

**DEVELOPING ENGLISH READING LEARNING MATERIALS FOR  
INTERNATIONAL MATHEMATICS EDUCATION STUDY PROGRAM  
OF YOGYAKARTA STATE UNIVERSITY**

**A THESIS**

Presented as a Partial Fulfillment of the Requirements for the Attainment of the  
*Sarjana Pendidikan* Degree in English Language Education



By:

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**ENGLISH EDUCATION DEPARTMENT  
FACULTY OF LANGUAGES AND ARTS  
YOGYAKARTA STATE UNIVERSITY**

**2016**

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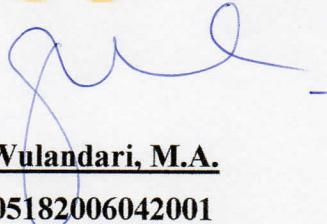
**2016**

**APPROVAL SHEET**

**DEVELOPING ENGLISH READING LEARNING MATERIALS FOR  
INTERNATIONAL MATHEMATICS EDUCATION STUDY PROGRAM  
OF YOGYAKARTA STATE UNIVERSITY**

**A THESIS**



  
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## RATIFICATION SHEET

### DEVELOPING ENGLISH READING LEARNING MATERIALS FOR INTERNATIONAL MATHEMATICS EDUCATION STUDY PROGRAM OF YOGYAKARTA STATE UNIVERSITY

#### A THESIS

Accepted by the board of examiners of English Education Department, Faculty of Languages and Arts, Yogyakarta State University on 30 March 2016 and declared to have fulfilled the requirements to acquire A *Sarjana Pendidikan* Degree

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## PERNYATAAN

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menyatakan bahwa karya ilmiah ini adalah hasil pekerjaan saya sendiri dan sepengetahuan saya karya ilmiah ini tidak berisi materi yang ditulis orang lain kecuali bagian – bagian tertentu saya ambil sebagai acuan dengan mengikuti tata cara dan etika penulisan karya ilmiah yang lazim.

Apabila ternyata terbukti bahwa pernyataan ini tidak benar, sepenuhnya menjadi tanggung jawab saya.

Yogyakarta, 8 Maret 2016

Penulis,



Tias Mafazatu Ma'arah  
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## MOTTOS

*Indeed, for the righteous is attainment. (An-Naba: 31)*

*And every soul will be fully compensated [for] what it did; and He is most knowing of what they do. ( Az – Zumar : 70 )*

*And whoever submits his face to Allah while he is a doer of good - then he has grasped the most trustworthy handhold. And to Allah will be the outcome of [all] matters. ( Luqman : 22 )*

*Avoid speaking until there is reasonable occasion; those who enter into useless talk, even if expressing truth are found reprehensible. — Hussein bin Ali bin Abi Thalib*

*To get what you love, you must first be patient with what you hate — Al Ghazali*

*Educating the mind without educating the heart is no education at all — Aristotle*



## **DEDICATIONS**

This thesis is fully dedicated to:  
my beloved mother, Fatiah Asmalina  
my beloved father, Sutino Sasmito

and

my beloved brothers, Fachru Rozan Asfaruddin and Abbad Ziaul Iqbal

## ACKNOWLEDGMENTS

*Alhamdulillahirabbil'alamin*, praise to Allah SWT the Almighty, the most Merciful who has blessed me with the best things in my life, including the blessing that empowered me to accomplish this thesis. Peace be upon Muhammad SAW, the Messenger of Allah.

First of all, I would like to express my deepest gratitude to my supervisor, Ella Wulandari, M.A., for her motivation, enthusiasm, and immense knowledge. I thank her for guiding me during the process of the thesis writing. I would also like to express my gratitude to Mr. Suharso, M.Pd., for his kindness to validate my materials through the expert judgment.

I would like to thank the Dean of Mathematics and Science Faculty, for giving me permission to conduct my research. Special thank goes to the Department of Mathematics Education students for their cooperation and help during the research.

Special gratitude and appreciation are directed to my beloved family. First, I would like to thank my father and mother for their prayers and supports. Second, I would like to thank my beloved little brothers, Ozan and Abbad for always making me smile every single day.

I would like to thank my friends in PBI H class: Nurin, Wury, Richa, Ari, Ipit, Fani, Siwi, Ana, Derin, Inka, Erlinda, Riski, Singgih, Tomi, and Taufik for the beautiful friendship and togetherness. I also give my regards to my friends in Ikatan Mahasiswa Muhammadiyah UNY for giving me a lot of experiences. A



heap of thanks are also sent to my beloved friends as well; Rayi, Eva, Umi, Novi, Kiki, Ulin, Zahara, Ivah, Renny, Susi, Aulia, Ocik, Deta, *mbak* Fanie, Mardhotillah, Aji, Riski, and Fajar who have been the place for me to share about many things. Special thank also goes to Latif and Wury who have spent their times for checking my thesis draft.

Finally, I hope that this thesis will be useful for the readers. I realize that this thesis is far from being perfect. Any criticisms, ideas, and suggestions for the improvement of this research are greatly appreciated.

Yogyakarta, 8 March 2016

Writer,

Tias Mafazatu Ma'arah  
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# **DEVELOPING ENGLISH READING LEARNING MATERIALS FOR INTERNATIONAL MATHEMATICS EDUCATION STUDY PROGRAM OF YOGYAKARTA STATE UNIVERSITY**

**Tias Mafazatu Ma'arah  
11202244025**

## **ABSTRACT**

This research was aimed: (1) to find out the target needs of International Mathematics Education Study Program; (2) to find out the learning needs of the student of International Mathematics Education Study Program; and (3) to develop appropriate reading learning materials for students of International Mathematics Education Study Program.

This research was categorized as Research and Development (R&D) study. The subjects of this research were the students of International Mathematics Education study program in the academic year of 2014/ 2015 at Yogyakarta State University. The steps of this research were conducting needs analysis, analyzing the result of needs analysis, developing the course grid, writing the first draft of the materials, evaluating the first draft of the materials, and revising it based on the feedback from the expert. The data in this research were collected by employing the needs analysis questionnaire and the materials evaluation questionnaire. The data obtained from needs analysis were analyzed quantitatively using frequency and percentage and the result of materials evaluation were analyzed using descriptive statistics.

The result of needs analysis shows that the target needs of the students of International Mathematics Education study program are: (1) they learn English to help them in understanding English literatures for supporting the teaching and learning process; (2) they are at intermediate level for reading skills; (3) they need to be able to conduct a quick survey of the text to identify the topic, the main idea, and the organization of the text (previewing); (4) they need to understand implicit meaning; (5) they have problems in doing skimming technique and summarizing a text. Related to the learning needs, the inputs use topics related to mathematics and pictures. In terms of activities, the students prefer to carry out the learning process by reading a text and answering questions. In terms of setting, the students choose doing the learning process inside the class and work in a group of 3. This research developed three units of the materials. Each unit has three main parts: introduction, main lesson, and reinforcement. Based on the expert judgment result, the developed English reading learning materials were appropriate in terms of the content, language, presentation, and layout. The mean score of all aspects was 3.4 which was categorized as “very good” that is in the range of  $3.25 \leq x \leq 4$ .

## **CHAPTER I**

### **INTRODUCTION**

This chapter presents background of the study, identification of the problems, limitation of the problems, formulation of the problems, objectives of the study, and the significance of the study.

#### **A. Background of the Study**

Yogyakarta State University is a university which aims to produce educators that will be able to compete in national and international levels. In line with that, the university has a vision to be a world-class university. Salmi (2009:3) claims that becoming a world-class university requires the improvement on quality of learning and research in tertiary education. The most important thing in developing world-class university is to develop the capacity to compete in the global tertiary education through the acquisition, adaption, and creation of advanced knowledge.

Altbach (2004 & 2011) in Wang, *et al* (2013:2) states that “scholars have identified key attributes which world-class universities have and which regular universities do not possess, including highly qualified faculty, talented students, excellence in research, quality teaching with international standards, high levels of government and non-government funding, academic freedom, autonomous governance structures and well-equipped facilities for teaching, research, administration and students life.”

One of the ways to achieve this purpose is by running international classes in some faculties. There are some faculties in Yogyakarta State University which

have international class programs. They are the Faculty of Economics and the Faculty of Mathematics and Science. These faculties have been carrying out international classes in some study programs. The Faculty of Economics has been carrying out International Economics Education and International Accounting classes. Meanwhile the Faculty of Science and Mathematics has been carrying out International Mathematics Education, International Physics Education, and International Biology Education. In line with this situation, this research aims to develop appropriate materials for students of international class. The researcher decided to focus on developing English materials for students of International Mathematics Education of Yogyakarta State University.

Students of an international class are expected to have a good ability in English. It is known that the teaching and learning processes are carried out using English in the forms of spoken and written. In spoken forms, during the teaching and learning processes the lecturers will be giving English instructions and explanations. Meanwhile in written forms, the students have to read the English references and literature to support their study. In this case, it can be said that the ability of English seems very crucial. The students should be provided the materials or media to support their English learning processes.

This research aims to develop only one skill that is a reading skill. English reading skills are very important for students of International Mathematics Education. The students will frequently find English mathematics texts. The mathematics texts differ from text in other subject. Furthermore, they should read the references such as mathematics text books, journals, and articles written in

English. In terms of the learning needs, the students of International Mathematics Education should be provided the texts which appropriate with their current study. The students should be given the texts which have close relation with a context of mathematics. Barton and Heidema (2002) cited in Metsisto (2005) state that mathematics texts contain more concepts per sentence and paragraph than any other type of text. They are written in a very compact style. It means that each sentence contains a lot of information with little redundancy. The mathematics texts can contain words and also numeric or non-numeric symbols to decode. This explanation represents that the texts in mathematics study have different terms, register, and jargon. These statements prove that mathematics students should master the English skills especially reading. Facing the texts in the form of English is their daily activity in the class. English reading skills seem very useful for students of International Mathematics Education in order to support their study. The department is still developing the English book for students of International Mathematics Education. This kind of book is still limited for the students of International Mathematics Education. Therefore, the product of this research is very needed by the students and department itself.

In order to support this goal, the appropriate English learning materials are needed for the students. The developed materials should represent students' needs, in this case students of International Mathematics Education study program. In addition, the final product of this research might be very useful for students in order to support their study. The materials are expected to help students in learning English reading skills effectively. Thus, the objective of this research is



to develop appropriate English reading learning materials for students of International Mathematics Education Study Program of Yogyakarta State University.

## **B. Identification of the Problems**

The concept of world-class university requires the implementation of internationalization concept. The way to apply the internationalization concept is by running the international classes. These international classes offer to do teaching and learning processes through international standards. The teaching and learning processes will be presented theoretically and practically in order to gain students' knowledge and skills based on the requirement of international standards.

The students of International Mathematics Education study program might need the ability of reading skills to support their study. They need reading in order to make them easier in doing the learning processes. In addition, they also need to be able to grasp the provided literatures or references written in English.

The learning materials should facilitate the students' learning and meet the students' needs. In this case, the reading materials should represent students' needs. Moreover, the input texts should relate to the students' study program, in this case Mathematics Education Study Program. One way to find students' needs related to learning materials are by conducting needs analysis. Needs analysis will examine some factors related to the development of learning materials such as text types, themes or topics, and length of a text.

In addition, the design of teaching and learning process will decide types of tasks or activities developed including how the tasks or activities will be done individually, in pairs, or in group whether inside or outside the classroom. Thus, those aspects should be included in examining the students' needs in order to develop English reading learning materials which might be useful for students of International Mathematics Education study program.

### **C. Limitation of the Problems**

The students of international mathematics study program need materials which can improve their reading skill ability related to mathematics study. This research focused on developing English reading learning materials for students of International Mathematics Education of Yogyakarta State University.

### **D. Formulation of The Problems**

The problems of this study are formulated as follows:

1. What are the target needs of the students of International Mathematics Education Study Program?
2. What are the learning needs of the students of International Mathematics Education Study Program?
3. What are the appropriate reading learning materials for the students of International Mathematics Education Study Program?

### **E. Objectives of The Study**

This study is aimed at:

1. Finding out the target needs of the students of International Mathematics Education Study Program.
2. Finding out the learning needs of the students of International Mathematics Education Study Program.
3. Developing appropriate reading learning materials for the students of International Mathematics Education Study Program.

### **F. The Significance of The Study**

This study gives significances to some parties. The significance of this study is stated as the following:

1. The students of International Mathematics Education study program

The results of this research are aimed at providing useful resources for students to have more practice in order to develop their reading skill ability.

2. The teachers of International Mathematics Education study program

The results of this research are expected to be one of the resources to supplement teachers of International Mathematics Education Study Program in teaching and also to inspire them in developing appropriate materials for their students in order to improve their reading skill.

3. To English department

This study gives contribution in providing more resources and ideas for the Research and Development study.

4. Course designers or materials developers

The result of this research are of great use for course designers or materials developers in developing reading materials that meet students' needs.

5. Other researchers

The results of this research can be used as a reference for other researchers to conduct a similar study but in different focus discussion.

## **CHAPTER II**

### **LITERATURE REVIEW**

The aim of this research is to develop appropriate reading learning materials for International Mathematics Education Study Program of Yogyakarta State University. To support the understanding of the background formulated in Chapter I, some theories related to the concepts of reading, English for specific purposes, and materials development were reviewed.

#### **A. Literature Review**

##### **1. Reading**

###### **a. The Nature of Reading**

Reading is one of skills in English which is important to be mastered by students. International students must have strong relationship with this skill. This skill will be used in contracting the meaning of the text and inferring messages of the writer.

Reading is a process in comprehending and interpreting a written text. From a reading process the learners will able to figure out the main idea, literal, and implied meaning of texts. Urquhat and Weir cited in Feng Liu (2009) state that a reading skill can be described as a cognitive ability which should be used by learners when interacting with texts. Although it is a receptive skill, learners must be able to extract the meaning from texts, not only literal meanings but also the implied meanings.



In addition, Brown (2001) proposes the nature of reading through three theories namely bottom-up and top-down processing as well as schemata theory. Led by Goodman's (1970) cited in Brown (2001:298-299) states the bottom-up processing requires the readers to recognize a multiplicity of linguistics signals and use their linguistics data-processing mechanism to impose some sort of order on these signals. Meanwhile the top-down processing, Brown (2001) says this is a process in which the readers draw on their own intelligence and experience to understand a text. This process requires the readers' background knowledge before they read a text. The last is schemata theory which not only requires the background knowledge of the readers. Further Brown (2001) states that schemata is the condition where the readers bring information, knowledge, emotion, experience, and culture.

Besides, Harmer (1983) also defines reading as a receptive skill which has two purposes. Firstly is reading instrumental. It means that the reading activity takes place because it will help a person to achieve some clear aims. In other words, instrumental reading is done when a person has an intended purpose in mind. The second one is pleasurable reading. It means that reading takes place only for pleasure. As an example is when people read magazines, illustrated cartoons, photo-stories and so on.

Based on the previous theories, it can be said that reading is the skill to extract the stated and implied meaning of the text. The process of extracting the meaning can be obtained through recognizing linguistics signals, the reader's background knowledge, emotion, experience, and culture.

## **b. Micro and Macro Skills of Reading**

The micro and macro skills of reading are important things in order to develop the materials. The product of this research has applied some of the micro and macro skills based on the result of needs analysis. They will be developed in form of tasks and various activities.

Harmer (1983:201-202) classifies the different skills of reading. These skills will frequently depend on what the readers are reading for. He classifies the skills as mentioned below.

### **1) Identifying the topic**

This skill requires the readers' ability to pick up the topic of a written text very quickly. The readers can use their own schemata in deciding the idea or topic of the text.

### **2) Predicting and guessing**

Sometimes after the readers identified the topic, they try to guess in order to try and understand what is being written about. Then, they try to predict what is coming or guess the content from their initial glance.

### **3) Reading for general understanding (skimming)**

This skill expects the readers to do reading for general comprehension. They need to get a quick idea of a text by having a quick look at the text before plunging into it for detail.

#### 4) Reading for specific information (scanning)

This skill is different from the previous skill. This skill aims to get specific information. For example, a reader may quickly look through a film review to find the name of the director or the star.

#### 5) Reading for detailed information

This skill aims to help the readers to understand what they are reading in detail. This is usually the case with written instructions or directions.

#### 6) Interpreting text

The readers are expected to be able to see beyond the literal meaning of words in a passage. They can use a variety of clues to understand what the writer is implying or suggesting.

In addition, Brown (2003:187-188) also gives more specific English reading skills as stated below.

### **1) Micro Skills of Reading**

- a) Discriminate among the distinctive graphemes and orthographic patterns of English.
- b) Retain chunks of language of different lengths in short-term memory.
- c) Process writing at an efficient rate of speed to suit the purpose.
- d) Recognize a core of words, and interpret word order patterns and their significance.
- e) Recognize grammatical word classes (nouns, verbs, etc.), systems (e.g., tense, agreement, pluralization) patterns, rules, and elliptical forms.
- f) Recognize that a particular meaning may be expressed in different grammatical forms.
- g) Recognize cohesive devices in written discourse and their role in signaling the relationship between and among clauses.

## 2) Macro Skills of Reading

- a) Recognize the rhetorical forms of written discourse and their significance for interpretation.
- b) Recognize the communicative functions of written texts, according to form and purpose.
- c) Infer context that is not explicit by using background knowledge.
- d) From described events, ideas, etc., infer links and connections between events, deduce causes and effects, and detect such relations as main idea, supporting idea, new information, given information, generalization, and exemplification.
- e) Distinguish between literal and implied meanings.
- f) Detect culturally specific references and interpret them in a context of the appropriate cultural schemata.
- g) Develop and use a battery of reading strategies, such as scanning and skimming, detecting discourse markers, guessing the meaning of words from context, and activating schemata for the interpretation of texts.

### c. Types of Reading

Every written text has its own rules and conventions. The readers should anticipate the rules and conventions in order to process meaning efficiently. That is why the readers should know types (genres) of reading. The developed materials of this research use academic type of writing. The materials will provide some texts related to mathematics. There are so many genres present in any literature culture. Brown (2003:186-187) proposes various genres of reading as mentioned below.

- 1) Academic reading
  - a) General interest articles (in magazines, newspapers, etc)
  - b) Technical report, professional journal articles
  - c) Reference materials
  - d) Textbooks, theses
  - e) Essays, papers
  - f) Test directions
  - g) Editorials and opinion writing
- 2) Job-related reading
  - a) Messages
  - b) Letters/ emails
  - c) Memos

- d) Reports
- e) Schedules, labels, signs, announcements
- f) Forms, applications, questionnaires
- g) Financial documents
- h) Directories
- i) Manuals, directions
- 3) Personal reading
  - a) Newspapers and magazines
  - b) Letters, emails, greeting cards, invitations
  - c) Messages, notes, lists
  - d) Schedules
  - e) Recipes, menus, maps, calendars, etc

#### **d. Classroom Reading Activities**

According to Brown (2003:189) several types of reading performance are typically identified, and these will serve as organizers of various assessment tasks.

- 1) *Perceptive*. In keeping with the set of categories specified for listening comprehension, similar specifications are offered here, except with some differing terminology to capture the uniqueness of reading. Perceptive reading tasks involve attending to the components of larger stretches of discourse: letters, words, punctuation, and other graphemic symbols. Bottom – up processing is implied.
- 2) *Selective*. This category is largely an artifact of assessment formats. In order to ascertain one's reading recognition of lexical, grammatical, or discourse features of language within a very short stretch of language, certain typical tasks are used: picture-cued tasks, matching, true/ false, multiple choice, etc.
- 3) *Interactive*. Included among interactive reading types are stretches of language of several paragraphs to one page or more in which the reader must, in a psycholinguistic sense, interact with text.
- 4) *Extensive*. Extensive reading, applies to texts of more than a page, up to and including professional articles, essays, technical reports, short stories, and books.

#### **e. Assessing Reading**

Brown (2003) proposes the idea that assessment is an ongoing process during teaching and learning process. The process can be in a written work, formal essay, productive performances like in reading and listening activities,



and so on. Moreover, when students offer a comment or response to a question, the teacher subconsciously makes an assessment of the student's performance.

Before assessing reading skills, the first thing that should be noticed is that reading has various genres. According to Brown (2003), there are three types of reading such as academic reading, job-related reading, and personal reading. The product of this research used the academic reading in almost all of the tasks. The materials from this genre are magazines, newspapers, articles, dictionaries, and so on. The genre of a text will guide the readers to apply certain schemata that will help them in extracting appropriate meaning.

The product of this research used some assessments such as matching tasks, comprehension questions, picture-cued items, short-answer tasks, true-false questions, scanning, ordering tasks, skimming, summarizing, and note-taking. In line with these assessments, Brown (2003:190-214) proposes some types of reading assessments as stated follow.

#### 1) Assessment of Basic Reading Skills

##### a) Reading aloud

Reading aloud is a strategy to assess students' ability in reading the provided text orally. This strategy will help students in developing their spelling awareness.

##### b) Multiple choice

This assessment is asked students to choose one of four or five possible answers. This kind of assessment is not only a matter of

choosing. Sometimes, the teacher will provide the outwitted possible answers to see the students understanding related to the presented texts.

## 2) Assessment of Selective Reading skills

### a) Matching tasks

Some tasks in this product are used matching tasks assessments. In the developed materials, this task is used in identifying the parts of speech.

It is the simple task which asks students to respond correctly or match an appropriate format.

### b) Editing tasks

This assessment is more appropriate to measure students' grammatical errors. This technique is not only focus on grammar but also introduce a simulation of the authentic task of editing.

### c) Gap-filling tasks

This kind of task can be converted in the multiple choice tasks. The students are asked to write a word or phrase. Another option is to create sentence completion items where the students read part of a sentence and then complete it by writing a phrase.

## 3) Assessment of interactive reading

### a) Impromptu reading plus comprehension questions

This is the most common technique in reading assessment. This assessment provides a passage then the students respond to questions.

These questions are not only about comprehension questions but also include some of effective reading strategies such as skimming for main idea, scanning for details, guessing word meanings from context, inferencing, etc.

b) Short – answer tasks

This is a common alternative to multiple-choice questions following reading passages. The students are provided a reading passage then answer the questions in a sentence or two. The specifications are also related to comprehension questions and some of effective reading skills. The product of this research also applied this assessment in some activities. Almost all of the evaluation parts in the developed product used short – answer tasks. Nevertheless, sometimes there are some combination between short-answer tasks and true-false questions.

c) Scanning

This strategy is used to find related information in a text. The students are asked to find specific informations. Some of the scanning objectives (for each of the genres) are to find:

- a date, name, or place in an article;
- the setting for a narrative or story;
- the principal divisions of a chapter;
- the principal research finding in a technical report;
- a result reported in a specified cell in a table;

- the cost of an item on a menu; and
- specified data needed to fill out an application.

4) Assessment of extensive reading

a) Skimming tasks

This task is a prediction strategy used to give the students a sense of topic and purpose of a text, the organization of the text, the perspective or point of view of the writer, its ease or difficulty, and its usefulness to the students. Sometimes the questions of skimming tasks are straightforward.

b) Summarizing and responding

The common technique in assessing extensive reading is through summarizing. The students are asked to write a summary after reading a text. Meanwhile responding is a technique which asks the students to respond to a text.

## **2. English for Specific Purposes**

### **a. Definition of English for Specific Purposes**

In developing English reading learning materials for students of International Mathematics Education, the researcher adopts the principles of English for Specific Purpose. According to Hutchinson and Waters (1987: 19), ESP (English for Specific Purpose) is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning. It means that English is expected to be used based on the

learners' needs and interest. For example, the students of International Mathematics Education need to learn reading skills in order to support them in understanding their references or literatures written in English. Further Hutchinson and Waters (1987) also state that ESP should properly be seen not as any particular language product but as an approach to language teaching which is directed by specific and apparent reasons for learning.

In line with the previous explanations, Basturkmen (2010:3) claims that ESP views learners in terms of their work or study roles and that ESP courses focus on work- or study-related needs, not personal needs or general interests. He also states that ESP involves analysis of texts and language use learners will encounter in their work and study situations.

Besides, Dudley-Evans and St John (1998:4-5) cited in Basturkmen (2010) state that the characteristics of ESP can be seen through two as presented below.

- 1) Absolute characteristics
  - a) ESP is designed to meet specific needs of the learner.
  - b) ESP makes use of the underlying methodology and activities of the disciplines it serves.
  - c) ESP is centered on the language (grammar, lexis, and register), skills, discourse and genres that are appropriate to activities.
- 2) Variable characteristics
  - a) ESP may be related or designed for specific disciplines.
  - b) ESP may use, in specific teaching situations, a different methodology from that general English.
  - c) ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation; it could be used for learners at secondary school level.
  - d) ESP is generally designed for intermediate or advanced learners, and
  - e) Most ESP courses assume basic knowledge of the language system, but it can be used with beginners.

Basturkmen (2010) claims that ESP is more effective than general English Second Language approach. He states that ESP approach can fulfill students' interests and needs that will increase their motivation. He also assumed that students will be more interested in topics and texts related to their work or study areas.

Based on some ideas proposed by some experts, it can be concluded that ESP is an approach to cover the English learners with a certain study or work. ESP products or courses are developed through needs analysis process. The result of needs analysis will present the needs and interests of the students. That is why the input of the materials should be appropriate for learners' needs.

#### **b. Definition of English for Academic Purposes**

It is known that EAP is one of the main branches of ESP. The developed materials of this research are classified as English for Academic Purpose since the learners require English for academic study. Dudley-Evans and St. John (1998:34) define EAP as "English teaching that refers to a study purpose and the concerns of EAP are needs analysis, text analysis, and preparing learners to communicate effectively in the tasks prescribe by their study situation".

Furthermore, Hyland and Lyons (2002:2) via Tomlinson (2008) state that "EAP refers to language research and instruction that focuses on the specific communicative needs and practices of particular groups in academic context. It means that this purpose aims to cover students' needs for their study

purpose. In addition, Hutchinson and waters (1987) state that English for academic purposes is a branch of ESP that focused on study purposes. It means that the learners require the language for their study.

Tomlinson (2008:75) proposes the reading skills required for EAP based on English Language Centers of some Australian Universities as mentioned below.

Table 1: Reading Skills Required for EAP

Reading	Understanding academic texts
	Taking notes
	Identifying relevant information
	Interpreting information
	Recognizing point of view and bias

Based on some definitions proposed by some experts, the developed materials of this research are classified as EAP since this research aims to develop reading materials for students of International Mathematics Education study program.

### c. Needs Analysis in ESP

Before developing materials for students of ESP, needs analysis should be done to distinguish between the current materials with the ESP materials are expected by students. Graves (2000:98) defines needs analysis as a systematic and ongoing process of collecting information about students' needs and preferences, interpreting the information and then making course decision based on the interpretations in order to meet the needs.

In addition, Dudley-Evans and St John (1998) cited in Basturkmen (2010) offer a ‘current concept of needs analysis’ (p. 125):

1. Professional information about the learners: The tasks and activities learners are/will be using English for – *target situation analysis* and *objective needs*.
2. Personal information about the learners: Factors which may affect the way they learn such as previous learning experiences, cultural information, reasons for attending the course and expectations of it, attitude to English – *wants, means* and *subjective needs*.
3. English language information about the learners: What their current skills and language use are – *present situation analysis* – which allows us to assess (D).
4. The learners’ lacks: The gap between (C) and (A) – *lacks*.
5. Language learning information: Effective ways of learning the skills and language in (D) – *learning needs*.
6. Professional communication information about (A): Knowledge of how language and skills are used in the target situation – *linguistic analysis, discourse analysis, genre analysis*.
7. What is wanted from the course.
8. Information about how the course will be run – *means analysis*.

Along with the concept above, Hutchinson and Waters (1987) also divided the things that should be done in doing needs analysis. There are target needs and learning needs. Target needs deal with what students’ necessities, lacks, and wants. Meanwhile learning needs deal with the learners themselves, the current materials provided, etc. The definitions of both aspects will be explained below.

#### 1) Target needs

As explained before, it refers to what the learners need to do in the target situation. The three related terms are necessities, lacks, and wants.

##### a) Necessities

It is what the learner has to know in order to function effectively in the target situation. It is a matter of observing what situations the



learner needs to function in and then analyzing the constituent parts of them. In this case, the English reading skills are needed for success in doing learning process in International Mathematics Education class.

b) Lacks

It is what the learner knows already in the target situation. The target proficiency needs to be matched against the existing proficiency of the learners. It is illustrated as a gap between the ideal situation with the real conditions. In this case, the lacks of student in International Mathematics Education class should be found out.

c) Wants

There is another important thing to be considered after finding out students' necessities and lacks. The students also have a view to what they want or they need. Hutchinson and Waters (1987) state that students' perceived wants cannot be ignored. Wants related to what the students want to learn. In this case, students' wants are important matters to consider the topic of the materials they want.

2) Learning needs

According to Hutchinson and Waters (1987: 60-62), learning needs indicate how the learners are going to get from their starting point (lacks) to the destination (necessities).

The previous theories proposed by some experts show that needs analysis become a crucial thing in developing ESP materials. The developed materials should present students' needs and interests in order to deliver the materials effectively.

### **3. Content – Based Instructions**

#### **a. Definition of Content – Based Instruction**

Content-based instruction is used in a variety of language learning context. CBI has been applied for the teaching and learning process of second language students as well as foreign language students. This approach is appropriate for English for Academic Purposes program.

Krahnke (1987:65) cited in Richards (2006) defines CBI as “the teaching of content or information in the language being learned with little or no direct explicit effort to teaching the language itself separately from the content being taught”. In this case, content means the information or subject matter that learners; learn or communicate through language. In line with this statement, Richards (2006) claims that content-based instruction can be used as the framework of a unit, as the guiding principle for course, as a course that helps students in mainstreaming, and as the basic thought for the use of English as a medium for teaching some school subjects in an English foreign language setting.

Further Richards (2006:28) states some of assumptions about language learning in content-based instruction as mentioned below.

1. People learn a language more successfully when they use the language as a means of acquiring information, rather than as an end in itself.
2. CBI better reflects learners' needs for learning a second language.
3. Content provides a coherent framework that can be used to link and develop all of the language skills.

Furthermore, Crandall and Tucker (1990: 187) define CBI as an approach to language instruction that integrates the presentation of topics or tasks from subject matter classes (e.g., math, social studies) within the context of teaching a second or foreign language.

In line with some theories above, this research aims to develop the English reading learning materials by applying content – based instruction. This approach is appropriate for students of International Mathematics Education. This research aims to present English reading skills within the context. In this case, the students will be provided the English texts related to mathematics study. By applying this approach, it is expected that the students will be having a meaningful learning since the CBI tends to combine the language skill with the context or circumstances of students.

#### **b. Principles of Content – Based Instruction**

Richards (2006:207) proposes the principles of content-based instruction as mentioned below.

1. People learn a second language more successfully when they use the language as a means of acquiring information, rather than as an end in itself.
2. Content-Based Instruction better reflects learners' needs for learning a second language.

The first principle shows that the movement of content-based instruction is that this approach is more effective in doing language learning. Furthermore, the second principle reflects that content-based instruction prepares ESL students for academic studies. It means that this approach needs to be able to access the content of academic learning and teaching.

Furthermore, Brinton (2003) in Nunan (2003: 205-209) proposes six principles of CBI as mentioned below:

1. The instructional decision is based on content rather than language criteria.
2. CBI integrates the four skills as well as grammar and vocabulary.
3. CBI involves students actively in all phases of the learning process that students learn thorough doing and are actively engaged in the learning process and do not depend on the teacher to direct all learning to be the source of all information.
4. CBI chooses content for its relevance to students' life, interests and/ or academic goals.
5. Since the key component of CBI is authenticity, the tasks associated with a given text should mirror those that would take place in the real world.
6. CBI makes use of awareness raising tasks to draw attention to specific language features found in the authentic texts.

### **c. Teaching and Learning Activities**

There are some types of activities in content-based instruction. Stoller (1997) cited in Richards (2006: 212-213) classified the activities of CBI based on their instructional focus like mentioned below.

1. Language skill improvement
2. Vocabulary building
3. Discourse organization
4. Communicative interaction
5. Study skills
6. Synthesis of content materials and grammar

In addition, Mohan (1986) cited in Richards (2006) also defines that content-based instruction is built around the notion of knowledge structures. It means that the knowledge structure over the frameworks and schemas of curriculum. Further he divided the framework into six universal knowledge structures such as practical elements and theoretical element. The practical elements represent the specific of knowledge structures including description, sequence, and choice. Meanwhile the theoretical knowledge represents the general of knowledge structures including concepts/ classification, principles, and evaluation.

### **d. Roles of Materials**

It is known that the materials play the important role in the development of content-based instruction. Stryker and Leaver (1997) propose two characteristics of CBI materials as follows:

- 1) The provided materials must be authentic. It means that the materials must be like the ones used in native language instructions.

- 2) The provided examples must be taken from realia, real life experience, and contemporary issues. The materials of CBI should be interesting and real. So the provided materials can improve communicative language teaching, capture the concentration of the learners, and make the language learning powerful and meaningful.

In addition, Richards (2001:252) also presents the roles of materials such as:

- 1) Providing exposure to the specialized genres and register of ESP.
- 2) Supporting learning through stimulating cognitive processes and providing a structure and progression for learners to follow.
- 3) Motivating learners by providing achievable challenges and interesting content.
- 4) Providing a resource for self-study outside of the classroom.
- 5) Providing the basis for the content lessons, the balance of skills taught, and the kinds of language practice students take part in.
- 6) Serving primarily to supplement the teacher's instruction.
- 7) Providing the major source of contact they have with the language apart from the teacher.

Based on some principles above, it can be concluded that materials play an important role in content-based instruction. It means that the materials should meet students' needs and interests. The materials also should allow students to improve their English skills.

## **4. Materials Development**

### **a. Definition of Materials Development**

Materials have an important role in English language teaching. It deals with the forms of material itself and also the way the materials going to be delivered. Tomlinson (1998:2) defines the material as anything which is done by writers, teachers or learners to provide sources of language input and to promote language learning. Meanwhile, according to Graves (2000) materials development is the process of planning by which a teacher creates units and lessons to carry out the goals and objectives of the course. It includes the process of making syllabus to be more specific. She also states that materials should consists of some activities, whereas, an activity comprises several core techniques by a teacher. There are some activities which can be applied in developing the learning materials. Graves (2000: 152) also proposes some activities that should be considered in developing materials such as:

- 1) Activities should draw on what students know (their experience, their current situation) and be relevant to them.
- 2) Activities should focus on students' outside class needs if appropriate, so that needs can be met.
- 3) Activities should build students' confidence.
- 4) Activities should allow students to problem solve, discover, analyze.
- 5) Activities should help students develop specific skills and strategies, so that they can transfer skills to other learning situations.
- 6) Activities should help students develop specific language and skills they need for authentic communication, so that students' learn and practice vocabulary, grammar, function, etc, that they can use in the real situation.
- 7) Activities should integrate the four skills such as listening, speaking, reading, and writing; because the four skills mutually reinforce each others.
- 8) Activities should enable students to understand how a text is constructed; so that students can gain access to similar texts.

- 9) Activities should enable students to understand the cultural context and cultural differences; so they can have more confidence in target culture and understand own culture better.
- 10) Activities should enable students to develop social awareness; so they can navigate system to target culture.
- 11) Activities should be as authentic as possible.
- 12) Activities should vary the roles and groupings.
- 13) Activities should be of various types and purposes; to provide adequate practice.
- 14) Activities should use authentic texts or realia when possible; so that students are familiar with/ have access to language as used in 'real world'
- 15) Activities should employ a variety of materials.

The materials should cover activities that can improve students' language ability, in this case English reading skills. The materials should present the input texts or media which have a various activities. In accordance with some theories above, Tomlinson (1998:22) also proposes the principles of materials development as mentioned below.

- 1) Materials should achieve impact.
- 2) Materials should help learners to feel at ease.
- 3) Materials should help learners to develop confidence.
- 4) What is being taught should be perceived by learners as relevant and useful.
- 5) Materials should require and facilitate learners self-investment.
- 6) Learner must be ready to acquire the points being taught.
- 7) Materials should expose the learner to language in authentic use.
- 8) The learners' attention should be drawn to linguistic feature of the input.
- 9) Materials should provide the learner with opportunities to use the target language to achieve communicative purposes.
- 10) Materials should take into account that the positive effects of instruction are usually delayed.
- 11) Materials should take into account that the learners differ in learning styles.
- 12) Materials should take into account that the learners differ in affective attitudes.
- 13) Materials should permit a silent period at the beginning of instruction.
- 14) Materials should maximize learning potential by encouraging intellectual aesthetic. and emotional involvement which stimulates both right and left brain activities.
- 15) Materials should not rely too much on controlled practice.
- 16) Materials should provide opportunities for outcome feedback.



## **b. Materials Design Model**

Materials are applied in form of tasks. Some experts propose some ideas related to make an effective task. In this research, the materials designs proposed by some experts were used based on the necessity for the supplementary book itself. Richards and Rodgers (2001) state that the materials used in content-based instruction are authentic. It means that the materials are like the kinds of materials used in native-language instruction. According to Nunan (1991: 210), the way materials organized and presented as well as the types of content and the activities help to shape the students' view of the target language.

Steps of materials design principles according to Nunan (1991) are as follows.

- 1) Selecting the topic
- 2) Collecting data
- 3) Determining that students need to do in relation to the texts
- 4) Creating activities focusing on language elements
- 5) Creating activities focusing on learning skills/ strategies
- 6) Creating application task

Hutchinson and Waters (1987) propose four elements of material design model. These elements are to provide a coherent framework for the integration of the various aspect of learning. The elements will be explained as follows.

- a) *Input*: It can be a text, dialogue, video recording and so on. The materials of this research are using texts as the input.
- b) *Content focus*: It means that the materials should not only focus on linguistics content. Non – linguistics content should be exploited to convey information and generate meaningful communication.
- c) *Language focus*: This element lets the learners take the language to pieces., study how it works, and practice getting it back together again.
- d) *Task*. The materials should be designed to lead towards a communicative task in which learners use the content and language knowledge they have built up through the unit.

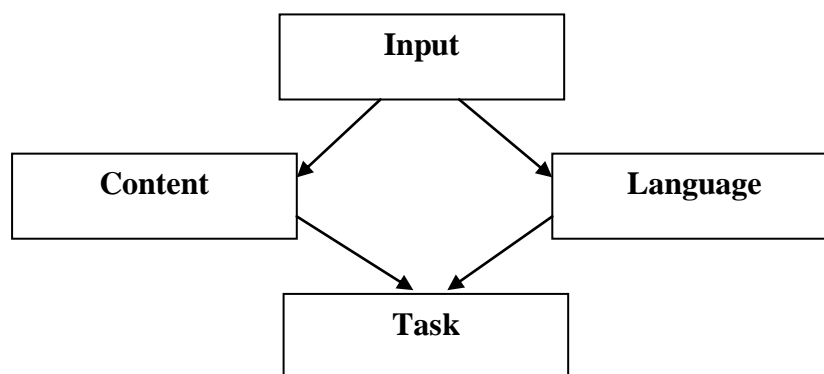


Figure 1: A material design model proposed by Hutchinson and Waters (1987:109)

In relation to this, Masuhara (in Tomlinson, 1998: 247) states that the sequence of course design recommended by experts can be summarized as the linear mode X as presented below.

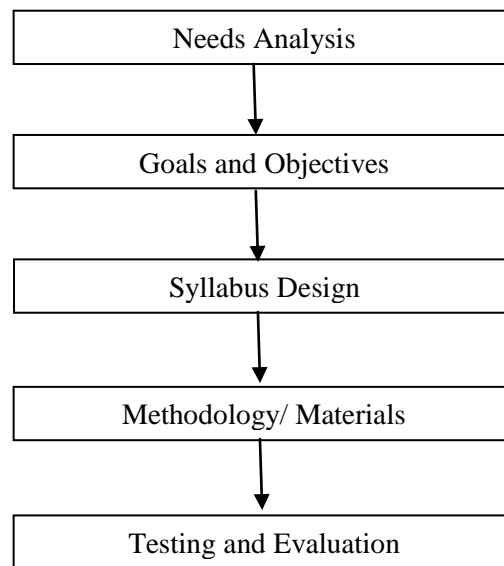


Figure 2: Model X of a course design proposed by Masuhara (in Tomlinson, 1998: 247)

### c. The Roles of Language Learning Materials

In teaching learning process, learning materials play the important roles.

Dudley-Evans and St. John (1998: 170-171) cited in Richards (2001) propose four important roles of learning materials in the ESP context as stated below.

- 1) As a source of language
- 2) As a learning support
- 3) For motivation and stimulation
- 4) For reference

In addition, Cunningsworth (1995:7) via Richards (2001) also summarizes the role of materials as:

- 1) a resource for presentation materials
- 2) a source of activities for learner practice and communicative interaction
- 3) a reference source for learners on grammar, vocabulary, pronunciation, and so on
- 4) a source of simulation and ideas for classroom activities
- 5) a syllabus
- 6) a support for less experienced teachers who have yet to gain in confidence

Furthermore, Hyland (2006 via Upton, 2012: 7-8) gives four principal roles that materials play within language instruction as follows.

- 1) To provide language scaffolding in order to support learners' understanding of how language is used.
- 2) To serve a model with the purpose to provide examples of specific language features, structures or functions of the language being studied.
- 3) To serve a stimulus in order to encourage students to connect with their experience, articulate their ideas, and interact with others.
- 4) To serve as a reference. It provides information about language instead of the practice. For example: dictionaries and grammars.

#### **d. Criteria of Good Materials**

In developing the materials, it is important to define some criteria of good materials. According to Hutchinson and Waters (1987: 107-108) there are some criteria of good materials as stated below.

- 1) Materials provide a stimulus to learning. Good materials do not teach but instead of encouraging learners to learn. Good materials should contain interesting texts, enjoyable activities which engage learners' thinking capacity, opportunities to use their existing knowledge and skills, and content which both learner and teacher can cope with.
- 2) Materials help to organize the teaching-learning process, by providing a path through the complex mass of the language to be learnt. Good materials should provide a clear and coherent unit structure that will guide teacher and learner through various activities.
- 3) Materials embody a view of the nature the language and learning. Materials should reflect what you think and feel about the learning process.
- 4) Materials reflect the nature of the learning task.
- 5) Materials can have very useful function in broadening the basis of teacher training by introducing teachers to new techniques.
- 6) Materials provide models of correct and appropriate language use.

#### **e. Materials Evaluation**

Materials evaluation should be done at the end of the developing the materials. It is to know whether the materials design meet the learners' needs and the appropriateness of the materials. Some experts have proposed

frameworks for materials evaluation. Cunningsworth (1995) in Richards (2001:258) suggests four criteria for evaluating materials as follows.

- 1) They should correspond to learners' needs. They should match the aims and objectives of the language learning programme.
- 2) They should reflect the uses (present or future) that learners make of the language. Textbooks should be chosen to help equip learners to use language effectively for their own purposes.
- 3) They should take account of students' needs as learners and should facilitate their learning processes, without dogmatically imposing a rigid 'method'.
- 4) They should have a clear role as a support for learning. Like teachers, they mediate between the target language and the learner.

Moreover, Tomlinson (1998:227-231) proposes the four steps are used to ensure that the evaluation is systemic and principled.

Table 2: Steps in Conducting an Evaluation of a Task

<b>Step 1</b>	Description of the task: 1. Contents (input, procedures, language activity) 2. Objective(s)
<b>Step 2</b>	Planning the evaluation (with references to the dimensions)
<b>Step 3</b>	Collecting information
<b>Step 4</b>	Conclusion and recommendations

## 5. Task Development

### a. Definition of Task

Task is an aspect that should be considered in developing the materials.

Nunan (2004) divided task into two categories; they are real-world or target

tasks and pedagogical tasks. The target tasks mean the uses of language in the world beyond the classroom. Meanwhile pedagogical tasks mean those that occur in the classroom. Accordance with the theories above, Skehan (1998) via Nunan (20014:3) proposes five key characteristics of a task as stated below.

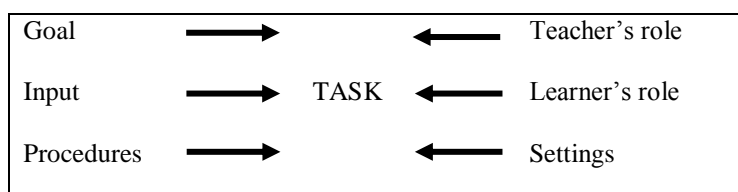
- 1) Meaning is primary.
- 2) Learners are not given other people's meaning to regurgitate.
- 3) There is some sort of relationship to comparable real-world activities.
- 4) Task completion has some priority.
- 5) The assessment of the task is in terms of outcome.

Finally, Nunan (2004: 4) defines task as a piece of classroom work that involves learners in comprehending, manipulating, producing, or interacting in the target language while their attention is focused on mobilizing their grammatical knowledge in order to express meaning, and in which the intention is convey meaning rather than to manipulate form.

### **b. Components of Task**

Nunan (2004) proposes a minimum specification of task that should be applied in developing materials. The components will include goals, input, and procedures. Those components will be supported by roles and settings. Every component has different function/ specification as proposed by Nunan (2004: 41-56).

Figure 3: Diagram of tasks simple model by Nunan



### 1) Goals

Goals are the vague, general intentions behind any learning task. They provide a link between the task and the broader curriculum. They may relate to a range of general outcomes (communicative, affective or cognitive). This component represents students' intention in doing the learning process.

### 2) Input

Input refers to the spoken, written and visual data that learners work with in the course of completing a task. Data can be provided by teacher, a textbook or some other source such as articles, newspapers, magazines, etc. The input relates to authenticity, in this context refers to the use of spoken and written material that has been produced for purposes of communication not for purposes of language teaching.

### 3) Procedures

Procedures specify what learners will actually do with the input that forms the point of departure for the learning task. In considering criteria for task selection (and, in the next section, we will look at what research has to say on this matter), some issues arise similar to those as encountered when considering input.

### 4) Teacher and Learner Roles

Role refers to the part that learners and teachers are expected to play in carrying out learning tasks as well as the social and interpersonal relationships between the participants. Richards and Rodgers (1986) cited

in Nunan (2004:64) point out that a method will reflect assumptions about the contributions that learners can make to the learning process. There is also growing evidence that an ability to identify one's preferred learning style, and reflect on one's own learning strategies and processes, makes one a better learner.

#### 5) Settings

Settings refer to the classroom arrangements specified or implied in the task. It is also consideration of whether the task is to be carried out wholly or partly outside the classroom. Learning mode refers to whether the learner is operating on an individual or a group basis. Meanwhile environment refers to where the learning actually takes place.

### **c. Principles of Task**

In developing tasks, the researcher follows some principles of task proposed by Nunan (2004) as explained below.

#### 1) Scaffolding

This principle shows that the lessons and materials should provide supporting framework within which the learning takes place. If this principle is removed, the learning process will collapse.

#### 2) Task dependency

This principle is illustrated in the instructional sequence. It means that at the beginning of the instructional cycle, learners spend a greater proportion of time engaged in receptive (listening and reading) tasks than in



productive (speaking and writing) tasks. In the next cycle, the learners spend more time in productive work.

### 3) Recycling

This principle allows the learners to encounter target language items in a range of different environments, both linguistic and experiential. The learners will see the language functions in relation to different content areas.

### 4) Active learning

This principle allows the learner to learning by doing. They could be practicing memorized dialogues to completing a table or chart based on some listening input. The key is that the learner who is doing the work.

### 5) Integration

This principle shows that learners should be taught in ways that make clear the relationships between linguistic form, communicative function, and semantic meaning.

### 6) Reproduction to creation

This principle encourages the learners to move from reproductive to creative language use. It means that the learners should reproduce language models provided by the teacher, textbook, or the tape.

### 7) Reflection

This principle allows the learners to reflect on what they have learned and how well they are doing.

#### **d. Developing Unit of Materials**

Developing unit of materials is one of the stages in developing a course book. A course book usually consists of some units and each unit has a number of tasks or activities. Developing the unit can be based on the writer's beliefs, understanding, and experience. It can be also based on the result of needs analysis. According to Graves (2000:156), developing materials should follow several considerations such as the learners, learning process, language, social context, activity, task types, and the materials.

#### **e. Task Grading and Sequencing**

Task grading and sequencing are related to the decision in what way the tasks should be presented. These components affect how the developed materials of this research are arranged. It means what to teach first, what second, and what the last in a course book. Richards, *et al* (1986:125) via Nunan (2004) describes that grading is “the arrangement of the content of a language course or textbook so that it is presented in a helpful way. Gradation would affect the order in which words, word meanings, tenses, structures, topics, functions, skills, etc. are presented. Gradation may be based on the complexity of an item, its frequency in written or spoken English, or its importance for the learner”. In addition, Graves (2000) states that sequencing involves deciding the order in presenting the materials.

There are some key components of input, the learner and procedures proposed by Nunan (2004). The components will be explained as follows.

### 1) Grading input

The first thing to consider is the complexity of the input. The grammatical factors will be very important. The grammatical complexity will be affected by the length of a text, propositional density, the amount of low-frequency vocabulary, the speed of spoken texts and the number of speakers involved, the explicitness of the information, the discourse structure and the clarity with this is signaled.

### 2) Learner factors

Learner factors are all those that the learner brings to the task of processing and producing language such as background knowledge, interest, motivation, etc.

Brindley (1987), cited in Nunan (2004: 120) proposes a list of questions that need to be considered in relation to each of these factors.

Table 3: Learner Factors

<b>Factor</b>	<b>Question</b>
<b>Confidence</b>	<ul style="list-style-type: none"> <li>• How confident does the learner have to be to carry out the task?</li> <li>• Does the learner have the necessary level of confidence?</li> </ul>
<b>Motivation</b>	<ul style="list-style-type: none"> <li>• How motivating is the task?</li> </ul>
<b>Prior learning experience</b>	<ul style="list-style-type: none"> <li>• Does the task assume familiarity with certain learning skills?</li> <li>• Does the learner's prior learning experience provide the necessary learning skills/strategies to carry out the task?</li> </ul>
<b>Learning pace</b>	<ul style="list-style-type: none"> <li>• How much learning material has the</li> </ul>

	learner shown he/she is capable of handling? • Is the task broken down into manageable parts?
<b>Observed ability in language skills</b>	• What is the learner's assessed ability in the skills concerned? • Does this assessment conform to his/ her observed behavior in class? • In the light of the teacher's assessment, what overall level of performance can reasonably be expected?
<b>Cultural knowledge/ awareness</b>	• Does the task assume cultural knowledge? • If so, can the learner be expected to have it? • Does the task assume knowledge of a particular subject
<b>Linguistic knowledge</b>	• How much linguistic knowledge does the learner have? • What linguistic knowledge is assumed by the task?

### 3) Procedural factors

The final step deals with the students requirement to perform on input data. With the increasing use of authentic texts, the trend has been to control difficulty, not by simplifying the input data but by varying the difficulty level of the procedures themselves.

## 6. International Mathematics Education Study Program

Yogyakarta State University has been running some international classes to be a world-class university. International Mathematics Education study program is one of international classes in Faculty of Mathematics and Science. According to Marsigit (2009:6) there are six criteria to be a world-class university such as (1)

citation of every faculty (2) peer review (3) international outlook (4) teaching quality (5) graduate employability and (6) quality research. These criteria have described the requirement to become a world-class university. It can be seen that faculties have a big impact to achieve this vision. Students of International Mathematics Education study program should be prepared to face the international class. It is known that the materials will be written in English. Furthermore, they will get English instructions and explanations in teaching and learning processes. That is why they need to learn English in order to support their study.

## **B. Review of Related Studies**

There are some researchers who have conducted the research focus on English for academics purposes and content-based instruction. Long (2011) conducted a research study related to English reading skills and mathematics. She claims that reading skills and math performance are very closely related. Her study suggests there are specific skills needed for students to process written information, such as decoding skills and reading comprehension. Duenas (2004) also conducted the research about content-based instruction in second/ foreign language education. In this research, she analyzed *the whats, whys, and whos of content-based instruction in ESL/ EFL*. Based on this research, she defines four characteristics of content-based instruction stated as follows.

1. Subject matter core –the fundamental organization of the curriculum should be derived from the subject matter, rather than from forms, functions, or situations.

2. Use of authentic texts –the core materials (texts, video tapes, audio recordings, visual aids, etc) should be selected primarily from those produced for native speakers of the language.
3. Learning new information –students should use the second/ foreign language to learn new information and to evaluate that information.
4. Appropriate to the specific needs of students –the topics, content, materials, and learning activities should correspond to the cognitive and affective needs of the students and should be appropriate to the proficiency level of the class.

Hernandez (2012) proposes the model of CBI to be applied in a second language or foreign language classroom. She refers to the ideas proposed by Brinton et al (1989) that theme-based model offers a great amount of advantages such as the topics can be selected according to learners' interests and needs as well as the content is exploited the maximally to increase language proficiency.

### **C. Conceptual Framework**

Developing effective English reading materials for students of International Mathematics Education study program is the focus of this study. It is believed that effective learning materials should meet the needs of the learners, help students to develop their confidence, equip the learners to use the language effectively, facilitate learners in learning process, help learners to feel at ease, and provide learners with opportunities to develop students' reading skills.

In developing English reading materials for students of International Mathematics Education study program, there are some considered aspects. This study adopted the principles of English for Specific Purposes. Developing the materials should be based on learners' needs and related literatures. This developed materials is the kind of materials used by teacher and students in

helping them to do the teaching and learning process in the class. The English reading materials are conducted in the form of supplementary book.

In developing the materials, several steps are done in this research; they are conducting need analysis, writing course grid, writing the first draft of the materials, getting experts' judgment, and writing the final draft of the materials. Before writing the materials, firstly the researcher distributed the needs analysis and examined the result of needs analysis. After conducting and analyzing needs analysis, the result should be applied in form of course grid. The course grid will be a guide in developing the materials in form of supplementary book. The materials should be developed based on some principles of material development in order to meet the characteristics good materials. The materials consist of several units. Units are constructed around a theme, objectives and a number of tasks. There are some components of task: goal, input, procedure, teacher and learner roles, and setting. Tasks should be arranged (graded and sequenced) in such a way that it can help the students to learn English easily and effectively. After the materials are developed, material evaluation should be done in order to check the fitness of the goals with the objectives. Finally, the output of this research is a set of English reading materials for International Mathematics Education Study Program of Yogyakarta State University.

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter consists of research methodology started from the type of the study, the population and sample, setting, instruments of the study, data collection, data analysis techniques and research procedures.

#### **A. Type of the Study**

The purpose of this study is to develop a product for students of International Mathematics Education that can be used as an English reading course book. Borg and Gall (1983) state that the term ‘product’ is not always about materials such as text books, videos but also the learning method and learning organization. Hence, this study is categorized as Research and Development. The purpose of research and development study is to develop effective products to be used in educational programs.

#### **B. Population and Sample of the Study**

In this research, the population is the students of International Mathematics Education study program. These students are in the 4<sup>th</sup> and 6<sup>th</sup> semesters which consist of 37 students.

#### **C. Setting of the Study**

This study was conducted at Yogyakarta State University, Faculty of Mathematics and Science from April up to May 2015. The campus is located in Karangmalang street, Sleman District, Province of Yogyakarta Special Territory.



#### D. Instruments of the Study

Instruments are needed in gaining the data when doing a research. There are some types of instruments that can be used in gathering the data. It is based on the type of the study. In this research, the instruments used in gathering the data were the needs analysis questionnaire and the expert judgment questionnaire.

The first questionnaire is needs analysis questionnaire. The purpose of this questionnaire is to find out the data about the target needs and learning needs. The organization of this questionnaire is adapted from Graves (2000), Hutchinson and Waters (1987) and Nunan (2004).

Table 4: The Organization of the Needs Analysis Questionnaire

No	Aspects	The Items (number)	Purpose of the Question	References
1	Students' personal identity	B	To find some information concerning on the learners' identity	Graves (2000:103) Hutchinson and Waters (1987:63)
<b>Target Needs</b>				
2	Goals	1, 4	To find some information about learners' goal in learning English	Graves (2000:104) Kurikulum Pendidikan Matematika Internasional
3	Necessities	2, 3	To find some information about	Hutchinson and Waters

			learners' need in the target situation for their job as learners and in the future	(1987:55) Nunan (2004:61-63)
4	Lacks	5, 6, 7, 9	To find information about learners' gap between what should they have known and what should they know	Hutchinson and Waters (1987:55-56)
5	Wants	8	To find information about learners' want to be included in the materials	Hutchinson and Waters (1987:56)
<b>Learning Needs</b>				
6	Input	10, 11, 12	To find some information about what kind of input that the students want in English reading materials	Nunan (2004:47-52)
7	Procedures	13, 14, 15	To find some information about activities that learners should do with the input within the tasks	Nunan (2004:53-63)
8	Setting	16, 17, 18	To find some information about situations of the learning process will be taken place	Nunan (2004:64-70)

9	Learners' role	20	To find some information about learners' role in carrying out the tasks	Nunan (2004:64-70)
10	Teachers' role	19	To find some information about teachers' role in the teaching and learning process	Nunan (2004:64-70)

The second questionnaire is the expert judgment questionnaire. The purpose of this questionnaire is to know opinions and suggestions about the materials from the expert of reading and materials. The result of this questionnaire is to revise the first draft of the materials. This questionnaire is adapted from BSNP.

Table 5: The Organization of the Expert Judgment Questionnaire

No	The purpose of the question	References
1	To find out the appropriateness of the content in the materials	BSNP
2	To find out the appropriateness of the presentation in the materials	BSNP
3	To find out the appropriateness of the language in the materials	BSNP
4	To find out the appropriateness of the layout of the materials	BSNP

### **E. Data Collection**

In this study, the researcher collected the data through questionnaire technique. There are two kinds of questionnaires. First, the researcher distributed the needs analysis questionnaire to get the data about the learners' needs. The results of needs analysis are used to improve the reading materials. Secondly, the expert judgment questionnaire is used to find the appropriateness of the developed materials.

### **F. Data Analysis Techniques**

There is only quantitative data in this research. The data are gained through the needs analysis questionnaire and expert judgment questionnaire.

#### **1. Needs Analysis Questionnaire**

The first questionnaire was analyzed by using percentage of each answer on the questionnaire by using the following formulas

$$P = \frac{f}{n} \times 100$$

With:            P            = Percentage  
                                      = Frequency  
                                      = Total number of respondents  
                                      100       = Fixed number

The answers on each question are considered as the tendency of the students' condition by seeing the highest percentage.

## 2. Expert Judgment Questionnaire

Meanwhile, the expert judgment questionnaire was analyzed by *likert*-scale measurement. The results of the questionnaire were calculated by using the formula proposed by Suharto (2005).

$$R = \frac{(xh - xI)}{4}$$

R : range

Xh : the highest scale

XI : the lowest scale

4 : range of *likert*-scale

The researcher converted the data through conversion table proposed by Suharto (2005) as the mean of the data which had been calculated.

Table 6: Data Conversion Table

Scale	Interval	Descriptive Categories
1	$1 \leq x \leq 1.74$	Poor
2	$1.74 \leq x \leq 2.24$	Fair
3	$2.25 \leq x \leq 3.24$	Good
4	$3.25 \leq x \leq 4$	Very Good

X is mean which is obtained from the expert judgment. To find x, the researcher used the formula as proposed by Suharto (2005) as follows.

$$Mn(x) = \frac{\sum fX}{N}$$

## **G. Research Procedures**

There are some steps in designing the course. In developing English reading for International Mathematics Education of Yogyakarta State University, the research procedure of this study is adapted from the steps proposed by Jolly and Bolitho cited in Tomlinson (1998). Furthermore, the researcher adapted the model used in this research as explained below.

### **1. Identification of needs**

In this step, the researcher was conducting needs analysis. the needs analysis was conducted in April-May 2015. The researcher distributed the questionnaire to find students' needs and interests.

### **2. Planning**

This step was done after analyzing the results of needs analysis. In this step, the researcher developed a course grid. The course grid would be used as a guide in developing the materials.

### **3. Production of the materials**

In this step, the researcher wrote the first draft of the materials. The materials were divided into three units which contain 20-22 tasks.

### **4. Evaluation**

This step was done after finishing the first draft of the materials. The evaluation was done by employing the materials evaluation questionnaire.

### **5. Revision**

This step was done after doing the evaluation. The results or the feedback from the evaluation was used to design the final draft.

## **CHAPTER IV**

### **RESEARCH FINDINGS AND DISCUSSION**

This chapter discusses the research findings. The first part will present the result of needs analysis, the course grid of the materials, the first draft of the materials and the results of expert judgment.

#### **A. Research Findings**

##### **1. The Result of Needs Analysis**

A needs analysis was conducted to evaluate the target and learning needs of the students. The questionnaire was shared to the students of International Mathematics Education in May 2015. The materials were developed based on the results of the needs analysis which showed the data of more than 50%. Furthermore, not all of the data of more than 50% would be included in the developed materials.

##### **a. Target Needs**

Hutchinson and Waters (1987) state that target needs are what students need to do in a particular situation. It consists of necessities, lacks and wants of the students.

##### **1) Necessities**

Necessities are determined by the demands of the target situation; that is, what the learner has to know in order to function effectively in the target situation (Hutchinson & Waters: 1987). The following table is the target situation of the students of International Mathematics Education.

Table 7: Students' View Target Goals

Questions	Items	N	F	%
My goal in learning English as a student of International Mathematics Education study program: (may choose more than one item).	a. Understand English instructions given by the teacher in the teaching and learning process.	35	19	54.3%
	b. Understand English references given by the teacher in the teaching and learning process.	35	29	82.9%
	c. Understand English literatures for supporting the teaching and learning process.	35	26	74.3%
	d. Supporting skill in the work field after graduated.	35	28	80%
	e. Others (write down).	35	0	0%

Table 7 shows students' goal in learning English. 82.9% of them claim that their goal in learning English is to understand English references given by the teacher in the teaching and learning process. Meanwhile the second highest tendency of their goals is to support skill in the work field after graduated. The third tendency is to understand English literatures for supporting the teaching and learning processes. Then the last is to understand English instructions given by the teacher. The result shows that almost all of students feel English is a very important skill they should master.

Table 8: Students' Level in Reading Skill

Questions	Items	N	F	%
To support my study, my English mastery/skill in reading should be at level:	a. Beginner: can understand simple sentences and expressions in daily life.	35	7	20%
	b. Intermediate: can understand main	35	17	48.6%



	information from a complex text and give ideas based on the given text.			
	c. Advanced: can recognize various types of texts and understand implicit information from a text.	35	11	31.4%

In terms of students' mastery skill, the result shows that 48.6 % of the students are in intermediate level. This level expects the students to understand main information from a complex text and give ideas based on the given texts.

Table 9: Students' Level in Mastering Mathematics Terms/ Vocabularies

Questions	Items	N	F	%
Vocabularies or mathematics terms you have already mastered.	a. < 100	35	11	31.4%
	b. 100 – 500	35	21	60%
	c. 500 – 1000	35	3	8.6%
	d. > 1000	35	0	0%

The table above shows the vocabularies have already mastered by students of International Mathematics Education. 60% of them have mastered 100 – 500 words. Meanwhile 31.3% of the students have mastered less than 100 words.

Table 10: Students' Goals in Learning Reading Skills

Questions	Items	N	F	%
Based on your study program, the purposes of mastering reading skills are:	a. To understand the references which are used during learning processes	35	29	82.9%
	b. To understand the supporting literatures such as journals and English articles	35	30	85.7%
	c. To be able to read mathematics terms	35	30	85.7%
	d. To be able to read mathematics symbols	35	21	60%
	e. To be able to read mathematics symbols	35	15	42.9%
	f. To be able to read definitions and theorems	35	22	62.9%
	g. Others (write down).	35	0	0%

Table 10 presents the purpose of the students in mastering English reading skills. 85.7% of the students believe that the purposes of mastering English reading skills are to be able to read mathematics terms and to understand the supporting literatures such as journals and English articles. In addition, their second choice is to understand the references which are used during learning processes. The third purpose is to be able to read definitions and theorems. The last is to be able to read mathematics symbols.

## 2) Lacks

Hutchinson and Waters (1987) say that lack is the gap between the knowledge of the learners and objectives they must be achieved. The students' view about their lacks is shown as follows.

Table 11: Students' Gaps in Reading Skills

Questions	Items	N	F	%
Following is a list of reading skills. Make an order from number 1 to 9 based on the skill you have mastered:	a. Can conduct a quick survey of the text to identify the topic, the main idea, and the organization of the text (previewing).	35	8	23%
	b. Can look quickly through the text to get a general idea of what it is about (skimming).	35	5	14%
	c. Can look quickly through a text in order to locate specific information (scanning).	35	6	20%
	d. Can anticipate what is to come (predicting).	35	5	14%
	e. Can ask questions and then read for answers (reading actively).	35	11	31%
	f. Reading to present	35	7	20%
	g. Can use context as well as parts of words (e.g. prefixes, suffixes and stems) to work out the meaning of unknown words (inferring unknown vocabulary).	35	6	20%
	h. Can look back over a text and summarize it (reviewing).	35	5	14%
	i. Understanding mathematics vocabulary terms	35	11	31%
	j. Understanding the meaning of abbreviations related to mathematics terms	35	7	20%
	k. Understanding mathematics symbols	35	8	23%
	l. Understanding implicit meanings	35	7	20%

In order to classify students' lack regarding their reading skills, the researcher selected the options which were categorized at 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> places. Table 4.5 shows that 31% of the students have mastered the skills of reading actively and understanding mathematics vocabulary terms. Meanwhile,

23 % of the students choose the previewing as the skill they already mastered.

14% of the students claim that their lacks are in reviewing, skimming, and predicting.

Table 12: Lacks in English Book being used by Students

Questions	Items	N	F	%
Based on the following items, give a tick (✓) to the parts that you think not really appropriate on your English book that being used:	a. Layout	35	11	31.4%
	b. The appropriateness of the texts	35	7	20%
	c. The appropriateness of the pictures	35	20	57.1%
	d. The instructions in every learning activities	35	8	22.9%
	e. The availability mathematics vocabulary terms	35	13	37.1%
	f. The availability mathematics symbols	35	3	8.6%
	g. Others (write down)	35	0	0%

This table shows the lack in English book being used by students. 57.1% of the students claim that the lack of the current book is related to the appropriateness of the pictures.

Table 13: Students' View in Learning Mathematics

Questions	Items	N	F	%
Based on your study program, in what way do you find mathematics learning process really difficult?	a. Reading mathematics vocabulary terms	35	14	40%
	b. Reading mathematics symbols	35	18	51.4%
	c. Reading diagrams	35	6	17.1%
	d. Others (write down)	35	7	20%

This table explains students' view when they learn mathematics. 51.4% of them state that it is difficult in reading mathematics symbols. Meanwhile

40% of the students claim that their difficulty is in reading mathematics vocabulary terms.

### 3) Wants

Wants refer to students' view about their needs. Hutchinson and Waters (1987) state another important thing to be considered is students' wants. The materials should be presented based on students' preferences.

Table 14: Students' View in Learning Mathematics

Questions	Items	N	F	%
Based on your study program, in what way do you find mathematics learning process really fun?	a. Reading mathematics vocabulary terms	35	24	68.6%
	b. Reading mathematics symbols	35	6	17.1%
	c. Reading diagrams	35	11	31.4%
	d. Reading definitions and theorems	35	13	37.1%
	e. Others (write down)	35	1	2.9%

Table 14 shows students' view in learning mathematics. 68.6% of the students claim that reading mathematics vocabulary terms is really fun. While 37.1% of them claim reading definitions and theorems are really fun in the learning process.

Table 15: Skills are Needed in Reading Skills

Questions	Items	N	F	%
In your opinion, what skills are needed in order to be able reading English texts?	a. Can conduct a quick survey of the text to identify the topic, the main idea, and the organization of the text (previewing).	35	27	77.1%
	b. Can look quickly through the text to get a general idea of what it is about (skimming).	35	24	68.6%
	c. Can look quickly through a text in order to locate specific	35	22	62.9%

	information (scanning).			
	d. Can anticipate what is to come (predicting).	35	18	51.4%
	e. Can ask questions and then read for answers (reading actively).	35	17	48.6%
	f. Reading to present	35	20	57.1%
	g. Can use context as well as parts of words (e.g. prefixes, suffixes and stems) to work out the meaning of unknown words (inferring unknown vocabulary).	35	17	48.6%
	h. Can look back over a text and summarize it (reviewing).	35	20	57.1%
	i. Understanding mathematics vocabulary terms	35	15	42.9%
	j. Understanding the meaning of abbreviations related to mathematics terms	35	17	48.6%
	k. Understanding mathematics symbols	35	15	42.9%
	l. Understanding implicit meanings	35	26	74.3%

Table 15 shows the skills needed in order to learn English reading skills. 77.1% of the students state the skills needed are those which can conduct a quick survey of the text to identify the topic, the main idea, and the organization of the text (previewing). In addition, 74.3% of the students choose understanding implicit meanings as the skill they need to learn English reading skills. Meanwhile 68.6% students choose skimming as an important skill in learning English reading skill. The data shows that there are some points which have the result more than 50%. That is why not all of the chosen skills will be provided in the developed materials.

## b. Learning Needs

According to Hutchinson and Waters (1987) learning needs are the knowledge and abilities that the learners need to learn in order to be able to perform to the required degree of competence in the learning situation. There are five components in the questionnaire namely input, procedure, setting, teachers' role, and learners' role.

### 1) Input

Input refers to what sources the students have to get when they learn English. The following tables show the various input that the students want to get in English learning process.

Table 16: Input for Reading Materials

Questions	Items	N	F	%
In the teaching and learning reading, types of texts as an input which I want: (may choose more than one item)	a. Texts consist of some paragraphs.	35	9	25.7%
	b. Texts consist of some pictures.	35	26	74.3%
	c. Texts consist of table, diagram or graphic.	35	17	48.6%
	d. Texts consist of lists of vocabulary.	35	16	45.7%
	e. Others (write down)	35	0	0%

The table above shows the input for reading materials that is wanted by students. 74.3% of the students claim that texts should consist of some pictures.

Table 17: Length of the Paragraph for Reading Materials

Questions	Items	N	F	%
In a text for the teaching and learning reading, I want it consists of: (may choose	a. < 4 paragraphs	35	13	37.1%
	b. 4 paragraphs	35	5	14.3%
	c. 5 paragraphs	35	10	28.6%
	d. 6 paragraphs	35	2	5.7%
	e. 7 paragraphs	35	2	5.7%

more than one item)	f. > 7 paragraphs	35	3	8.6%
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In this table, 37.1% of the students want to have the text which consists of less than 4 paragraphs. Furthermore, 28.6% of the students choose 5 paragraphs for the length of the paragraph in every text.

Table 18: Topics for Reading Materials

Questions	Items	N	F	%
Topic or theme within a text that I want in the teaching and learning reading: (may choose more than one item)	a. Topics related to mathematics study in general.	35	26	74.3%
	b. Topics related to the use of mathematics symbols.	35	10	28.6%
	c. Topics related to the use of diagrams.	35	11	31.4%
	d. Others (write down)	35	0	0%

Table 18 provides the input related to the topic of the reading materials. 74.3% of the students choose topics related to mathematics study in general as their preference in learning English reading skills.

## 2) Procedure

As stated by Nunan (2004), procedure refers to what learners will actually do with the activity and tasks in order to achieve certain goals on developed units. The result of learning procedures will be explained as follows.

Table 19: Tasks Types for Reading Activities

Questions	Items	N	F	%
In your opinion, what kind of task types that can help you in improving your English reading	a. Completing gaps of a sentence.	35	11	31.4%
	b. Correcting the texts	35	10	28.6%
	c. Matching	35	7	20%
	d. Short questions	35	23	65.7%
	e. Translating English texts	35	15	42.9%



skills?	f. Arranging jumbled texts	35	9	25.7%
	g. Others (write down)	35	0	0%

The table above presents task types for reading activities. 65.7% of the students claim short questions task is the most activity that they want. The second activity is translating English texts.

Table 20: Tasks for Vocabulary Activities

Questions	Items	N	F	%
What kind of vocabulary activities that you want?	a. Finding new words from the text and find the meaning in a dictionary	35	19	54.3%
	b. Finding new words from the text and find the meaning based on the context.	35	22	62.9%
	c. Completing sentences	35	12	34.3%
	d. Grouping the new words in a table and find the meaning based on context form the text	35	13	37.1%
	e. Matching the words with the provided meanings	35	14	34.3%
	f. Finding synonyms or antonyms	35	13	37.1%
	g. Identifying the parts of speech	35	12	34.3%
	h. Matching the words with pictures	35	8	22.9%
	i. Others (write down)	35	0	0%

Table 20 shows the students' view in learning vocabulary. 62.9% of the choose finding new words from the text and find the meaning based on the context as the activity that they want in learning vocabulary. Meanwhile 54.3% of the students prefer to learn vocabulary skill with finding new words from the text and find the meaning from dictionary.

Table 21: Tasks for Grammar Activities

Questions	Items	N	F	%
Types of grammar activities that I want: (may choose more than one item).	a. Memorizing the grammar structure formulas	35	4	11.4%
	b. Filling the gaps	35	11	31.4%
	c. Doing exercises related to grammar	35	20	57.1%
	d. Making sentences based on the grammar structure that has been taught	35	17	48.6%
	e. Identifying the wrong sentence structure and fix it	35	18	51.4%
	f. Others (write down).	35	0	0%

Table 21 presents types of grammar activities that students want. 57.1% of the students want to have exercises related to grammar. Meanwhile 48.6% choose to make sentences based on the grammar structure that has been taught.

### 3) Setting

Setting consists of some aspects such as students' learning mode as well as teaching and learning environment. It is related to students' preferences when they do their teaching and learning activities.

Table 22: Students' Learning Mode

Questions	Items	N	F	%
I want teaching and learning reading is done in:	a. Individually	35	13	37.1%
	b. Pairs	35	16	45.7%
	c. Groups	35	12	34.3%

Table 22 shows students' learning mode. 45.7% of the students claim to do teaching and learning reading in pairs.

Table 23: Students' Learning Mode

Questions	Items	N	F	%
Number of group members that I want to work in a group:	a. 3	35	20	57.1%
	b. 4	35	12	34.3%
	c. 5	35	4	11.4%
	d. 6	35	0	0%

The number of group that students want is 3 members. 57.1% of the students have chosen this number as their preference when they work in a group.

Table 24: Students' Teaching and Learning Environment

Questions	Items	N	F	%
I want the teaching and learning reading to be held in:	a. A classroom	35	20	57.1%
	b. Outside a classroom	35	15	42.9%

This table shows that 57.1% of the students want to have teaching and learning reading to be held in a classroom.

#### 4) Teacher's Role

Teacher's role means the role of the teacher during the classroom activities. The following is the tendency of what teachers should do when students perform the task during activities in the classroom.

Table 25: Teachers' Role

Questions	Items	N	F	%
In the teaching and learning process, I prefer if the teacher: (may choose more than one item).	a. Explaining through oral explanations in class	35	11	31.4%
	b. Providing a lot of exercises	35	20	57.1%
	c. Giving many examples	35	13	37.1%
	d. Providing direct practice	35	25	71.4%
	e. Having discussion	35	20	57.1%
	f. Giving a lot of tasks	35	2	5.7%

Table 25 shows the teachers' role. 71.4% students prefer if the teacher provides direct practice when teaching and learning process. Meanwhile 57.1% students want the teacher to provide a lot of exercises and discussion.

## 5) Learners' Role

Learners' role is the role of the students during the teaching and learning process (Nunan, 2004). Here is the result of the questionnaire related to the role of the learners during classroom activities.

Table 26: Learners' Role

Questions	Items	N	F	%
In the teaching and learning process, I prefer: (may choose more than one item).	a. Asking questions to a friend	35	18	51.4%
	b. Critical thinking	35	15	42.9%
	c. Given materials directly	35	5	14.3%
	d. Discussion	35	31	88.6%

The last table is learners' role. 88.6% of the students choose discussion when they do teaching and learning process. Meanwhile 51.4% of them choose asking questions to a friend as a second option when doing teaching and learning process.

## 2. Course Grid of the Materials

The course grid was considered as a framework to develop the materials. It was designed by referring to the result of the needs analysis of International Mathematics Education students. The course grid has eight items i.e. topics, reading skills, vocabulary skills, indicators, materials, input texts, activities, assessments, and resources. The following explanations are the brief information

about the course grid from each unit. The detailed course grid will be shown in appendix C.

#### **a. Unit 1**

The title of this unit is “*Why Do You Love Math?*” The students are expected to be able to do skimming for the whole text, scanning for details, finding implicit meanings, and identifying pronouns and finding their referents. The students are guided by answering the question of their feeling in learning mathematics. The input texts in this unit are in form of articles and a book review related to why people or the author loves mathematics. The information related to sub-skill of reading is provided before students do their activities. Then, the vocabularies are given before the students read the text and answering the questions. Almost every text is inserted by pictures. In terms of grammar, the students are given the information about pronouns and referents.

#### **b. Unit 2**

The title of the second unit is “*Math and Our Real Life*”. The students are expected to understand how to identify the topic and topic sentence, identifying main idea and supporting details, finding synonyms, and identifying the parts of speech. As the previous unit, the students start the activity by answering the question related to deciding the topic. The information related to the sub-skills of reading that will be taught is also given before students reading the texts and doing the exercise. In terms of vocabulary, the students have activities to identify the parts of speech when they are asked to find the meaning of words. Then, the students are asked to find the synonyms of certain words. The input

texts mostly related to the use of math in everyday life, the article of some mathematicians, and the article related to Dyscalculia.

### **c. Unit 3**

In the last unit, the title is “*Math is Fun*”. In this unit, the students are expected to be able to paraphrase paragraph, write a summary, find antonyms, identify the simple past tense, and infer unknown vocabularies. The first task asks the students’ ideas related to mathematics and music. The input texts mostly used in this unit are related to the connection of Mathematics and music. The grammar focus is about the simple past tense. Meanwhile in terms of vocabulary, the students are asked to identify the simple past tense and find the antonyms.

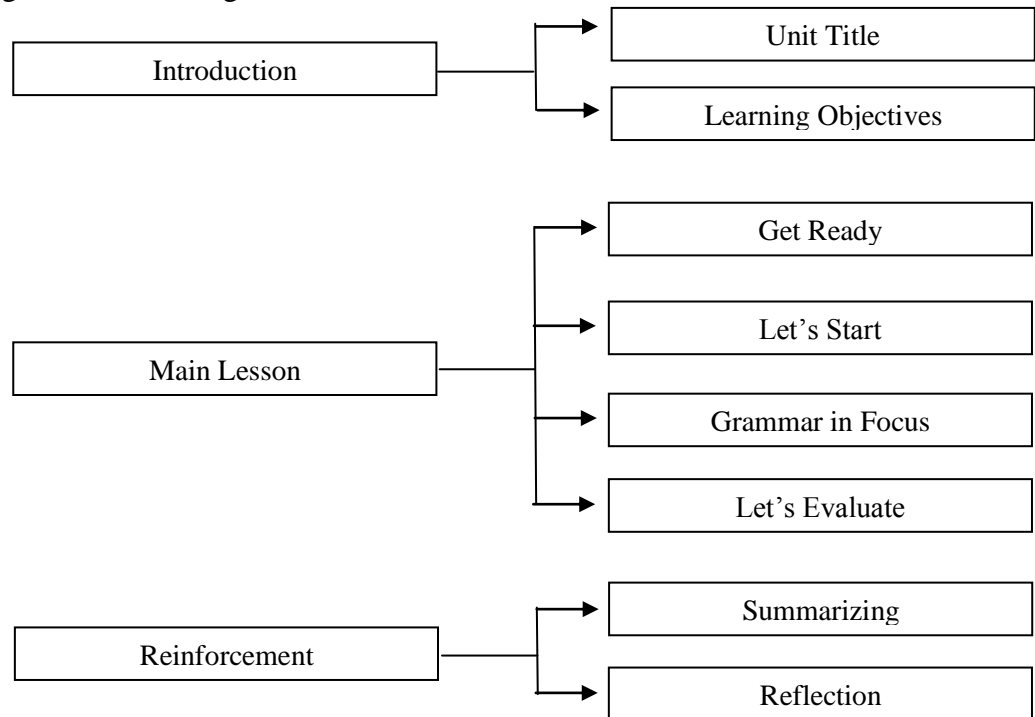
### **3. The Design of the Unit**

After finishing in designing the course grid, the researcher continues with the next step. It was developing the materials. The developed materials were designed based on the result of needs analysis. Each of unit in the materials consists of some tasks that cover reading skills.

In the introduction part there were the title of the unit, a picture, and learning objectives. The title of the unit was taken from the texts which were discussed in the unit. Meanwhile the picture below the unit title describes the topic of the unit title. There were some parts in every unit namely, *get ready*, *let’s start*, *grammar in focus*, *let’s evaluate*, *summarize*, and *reflection*. In the *get ready* section, students were introduced the topic that would be discussed in the unit. There were some questions that would guide students in getting the topic of

the unit. In the *let's start* section, students were started to do reading skill activities. Before reading the text, students were given the vocabularies related to the topic of the text. The vocabularies list consists of the English words, the Indonesian meaning, the parts of speech and the pronunciation for each word. After reading the text, students were asked to answer some questions in order to check the students understanding. The grammatical rules were given in *grammar in focus* section. In this section, the students were having some informations related to grammatical structure. Students would have additional activities related to the grammatical structure. The next section is *let's evaluate*. In this section there was free guided activity. It was used in order to check students' progress after learning the whole unit. In the *summarizing* students were given the review of the materials they have learnt in the unit. The last was *reflection* section. In this section, students were given the opportunity to take an objective view of their progress and see what was going well and what needed working on.

Figure 4: Unit Design



#### 4. Expert Judgment Results

The expert judgment purpose is to get the experts' opinion and suggestions of the first draft materials. The instrument of the expert judgment was a questionnaire. According to BSNP, there were four aspects to evaluate the materials. They were content, presentation, language, and layout. The questionnaire was used in order to measure how far the materials have accomplished those standards. The questionnaire used the four scale of *likert* scale. There were also spaces for the expert to give his comments or suggestions related to the materials of each unit. The summary of the result are presented as follows.



### a. The Result of Expert Judgment of Unit 1

The tables below shows the result of the analysis related to the content appropriateness of Unit 1.

Table 27: The Content Appropriateness of the Unit 1

No	Items	Scores
1	The topic of the unit of the developed materials is relevant with the students of International Mathematics Education study program.	3
2	The developed materials are in accordance with the learning context of the students of International Mathematics Education study program.	3
3	The developed materials lead the students to perform and develop their reading skills.	4
4	The developed materials lead the students to perform and develop their vocabulary skills.	4
5	The developed materials lead the students to understand the linguistic features of the discussed text.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.6</b>

The table 27 shows that the contents of the materials of unit 1 was considered “very good” by having value in the range of  $3.25 \leq x \leq 4$ . It could be seen through the mean of the general judgment which is gained from five questions related to the content of the materials.

Table 28: The Language Appropriateness of the Unit 1

No	Items	Scores
1	The language used in the explanations and instructions are clear and understandable.	3
2	The language used in the developed materials is grammatically correct.	3
3	The language used in the developed materials is cohesive and coherent.	3
4	The developed materials consistently use one variation of English.	3
<b>Mean (<math>\bar{x}</math>)</b>		<b>3</b>

The table above presents the language appropriateness of unit 1. The result of the table 4.22 was considered as “good” by having value in the range of  $2.5 \leq x \leq 3.24$ .

Table 29: The Presentation Appropriateness of the Unit 1

No	Items	Scores
1	The tasks are arranged systematically from the easiest to the most difficult.	4
2	The developed materials are balance in terms of texts, illustrations and symbols.	4
3	The developed materials support the students to get information within the texts.	4
4	The developed materials contain opening activities, main activities and closing activities.	4
5	The developed materials are completed with vocabulary list related to the unit topic.	4
6	The developed materials provide evaluation part for the students to check their understanding.	4
7	The learning objectives are stated in every unit of the developed materials.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>4</b>

Table 29 presents the result of experts' judgment related to the presentation appropriateness of the materials of Unit 1. The mean of the general judgment of the presentation appropriateness was 4. It means that the presentation of the unit was categorized as "very good".

Table 30: The Layout Appropriateness of the Unit 1

No	Items	Scores
1	The developed materials are printed on ISO-standardized size paper (A4, A5, B5).	4
2	The layout of the developed materials use the appropriate placement of the unit title, sub-title, page number, illustrations and captions.	3
3	The developed materials use the appropriate variation of fonts.	4
4	The fonts used are not too big or too small.	3
5	The color usage of the developed materials is not disturbing the readers.	2
6	The illustration and graphic design in the developed materials are aesthetic and functional.	3
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.1</b>

Table 30 shows the result of analysis of the layout appropriateness in Unit 1. The mean of the layout appropriateness was 3.1. Therefore, the layout appropriateness in Unit 1 was categorized as "good".

### b. The Result of Expert Judgment of Unit 2

The tables below present the descriptive statistic of the materials judgment related to the appropriateness of Unit 2.

Table 31: The Content Appropriateness of the Unit 2

No	Items	Scores
1	The topic of the unit of the developed materials is relevant with the students of International Mathematics Education study program.	3
2	The developed materials are in accordance with the learning context of the students of International Mathematics Education study program.	3
3	The developed materials lead the students to perform and develop their reading skills.	4
4	The developed materials lead the students to perform and develop their vocabulary skills.	4
5	The developed materials lead the students to understand the linguistic features of the discussed text.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.6</b>

The table 31 shows that the contents of the materials of unit 2 was considered “very good” by having value in the range of  $3.25 \leq x \leq 4$ . It could be seen through the mean of the general judgment which is gained from five questions related to the content of the materials.

Table 32: The Language Appropriateness of the Unit 2

No	Items	Scores
1	The language used in the explanations and instructions are clear and understandable.	3
2	The language used in the developed materials is grammatically correct.	3
3	The language used in the developed materials is cohesive and	3

	coherent.	
4	The developed materials consistently use one variation of English.	3
<b>Mean (<math>\bar{x}</math>)</b>		<b>3</b>

Table 32 presents the language appropriateness of unit 2. The result of the table 4.26 was considered as “good” by having value in the range of  $2.5 \leq x \leq 3.24$ .

Table 33: The Presentation Appropriateness of the Unit 2

No	Items	Scores
1	The tasks are arranged systematically from the easiest to the most difficult.	4
2	The developed materials are balance in terms of texts, illustrations and symbols.	4
3	The developed materials support the students to get information within the texts.	4
4	The developed materials contain opening activities, main activities and closing activities.	4
5	The developed materials are completed with vocabulary list related to the unit topic.	4
6	The developed materials provide evaluation part for the students to check their understanding.	4
7	The learning objectives are stated in every unit of the developed materials.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>4</b>

Table 33 presents the result of experts’ judgment related to the presentation appropriateness of the materials of Unit 2. The mean of the general judgment of the presentation appropriateness was 4. It means that the presentation of the unit was categorized as “very good”.

Table 34: The Layout Appropriateness of the Unit 2

No	Items	Scores
1	The developed materials are printed on ISO-standardized size paper (A4, A5, B5).	4
2	The layout of the developed materials use the appropriate placement of the unit title, sub-title, page number, illustrations and captions.	3
3	The developed materials use the appropriate variation of fonts.	4
4	The fonts used are not too big or too small.	3
5	The color usage of the developed materials is not disturbing the readers.	2
6	The illustration and graphic design in the developed materials are aesthetic and functional.	3
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.1</b>

Table 34 shows the result of analysis of the layout appropriateness in Unit 2. The mean of the layout appropriateness was 3.1. Therefore, the layout appropriateness in Unit 1 was categorized as “good”.

### c. The Result of Expert Judgment of Unit 3

The tables below shows the result of the analysis related to the content appropriateness of Unit 3.

Table 35: The Content Appropriateness of the Unit 3

No	Items	Scores
1	The topic of the unit of the developed materials is relevant with the students of International Mathematics Education study program.	3
2	The developed materials are in accordance with the learning context of the students of International Mathematics Education study program.	3
3	The developed materials lead the students to perform and	4

	develop their reading skills.	
4	The developed materials lead the students to perform and develop their vocabulary skills.	4
5	The developed materials lead the students to understand the linguistic features of the discussed text.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.6</b>

The table 35 shows that the contents of the materials of Unit 3 were considered “very good” by having value in the range of  $3.25 \leq x \leq 4$ . It could be seen through the mean of the general judgment which is gained from five questions related to the content of the materials.

Table 36: The Language Appropriateness of the Unit 3

<b>No</b>	<b>Items</b>	<b>Scores</b>
1	The language used in the explanations and instructions are clear and understandable.	3
2	The language used in the developed materials is grammatically correct.	3
3	The language used in the developed materials is cohesive and coherent.	3
4	The developed materials consistently use one variation of English.	3
<b>Mean (<math>\bar{x}</math>)</b>		<b>3</b>

Table 36 presents the language appropriateness of unit 3. The result of the table 36 was considered as “good” by having value in the range of  $2.5 \leq x \leq 3.24$ .

Table 37: The Presentation Appropriateness of the Unit 3

No	Items	Scores
1	The tasks are arranged systematically from the easiest to the most difficult.	4
2	The developed materials are balance in terms of texts, illustrations and symbols.	4
3	The developed materials support the students to get information within the texts.	4
4	The developed materials contain opening activities, main activities and closing activities.	4
5	The developed materials are completed with vocabulary list related to the unit topic.	4
6	The developed materials provide evaluation part for the students to check their understanding.	4
7	The learning objectives are stated in every unit of the developed materials.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>4</b>

Table 37 presents the result of experts' judgment related to the presentation appropriateness of the materials of Unit 3. The mean of the general judgment of the presentation appropriateness was 4. It means that the presentation of the unit was categorized as "very good".

Table 38: The Layout Appropriateness of the Unit 3

No	Items	Scores
1	The developed materials are printed on ISO-standardized size paper (A4, A5, B5).	4
2	The layout of the developed materials use the appropriate placement of the unit title, sub-title, page number, illustrations and captions.	3
3	The developed materials use the appropriate variation of fonts.	4
4	The fonts used are not too big or too small.	3
5	The color usage of the developed materials is not disturbing	2



	the readers.	
6	The illustration and graphic design in the developed materials are aesthetic and functional.	3
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.1</b>

Table 38 shows the result of analysis of the layout appropriateness in Unit 3. The mean of the layout appropriateness was 3.1. Therefore, the layout appropriateness in Unit 3 was categorized as “good”.

## 5. The Results of Expert Judgment of the Whole Materials

Table 39: The Appropriateness of the Whole Materials

No	Units	Means
<b>1</b>	<b>Unit 1</b>	
	1. Content	3.6
	2. Language	3
	3. Presentation	4
	4. Layout	3.1
Average Score		<b>3.4</b>
<b>2</b>	<b>Unit 2</b>	
	1. Content	3.6
	2. Language	3
	3. Presentation	4
	4. Layout	3.1
Average Score		<b>3.4</b>
<b>3</b>	<b>Unit 3</b>	
	1. Content	3.6
	2. Language	3
	3. Presentation	4
	4. Layout	3.1
Average Score		<b>3.4</b>
<b>Final Means</b>		<b>3.4</b>

The table 39 presents the average score of each unit. Fortunately, every unit has the same result that is 3.4. So, the overall means is 3.4. Therefore, the result of the expert judgment shows that the materials were categorized as “very good” and feasible to apply.

## 6. The Review of the First Draft Materials

This part will discuss the feedback were given by the expert. The expert was asked to give the evaluation about the materials related to content, presentation, language, and layout. The expert was also asked to comments the weaknesses of the materials and give suggestions to improve the developed materials. The results of the evaluation were used to revise the first draft to be the final draft. The feedback from the expert will be explained as follows.

Table 40: Suggestions of Unit 1

<b>Unit 1</b>	
<b>Parts of Units</b>	<b>Suggestions</b>
Task 2	Revising the punctuation
Task 3	Revising the instruction
Task 4	Revising the punctuation
Task 5	Revising some questions
Task 7	Revising the punctuation
Task 11	Revising the punctuation
Task 14	Revising some questions
Task 16	Revising the punctuation
Task 19	Revising some questions
Task 21	Revising the punctuation
Task 22	Revising some questions
Summary	Revising the punctuation and grammar
Reflection	Revising the grammar
Additional suggestion	Changing the color of the background

The table above shows that the materials must be revised. The suggestions from the expert related to punctuations and grammatical structure in some instructions. The revisions will be explained as follows.

Table 41: Revisions of Unit 1

Part of the Unit	Before Revision	After Revision
Task 2	a. Easy b. Hard c. Fun subject d. Complicated e. A game f. Logic g. Rational h. Irrational i. Useful j. Boring	a. easy b. hard c. fun subject d. complicated e. a game f. logic g. rational h. irrational i. useful j. boring
Task 3	Have you ever done skimming for the whole text? Do you know what does it mean? Do you know how to use it? These are the short explanation of 'skimming'. Study the following information carefully. You will do skimming for the whole text in Task 4.	Have you ever done skimming for the whole text? Do you know how to use it? These are the short explanation of 'skimming'. Study the following information carefully. You will do skimming for the whole text in Task 4.
Task 4	Write down your ideas into following spaces.	Write down your ideas to the following space.

Task 5	<p>a. What are the topic sentences of each paragraph?</p> <p>b. Do you agree that mathematics is an applicable knowledge?</p>	<p>a. What is the topic sentence of the following paragraph?</p> <p>Mathematics is the science that deals with the logic shape, quantity and arrangement. Math is all around us, in everything we do. It is the building block for everything in our daily lives, including mobile devices, architecture (ancient and modern), art, money, engineering, and even sports.</p> <p>b. Do you agree that mathematics is a knowledge that can be applied?</p>
Task 7	<p>a. Companionship</p> <p>b. Oddness</p> <p>c. Warmth</p> <p>d. Declare</p> <p>e. Fuel</p> <p>f. Arguably</p> <p>g. Constantly</p> <p>h. Prolific</p> <p>i. Strange</p>	<p>a. companionship</p> <p>b. oddness</p> <p>c. warmth</p> <p>d. declare</p> <p>e. fuel</p> <p>f. arguably</p> <p>g. constantly</p> <p>h. prolific</p> <p>i. strange</p>

	j. Obsessed k. Indispensible l. Marvelous m. Vivid n. Extraordinary	j. obsessed k. indispensable l. marvelous m. vivid n. extraordinary
Task 11	a. Napkin b. Fridge c. Approach d. Insight e. Realize f. Neatness g. Scratch h. Shrug i. Limitless j. Strict k. Glorious	a. napkin b. fridge c. approach d. insight e. realize f. neatness g. scratch h. shrug i. limitless j. strict k. glorious
Task 14	a. Why the writer loves mathematics so much? b. The word 'it' on the first line of the third paragraph refers to?	a. Why does the writer love mathematics so much? b. The word 'it' on the 6 <sup>th</sup> line refers to?
Task 16	a. Require b. Provide c. Seen d. Knowledge e. Firsthand f. Biomedical engineering g. Food technology h. Building technology i. Chemical science	a. require b. provide c. seen d. knowledge e. firsthand f. biomedical engineering g. food technology h. building technology i. chemical science

	j. Civil and structural engineering k. Prosthetics l. Surveying m. Various n. Occupation	j. civil and structural engineering k. prosthetics l. surveying m. various n. occupation
Task 19	a. Mathematics is applicable only in jobs engineering b. Mathematics has a big impact in technology development	a. Mathematics is applicable only in engineering jobs b. Mathematics has a big impact on technology development
Task 21	a. Entirely b. Doing c. Fundamental d. Scientists e. Borrowed f. Noun g. Verb h. Adverb i. Adjective j. Remember k. Wherever l. Challenge m. Fellow n. Recent	a. entirely b. doing c. fundamental d. scientists e. borrowed f. noun g. verb h. adverb i. adjective j. remember k. wherever l. challenge m. fellow n. recent
Task 22	a. How is Liu see mathematics? b. Did the author feel impressed with Jun's life experience? How can you	a. What is Liu opinion about mathematics? b. Did the author feel impressed with Jun's life experience?

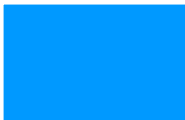
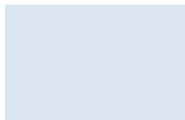
	<p>tell?</p> <p>c. How many pronouns that you found? Write them down and don't forget to write the referent for each pronoun.</p> <p>d. Please find at least 5 nouns and 5 verbs from the text above. Then, find the meaning for each word.</p>	<p>c. How many pronouns did you found? Write them down and don't forget to write the referent for each pronoun.</p> <p>d. Please find at least 5 nouns and 5 verbs from the text above. Then, find the meaning of each word.</p>
Summary	<p>a. There are some techniques in skimming for the whole text and scanning for detail information</p> <p>b. Skimming can help you to understand the general information from the text</p>	<p>a. There are some techniques in skimming for the whole text and scanning for details information.</p> <p>b. Skimming can help you to understand the general information from the text.</p>
Reflection	<p>a. Identifying part of speech</p> <p>b. Identifying pronouns and their referent</p>	<p>a. Identifying the parts of speech</p> <p>b. Identifying pronouns and their referents</p>
Additional suggestion	<p>Changing the color of the background</p> 	

Table 42: Suggestions of Unit 2

<b>Unit 2</b>	
<b>Parts of Units</b>	<b>Suggestions</b>
Task 5	Revising the punctuation
Task 7	Revising the punctuation
Task 9	Revising the instruction
Task 10	Revising the punctuation
Task 12	Revising the instruction
Task 14	Revising the instruction
Task 16	Revising the instruction
Task 18	Revising the punctuation
Task 20	Revising a mathematics term and some questions
Reflection	Revising the grammar
Additional suggestion	Changing the color of the background

In unit 2, the expert suggested the materials have to be revised in some parts. The revisions also related to the grammatical error, the use of punctuation, and the instructions. The revisions are as follows.

Table 43: Revisions of Unit 2

<b>Part of the Unit</b>	<b>Before Revision</b>	<b>After Revision</b>
Task 5	a. Manufacturing b. Acronym c. Development d. Release e. Diversify f. Intend g. Stuck h. Ingrained i. Approximately	a. manufacturing b. acronym c. development d. release e. diversify f. intend g. stuck h. ingrained i. approximately



	j. During	j. during
Task 7	a. Release b. Intend c. During d. Produce e. Develop f. Approximately g. Development h. Ready i. Rumor j. Also k. Through l. Evolve m. Affair n. Almost o. Discharge p. Elaboration q. Aim r. Gossip s. Alike t. Prepare	a. release b. intend c. during d. produce e. develop f. approximately g. development h. ready i. rumor j. also k. through l. evolve m. affair n. almost o. discharge p. elaboration q. aim r. gossip s. alike t. prepare
Task 9	We have discussed about topic and topic sentence. Now, you will identify <b>main idea</b> and	We have talked about topic and topic sentence. Now, you will identify <b>main idea</b> and <b>supporting details</b> of the

	<b>supporting details</b> of the paragraph. Please read the information below before identifying paragraphs in Task 11.	paragraph. Please read the information below before identifying paragraphs in Task 11.
Task 10	a. Commonly b. Worthwhile c. Satisfy d. Generally e. Measurement f. Perspective g. Increase h. Lost i. Instruction j. Arguably k. Proof l. Influence m. Consider n. Exist	a. commonly b. worthwhile c. satisfy d. generally e. measurement f. perspective g. increase h. lost i. instruction j. arguably k. proof l. influence m. consider n. exist
Task 12	Task 12. Before doing the exercise in Task 13 and 14, study the information below about <b>simple present tense</b> .	Task 12. Before doing the exercise in Task 13 and 14, study the information below about <b>the simple present tense</b> .
Task 14	Task 14. Now, please write at least 5 sentences by using simple present tense. You may open your dictionary.	Task 14. Now, please write at least 5 sentences by using the simple present tense. You may open your dictionary.
Task 16	Task 16. Read again the	Task 16. Read again the text

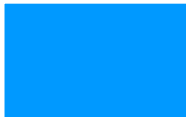
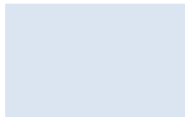
	text in Task 15. Please identify the simple present forms used in the text. Then, write them down into provided space.	in Task 15. Please identify the simple present forms used in the text. Then, write them down to the provided space.
Task 18	a. Difficult b. Avoid c. Often d. Higher e. Weak	a. difficult b. avoid c. often d. higher e. weak
Task 20	a. Pythagoras' b. How many simple present tense that you found from the text above? Write them down. c. Nowadays	a. Pythagoras's b. How many simple present tenses did you found from the text above? Write them down. c. Nowadays
Reflection	a. Identifying main idea and supporting detail b. Understand about simple present tense	a. Identifying main idea and supporting details b. Understanding the simple present tense
Additional suggestion	Changing the color of the background 	

Table 44: Suggestions of Unit 3

<b>Unit 3</b>	
<b>Parts of Units</b>	<b>Suggestions</b>
Task 3	Revising the punctuation
Task 4	Revising some questions
Task 9	Revising the instruction and a question
Task 10	Revising the instruction
Task 11	Revising the punctuation
Task 20	Revising the instruction and some questions
Reflection	Revising the grammar
Additional suggestion	Changing the color of the background

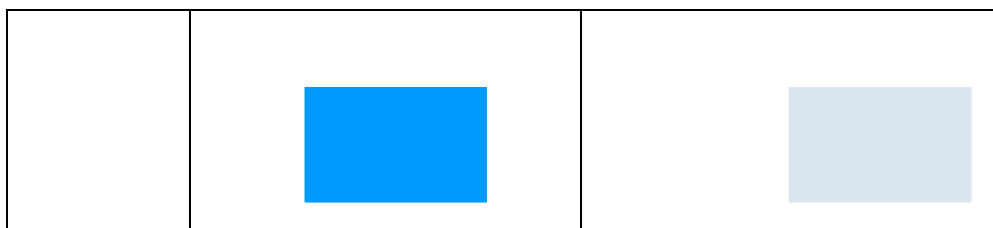
Not really different from the previous units, in unit 3 the expert also gave some suggestions. The revisions also related to grammatical rules, the instructions, and the color of the background. The revisions are as follows.

Table 45: Revisions of Unit 3

<b>Part of the Unit</b>	<b>Before Revision</b>	<b>After Revision</b>
Task 3	a. Musical pieces b. Represent c. Shape d. To indicate e. Signify f. Correctly g. Infinitely h. Arrange i. Midway j. Lengthens	a. musical pieces b. represent c. shape d. to indicate e. signify f. correctly g. infinitely h. arrange i. midway j. lengthens

Task 4	<p>a. How can you say that music, math, and pattern have a relationship?</p> <p>b. Do you think the author agree that math and music are enjoyable things? How can you say?</p>	<p>a. How can you say that music, math, and pattern have a relationship?</p> <p>b. Does the author agree that math and music are enjoyable things?</p>
Task 9	<p>a. Task 9. Study the following information. It is about simple past tense. Then, answer the questions that follow by underlining the correct answer.</p> <p>b. Jessie and I (<b>go</b> / <b>went</b>) to mathematics and science conference three months ago.</p>	<p>a. Task 9. Study the following information. It is about the simple past tense. Then, answer the questions that follow by underlining the correct answer.</p> <p>b. Jessie and I (<b>go</b> / <b>went</b>) to a mathematics and science conference three months ago.</p>
Task 10	Change the verbs in the following sentence into past tense.	Change the verbs in the following sentences into the past tense.

Task 11	a. Familiar b. Represent c. Realize d. Indicate e. Signify f. Correctly g. Infinitely h. Arrange i. Closest j. Different	a. familiar b. represent c. realize d. indicate e. signify f. correctly g. infinitely h. arrange i. closest j. different
Task 20	a. Task 20. You will read a text entitled <b>what is the relationship between classical music and mathematics?</b> Then answer the questions. b. Do you think the author agree that these two subjects have a relationship? c. Do you find simple past tense from the text? If yes, write it down. d. Please write summarize based on the text above.	a. Task 20. You will read a text entitled “What is the relationship between classical music and mathematics?” Then answer the questions. b. Does the author agree that these two subjects have a relationship? c. Do you find the simple past tense from the text? If yes, write it down. d. Please write a summary based on the text above.
Reflection	Understand about simple past tense	Understanding the simple past tense
Additional suggestion	Changing the color of the background	



## 7. The Final Draft of The Materials

The result of the expert judgment shows that the content, the language, the presentation, and the graphic design of the materials were revised and written into the final draft.

### B. Discussion

The materials were developed based on the result of needs analysis. Gaining the needs analysis was the first step that was done by the researcher. Basturkmen (2010) proposes that needs analysis was a stage in which the course developers identify what specific language and skills the group of language learners would need. This identification could be used in determining and refining the content for the ESP course book. In this research, the subjects were students of International Mathematics Education of YSU in the 4<sup>th</sup> and 6<sup>th</sup> semester. The topics were decided by the result of needs analysis. The researcher also developed the materials by using the texts that related with mathematics. In this case, the students were given the English reading learning materials through Mathematics. The input texts were closely related to Mathematics in a real life or the application of Mathematics itself.

In conducting needs analysis, the researcher distributed the questionnaire to the students of International Mathematics Education of Yogyakarta State

University. The questionnaire was conducted based on the principles that proposed by Hutchinson and Waters (1987) that cover the target needs and learning needs. The target needs cover some aspects such as necessities, lacks, and wants. Meanwhile in term of learning needs, the questionnaire was divided into some aspects. They were input, activities (procedure), setting, teacher's role, and learner's role.

The first aspect of the questionnaire was target needs. In terms of necessities, most of students of International Mathematics Education wanted to learn English to help them in understanding English literatures. It was because almost the references they used were written in English. Then, most of students of International Mathematics Education had difficulties in identifying main idea and topic, reading to present, and understanding the meaning of abbreviations related to mathematics terms. They wanted to learn more about them. In addition, they wanted to learn more about mathematics vocabulary terms. Nonetheless, this course book could not cover all of students' intention in learning English reading skills. The researcher decided to pick only some of them. The skills were applied in unit 1 were skimming, scanning, and finding implicit meaning. Meanwhile in second unit, the skills were identifying topic, main idea, and supporting details of the text. The last unit provided the skills of paraphrasing, summarizing, reading to present, and inferring unknown vocabulary. Furthermore, there were also some grammatical and vocabulary aspect in every unit of the book.

The second aspect of the questionnaire was learning needs. For the input, the students prefer the texts consist of some pictures and no less than 4 paragraphs.



Meanwhile the topic was related to mathematics in general. That is why the titles of the unit were very general. The title of unit 1 was *Why Do You Love Math?* This unit delivered some texts related to the reasons why some people love mathematics. In addition, the title of unit 2 was *Math and Our Real Life*. In this unit, the students were provided texts related to the application of mathematics in a real life. For the last unit, the title was *Math is Fun*. The provided texts were related to mathematics and music. The texts from each unit consist of 4-5 paragraphs. The longest paragraph would be found in an evaluation parts. The second component was procedure. They wanted to have activities with short questions. In vocabulary activities, the students wanted to have activities by finding new words and find the meaning based on the context. Therefore, there were some activities with answering short questions. Besides, there were also some questions in form of matching and true-false. In terms of setting, the students choose to have a learning mode in pairs or in a group consist of 3 members. Moreover, the students prefer the teacher providing direct practice. In this book, the students were asked to do some activities independently, in pairs, and I group. Meanwhile, the students choose to do a discussion in doing teaching and learning process.

After analyzing the needs analysis, the next step was developed a course grid. The course grid covers the topics, reading skills, vocabulary skills, indicator, materials/ input texts, activities, assessments, and resources. Then, the course grid was developed into three units of reading materials. The course grid was attached in appendix C.

After that, the materials were evaluated by the experts. The material evaluation was done by distributing a questionnaire. It was developed based on the aspects proposed by *BSNP*. They were the appropriateness of content, the appropriateness of presentation, the appropriateness of language, and the appropriateness of layout. The result of the expert judgment shows that the developed speaking materials were appropriate for the needs of intermediate level students of International Mathematics Education at Yogyakarta State University. Then, the second draft of the materials was developed based on the result of evaluation from the first draft of the materials.

The first unit of this book was entitled *Why Do You Love Math?* There were four skills in this unit. There were skimming for the whole text, scanning for details, finding implicit meanings from text, and identifying pronouns and finding their referents. The unit began from asking the students' feeling about mathematics. The pictures were provided in order to guide students in predicting what materials they were going to learn. Almost all of tasks were provided some pictures. The skills were delivered through some information and some exercises. The five texts from this unit were used differently depends on the skills being taught. The students were also given the vocabularies before reading the text. Vocabularies were delivered by categorizing the part of speech and meaning. Besides, the tips or guidelines of skimming and scanning were provided before doing the task. Related to the parts of speech, the students were asked to identify the texts provided.

Then, the second unit was entitled *Math and Our Real Life*. This unit provided the five skills of reading. There were about identifying topic and topic sentence, identifying main ideas and supporting details, finding synonyms, identifying the parts of speech, and the grammar was about the simple present tense. The organization of the tasks was not really different from the previous unit. The students were given lists of words before reading the text and doing some activities. The activities were quite various such as matching the synonyms, finding the meaning, identifying the parts of speech, etc. The information and tips related to the micro-skills were provided before students doing the tasks.

The last unit was entitled *Math is Fun*. This unit consists of some information about Mathematics related to music. There were six micro-skills in this unit. There were also 20 activities in this unit. The activities were different from the previous unit. In this unit, the students were expected to do independent activities. They were asked to paraphrase a paragraph, answer the questions, find the meaning, identify the past tense and the parts of speech. Moreover, the information and tips related to the materials were provided.

## **CHAPTER V**

### **CONCLUSIONS AND SUGGESTIONS**

This chapter will present some conclusions and suggestions of this research. The conclusions present the summary of research findings related to the formulation of the problems and objectives of the research. Meanwhile the suggestion part provides some suggestions from the researcher and other researchers.

#### **A. Conclusions**

Based on the findings and discussion, the results of the research can be summarized as follows.

1. The first aim of this research is to find out the target needs of students of International Mathematics Education Study Program. The findings of the research reveal the target needs of students of International Mathematics Education which presented as follows.
  - a. Most of the students of International Mathematics Education claim that their goals in learning English are to help them in understanding English literatures and understanding English instructions and references given by the teacher. In addition, they also claim that English is a supporting skill in the work field after graduating from the university.
  - b. The students state the goals in learning English reading skills are to help them to understand the references which are used during learning processes, to understand the supporting literatures, to be able to read

- c. Mathematics terms, to be able to read mathematics symbols, and to be able to read definitions and theorems.
  - d. Most of the students admit that their English reading skill is at the level of intermediate.
  - e. The students state that mathematics terms they have already mastered are 100-500 words.
  - f. The difficulties that most of the students have in reading English skills are skimming, scanning, predicting, reviewing, understanding implicit meanings, and understanding the meaning of abbreviations related to mathematics terms.
  - g. The lack that English book being used by students is related to the appropriateness of the pictures and the texts related to mathematics.
  - h. Most of the students want to learn English reading skills in order to improve their ability in previewing, skimming, scanning, predicting, reading to present, reviewing, and understanding implicit meanings.
2. The second aim of this research is to find out the learning needs of students of International Mathematics Education Study Program. The findings of the research reveal the learning needs of students of International Mathematics Education which presented as follows.
- a. Most of the students want to get input texts which consist of some pictures in length no more than 4 paragraphs.
  - b. The students prefer to get topics related to mathematics study in general.

- c. In terms of type for reading activity, students want to have short questions in doing their task.
  - d. In terms of vocabulary activity, students want to find new words from the text and find the meaning in a dictionary. They also want to find new words from the text and find the meaning base on the context for their task.
  - e. In terms of grammar activity, students prefer to do exercises and identify the wrong sentence structure and fix it.
  - f. Students want to do teaching and learning reading processes in pairs or in a group of 3.
  - g. Students prefer to hold teaching and learning reading in a classroom.
  - h. Students want the teacher to provide a lot of exercises, and carry out discussion in the class.
  - i. Students want if they do a discussion and ask questions to a friend during teaching and learning processes.
3. The last aim of this research is to develop the appropriate reading learning materials for students of International Mathematics Education Study Program. The materials were developed by analyzing the result of needs analysis. They were formulated into a course grid, first draft of the materials, and final draft of the materials. The findings of the research reveal the appropriate reading learning materials for students of International Mathematics Education which presented as follows.
- a. The materials lead students to perform and develop their reading skills.

- b. The materials lead students to perform and develop their vocabulary skills.
- c. The materials lead students to understand the linguistic features of the discussed text.
- d. The materials are categorized as ‘very good’ and feasible to apply.
- e. The learning materials have the following components as follows.
  - 1) The first part of the unit is the title of the unit. There are also some objectives of the unit to give students information about what they are going to learn.
  - 2) The second part of the unit is pre-task. This course book uses the term *Get Ready!* to start the first task of the unit. These tasks are designed to build students’ schemata and recall their background knowledge related the topic they are going to learn.
  - 3) The next tasks are task cycle and language focus. This course book uses the term *Let’s Start* and *Grammar in Focus* to present the main lesson. These steps give students an opportunity to various kinds of tasks.
  - 4) The last part is reinforcement. This course book uses the terms *summarize* and *reflection* to recall materials that students have learnt. The summary is available for students in the last chapter of the unit.

## **B. Suggestions**

The final product of this research is English course book for International Mathematics Education of Yogyakarta State University. This course book focuses only on English reading skills. That is why other researchers are expected to develop other English learning materials for International classes which have the problem related to appropriate English learning materials. The result of this research is expected will be useful for lectures and students of International Mathematics Education of Yogyakarta State University. The suggestions will be summarized as follows.

1. In terms of the input of the materials, it is suggested to provide the texts related to mathematics study in general. The texts can be adopted and adapted from any resources such as a book, internet, articles, and so on.
2. It is suggested to have the input texts which provide a lot of pictures. The pictures have a strong impact for students in carrying out English learning processes.
3. In terms of learning procedure, it is suggested to have various kinds of activities which are engaged students to work in pairs or in a group of three.
4. Lastly, in terms of teacher's and learner's role, it is suggested to have a discussion and ask questions to a friend when students doing their activities in a class. Meanwhile the teachers are asked to give direct practice, provide a lot of exercises, and carry out the discussion during the learning processes.



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**APPENDIX A**  
**THE NEEDS ANALYSIS INSTRUMENTS**



**Angket Analisis Kebutuhan Mahasiswa**  
**Program Pendidikan Matematika Internasional, UNY**  
**untuk Pengembangan Bahan Ajar *Reading for Math Students***  
**untuk Mendukung Penguasaan bahasa Inggris Mahasiswa**

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**A. Pengantar**

Angket ini berisi sejumlah pertanyaan yang berkaitan dengan keterampilan membaca dalam bahasa Inggris bagi mahasiswa jurusan Pendidikan Matematika Internasional. Angket ini bertujuan untuk mengetahui kebutuhan mahasiswa jurusan Pendidikan Matematika Internasional yang kemudian akan dianalisa oleh peneliti sebagai dasar mengembangkan bahan ajar mengenai *English Reading Materials for International Mathematics Education Study Program Of Yogyakarta State University*. Hasil angket ini tidak akan disebar luaskan dan tidak berpengaruh terhadap nilai.

**B. Data Responden**

Nama : \_\_\_\_\_

Umur : \_\_\_\_\_ tahun

Jenis kelamin ( lingkari salah satu ) : L / P

Semester : \_\_\_\_\_

### C. Kebutuhan Keterampilan Membaca Dalam Bahasa Inggris

**Petunjuk pengisian:** berikut ini adalah pertanyaan yang menunjukkan keadaan diri anda. Berilah tanda **centang** (✓) untuk menjawab pertanyaan dibawah ini, kecuali pertanyaan dengan perintah khusus.

1. Tujuan anda mempelajari bahasa Inggris adalah? (boleh memilih lebih dari satu)

- ☐ Memahami instruksi yang diberikan oleh dosen saat kegiatan perkuliahan
- ☐ Memahami referensi berbahasa Inggris yang digunakan saat kegiatan perkuliahan
- ☐ Memahami literature (sumber bacaan) berbahasa Inggris sebagai pendukung .kegiatan perkuliahan
- ☐ Sebagai kemampuan penunjang dalam pekerjaan setelah menyelesaikan jenjang perkuliahan
- ☐ Lain – lain (sebutkan) .....

2. Untuk menunjang pendidikan anda saat ini, seharusnya anda berada pada level?

- ☐ Pemula (*beginner*): dapat memahami kalimat dan ungkapan sederhana yang sering muncul dalam kehidupan sehari-hari
- ☐ Menengah (*intermediate*): dapat memahami inti atau maksud dari teks yang rumit dan member tanggapan mengenai teks
- ☐ Mahir (*advanced*): dapat memahami berbagai macam teks dan memahami makna tersirat yang terdapat dalam sebuah teks

3. Kosakata/ istilah dalam ilmu matematika yang telah anda kuasai sebanyak?

- ☐ < 100 kosakata
- ☐ 100 – 500 kosakata
- ☐ 500 – 1000 kosakata
- ☐ > 1000 kosakata

4. Berdasarkan jurusan yang sedang anda tempuh saat ini, tujuan anda menguasai keterampilan membaca (*reading*) adalah? (boleh memilih lebih dari satu)

- ☐ Mampu memahami buku referensi yang digunakan saat kegiatan perkuliahan
- ☐ Mampu memahami sumber bacaan (*literature*) pendukung seperti jurnal dan artikel berbahasa Inggris
- ☐ Mampu membaca istilah – istilah dalam ilmu matematika (*mathematics vocabulary terms*)
- ☐ Mampu membaca simbol – simbol dalam ilmu matematika
- ☐ Mampu membaca diagram
- ☐ Mampu membaca *definitions* dan *theorems*
- ☐ Lain – lain (sebutkan) .....

5. Berdasarkan pilihan dibawah, berilah tanda **centang** (✓) pada bagian yang menurut anda **kurang sesuai** dengan buku pembelajaran bahasa Inggris yang anda gunakan saat ini? (boleh memilih lebih dari satu)

- ☐ Layout ( kesesuaian warna, design template, font, dsb )
- ☐ Kesesuain teks yang disajikan



- ☐ Ketersediaan gambar
- ☐ Kejelasan instruksi atau kalimat perintah dalam setiap aktivitas pembelajaran
- ☐ Ketersediaan istilah – istilah dalam ilmu matematika (*mathematics vocabulary terms*)
- ☐ Ketersediaan simbol – simbol dalam ilmu matematika
- ☐ Lain – lain (sebutkan).....

6. Berdasarkan jurusan yang sedang anda tempuh saat ini, dalam hal apa pembelajaran membaca (*reading*) anda temukan sangat menyenangkan? (boleh memilih lebih dari satu)

- ☐ Membaca istilah – istilah dalam ilmu matematika (*mathematics vocabulary terms*)
- ☐ Membaca simbol – simbol dalam ilmu matematika
- ☐ Membaca diagram
- ☐ Membaca *definitions* dan *theorems*
- ☐ Lain – lain (sebutkan) .....

7. Berdasarkan jurusan yang sedang anda tempuh saat ini, dalam hal apa pembelajaran membaca (*reading*) anda temukan sangat sulit? (boleh memilih lebih dari satu)

- ☐ Membaca istilah – istilah dalam ilmu matematika (*mathematics vocabulary terms*)
- ☐ Membaca simbol – simbol dalam ilmu matematika
- ☐ Membaca diagram

☐ Lain – lain (sebutkan) .....

8. Menurut anda, keterampilan apa yang dibutuhkan untuk **membaca** teks berbahasa Inggris? (boleh memilih lebih dari satu)

☐ Mampu mengidentifikasi topik, ide pokok, struktur organisasi, dan tujuan penulisan dari suatu teks (*previewing*).

☐ Mampu menjawab pertanyaan berdasarkan informasi yang didapatkan dari suatu teks (*reading actively*).

☐ Mampu memahami makna tersirat (*implicit meanings*) dari sebuah teks.

☐ Mampu menentukan informasi atau kejadian selanjutnya yang mengikuti suatu teks (*predicting*).

☐ Mampu mengetahui makna dari suatu kata yang tidak diketahui dengan cara menggunakan konteks dari kalimat (*inferring unknown vocabulary*).

☐ Mampu memahami istilah yang sering digunakan dalam teks yang berhubungan dengan ilmu matematika

☐ Mengerti makna singkatan – singkatan dalam teks yang berhubungan dengan ilmu matematika

☐ Mampu memahami simbol – simbol yang digunakan dalam ilmu matematika

☐ Mampu membaca cepat teks secara keseluruhan untuk mendapatkan gambaran umum suatu teks (*skimming*).

☐ Mampu membaca cepat teks secara keseluruhan untuk mendapatkan informasi khusus (*scanning*).

☐ Mampu memahami suatu teks dan merangkumnya (*reviewing*).

- ☐ Mampu memahami suatu teks dan mempresentasikannya (*reading to present*).
- ☐ Lain – lain (sebutkan) .....

9. Berikut adalah kemampuan membaca (*reading*). (Urutkan dari yang paling anda kuasai dari 1-12)

- ☐ Mampu mengidentifikasi topic, ide pokok, struktur organisasi, dan tujuan penulisan dari suatu teks (*previewing*).
- ☐ Mampu menjawab pertanyaan berdasarkan informasi yang didapatkan dari suatu teks (*reading actively*).
- ☐ Mampu memahami makna tersirat (*implicit meanings*) dari sebuah teks.
- ☐ Mampu menentukan informasi atau kejadian selanjutnya yang mengikuti suatu teks (*predicting*).
- ☐ Mampu mengetahui makna dari suatu kata yang tidak diketahui dengan cara menggunakan konteks dari kalimat (*inferring unknown vocabulary*).
- ☐ Mampu memahami istilah yang sering digunakan dalam teks yang berhubungan dengan ilmu matematika
- ☐ Mengerti makna singkatan – singkatan dalam teks yang berhubungan dengan ilmu matematika
- ☐ Mampu memahami simbol – simbol yang digunakan dalam ilmu matematika
- ☐ Mampu membaca cepat teks secara keseluruhan untuk mendapatkan gambaran umum suatu teks (*skimming*).

- ☐ Mampu membaca cepat teks secara keseluruhan untuk mendapatkan informasi khusus (*scanning*).
- ☐ Mampu memahami suatu teks dan merangkumnya (*reviewing*).
- ☐ Mampu memahami suatu teks dan mempresentasikannya (*reading to present*).

10. Input teks materi seperti apa yang anda inginkan dalam pembelajaran keterampilan membaca (*reading*)? (boleh memilih lebih dari satu)

- ☐ Teks bacaan terdiri dari beberapa paragraph
- ☐ Teks bacaan disertai dengan gambar – gambar
- ☐ Teks bacaan disertai dengan table, diagram, atau grafik
- ☐ Teks bacaan disertai daftar kosakata
- ☐ Lain – lain (sebutkan) .....

11. Dalam suatu teks, banyak paragraph yang anda inginkan dalam pembelajaran membaca (*reading*) sebanyak?

- ☐ < 4 paragraf
- ☐ 4 paragraf
- ☐ 5 paragraf
- ☐ 6 paragraf
- ☐ 7 paragraf
- ☐ > 7 paragraf

12. Topik atau tema yang anda inginkan dalam pembelajaran membaca (*reading*) adalah? (boleh memilih lebih dari satu)

- ☐ Topik – topik yang berhubungan dengan ilmu matematika secara umum

- ☐ Topik – topik yang berhubungan dengan penggunaan simbol – simbol dalam matematika
- ☐ Topik – topik yang berhubungan dengan penggunaan diagram dalam ilmu matematika
- ☐ Lain – lain (sebutkan) .....

13. Menurut anda, aktivitas seperti apakah yang dapat meningkatkan keterampilan **membaca** dalam bahasa Inggris? (boleh memilih lebih dari satu)

- ☐ Melengkapi teks rumpang
- ☐ Memperbaiki teks
- ☐ Menjodohkan istilah dan singkatan
- ☐ Menjawab pertanyaan mengenai informasi dalam sebuah teks
- ☐ Menerjemahkan kosakata bahasa Inggris berdasarkan teks
- ☐ Mengurutkan struktur teks
- ☐ Lain – lain (sebutkan).....

14. Jenis kegiatan pembelajaran kosa kata (*vocabulary*) yang anda inginkan? (boleh memilih lebih dari satu)

- ☐ Menemukan kosa kata baru di dalam suatu teks dan mencari arti kata atau terjemahannya di dalam kamus.
- ☐ Menemukan kosa kata baru di dalam suatu teks dan mencari arti kata atau terjemahannya berdasarkan konteks di dalam teks tersebut.
- ☐ Melengkapi kalimat atau paragraf dengan pengetahuan sendiri.

- ☐ Mengelompokkan kosa kata baru di dalam sebuah tabel kemudian mencari arti atau terjemahan berdasarkan konteks di dalam suatu teks.
- ☐ Mencocokkan kata-kata dengan pilihan makna yang telah disediakan.
- ☐ Mencari sinonim atau antonim kata.
- ☐ Mengidentifikasi jenis kata: kata kerja, kata benda, kata sifat, dll.
- ☐ Mencocokkan kata dengan gambar.
- ☐ Lain – lain (sebutkan).....

15. Jenis kegiatan pembelajaran tata bahasa (*grammar/structure*) yang anda inginkan? (boleh memilih lebih dari satu)

- ☐ Menghafalkan rumus atau formula struktur tata bahasa.
- ☐ Mengisi kalimat rumpang agar sesuai dengan struktur tata bahasa.
- ☐ Mengerjakan soal-soal latihan tentang tata bahasa.
- ☐ Membuat kalimat sendiri berdasarkan pola yang diajarkan.
- ☐ Mengidentifikasi struktur kalimat yang salah lalu memperbaikinya.
- ☐ Lain - lain (sebutkan).....

16. Saya ingin belajar keterampilan membaca dalam bahasa Inggris secara:

- ☐ Individu
- ☐ Berpasangan
- ☐ Kelompok

17. Jumlah anggota kelompok yang saya inginkan jika bekerja dalam sebuah kelompok:

- ☐ 3
- ☐ 4

☐ 5

☐ 6

18. Saya senang belajar keterampilan membaca dalam bahasa Inggris di:

☐ Dalam kelas

☐ Luar kelas

19. Selama proses pembelajaran, peran guru yang saya inginkan: (boleh memilih lebih dari satu)

☐ Menerangkan penjelasan oral di kelas

☐ Memberikan banyak latihan

☐ Memberikan tugas

☐ Memberikan banyak contoh

☐ Memberikan praktik langsung

☐ Diskusi dan Tanya jawab

20. Selama proses pembelajaran, saya ingin belajar dengan cara: (boleh memilih lebih dari satu)

☐ Bertanya pada teman

☐ Berpikir kritis

☐ Langsung diberikan materi

☐ Diskusi dan tanya jawab

**APPENDIX B**  
**THE NEEDS ANALYSIS DATA**



## NEEDS ANALYSIS DATA

Target Needs				
Necessities				
Questions	Items	N	F	%
My goal in learning English as a student of International Mathematics Education study program: (may choose more than one item).	a. Understand English instructions given by the teacher in the teaching and learning process.	35	19	54.3%
	b. Understand English references given by the teacher in the teaching and learning process.	35	29	82.9%
	c. Understand English and literatures for supporting the teaching and learning process.	35	26	74.3%
	d. Supporting skill in the work field after graduated.	35	28	80%
	e. Others (write down).	35	0	0%
To support my study, my English mastery/skill in reading should be at level:	a. Beginner: can understand simple sentences and expressions in daily life.	35	7	20%
	b. Intermediate: can understand main information from a complex text and give ideas based on the text given.	35	17	48.6%
	c. Advanced: can recognize various types of texts and understand implicit information from a text.	35	11	31.4%
Vocabularies or	a. < 100	35	11	31.4%

mathematics terms you have already mastered	b. 100 – 500	35	21	60%
	c. 500 – 1000	35	3	8.6%
	d. > 1000	35	0	0%
Based on your study program, the purposes of mastering reading skills are?	a. To understand the references which are used during learning processes	35	29	82.9%
	b. To understand the supporting literatures such as journals and English articles	35	30	85.7%
	c. To be able to read mathematics terms	35	30	85.7%
	d. To be able to read mathematics symbols	35	21	60%
	e. To be able to read mathematics symbols	35	15	42.9%
	f. To be able to read definitions and theorems	35	22	62.9%
	g. Others (write down).	35	0	0%
<b>Lacks</b>				
Following is a list of reading skills. Make an order from 1-9 based on the skill I have mastered mostly:	a. Can conduct a quick survey of the text to identify the topic, the main idea, and the organization of the text (previewing).	35	8	23%
	b. Can look quickly through the text to get a general idea of what it is about (skimming).	35	5	14%
	c. Can look quickly through a text in order to locate specific information (scanning).	35	6	20%

	d. Can anticipate what is to come (predicting).	35	5	14%
	e. Can ask questions and then read for answers (reading actively).	35	7	20%
	f. Reading to present	35	11	31%
	g. Can use context as well as parts of words (e.g. prefixes, suffixes and stems) to work out the meaning of unknown words (inferring unknown vocabulary).	35	6	20%
	h. Can look back over a text and summarize it (reviewing).	35	5	14%
	i. Understanding mathematics vocabulary terms	35	11	31%
	j. Understanding the meaning of abbreviations related to mathematics terms	35	7	20%
	k. Understanding mathematics symbols	35	8	23%
	l. Understanding implicit meanings	35	7	20%
Based on the following items, give a tick (✓) to the parts that you think not really appropriate on your English book that being used:	a. Layout	35	11	31.4%
	b. The appropriateness of the texts	35	7	20%
	c. The appropriateness of the pictures	35	20	57.1%
	d. The instructions in every learning activities	35	8	22.9%
	e. The availability mathematics vocabulary terms	35	13	37.1%
	f. The availability mathematics	35	3	8.6%

	symbols			
	g. Others (write down)	35	0	0%
Based on your study program, in what way do you find mathematics learning process really difficult?	a. Reading mathematics vocabulary terms	35	14	40%
	b. Reading mathematics symbols	35	18	51.4%
	c. Reading diagrams	35	6	17.1%
	d. Others (write down)	35	7	20%
<b>Wants</b>				
Based on your study program, in what way do you find mathematics learning process really fun?	a. Reading mathematics vocabulary terms			
	b. Reading mathematics symbols			
	c. Reading diagrams			
	d. Reading definitions and theorems			
	e. Others (write down)			
In your opinion, what skills are needed in order to be able reading English texts?	a. Can conduct a quick survey of the text to identify the topic, the main idea, and the organization of the text (previewing).	35	27	77.1%
	b. Can look quickly through the text to get a general idea of what it is about (skimming).	35	24	68.6%
	c. Can look quickly through a text in order to locate specific information (scanning).	35	22	62.9%
	d. Can anticipate what is to come (predicting).	35	18	51.4%
	e. Can ask questions and then read for answers (reading actively).	35	17	48.6%

	f. Reading to present	35	20	57.1%
	g. Can use context as well as parts of words (e.g. prefixes, suffixes and stems) to work out the meaning of unknown words (inferring unknown vocabulary).	35	17	48.6%
	h. Can look back over a text and summarize it (reviewing).	35	20	57.1%
	i. Understanding mathematics vocabulary terms	35	15	42.9%
	j. Understanding the meaning of abbreviations related to mathematics terms	35	17	48.6%
	k. Understanding mathematics symbols	35	15	42.9%
	l. Understanding implicit meanings	35	26	74.3%
<b>Learning Needs</b>				
<b>Input</b>				
In the teaching and learning reading, types of texts as an input which I want: (may choose more than one item)	a. Texts consist of some paragraphs.	35	9	25.7%
	b. Texts consist of some pictures.	35	26	74.3%
	c. Texts consist of table, diagram or graphic.	35	17	48.6%
	d. Texts consist of lists of vocabulary.	35	16	45.7%
	e. Others (write down)	35	0	0%
In a text for the teaching and learning reading, I	a. < 4 paragraphs	35	13	37.1%
	b. 4 paragraphs	35	5	14.3%
	c. 5 paragraphs	35	10	28.6%

want it consists of: (may choose more than one item)	d. 6 paragraphs	35	2	5.7%
	e. 7 paragraphs	35	2	5.7%
	f. > 7 paragraphs	35	3	8.6%
Topic or theme within a text that I want in the teaching and learning reading: (may choose more than one item)	a. Topics related to mathematics study in general.	35	26	74.3%
	b. Topics related to the use of mathematics symbols.	35	10	28.6%
	c. Topics related to the use of diagrams.	35	11	31.4%
	d. Others (write down)	35	0	0%
<b>Procedure</b>				
In your opinion, what kind of task types that can help you in improving your English reading skills?	a. Completing gaps of a sentence.	35	11	31.4%
	b. Correcting the texts	35	10	28.6%
	c. Matching	35	7	20%
	d. Short questions	35	23	65.7%
	e. Translating English texts	35	15	42.9%
	f. Arranging jumbled texts	35	9	25.7%
	g. Others (write down)	35	0	0%
What kind of vocabulary activities that you want?	a. Finding new words from the text and find the meaning in a dictionary	35	19	54.3%
	b. Finding new words from the text and find the meaning based on the context.	35	22	62.9%
	c. Completing sentences	35	12	34.3%
	d. Grouping the new words in a table and find the meaning	35	13	37.1%

	based on context form the text			
	e. Matching the words with the provided meanings	35	14	34.3%
	f. Finding synonyms or antonyms	35	13	37.1%
	g. Identifying the parts of speech	35	12	34.3%
	h. Matching the words with pictures	35	8	22.9%
	i. Others (write down)	35	0	0%
Types of grammar activities that I want: (may choose more than one item).	a. Memorizing the grammar structure formulas	35	4	11.4%
	b. Filling the gaps	35	11	31.4%
	c. Doing exercises related to grammar	35	20	57.1%
	d. Making sentences based on the grammar structure that has been taught	35	17	48.6%
	e. Identifying the wrong sentence structure and fix it	35	18	51.4%
	f. Others (write down).	35	0	0%
<b>Setting</b>				
I want teaching and learning reading is done in:	a. Individually	35	13	37.1%
	b. Pairs	35	16	45.7%
	c. Groups	35	12	34.3%
Number of group members that I want to work in a group:	a. 3	35	20	57.1%
	b. 4	35	12	34.3%
	c. 5	35	4	11.4%
	d. 6	35	0	0%

I want the teaching and learning reading to be held in:	a. A classroom	35	20	57.1%
	b. Outside a classroom	35	15	42.9%
<b>Teachers' Role</b>				
In the teaching and learning process, I prefer if the teacher: (may choose more than one item).	a. Explaining through oral explanations in class	35	11	31.4%
	b. Providing a lot of exercises	35	20	57.1%
	c. Giving many examples	35	13	37.1%
	d. Providing direct practice	35	25	71.4%
	e. Discussion	35	20	57.1%
	f. Giving a lot of tasks	35	2	5.7%
<b>Learners' Role</b>				
In the teaching and learning process, I prefer: (may choose more than one item).	a. Asking questions to a friend	35	18	51.4%
	b. Critical thinking	35	15	42.9%
	c. Given materials directly	35	5	14.3%
	d. Discussion	35	31	88.6%



# **APPENDIX C**

## **SYLLABUS**

## COURSE GRID

<b>Name Of the Department</b>	:	Mathematics Education
<b>Study Program</b>	:	International Mathematics Education
<b>Subject</b>	:	English
<b>Competence Standard</b>	:	Understanding given information within certain texts in various text types related to international mathematics education context to access knowledge
<b>Basic Competence</b>	:	Getting and responding to the given information of certain texts accurately, fluently, and appropriately to access knowledge

Topics/ Units	Reading Skills	Vocabulary skills	Indicators	Materials/ Input Texts	Activities	Assessments	Resources
Why Do You Love Math?	<ul style="list-style-type: none"> <li>■ Skimming for the whole text</li> <li>■ Scanning for details</li> <li>■ Finding implicit meanings from text</li> </ul>	<ul style="list-style-type: none"> <li>■ Identifying pronouns and finding their referents</li> </ul>	<ul style="list-style-type: none"> <li>■ Students are able to do skimming for the whole text</li> <li>■ Students are able to do scanning for details</li> <li>■ Students are able to find implicit meanings</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Skimming</b> refers to the process of reading only main ideas within a passage to get an overall impression of the content of a reading selection.</li> <li>■ <b>Scanning</b> is a reading technique to be used when you want to find specific information quickly.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Task 1.</b> Look at the pictures below. Have you ever felt the same way when you do something related to math? Thick (✓) the picture that show your feeling about math subject.</li> <li>■ <b>Task 2.</b> Look at the pictures below. There are two pictures and</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Task 22.</b> In this final task, you will read a text entitled “Mathematics is a Game of Life”. Then, answer the questions that follow. You may open your dictionary.</li> </ul>	<ul style="list-style-type: none"> <li>■ <a href="http://readingstrategies.wikidot.com/skimming">http://readingstrategies.wikidot.com/skimming</a></li> <li>■ <a href="http://www.livescience.com/3893-6-mathematics.html">http://www.livescience.com/3893-6-mathematics.html</a></li> <li>■ <a href="http://pioneer.net1.serv.chula.ac.th/~pkanchan/html/skim.htm">http://pioneer.net1.serv.chula.ac.th/~pkanchan/html/skim.htm</a></li> </ul>

			<p>from text</p> <ul style="list-style-type: none"> <li>▪ Students are able to find the reference</li> <li>▪ Students are able to recognize the part of speech</li> </ul>	<p>In scanning you have a question in your mind and you read a passage only to find the answer, ignoring unrelated information.</p> <ul style="list-style-type: none"> <li>▪ The word that a pronoun refers to is called its <b>referent</b>.</li> <li>▪ <b>Texts :</b> <ol style="list-style-type: none"> <li>a. What is mathematics?</li> <li>b. The man who only loved only numbers: the story of Paul Erdos and the search for mathematical truth</li> <li>c. Why do you love math so much?</li> <li>d. Why do we need to learn math?</li> <li>e. Mathematics is a game of life</li> </ol> </li> <li>▪ <b>Parts of speech:</b></li> </ul>	<p><i>lists of words in this task. Choose the best words to describe these pictures.</i></p> <ul style="list-style-type: none"> <li>▪ <b>Task 3.</b> Have you ever done skimming for the whole text? Do you know how to use it? These are the short explanation of 'skimming'. Study the following information carefully. You will do skimming for the whole text in Task 4.</li> <li>▪ <b>Task 4.</b> Read the following text entitled 'What is Mathematics?'. Please use skimming techniques that you have learned before. Then, write the ideas that you get in the provided space.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <a href="http://www.amazon.com/exec/obidos/ASIN/1857028295/antonioca%20ref=nosim/">http://www.amazon.com/exec/obidos/ASIN/1857028295/antonioca%20ref=nosim/</a></li> <li>▪ <a href="http://www.flyincoloursmaths.co.uk/student-asks-love-maths-much/">http://www.flyincoloursmaths.co.uk/student-asks-love-maths-much/</a></li> <li>▪ <a href="http://dictionary.reference.com/browse/part+of+speech">http://dictionary.reference.com/browse/part+of+speech</a></li> <li>▪ <a href="http://grammar.about.com/od/pq/g/partsspeechterm.html">http://grammar.about.com/od/pq/g/partsspeechterm.html</a></li> <li>▪ <a href="http://mathforum.org/dr.math/faq/faq.whv.math.html">http://mathforum.org/dr.math/faq/faq.whv.math.html</a></li> <li>▪ <a href="http://news.harvard.edu/gazette/2001/02/01/03-mathematics.htm">http://news.harvard.edu/gazette/2001/02/01/03-mathematics.htm</a></li> </ul>
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					<p><i>skimming.</i></p> <ul style="list-style-type: none"><li>▪ <b>Task 9.</b> Read again the previous text. Then, answer the following questions. You may work in pairs.</li><li>▪ <b>Task 10.</b> Study the following information about pronouns.</li><li>▪ <b>Task 11.</b> Study the following words. You will find these words in Task 12.</li><li>▪ <b>Task 12.</b> The following text tells you the reason why the writer loves math so much. Read it carefully.</li><li>▪ <b>Task 13.</b> In a group of 3, please find</li></ul>		
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					<p><i>pronouns from text in Task 8. Write down the pronouns and also the referents. Find as many as you can.</i></p> <p>▪ <b>Task 14.</b> Based on the text in Task 12, answer the following questions. Check your answer with your partner.</p> <p>▪ <b>Task 15.</b> Study the following information about the part of speech.</p> <p>▪ <b>Task 16.</b> Identify the part of speech and find the meaning of the words below. You will find these words in Task 18.</p> <p>▪ <b>Task 17.</b> You have learnt skimming for</p>		
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					<p><i>the whole text. Now, you will learn 'scanning for details'. Study the information below.</i></p> <p>▪ <b>Task 18.</b> Read the following text about 'why do we need to learn math?'. How many nouns did you find? Underline them.</p> <p>▪ <b>Task 19.</b> The following information will discuss about noun. Please read the information carefully.</p> <p>▪ <b>Task 20.</b> In this task, you will find some statements. Please decide whether the statements below are true (✓) or false (X).</p> <p>▪ <b>Task 21.</b> The</p>		
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					<p><i>information below is about how to do scanning effectively. Read the information carefully.</i></p> <p>▪ <b>Task 22.</b> Read the words in the following table. Then, analyze their parts of speech by matching the words in the right and left column with appropriate part of speech.</p> <p>▪ <b>Task 23.</b> In this final task, you will read a text entitled “Mathematics is a Game of Life”. Then, answer the questions that follow. You may open your dictionary.</p>		
Math and Our Real Life	▪ Finding topic of the paragraph,	▪ Identifying the parts of speech	▪ Students are able to differentiate	▪ <b>Topic:</b> A broad category or general subject.	▪ <b>Task 1.</b> Let us try to classify the <i>topic</i> for each number below by	▪ <b>Task 20.</b> In this task, you will read a	▪ <a href="http://faculty.scf.edu/smithe/cdrom/miniexam/Topics">http://faculty.scf.edu/smithe/cdrom/miniexam/Topics</a>



	<ul style="list-style-type: none"> <li>■ Finding synonyms</li> </ul>	<ul style="list-style-type: none"> <li>■ Topic sentence: the vehicle the writer uses to introduce the main idea and to define the limits of a paragraph.</li> <li>■ Main idea: the main point the writer is making about the topic.</li> <li>■ Supporting details: all of the other information within a paragraph that is needed to support, explain, elaborate on or prove the topic sentence.</li> <li>■ Texts: <ul style="list-style-type: none"> <li>a. First all – electronic desktop calculator</li> <li>b. The use of mathematics in everyday life</li> <li>c. Mathematicians</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ Task 2. Now, the task is different from previous task. In this task, the topics are given. Write a list of things that fit the topic.</li> <li>■ Task 3. Up to this point, have you understood what the 'topic' is? Here is the information for you. Read and study the information carefully.</li> <li>■ Task 4. After finishing the previous task, we will have another activity. Before we start, please study the following information about <b>topic sentence</b>. You have to be able to differentiate between topic and topic</li> </ul>	<p>text entitled <b>Pythagoras's Theorem Used in Real Life Experiences</b>. You may open your dictionary to find the meaning. Then, answer the questions that follow.</p>	<ul style="list-style-type: none"> <li>■ <a href="http://faculty.scf.edu/smithe/cdrom/migrant/TopicsSent.htm">http://faculty.scf.edu/smithe/cdrom/migrant/TopicsSent.htm</a></li> <li>■ <a href="http://listverse.com/2010/12/07/top-10-greatest-mathematicians/">http://listverse.com/2010/12/07/top-10-greatest-mathematicians/</a></li> <li>■ <a href="http://www.grammar.cl/Present/Simple.html">http://www.grammar.cl/Present/Simple.html</a></li> <li>■ <a href="http://tesprep.about.com/od/reading_tips/tp/Finding_Main_Ideas.htm">http://tesprep.about.com/od/reading_tips/tp/Finding_Main_Ideas.htm</a></li> <li>■ <a href="http://www.bdadyslexia.org.uk/dy">http://www.bdadyslexia.org.uk/dy</a></li> </ul>
topic sentences, and main ideas	<ul style="list-style-type: none"> <li>■ Analyzing topic of the paragraph and topic sentences</li> <li>■ Analyzing main ideas and supporting details</li> <li>■ Identifying the simple present tense</li> </ul>	<ul style="list-style-type: none"> <li>■ among topic of the paragraph, topic sentence, and main idea</li> <li>■ Students are able to find topic of the paragraph, topic sentences, and mind ideas</li> <li>■ Students are able to analyze topic of the paragraph</li> <li>■ Students are able to analyze topic sentences</li> <li>■ Students are able to analyze main ideas and supporting details</li> </ul>			

			<ul style="list-style-type: none"> <li>▪ Students are able to identify the parts of speech</li> <li>▪ Students are able to find the synonyms</li> </ul>	<p>d. Math</p> <p>e. Dyscalculia</p> <p>f. Pythagoras's theorem used in real life experiences</p> <p>• <b>The simple present tense</b> in English is used to describe an action that is regular, true or normal.</p> <p>▪ <b>Parts of speech:</b> verbs, nouns, adjectives, adverbs, pronouns, prepositions</p> <p>▪ <b>Vocabularies:</b> Diversify, ingrained, arguably, influence, worthwhile, measurement, exist, approximately</p>	<p><i>sentence. Here is the information for you.</i></p> <p>▪ <b>Task 5.</b> Read and study the words below. You will find these words in Task 6. You may open your dictionary to find the meaning.</p> <p>▪ <b>Task 6.</b> In this task, you will read two different paragraphs. In a group of 3, write the best <b>topic</b> and <b>topic sentence</b> for each paragraph. Share and discuss your answer with other groups.</p> <p>▪ <b>Task 7.</b> Refer to the text in Task 6, discuss and match the words in column A to their <b>synonyms</b> in column B below with your partner. Please do not open your dictionary.</p>		<ul style="list-style-type: none"> <li>▪ <a href="http://www.bright-hubeducation.com/home-work-math-help/36639-applications-of-pythagoras-theorem-in-real-life/">http://www.bright-hubeducation.com/home-work-math-help/36639-applications-of-pythagoras-theorem-in-real-life/</a></li> </ul>
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					<p>▪ <b>Task 8.</b> In this text you will read a text entitled <b>The Use of Mathematics in Everyday Life</b>. Choose the best topic and topic sentence for each paragraph. You may work in pairs.</p> <p>▪ <b>Task 9.</b> We have talked about topic and topic sentence. Now, you will identify <b>main idea</b> and <b>supporting details</b> of the paragraph. Please read the information below before identifying paragraphs in Task 11.</p> <p>▪ <b>Task 10.</b> Read and study the words below. You will find these words in Task 11. You may open your dictionary to identify the part of speech and to find the meaning.</p>		
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					<ul style="list-style-type: none"><li>▪ <b>Task 11.</b> <i>In this task, you will find 3 different paragraphs. Please write the main idea for each paragraph.</i></li><li>▪ <b>Task 12.</b> <i>Before doing the exercise in Task 13 and 14, study the information below about <b>the simple present tense</b>.</i></li><li>▪ <b>Task 13.</b> <i>In pairs, complete the following sentences by underlining (____) the correct form.</i></li><li>▪ <b>Task 14.</b> <i>Now, please write at least 5 sentences by using the simple present tense. You may open your dictionary.</i></li></ul>		
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					<p>▪ <b>Task 15.</b> <i>In this task, you will find 2 different texts. Work in pairs, and then identify the <b>topic sentence</b> and <b>supporting details</b> for each paragraph.</i></p>		
					<p>▪ <b>Task 16.</b> <i>Read again the text in Task 15. Please identify the simple present forms used in the text. Then, write them down to the provided space.</i></p>		
					<p>▪ <b>Task 17.</b> <i>Read and study the following words. You will find these words in Task 18.</i></p>		
					<p>▪ <b>Task 18.</b> <i>In pairs, rearrange the jumbled paragraph below by giving the number in the provided spaces. This paragraph is about 'Dyscalculia'. You may open your</i></p>		

					<ul style="list-style-type: none"><li>▪ <b>Task 19.</b> Read again the text you have arranged in Task 17. Then, answer the questions that follow.</li><li>▪ <b>Task 20.</b> Now, in a group of 3, please find any articles related to mathematics. Then, identify the topic, main idea, and supporting details for each paragraph.</li><li>▪ <b>Task 21.</b> In this task, you will read a text entitled <i>Pythagoras's Theorem Used in Real Life Experiences</i>. You may open your dictionary to find the meaning. Then, answer the questions that follow.</li></ul>		
Math is Fun	▪ Paraphrasi	▪ inferring	▪ Students are able to	▪ <b>Paraphrasing</b> is putting the ideas of	<ul style="list-style-type: none"><li>▪ <b>Task 1.</b> You will find two different words in</li></ul>	<b>Task 20.</b> You will read a text	<ul style="list-style-type: none"><li>▪ <a href="http://mathcentral.uregina.ca/beyond">http://mathcentral.uregina.ca/beyond</a></li></ul>

					<p><a href="#">d/articles/Music/music1.html</a></p> <ul style="list-style-type: none"><li>▪ <a href="http://content.eas.ybib.com/student_s/research-guide/paraphrasing-patchwriting-direct-quotes/how-to-paraphrase/">http://content.eas.ybib.com/student_s/research-guide/paraphrasing-patchwriting-direct-quotes/how-to-paraphrase/</a></li><li>▪ <a href="http://www.edufind.com/english-grammar/simple-past-tense/">http://www.edufind.com/english-grammar/simple-past-tense/</a></li><li>▪ <a href="http://www.library.dmu.ac.uk/Support/Heat/index.php?page=489">http://www.library.dmu.ac.uk/Support/Heat/index.php?page=489</a></li><li>▪ <a href="http://www.hawaii.edu/eli/online/eli72/unknownvocabulary_ch5.htm">http://www.hawaii.edu/eli/online/eli72/unknownvocabulary_ch5.htm</a></li><li>▪ <a href="https://plus.maths.org/content/geometrical-music-theory">https://plus.maths.org/content/geometrical-music-theory</a></li><li>▪ <a href="http://www.nlb.gov.sg/blogs/librarian/yesplanade/music/what-is-the-relationship-">http://www.nlb.gov.sg/blogs/librarian/yesplanade/music/what-is-the-relationship-</a></li></ul>
entitled "What is the Relationship between Classical Music and Mathematics?" Then answer the questions.					
<p><i>this task. What do you think of when you read these words? Write your ideas in the boxes below.</i></p> <ul style="list-style-type: none"><li>▪ <b>Task 2.</b> Do you like to play music? Is there any relationship between music and math? What do you think? How can you say it?</li><li>▪ <b>Task 3.</b> Below are words that you will find in Task 4. Try to find Indonesian meanings and identify the part of speech. You may open your dictionary.</li><li>▪ <b>Task 4.</b> Read and study the text below. It is about <b>Music, Math, and Pattern</b>. After that, answer the questions that follow.</li><li>▪ <b>Task 5.</b> Do you know</li></ul>					
an author into your own words. <ul style="list-style-type: none"><li>▪ The simple past tense is used to talk about a <b>completed action</b> in a time <b>before now</b>.</li><li>▪ <b>Summarizing</b> involves taking the main ideas from a piece of text and rewriting them in your own words. A summary is significantly shorter than the original text and tends to give an overview of a topic area.</li><li>▪ <b>Texts:</b><ul style="list-style-type: none"><li>a. Music, math, and patterns</li><li>b. Many thousands of Chinese are studying at schools in the United States. And writer Liel Leibovitz says the students are</li></ul></li></ul>					
paraphrase the paragraph <ul style="list-style-type: none"><li>▪ Students are able to write a summary</li><li>▪ Students are able to find antonyms</li><li>▪ Students are able to identify the simple past tense</li><li>▪ Students are able to infer unknown words</li></ul>					
unknown vocabulary <ul style="list-style-type: none"><li>▪ finding antonyms</li><li>▪ identifying the part of speech</li></ul>					
ng the paragraph writing a summary identifying the simple past tense					

				<p>following an example that began in the eighteen seventies.</p> <p>c. Geometrical music theory</p> <p>d. What is the relationship between classical music and mathematics?</p> <p>▪ <b>Parts of speech:</b> verbs, nouns, adjectives, adverbs, pronouns, prepositions</p> <p>▪ <b>Vocabularies:</b> Signify, infinitely, lengthens, arrange, represent, obvious,</p>	<p><i>how to paraphrase?</i> <i>Below is the information about paraphrasing. Read and study the information.</i></p> <p>▪ <b>Task 6.</b> <i>In pairs, try to paraphrase these following sentences.</i></p> <p>▪ <b>Task 7.</b> <i>Now, your task is to paraphrase the following main ideas. After finishing your work, you may compare your answer with other students.</i></p> <p>▪ <b>Task 8.</b> <i>Now, in a group of 3, please find a short article. You may take the article from the newspaper, magazine, or internet. Then, paraphrase each paragraph of the article.</i></p> <p>▪ <b>Task 9.</b> <i>Study the following information.</i></p>	<p><a href="#"><u>between-classical-music-and-mathematics/</u></a></p>
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					<p><i>It is about the simple past tense. Then, answer the questions that follow by underlining the correct answer.</i></p> <p>▪ <b>Task 10.</b> Below are sentences with the simple present tense forms. Then, change these sentences into simple past tense. You may work in pairs.</p> <p>▪ <b>Task 11.</b> These are the words from text in Task 4. Please find the <i>antonyms</i> for each word below. You may open your dictionary.</p> <p>▪ <b>Task 12.</b> Do you know how to summarize a paragraph? Read the information below before doing the next task.</p> <p>▪ <b>Task 13.</b> In pairs, summarize the</p>		
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					<p><i>from context.</i></p>		
					<p>▪ <b>Task 17.</b> Read and study the following text. Underline the difficult words from this text. Try to guess the meaning without open your dictionary.</p>		
					<p>▪ <b>Task 18.</b> After reading the previous text, please write the ideas that you get from the text. After that, please make a summary at least one paragraph. You may use ideas that you get to help you summarize the text.</p>		
					<p>▪ <b>Task 19.</b> You have underlined the difficult words from the text in Task 17. Please write them down into following space. Then, find the antonyms and the meaning of each</p>		

					<p><i>word.</i></p> <p>■ <b>Task 20.</b> You will read a text entitled 'What is the relationship between classical music and mathematics?' Then answer the questions.</p>		
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**APPENDIX D**

**THE DESCRIPTION OF THE DEVELOPED  
MATERIALS**

### Description of Task in Unit 1

Unit 1 – Why Do You Love Math?	
Get Ready!	
<p><b>Task 1</b></p> <p><b>Instruction</b></p> <p>Look at the pictures below. Have you ever felt the same way when you do something related to math? Thick (√) the picture that show your feeling about math subject.</p>	<p><b>Description</b></p> <p>In this task, students are asked to give a thick (√) to the provided spaces based on the pictures. The aim of this task is to activate students' schemata related to the topic of the unit.</p>
<p><b>Task 2</b></p> <p><b>Instruction</b></p> <p>Look at the pictures below. There are two pictures and lists of words in this task. Choose the best words to describe these pictures.</p>	<p><b>Description</b></p> <p>In this task, students are asked to choose the words based on the provided pictures. There are some words available to help students to describe the pictures. The purpose of this task is to help students understand further the topic which is going to be discussed.</p>
Let's Start	
<p><b>Task 3</b></p> <p><b>Instruction</b></p> <p>Have you ever done skimming for the whole text? Do you know how to use it? These are the short explanation of 'skimming'. Study the following information carefully. You will do skimming for the whole text in Task 4.</p>	<p><b>Description</b></p> <p>In this task, students are asked to learn one of the micro-skills which is going to be discussed. This task aims to help students understand the topic before they do some activities.</p>

<p><b>Task 4</b></p> <p><b>Instruction</b></p> <p>Read the following text entitled ‘What is Mathematics?’. Please use skimming techniques that you have learned before. Then, write the ideas that you get in the provided spaces.</p>	<p><b>Description</b></p> <p>In this task, the students are asked to read a text by using skimming techniques. The aim of this task is to help students get the idea of the text by using skimming techniques. There are some spaces to write down the idea they get.</p>
<p><b>Task 5</b></p> <p><b>Instruction</b></p> <p>Read again the text in Task 4. Then answer the following questions.</p>	<p><b>Description</b></p> <p>In this task, students are asked to answer some question related to the text from the previous task. The aim of this task is to see the understanding of the students in getting the information from the text.</p>
<p><b>Task 6</b></p> <p><b>Instruction</b></p> <p>Study the information below. This is the tips for you to do skimming effectively.</p>	<p><b>Description</b></p> <p>In this task, students are given some tips related to skimming techniques. The aim of this task is to give some information for students how to do skimming effectively.</p>

<p><b>Task 7</b></p> <p><b>Instruction</b></p> <p>Study the following words. You will find these words in Task 8.</p>	<p><b>Description</b></p> <p>In this task, students are given some words which are going to be found in the text on the next task. The purpose of this task is to help students get familiar with the words in the text they are going to read. There are also the information related to the pronunciation, the parts of speech, and the meaning.</p>
<p><b>Task 8</b></p> <p><b>Instruction</b></p> <p>The following text is a book review of The Man Who Loved Only Numbers: The Story of Paul Erdos and the Search for Mathematical Truth. Work as quickly as you can.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read a book review. The aim of this task is to help students in doing skimming techniques.</p>
<p><b>Task 9</b></p> <p><b>Instruction</b></p> <p>Read again the previous text. Then, answer the following questions. Compare your answers with other students.</p>	<p><b>Description</b></p> <p>In this task, students are asked to answer some questions related to the text in task 8. The purpose is to see the understanding of the students in getting the information of the text.</p>
<p><b>Grammar in Focus</b></p>	



<p><b>Task 10</b></p> <p><b>Instruction</b></p> <p>Study the following information about pronouns.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read the information about pronouns. The purpose of this task is to help students in understanding the English structure related to pronouns.</p>
<p><b>Task 11</b></p> <p><b>Instruction</b></p> <p>Study the following words. You will find these words in task 12.</p>	<p><b>Description</b></p> <p>In this task, students are given some words which are going to be found in the text on the next task. The purpose of this task is to help students get familiar with the words in the text they are going to read. There are also the information related to the pronunciation, the parts of speech, and the meaning.</p>
<p><b>Task 12</b></p> <p><b>Instruction</b></p> <p>The following text tells you the reason why the writer loves math so much. Read it carefully.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read a text. This task aims to give students a chance in finding some pronouns and getting the information of the text.</p>

<p><b>Task 13</b></p> <p><b>Instruction</b></p> <p>In a group of 3, please find pronouns from text in Task 8. Write down the pronouns and also the references. Find as many as you can.</p>	<p><b>Description</b></p> <p>In this task, students are asked to work in a group. Every group has to analyze the pronouns from the text in task 12. The purpose of this task is to give a chance for students to apply they current knowledge related to pronouns.</p>
<p><b>Task 14</b></p> <p><b>Instruction</b></p> <p>Based on the text in Task 12, answer the following questions. Check your answer with another student.</p>	<p><b>Description</b></p> <p>In this task, students are asked to answer some questions related to the text in task 12. The aim of this task is to see the understanding of the students in getting the information of the text.</p>
<p><b>Task 15</b></p> <p><b>Instruction</b></p> <p>Study the following information about the part of speech.</p>	<p><b>Description</b></p> <p>In this task, students are asked to learn the information about the parts of speech. The purpose of this task is to guide students before doing the next task.</p>

<p><b>Task 16</b></p> <p><b>Instruction</b></p> <p>Identify the part of speech and find the meaning of the words below. You will find these words in Task 18.</p>	<p><b>Description</b></p> <p>This task is continued from the previous task. In this task, students are asked to identify the parts of speech of some words. They are also asked to find the Indonesia meaning. These words will be used in task 18. The purpose of this task is to give a chance to students in analyzing the parts of speech.</p>
<p><b>Task 17</b></p> <p><b>Instruction</b></p> <p>You have learnt skimming for the whole text. Now, you will learn ‘scanning for details’. Study the information below.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read the information of skimming. The aim of this task is to guide students before doing some tasks related to skimming.</p>
<p><b>Task 18</b></p> <p><b>Instruction</b></p> <p>Read the following text about ‘why do we need to learn math?’. How many nouns did you find? Underline them.</p>	<p><b>Description</b></p> <p>In this task, the students are asked to read a text by using scanning techniques. Besides, they are also asked to analyze the nouns from the text.</p> <p>The aim of this study is to give a chance to students in doing skimming and analyzing the part of speech.</p>

<p><b>Task 19</b></p> <p><b>Instruction</b></p> <p>The following information will discuss about noun. Please read the information carefully.</p>	<p><b>Description</b></p> <p>In this task, students will get some information about noun.</p>
<p><b>Task 20</b></p> <p><b>Instruction</b></p> <p>In this task, you will find some statements. Please decide whether the statements below are true (√) or false (X).</p>	<p><b>Description</b></p> <p>In this task, students are asked to answer the true false questions. The aim of this task is to see the understanding of the students in gaining the information through scanning techniques.</p>
<p><b>Task 21</b></p> <p><b>Instruction</b></p> <p>The information below is about how to do scanning effectively. Read the information carefully.</p>	<p><b>Description</b></p> <p>In this task, students are given some tips in doing scanning. The purpose is to give them the information how to do scanning effectively.</p>
<p><b>Task 22</b></p> <p><b>Instruction</b></p> <p>Read the words in the following table. Then, analyze their parts of speech by matching the words in the right and left column with appropriate part of speech.</p>	<p><b>Description</b></p> <p>In this task, students are asked to match the word by its part of speech. The aim of this task is to give students a chance in analyzing the parts of speech.</p>
<p><b>Let's Evaluate</b></p>	

<p><b>Task 23</b></p> <p><b>Instruction</b></p> <p>In this final task, you will read a text entitled “Mathematics is a Game of Life”. Then, answer the questions that follow. You may open your dictionary.</p>	<p><b>Description</b></p> <p>This is the final task of this unit. In this task, students are asked to read a text. Then, they have to answer some questions. The aim of this task is to review the materials they have learnt before.</p>
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### Description of Task in Unit 2

Math and Our Real Life	
Get Ready!	
<p><b>Task 1</b></p> <p><b>Instruction</b></p> <p>Let us try to classify the <b>topic</b> for each number below by matching the words in the left side with the best topic in the right side.</p>	<p><b>Description</b></p> <p>In this task, students are asked to match the clue words with some mathematics terms. This task aims to guide students to the topic they are going to learn.</p>
<p><b>Task 2</b></p> <p><b>Instruction</b></p> <p>Now, the task is different from previous task. In this task, the <b>topics</b> are <b>given</b>. Write a list of things that fit the topic.</p>	<p><b>Description</b></p> <p>In this task, students are asked to write some words related to the mathematics terms. This task also aims to activate students’ schemata before doing the next task</p>
Let’s Start	

<p><b>Task 3</b></p> <p><b>Instruction</b></p> <p>Up to this point, have you understood what the ‘<b>topic</b>’ is? Here is the information for you. Read and study the information carefully.</p>	<p><b>Description</b></p> <p>This task is asked students to read the information related the topic they are going to learn. The aim of this task is to guide students to the topic they are going to learn.</p>
<p><b>Task 4</b></p> <p><b>Instruction</b></p> <p>After finishing the previous task, we will have another activity. Before we start, please study the following information about <b>topic sentence</b>. You have to be able to differentiate between <b>topic</b> and <b>topic sentence</b>. Here is the information for you.</p>	<p><b>Description</b></p> <p>This task aims to help students in understanding the topic and topic sentence. The purpose is to enrich students’ information before they do the next task.</p>
<p><b>Task 5</b></p> <p><b>Instruction</b></p> <p>Read and study the words below. You will find these words in Task 6. You may open your dictionary to find the meaning.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read some words find the meaning. The aim of this task is to enrich students’ vocabularies before they read a text in task 6.</p>

<p><b>Task 6</b></p> <p><b>Instruction</b></p> <p>In this task, you will read a text consists of two paragraphs. In a group of 3, write the best <b>topic</b> and <b>topic sentence</b> for each paragraph. Share and discuss your answer with another group.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read some paragraphs. Then, they have to find the topic and topic sentence for each paragraph. The aim of this task is to give a chance to students to practice in finding the topic and topic sentence.</p>
<p><b>Task 7</b></p> <p><b>Instruction</b></p> <p>Refer to the text in Task 6, discuss and match the words in column A to their <b>synonyms</b> in column B below with your partner. Please do not open your dictionary.</p>	<p><b>Description</b></p> <p>In this task, students are asked to match the words in column A and column B. The words are provided. The aim of this task is to give students a chance to practice in finding synonyms.</p>
<p><b>Task 8</b></p> <p><b>Instruction</b></p> <p>In this text you will read a text entitled <b>The Use of Mathematics in Everyday Life</b>. Choose the best <b>topic</b> and <b>topic sentence</b> for each paragraph. You may work in pairs.</p>	<p><b>Description</b></p> <p>In this task, there are six paragraph with different topic. Students are asked to identify the topic and topic sentence. The purpose is to give students a chance in finding the topic and topic sentence from the text.</p>

<p><b>Task 9</b></p> <p><b>Instruction</b></p> <p>We have talked about topic and topic sentence. Now, you will identify <b>main idea</b> and <b>supporting details</b> of the paragraph. Please read the information below before identifying paragraphs in Task 11.</p>	<p><b>Description</b></p> <p>In this task, students are given some information related to main idea and supporting details of the text. The purpose of this study is to give the information for students before doing the next task.</p>
<p><b>Task 10</b></p> <p><b>Instruction</b></p> <p>Read and study the words below. You will find these words in Task 11. You may open your dictionary to identify the part of speech find the meaning.</p>	<p><b>Description</b></p> <p>In this task, students are asked to identify the parts of speech of some words. They are also asked to find the Indonesia meaning. These words will be used in task 18. The purpose of this task is to give a chance to students in analyzing the parts of speech.</p>
<p><b>Task 11</b></p> <p><b>Instruction</b></p> <p>In this task, you will find 3 different paragraphs. Please choose the main idea for each paragraph.</p>	<p><b>Description</b></p> <p>In this task, students are given 3 different paragraphs. They are asked to find the mind idea of each paragraph. the purpose of this task is to give students a chance in finding the main idea from the text.</p>
<p><b>Grammar in Focus</b></p>	



<p><b>Task 12</b></p> <p><b>Instruction</b></p> <p>Before doing the exercise in Task 13 and 14, study the information below about <b>the simple present tense</b>.</p>	<p><b>Description</b></p> <p>In this task, students are given the information about the simple present tense. The aim of this task is to guide students before they do the task related to the simple present tense.</p>
<p><b>Task 13</b></p> <p><b>Instruction</b></p> <p>In pairs, complete the following sentences by underlining (____) the correct form.</p>	<p><b>Description</b></p> <p>In this task, students are asked to work in pairs. They have to complete the provided sentences by using the simple present tense. The options are available. The aim of this task is give students a chance to analyze the simple present tense with their partner.</p>
<p><b>Task 14</b></p> <p><b>Instruction</b></p> <p>Now, please write at least 5 sentences by using the simple present tense. You may open your dictionary.</p>	<p><b>Description</b></p> <p>In this task, students are asked to write their own sentences by using the simple present tense. The aim of this task is to give students a chance in making the sentences by using their own words.</p>

<p><b>Task 15</b></p> <p><b>Instruction</b></p> <p>In this task, you will find 2 different texts. Work in pairs, then identify the <b>topic sentence</b> and <b>supporting details</b> for each paragraph.</p>	<p><b>Description</b></p> <p>In this task, students are asked to identify the topic sentence and supporting details from two different paragraphs. The purpose is to give students a chance in identifying the topic sentence and supporting details of the text.</p>
<p><b>Task 16</b></p> <p><b>Instruction</b></p> <p>Read again the text in Task 15. Please identify the simple present forms used in the text. Then, write them down to the provided space.</p>	<p><b>Description</b></p> <p>This task is related to the previous task. The students are asked to identify the simple present forms of the text in task 15. The purpose is to give students a chance in identifying the simple present forms from the text.</p>
<p><b>Task 17</b></p> <p><b>Instruction</b></p> <p>Read and study the following words. You will find these words in Task 18.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read some words. The aim of this task is to enrich students' vocabularies before they read a text in task 18.</p>

<p><b>Task 18</b></p> <p><b>Instruction</b></p> <p>In pairs, rearrange the jumbled paragraph below by giving the number in the provided spaces. This paragraph is about ‘Dyscalculia’. You may open your dictionary to find the meaning.</p>	<p><b>Description</b></p> <p>In this task, students are asked to rearrange the jumbled paragraph in pairs. The aim of this task is to give students a chance in analyzing the text by choosing the main idea, the topic sentence, and the supporting details.</p>
<p><b>Task 19</b></p> <p><b>Instruction</b></p> <p>Read again the text you have arranged in Task 18. Then, answer the questions that follow.</p>	<p><b>Description</b></p> <p>In this task, students are asked to answer some questions after finishing rearrange the jumbled paragraph. the aim of this task is to check students in understanding the text.</p>
<p><b>Task 20</b></p> <p><b>Instruction</b></p> <p>Now, in a group of 3, please find any articles related to mathematics. Then, identify the topic, main idea, and supporting details for each paragraph.</p>	<p><b>Description</b></p> <p>In this task, students are asked to work in a group of 3. They are asked to find any articles related to mathematics. The aim of this task is to give students a chance in developing their team work and also choosing their interested topic related to mathematics.</p>
<p><b>Let's Evaluate</b></p>	

<b>Task 21</b> <b>Instruction</b> In this task, you will read a text entitled <b>Pythagoras's Theorem Used in Real Life Experiences</b> . You may open your dictionary to find the meaning. Then, answer the questions that follow.	<b>Description</b> The purpose of this task is to review what students have learnt. In this task, students are asked to read a text and answer the questions that follow.
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### Description of Task in Unit 3

<b>Math is Fun</b>	
<b>Get Ready!</b>	
<b>Task 1</b> <b>Instruction</b> You will find two different words in this task. What do you think of when you read these words? Write your ideas in the boxes below.	<b>Description</b> In this task, students are asked to write some words related to the words 'music' and 'math'. The aim of this task is to activate students' schemata to the topic they are going to learn.
<b>Task 2</b> <b>Instruction</b> Do you like to play music? Is there any relationship between music and math? What do you think? How can you say it?	<b>Description</b> In this task, students are asked to connect between music and math. The purpose is to guide students to the next task.
<b>Let's Start</b>	

<p><b>Task 3</b></p> <p><b>Instruction</b></p> <p>Below are words that you will find in Task 4. Try to find Indonesian meanings and identify the part of speech. You may open your dictionary.</p>	<p><b>Description</b></p> <p>In this task, students are given the words which are going to find in task 4. They are also asked to identify the parts of speech and the meaning of each word. The purpose is to enrich students' vocabulary and review the parts of speech they have learnt before.</p>
<p><b>Task 4</b></p> <p><b>Instruction</b></p> <p>Read and study the text below. It is about <b>Music, Math, and Pattern</b>. After that, answer the questions that follow.</p>	<p><b>Description</b></p> <p>This task asks students to read a text and answer the questions that follow. The aim of this task is to give students a chance in getting the information from the text.</p>
<p><b>Task 5</b></p> <p><b>Instruction</b></p> <p>Do you know how to paraphrase? Below is the information about paraphrasing. Read and study the information.</p>	<p><b>Description</b></p> <p>In this task, students are given the information about paraphrasing. It aims to give students some information before they do paraphrase on the next task.</p>
<p><b>Task 6</b></p> <p><b>Instruction</b></p> <p>In pairs, try to paraphrase these following sentences.</p>	<p><b>Description</b></p> <p>There are 5 numbers in this task. Students are asked to paraphrase the sentences of each number. The purpose is to give students a chance to practice paraphrasing sentence.</p>

<p><b>Task 7</b></p> <p><b>Instruction</b></p> <p>Now, your task is to paraphrase the following main ideas. After finishing your work, you may compare your answers with other students.</p>	<p><b>Description</b></p> <p>In this task, students are asked to paraphrase the main idea. There 5 main ideas in this task. The aim of this task is to give students a chance to practice paraphrasing sentences.</p>
<p><b>Task 8</b></p> <p><b>Instruction</b></p> <p>Now, in a group of 3, please find a short article. You may take the article from the newspaper, magazine, or internet. Then, paraphrase each paragraph from the article.</p>	<p><b>Description</b></p> <p>In this task, students are asked to work in a group of three. Then, they have to find a short article and paraphrase each paragraph from it. The aim of this task is to give students a chance work as a team and decide their own preference article.</p>
<p><b>Grammar in Focus</b></p>	
<p><b>Task 9</b></p> <p><b>Instruction</b></p> <p>Study the following information. It is about the simple past tense. Then, answer the questions that follow by underlining the correct answer.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read the information about the simple past tense. Then, they have to answer the questions that follow. The purpose is to help students understand about the function and the use of simple past tense.</p>

<p><b>Task 10</b></p> <p><b>Instruction</b></p> <p>Below are sentences with the simple present tense forms. Then, change these sentences into simple past tense. You may work in pairs.</p>	<p><b>Description</b></p> <p>In this task, students are asked to change the simple present forms into simple past tense. The aim of this task is to give students a chance in identifying the present and simple past tense.</p>
<p><b>Task 11</b></p> <p><b>Instruction</b></p> <p>These are the words from text in Task 4. Please find the <b>antonyms</b> for each word below. You may open your dictionary.</p>	<p><b>Description</b></p> <p>In this task, students are asked to find antonyms of the provided words.</p>
<p><b>Task 12</b></p> <p><b>Instruction</b></p> <p>Do you know how to summarize a paragraph? Read the information below before doing the next task.</p>	<p><b>Description</b></p> <p>In this task, students are given the information about summarizing paragraph. The purpose is to help students in gaining information before they do the next task.</p>
<p><b>Task 13</b></p> <p><b>Instruction</b></p> <p>In pairs, summarize the following paragraph taken from VOA website. You may open your dictionary to find the meaning.</p>	<p><b>Description</b></p> <p>Students are asked to work in pairs and summarize the paragraph. the purpose is to give students a chance to practice summarizing while discussing with their partner.</p>

<p><b>Task 14</b></p> <p><b>Instruction</b></p> <p>Now, your task is to summarize the text in Task 4. You can work in a group of 3. Then, compare your work with another group.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read again the text in task 4 and summarize for each paragraph. The aim of this task is to give students a chance to work in a group and guide them to practice summarizing.</p>
<p><b>Task 15</b></p> <p><b>Instruction</b></p> <p>In a group of 3, please find an article from newspaper, magazine, or internet. Then, summarize the article. Use the step like in the Task 14. Do not forget to write the source of the article.</p>	<p><b>Description</b></p> <p>Still in group, each group has to find an article. Then, they have to summarize for each paragraph of the article. The aim of this task is to let students choose their preference topic while practicing to summarize a text.</p>
<p><b>Task 16</b></p> <p><b>Instruction</b></p> <p>Read and study the following information. It is about ‘<b>inferring unknown vocabulary</b>’ or inferring words from context.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read the information related to ‘inferring unknown vocabulary’. The aim of this task is to guide students before they do the next task.</p>



<p><b>Task 17</b></p> <p><b>Instruction</b></p> <p>Read and study the following text. Underline the difficult words from this text. Try to guess the meaning without open your dictionary.</p>	<p><b>Description</b></p> <p>In this task, students are asked to read a text and find the difficult words. They have to find the meaning of the difficult words without open their dictionary. The purpose is to let them practice to infer unknown vocabulary and guess the meaning through context.</p>
<p><b>Task 18</b></p> <p><b>Instruction</b></p> <p>After reading the previous text, please write the ideas that you get from the text. After that, please make a summary at least one paragraph. You may use ideas that you get to help you summarize the text.</p>	<p><b>Description</b></p> <p>In this task, students are asked to write ideas they have got after reading the text in task 17. The purpose is to give students a chance in finding the idea of the text.</p>
<p><b>Task 19</b></p> <p><b>Instruction</b></p> <p>You have underlined the difficult words from the text in Task 17. Please write them down into following space. Then, find the antonyms and the meaning of each word.</p>	<p><b>Description</b></p> <p>In this task, students are asked to write the difficult words they found in task 17. Then, they have to find the meaning and the antonym of each word. The aim is to let them practice to use their dictionary and find the meaning or the meaning by themselves.</p>
<p><b>Let's Evaluate</b></p>	

<p><b>Task 20</b></p> <p><b>Instruction</b></p> <p>You will read a text entitled “<b>What is the relationship between classical music and mathematics?</b>” Then answer the questions.</p>	<p><b>Description</b></p> <p>The purpose of this task is to review what students have learnt. In this task, students are asked to read a text and answer the questions that follow.</p>
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## **APPENDIX E**

### **THE FIRST DRAFT OF THE MATERIALS**





- 2015

# WHY DO YOU LOVE MATH?

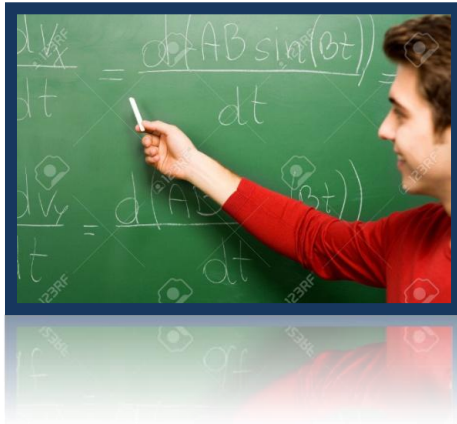


In this chapter, you will learn:

- a. Skimming for the whole text
- b. Scanning for details
- c. Finding implicit meanings from text
- d. Identifying pronouns and finding their referent

# Get Ready!

- **Task 1.** Look at the pictures below. Have you ever felt the same way when you do something related to math? Thick (✓) the picture that show your feeling about math subject.



I love math. Math is a fun  
about math is a piece



I hate math. It is a complicated  
with math formulas. It is not  
there

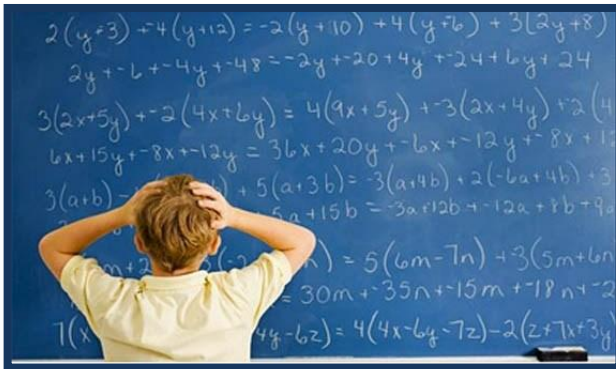


## Math Symbols

+	plus/ p	≠	is not equal
−	minus/ r	<	is less
×	multiplied	>	is greater
÷	divide	≤	is less than or equal to
=	equal	≥	is greater than or equal to

- **Task 2. Look at the pictures below. There are two pictures and lists of words in this task. Choose the best words to describe these pictures.**

easy	hard	fun subject	complicated	a game	logic
rational	irrational	useful	boring		



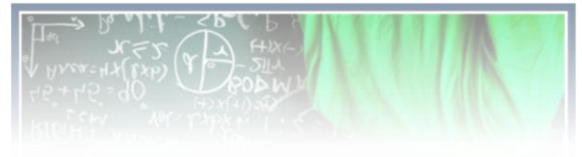
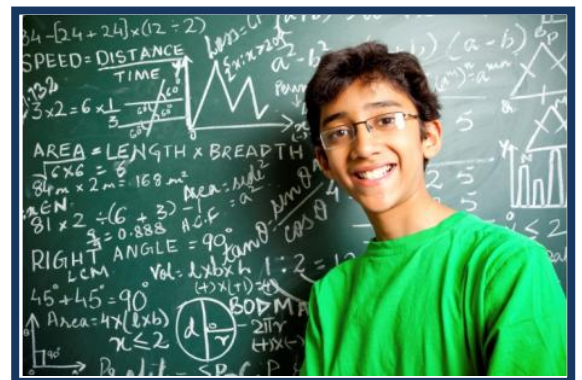
Related to this picture:

.....  
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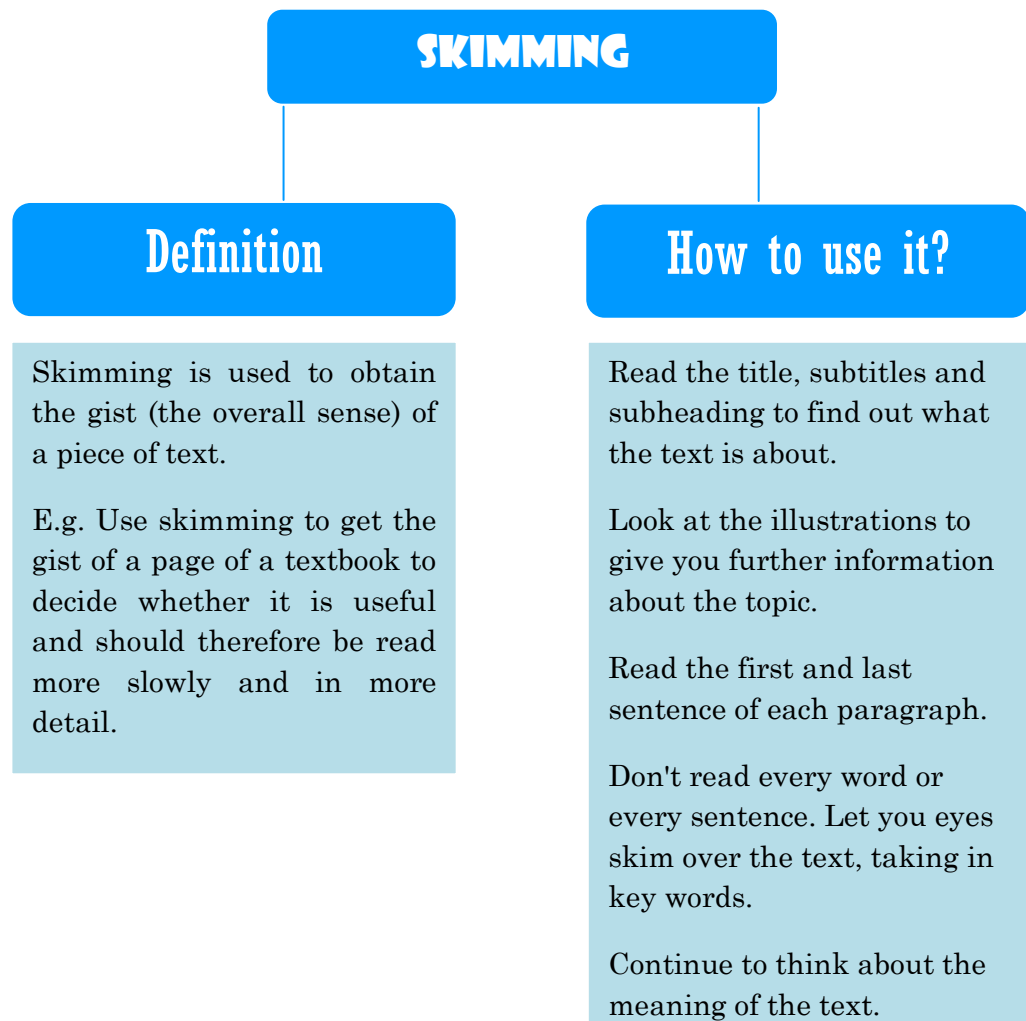
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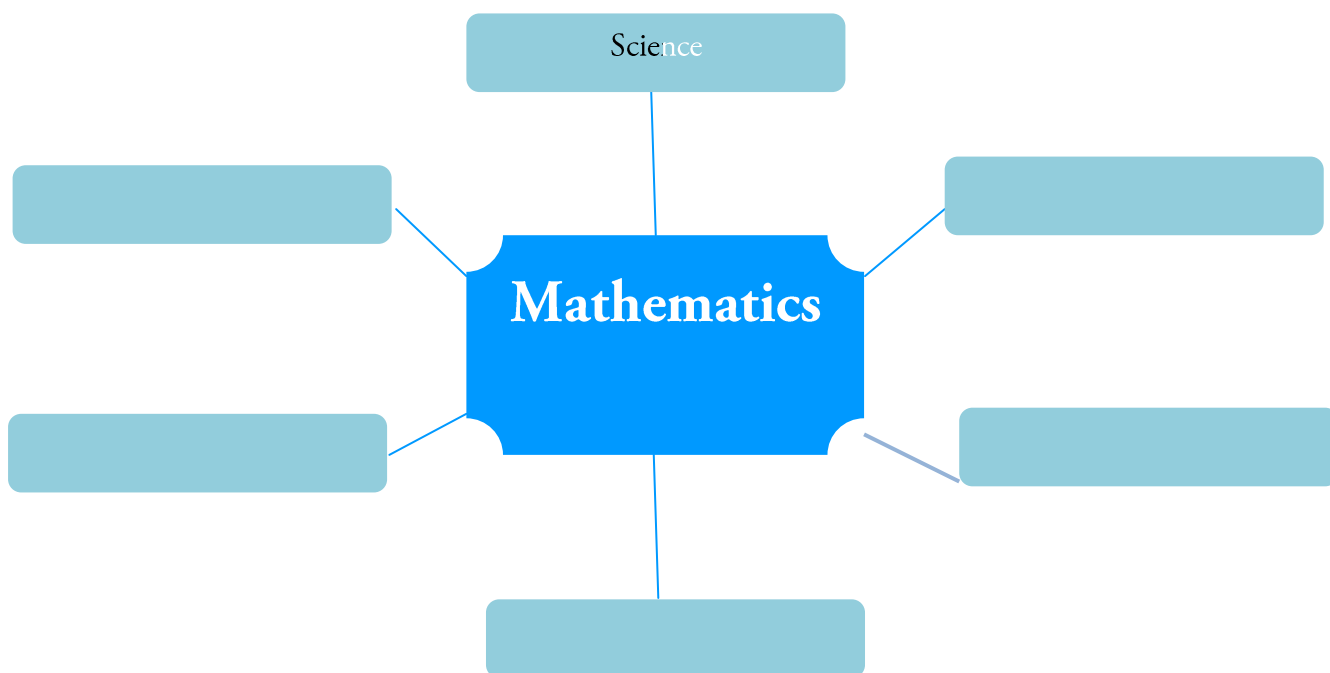
- **Task 3.** Have you ever done skimming for the whole text? Do you know how to use it? These are the short explanation of 'skimming'. Study the following information carefully. You will do skimming for the whole text in Task 4.



Source: <http://readingstrategies.com>



**Write down your ideas into following spaces.**



**Task 5. Read again the text in Task 4. Then answer the following questions.**

1. What is the topic sentence?  
.....
2. What is the topic sentence?  
Mathematics is the science of shape, quantity and measurement.  
It is all around us, in everything we do. It is the basis of many things,  
including mobile devices, architecture (ancient and modern), and sports.  
.....  
.....
3. Do you agree that mathematics is a key to understanding the world?  
.....  
.....
4. Do you love mathematics? Is it an interesting subject?  
.....  
.....
5. Are the statements true or false?  
Mathematics is related to science.  
Mathematics is not used in our daily life.

● **Task 6. Study the information below. This is the tips for you to do skimming effectively.**

**Guidelines for Effective Skimming**

Read the title.

Read the introduction or the first paragraph.

Read the first sentence of every other paragraph.

Read any headings and sub-headings.

Always work as fast as you can.

Always keep in mind your reason for skimming.

Be flexible when you are skimming. How much you skim in a passage depends on your purpose and on the passage.

● **Task 7. Study the following words. You will find these words in Task 8.**

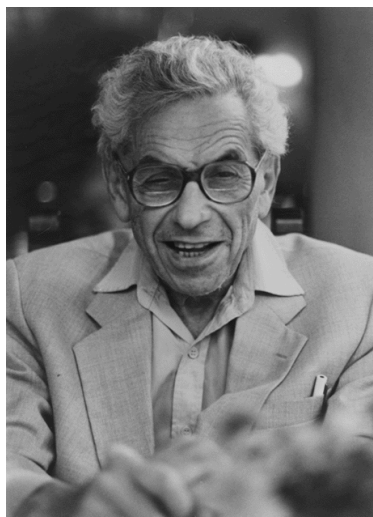
No	Words	Pronunciation	Part of Speech	Meaning
1	companionship	/kəm'pæniʃp/	noun	Persahabatan
2	address	/ˈædres/	noun	keane
3	warmth	/wɜ:mθ/	noun	kehangat
4	declare	/ˌkleɪr/	verb	menyatakan
5	fuel	/fjuel/	verb	didor
6	arguably	/ˈɑ:gjuəbl/	adverb	dapat dibilang, c
7	constantly	/ˈkɒnsənt/	adverb	terti – mence
8	prolific	/prə'lifɪk/	adjective	produktif
9	strange	/streɪndʒ/	adjective	Anak
10	obsessed	/əb'sesəd/	adjective	Terol
11	indispensable	/ɪndɪ'spensəbəl/	adjective	sangat di
12	marvelous	/ˈmɑ:vələs/	adjective	menakutkan

13	vivid	/'vɪvɪd.	adjective	ˈjel:
14	extraordinary	/ɪk'stɔ:d(ə)n(ə)rɪ	adjective	ˈluːər t

- **Task 8. The following text is a book review of *The Man Who Loved Only Numbers: The Story of Paul Erdos and the Search for Mathematical Truth*. Work as quickly as you can.**

## The Man Who Loved Story of Paul Erdos Mathematici

By: Paul .

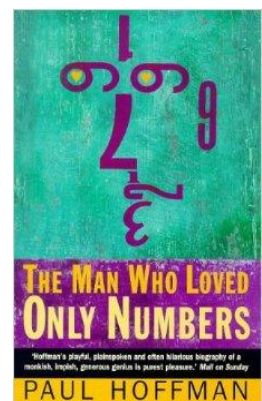


The biography of a mathematic most prolific pure mathematician; strangest too. 'A mathematical ; Erdos was totally obsessed wrote mathematics for nineteen travelled constantly, living interest in food, sex, indispe to a human life. in this marvellous biogr and strangely moving p creature, one that bring

- he thoug

had

- all that is



genius and his oddness, but his warmth strange life.' Oliver Sacks For six decades wife, no home; he nev laundry, drive a virgin. Instead he travelled the world w doorstep of este icians declaring 'My travelled until his death at 83, racing across fr possible, fuelled by a diet of espresso and amphe or -written, a d; of 19 hours of mathematics was one of the most extraord

Paul E

<http://www.amazon.com/exec/obidos/ASIN/1857028295/antoniocangia-20/ref=nosim/>

**Task 9. Read again the previous text. Then, answer the following questions. Compare your answers with another student.**

---

1 Does this seem like a good book to

.....

.....

.....

2 Is this a good book if you are a r

.....

.....

.....

3 Did the reviewer think thi

.....

.....

.....

4. Is this a good book to students of mat

.....

.....

.....

5. Would you like to read thi

.....

.....

.....

## Grammar in Focus

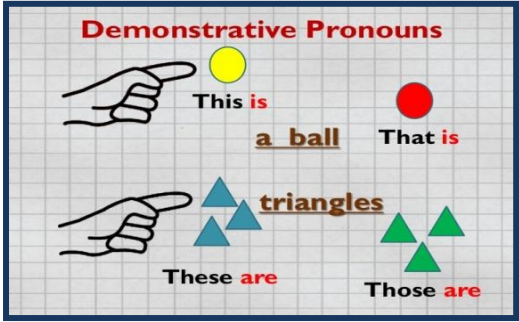
### ● Task 10. Study the following information about pronouns.

A pronoun (I, me, he, she, herself, you, it, that, they, each, few, many, who, whoever, whose, someone, everybody, etc.) is a word that takes the place of a noun.

Subject P	Obj Pronc	Posse: Pronc	Refle: Pronc	Posse: Adjec
I	Me	Mine	Myself	My
You (sing)	You	Yours	Yourself	Yours
He	Him	His	Himself	His
She	Her	Her	Herself	Her
It	It	-	Itself	Its
We	Us	Ours	Ourselves	Ours
You (pl)	You	Yours	Yourselves	Yours
They	The	The	Them	The

Indefinite		
Sing	Plu	Singular c
Anyo	Bo	All
Anyb	Fe	An
Anyo	Ma	Mo
Anytl	Oth	Mc
Each	Seve	No
Each		Sor
Every		Suc
Every		
Everyo		
Little		
Much		
Neither		
None		
No one		
Nothing		
Or		
Other		
Someb		
Someo		
Somet		

Relative P	
Who	Used for
Which	Used for
That	Used for people things





● **Task 11. Study the following words. You will find these words in Task 12.**

No	Words	Pronunciation	Part of Speech	Meaning
1	napkin	/ˈnɑːpɪn/	noun	seret
2	fridge	/ˈfrɪdʒ/	noun	kull
3	approach	/əˈprɔːtʃ/	noun	pende
4	insight	/ˈɪnːsaɪt/	noun	wawə
5	realize	/ˈriəlɪz/	noun	meny
6	neatness	/ˈniːtnəs/	noun	keraf
7	scratch	/skɹætʃ/	verb	mengg
8	shrug	/ʃrʌɡ/	verb	mengangl
9	limitless	/ˈlɪmɪtləs/	adjective	tak ter
10	strict	/stɹɪkt/	adjective	ket
11	glorious	/ˈɡlɔːriəs/	adjective	mulia, agur

● **Task 12. The following text tells you the reason why the writer loves math so much. Read it carefully.**

### WHY DO YOU LOVE

It's a really hard question to answer – if you asked someone why they'd probably shrug their shoulders. But I love math because it's so creative and there are loads of things to learn about it – on one hand, it's completely limitless and at the same time very strict. It's like having a huge set of tools you can use to solve any problem. I love that you can do it anywhere, on restaurant napkins, on someone's left on the train, on envelopes, even (using fridge magnets).

I love battling against a puzzle until I find a solution, getting completely lost in different approaches, finding clues, putting them right, scratching my head, getting a flash of insight, realizing I'm making it too close to the solution.

But above all, I love the moment – when a puzzle finally drops into place, or you spot a pattern you've seen before, and it all ties together like a detective novel...

It's glorious. And there's always another puzzle waiting.

<http://www.flyingcoloursmaths.co.uk/student-asks-love-maths-much/>

**Task 13. In a group of 3, please find pronouns from text in Task 8. Write down the pronouns and also the referents. Find as many as you can.**

No	Pron	Line	Refer
1	It	Line 1	Refers to maths
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Task 14. Based on the text in Task 12, answer the following questions. Check your answer with your partner.**

1 Do you understand the pair?

.....

.....

.....

.....

2 Why does the writer love

.....

.....

.....

3 The word 'i' <sup>th</sup> line ref

.....

4 Are these statements

- a Mathematics cannot be taught.
- b The writer loves mathematics.
- c You can find mathematics everywhere.

5 Do you agree that mathematics is easier than science?

```

.....
.....
.....

```

● **Task 15. Study the following information about the part of speech.**

## PART OF SPEECH

It is a group of words in a language that may occur in similar positions or fulfill similar functions in a sentence. The chief parts of speech in English are noun, pronoun, adjective, determiner, adverb, verb, preposition, conjunction, and interjection.

<http://dictionary.reference.com/browse/part+of+speech>

<http://dictionary.reference.com/browse/part+of+speech>

These little words you are articulating determine a lot, and then

A **not** is the name of a **not** gate.      ►► A **sch** is the name of a **sch** gate, **ho** is the name of a **ho** gate.

**Adjec** tell the kind      ►► A: gre sm: pret wh: ,  
o: brov .

Instead of n                      pronc                      stand                      ►►  
He hea hi fac voi arr m' han

**Ver** tell of something      -- ►► To read something  
 jun o ru .

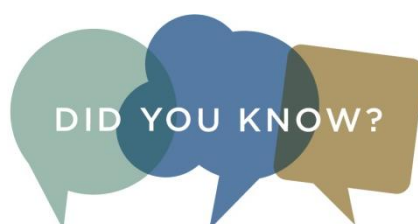
How things a **adve** tel ►► A slow quic il, c we .

**Conjun** join the wo -- ►► As i an wom  
wif o) weat

The prepos stands before the verb as in other languages

- **Task 16. Identify the part of speech and find the meaning of the words below. You will find these words in Task 18.**

No	Words	Pronunciation	Part of Speech	Meaning
1	require	/ɪr'kʌ ɹɪə/		
2	provide	/p ə'vʌɪd/		
3	see	/sē		
4	knowledge	/'nɒlɪdʒ/		
5	firsthand	/'fɜːsɪ'hæn		
6	biomedical engineering	/t̪ ɹɪə(ʊ)'mɛdɪk(ə)l, /ɛnɔ ʒɪ'niərɪŋ/		
7	food technology	/fɪ :d/ ɛk'nɒlədʒi/		
8	building technology	/'bɪlɔ ŋ/ ɛk'nɒlədʒi/		
9	chemical science	/'kɛmɪk(ə)l/ 'saɪəns		
10	civil and structural engineering	/'sɪv(ə)l/ ənd /'st ʌkɪf(ə)r ə)l, /ɛnɔ ʒɪ'niərɪŋ/		
11	prosthetic	/p ɒs'θetɪk/		
12	survey	/sə'veɪ/		
13	various	/'vɛːrɪəs/		
14	occupation	/ɒk ʊ'pɔɪʃ(ə)n		



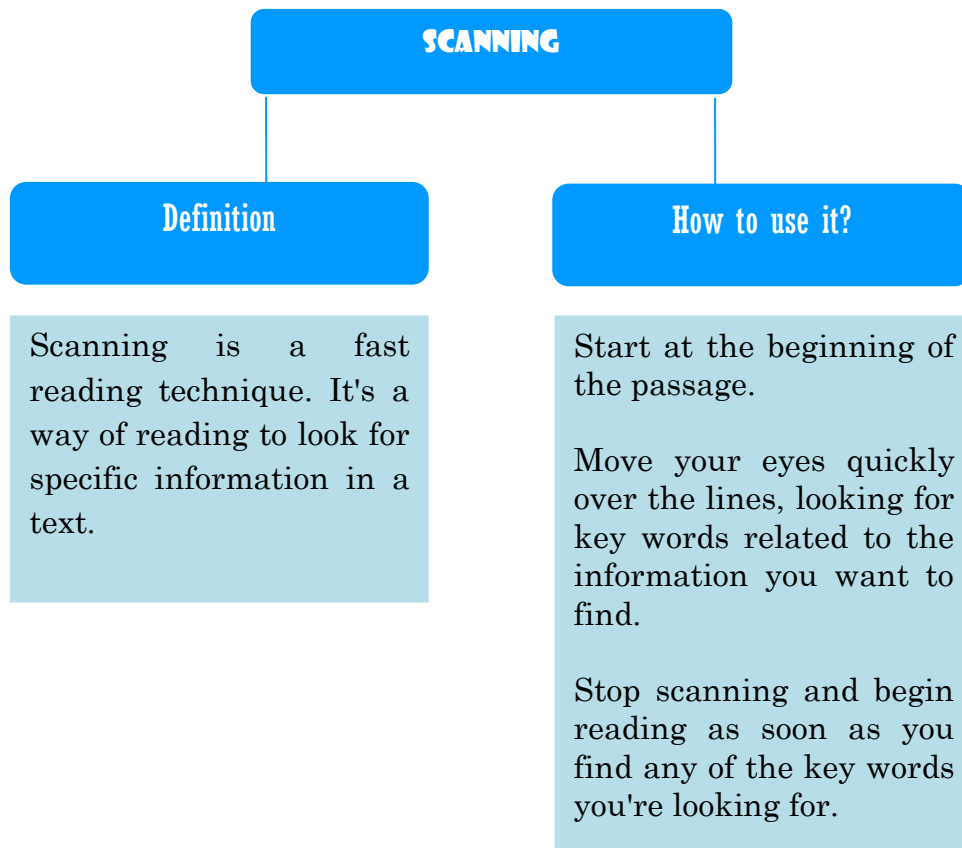
Mathematician Paul Erdos could **calculate** in his head, given a person's age, how many **seconds** they had lived, when he was just **4 years** old.

<http://www.factslides.com/s-Math>

Isaac Newton's Principia Mathematica contained a simple calculation error **that went unnoticed for 300 years**

<http://www.factslides.com/s-Math>

- **Task 17. You have learnt skimming for the whole text. Now, you will learn 'scanning for details'. Study the information below.**



- **Task 18. Read the following text about 'why do we need to learn math?'. How many nouns did you find? Underline them.**

Why do we need

There are actually thousands of jobs that require some knowledge  
 are more than 30 first-year students who are Mathematicians, telling what's  
 math majors are doing, from an Air Force pilot to a Lawyer  
 Capture Facility Troubleshooter

Exactly How Is Math Used? , from the Mathematics Department  
 Columbia Institute of Technology provides examples of math use  
 food technology, building technology, chemical  
 graphics and computer-aided drawing (CAD), electronics,  
 engineering, mining technology, nuclear medicine, occupa  
 prosthetics, forestry and wildlife, robotics

Examining How Mathematics is Used in the Workplace, by Annie and John Selden for the Mathematical Association of America's Teaching and Learning Research Sampler, provides abstracts of studies on how much mathematics is used in various occupations: Mathematics in Automobile Production; Precalculus in Business Courses; Modeling the Mathematics of Banking; Mathematical Models as Seen by Biologists; and How Do Scientists Interpret Graphs?

<http://mathforum.org/dr.math/faq/faq.why.math.html>

● **Task 19. In this task, you will find some statements. Please decide whether the statements below are true (✓) or false (X).**

---

There are some jobs that require knowledge of mathematics.

Mathematical knowledge is not required for most jobs.

No research studies have shown a direct relationship between mathematical knowledge and job performance.

The author of this article implicitly states that knowledge of mathematics is essential for most jobs.

Mathematics is a required skill for most engineers.

Environment study has strong mathematical knowledge of mathematics.

Mathematics has a strong relationship with technology development.

Scientists need to learn mathematics to advance their research.

● **Task 20. The information below is about how to do scanning effectively. Read the information carefully.**

---

### Guidelines for Effective Scanning

State the specific information you are looking for.

Try to anticipate how the answer will appear and what clues you might use to help you locate the answer. For example, if you were looking for a certain date, you would quickly read the paragraph looking only for numbers.

Use headings and any other aids that will help you identify which sections might contain the information you are looking for.

Selectively read and skip through sections of the passage.

<http://pioneer.netserv.chula.ac.th/~pkanchan/html/skim.htm>

- **Task 21.** Read the words in the following table. Then, analyze their parts of speech by matching the words in the right and left column with appropriate part of speech.

entirely	noun	remember
doing	verb	wherever
fundamental	adverb	challenge
scientists	adjective	fellow
borrowed		recent

## Let's Evaluate

- **Task 22.** In this final task, you will read a text entitled “Mathematics is a Game of Life”. Then, answer the questions that follow. You may open your dictionary.

Mathematics is

Jun Liu uses statistics

By William

Gazette

Jun Liu remembers being interested in mathematics as early as age 10. He wanted to pursue in the waning years of the Cultural Revolution. He didn't own a calculator. Math was his only friend.

Jun's parents, both teachers, scrounged books wherever they could find them. Professors who had hidden them away. His father, a mathematician, had one book entirely by hand.

"I couldn't tell high school from low school, so I read everything," Liu recalls. "Doing math was like a game you could play with only a piece of paper and a pencil. On Sundays, I rode my bike for an hour to meet friends and

Sitting in his office at the Science Center, Liu shows a youthful enthusiasm for math problems. He wants to find answers to fundamental questions about genes and how they control life. "Every cell in your body contains a complete set of genes. You have a part of your eye, your hand, or your brain. The question that challenges many scientists is how to be part of one organ or the other."

Liu thinks he may be able to get some of the answers to these questions with his new experimental approach.

Commenting on Liu's recent tenure appointment, fellow professor David Baltimore, "a great asset to the University both as a teacher and as a researcher in computational biology. In addition, he is a very personable, energetic, and -spoken individual with a fabulous sense of humor."

<http://news.harvard.edu/gazette/2001/02.01/03-mathematics.html>

1 Do you understand the paragraph?

.....

.....

.....

.....

2 Does this seem like a good life experience?

.....

.....

.....

.....

3 What is Liu's opinion?

.....

.....

.....

.....

4 Did the author feel impressed?

.....

.....

.....

.....



.....

5 How was Jun his hard times d

.....

.....

.....

6 How does Prof. Donald Robin com

.....

.....

7 How many pronouns did you find? Write ther  
for each p

.....

.....

.....

8 How many adjectives do you get f

.....

.....

.....

9. Please find at least 5 nouns and 5  
wo

find the mear

.....

.....

.....

.....

10. What can you lear

.....

.....

.....

## SUMMARY

There are some techniques for reading  
whole text and scanning

Skimming can help you get  
general information

Scanning helps you to understand  
information faster

In order to understand the text, you should understand  
the context of the text

## REFLECTION

How much improvement have you made?  
Mark with a check (✓) in the right column to indicate

Put

Aspects	Very much	Much	Little
Skimming for the whole text			
Scanning for details			
Identifying the parts of speech			
Identifying implicit meanings			
Identifying pronouns and their referents			

## **MATH AND OUR REAL LIFE**



In this chapter, you will learn:

- e. Identifying topic and topic sentence
- f. Identifying main idea and supporting details
- g. Finding synonyms
- h. Identifying the part of speech

Get  
Ready!

- Task 1. Let us try to classify the **topic** for each number below by matching the words in the left side with the best topic in the right side.

Shapes

Size

Figures

Two and three dimensional  
objects

**Shapes**

Derivatives

Definite integrals

Indefinite integrals

Limits

**Geometry**

Rectangle

Oval

Square

Triangle

**Mathematics**

Trigonometry

Calculus

Geometry

Algebra

**Calculus**

- Task 2. Now, the task is different from previous task. In this task, the **topics** are **given**. Write a list of things that fit the topic.
- 

1 Mathem:

2 Mather – Related Pi

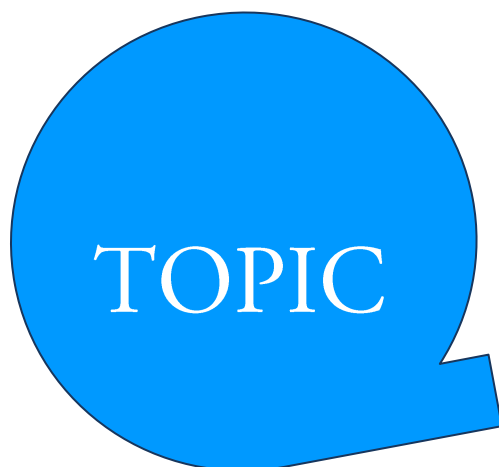
3 Natural N

4 Trigonc

5 Mathematic

Let's  
Start

- Task 3. Up to this point, have you understood what the '**topic**' is? Here is the information for you. Read and study the information carefully.
- 



A broad ca  
general sul  
your pi  
writing i .

- Task 4. After finishing the previous task, we will have another activity. Before we start, please study the following information about **topic sentence**. You have to be able to differentiate between **topic** and **topic sentence**. Here is the information for you.

## TOPIC SENTENCE

The vehicle that  
introduce the main idea  
define the limits

<http://faculty.scf.edu/smithe/cd>

### Rules for Finding the Topic

The topic sentence usually finds the main idea, but could be in any position in the paragraph.

A topic sentence is usually more "general" than the rest of the paragraph. That is, it talks about many things. Sometimes it refers to more than one thing, using words like "many", "many a", "several", "various", "numerous", or "several" etc.

Defining sentences are usually more specific. That is, they usually talk about one specific aspect of an idea. Also, the words "first", "second", "third", etc., and "firstly", "secondly", etc., are often used.

Most of the defining sentences support, give examples, or talk about, or point towards the main idea.

How can you be sure that you have found the topic sentence?

-- Switch the sentence around into a question that seems to "answer" the question.

<http://english.glendal>

- Task 5. Read and study the words below. You will find these words in Task 6. You may open your dictionary to find the meaning.

No	Words	Pronunciation	Part of Speech	Meaning
1	Manufacture	/məˈʊʃəl fə/	noun	
2	Acronym	/ˈæk rənɪm	noun	
3	Development	/cɪˈvələp m ənt	noun	
4	Release	/ɪˈrliːs/	verb	
5	Diversify	/cɪˈvəːsɪfaɪ/	verb	
6	Intend	/ɪnˈtend	verb	

7	Stuck	/s ʌ k/	verb	
8	Ingrained	/ɪn'græɪnd/	adjective	
9	Approximately	/ə'pɹɒksɪmətli/	adverb	
10	During	/'dʊərɪŋ/	preposition	

Task 6. In this task, you will read two different paragraphs. In a group of 3, write the best **topic** and **topic sentence** for each paragraph. Share and discuss your answer with another group.

1961: F -Electronic Desk



Photo Credit: [Anita-8 Calculator](#)  
 Device: ANITA-8  
 Invented by: Bell Laboratories

A Brief History: In 1956, [Bell Laboratories](#) of General Electric  
 Britain set out to diversify from manufacturing electronic desktop calculator codenamed  
[Muse](#), the vacuum tube-based calculator was released in 1958. The machine featured approximately 170 control  
 vacuum tube and Numicator display.

Topic Sentence: \_\_\_\_\_

Topic Sentence: \_\_\_\_\_

Interesting Fact: The acronym ANITA was intended for the development of the machine, but the name was scrapped for production that the company felt the acronym has been said to mean "A New Inspiration to Accounting" or "A New Inspiration to the name of the company".

Topic Sentence: \_\_\_\_\_

Topic Sentence: \_\_\_\_\_

- Task 7. Refer to the text in Task 6, discuss and match the words in column A to their **synonyms** in column B below with your partner. Please do not open your dictionary.

rele
inte
duri
prod
dev lo
approx
develop
reac
run
als

throu
Evol
affa
alm
disch
elabor
ain
goss
alil
prep

- Task 8. In this text you will read a text entitled **The Use of Mathematics in Everyday Life**. Choose the best **topic** and **topic sentence** for each paragraph. You may work in pairs.

## The Use of Mathema

by Linda Emma,

1. Even those suffer from math-related anxieties or phobias  
presence in their lives. From home  
everywhere. Whether using measurements in a rec  
make the destination, we all use math. It is a gc  
reluctant math learners to use real w

-between,

actical i

Topic:

\_\_\_\_\_

Topic sentence:

\_\_\_\_\_  
\_\_\_\_\_

### 2. At Home

Some people aren't even out of bed before end  
snooze, they may quickly need to calculate the n  
a bathroom scale and decide that they'll

lories at lunch



medication need to understand different dosages, whether in grams or milliliters. Recipes call for ounces and cups. --all measurements, all math. And decorators need to know that the dimensions of the room and rugs will match the area of their rooms.

Top

---

Topic sentence

---

---

### 3 In Travel

Travelers often calculate fuel costs. They need to know how many gallons when fueling up for a trip. They need to calculate anew when faced with obstructed routes. Travelers need to know departure times and arrival times. They need to know the weight of their luggage to avoid overweight surcharges. Once on board, they may need to know the speed of the plane. --related material flying

Top

---

Topic sentence

---

---

### 4 At School and in the Workplace

Students can't do math without math. Most take it every day. However, in some classes they may need to know a little math. They may need to know centuries or eras or calculate the area of a shape. They may need to know basic math skills. Jobs in business and finance require math. They may read profit and earning statements or how to calculate interest. They may need to calculate working hours times their rate of pay. --related material

Top

---

Topic sentence

---

---

### 5 At the Store

Whether buying coffee or a car, basic principles of math are required. They require some understanding of budgets and the ability to calculate. They may need to calculate the area of a room. They may need to calculate the area of a room. They may need to calculate the area of a room. --related material, but

purchases may require knowledge of interest rates. A mortgage may be much different than choosing a car, money and real estate.

cos

Top

Topic search

## 6 Past

Even -time can be math time. Baseball fans know considering -loss ratios, batting averages, -run -averages. Fans know about yardage s. And individual athletes, bikers, sailors or hikers, often have their own mileage to

Top

Topic search :

<http://eve-globalpost-mathematics-every-life-14225>

Quote Corner

"A MATHEMATICIAN IS A DEVICE FOR TURNING  
COFFEE INTO THEOREMS."

PAUL ERDOS

© Lifehack Quotes

- Task 9. We have talked about topic and topic sentence. Now, you will identify **main idea** and **supporting details** of the paragraph. Please read the information below before identifying paragraphs in Task 11.
- 

A more narrowly focused idea--the main point the writer is making about the topic

## **MAIN IDEA**

## **SUPPORTING DETAILS**

All of the other information within a paragraph that is needed to support, explain, elaborate on or prove the topic sentence

How to Find the **Main Idea** (It's written directly in the text)

- 1 Read the passage
- 2 Ask this question to yourself: "What is the main point?"
- 3 In your own words, explain the main point
- 4 Look for a sentence in the text that most closely states the main point

How to Find the **Main Idea** (the author doesn't directly state it)

- 1 Read the passage
- 2 Ask this question to yourself: "What is the author's purpose in writing this passage?"
- 3 In your own words, find the common bond between the author's purpose and the main point of the passage
- 4 Compose a short sentence stating the bond

- **Task 10.** Read and study the words below. You will find these words in Task 11. You may open your dictionary to identify the part of speech and to find the meaning.

No	Words	Pronunciation	Part of Speech	Meaning
1	Commonly	/'kɒmənəl		
2	Worthwhile	/v ə:θ'wɔɪl/		
3	Satisfy	/'saɪsɪfaɪ/		
4	Generally	/'dʒenərəli		
5	Measurement	/'meɪʒəmənt		
6	Perspective	/fə'spektɪv/		
7	Increase	/ɪn'kri:z/		
8	Lost	/'lɒst		
9	Instruction	/ɪn'strʌkʃ(ə)n		
10	Arguably	/'ɑ:gjuəbl		
11	Proof	/pru:f/		
12	Influence	/'ɪnfluəns		
13	Consider	/kən'sɪdə/		
14	Exit	/eg'zɪt		

- **Task 11.** In this task, you will find 3 different paragraphs. Please write the main idea for each paragraph.

### 1. Pythagoras

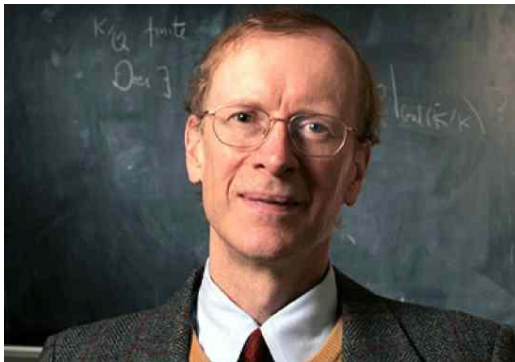
Greek Mathematician Pythagoras was one of the first great mathematicians. He lived around 570-495 BC, in modern day Greece. He founded the Pythagorean cult, who were to be one of the first groups to study mathematics. He is also credited with the Pythagorean Theorem within mathematics. Some sources doubt that it was his discovery (Some attribute it to his student or even some 300 years earlier in India). However, such, as with large portions of fundamental mathematics commonly felt today, with the theorem being used in modern measurements and technological equipment. A portion of other areas and theorems in mathematics have a bearing on the development of geometry, trigonometry, and mathematics as a worthwhile endeavor. Thus, he is a key figure in mathematics.



the p

e stud

## 2 Andrew



The only currently living mathematician on this list, Andrew Wiles is most well known for his proof of Fermat's Last Theorem: That no positive integers,  $a$ ,  $b$  and  $c$  can satisfy the equation  $a^n + b^n = c^n$  for  $n$  greater than 2 (the Pythagoras Formula). Although the contributions of Wiles are not, perhaps, as grand as other on this list, his proof is a large portion of new mathematical theorem. Besides, his dedication

most, as he eventually shut himself away for 7 years to find that the solution contained an error, he reworked the solution was accepted. To put in perspective, it has been said that you could count the number of mathematicians in the time, could understand and validate his proof. The number only increase as time passes (the proof can under

## 3 Euc



Living around 300BC, he is known for his work in Geometry and his Elements, is one of his greatest mathematical works in which he laid out the foundations of geometry in education up until the 20th century. Little is known about his life, but long after his presumed death, he is credited with the instruction of many students for theorems and conjectures. Up to this day, and thus, arguable the influence of all mathematicians. The Elements, his other surviving work, has been written by him, all generations of mathematicians or Number theory. There are

have, sadly, been lost

Please identify whether the main idea is stated or implied. Then, write the best main idea for each number.

Parag	A stated n	An implied
1		
2		
3		

## Grammar in Focus

### ● Task 12. Before doing the exercise in Tasks 13 and 14, study the information below about **the simple present tense**.

The simple present tense in English is used to describe an action that is regular, true or normal.

We use the present tense:

#### 1. For repeated or regular actions in the present time period.

- I **take** the train to the office.
- The train to Berlin **leaves** every hour.
- John **sleeps** eight hours every night during the week.

#### 2. For facts.

- The President of The USA **lives** in The White House.
- A dog **has** four legs.
- We **come** from Switzerland.

#### 3. For habits.

- I **get up** early every day.
- Carol **brushes** her teeth twice a day.
- They **travel** to their country house every weekend.

#### 4. For things that are always / generally true.

- It **rains** a lot in winter.
- The Queen of England **lives** in Buckingham Palace.
- They **speak** English at work.

● **Task 13.** In pairs, complete the following sentences by underlining (\_\_\_\_) the correct form.

---

- 1 For some people, mathematics (is/are) a difficult subject.
- 2 I (like/ likes) to memorize mathematics for high school.
- 3 My best friend (work/ works) as a mathematician in N 1 Yogyakarta.
- 4 My sister ( ) to do her homework with me.
- 5 Life (is/am/are) like math, if it (go/ goes).

● **Task 14.** Now, please write at least 5 sentences by using the simple present tense. You may open your dictionary.

---

- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....

● **Task 15.** In this task, you will find 2 different texts. Work in pairs, and then identify the **topic sentence** and **supporting details** for each paragraph

---

1 Ma

From adolescence, studies show that males outperform female reasoning, despite differences in IQ. The current research on arithmetic ability show that males still score higher than females, as measured using a third grade arithmetic test. This finding is questionable because the intelligence quotient in adolescence is not average in both sexes. The finding of a sex difference in performance from adolescence to adulthood – is nature or nurture? This finding that arouses curiosity as to whether the difference is a combination of nature and nurture.

<http://testprep.com/od/readingtesttips/tp/>

---

Topic Sentence :

Supporting Details :

---

---

---

---

## 2 Dyscalculia

Developmental Dyscalculia (DD) is a specific impairment in learning basic arithmetic facts, poor understanding of numbers, and poor accurate and fluent calculation skills. It must be quantifiably below the expected level for an individual's chronological age, and must interfere with academic activities or by intelligence.

must be quantifiably below

<http://www.dyslexia.org.uk/dyscalculia>

Topic Sentence :

Supporting Sentence :

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- Task 16. Read again the text in Task 15. Please identify the simple present forms used in the text. Then, write them down to the provided space.

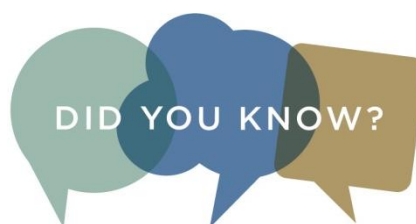
- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....

- Task 17. In pairs, rearrange the jumbled paragraph below by giving the number in the provided spaces. This paragraph is about 'Dyscalculia'. You may open your dictionary to find the meaning.

	Currently (January 2015) a search for 'dyscalculia' on the American Psychiatric Association's website gives 0 results as compared to 44 for dyslexia.
1	Dyscalculia is usually perceived of as a specific learning difficulty more appropriate to mathematics than to language.
	<p>Typical symptoms of dyscalculia/developmental dyscalculia include:</p> <ul style="list-style-type: none"> <li>• Has difficulty when calculating.</li> <li>• Has a poor sense of number.</li> <li>• Has difficulty in remembering 'basic' facts.</li> <li>• Has no strategies to compensate for lack of understanding.</li> <li>• Has difficulty in understanding place value.</li> <li>• Has no sense of whether any answers that are given are correct.</li> <li>• Tends to be slower to perform calculations.</li> <li>• Forgets mathematical procedures, especially those that are not frequently used.</li> </ul>



	<p>example for</p> <ul style="list-style-type: none"> <li>• Addition is often the default operation. The other operations are usually very poorly executed (or avoided).</li> <li>• Avoids tasks that are perceived as difficult and likely to result in a wrong answer.</li> <li>• Weak mental arithmetic</li> <li>• High levels of mathematics anxiety</li> </ul>
	<p>Developmental Dyscalculia (DD) is a specific learning disorder characterized by difficulties in understanding and working with numbers. It is often associated with other developmental disorders such as dyslexia or dysgraphia. The co-occurrence of learning disabilities appears to be the rule rather than the exception. The prevalence of DD is generally assumed to be around 6-7%, although the exact figure varies depending on the criteria used and the population studied. Risk factors that have been identified include genetic factors, environmental factors, and cognitive factors. For example, children with DD often have difficulties with basic arithmetic skills, such as addition and subtraction, and may struggle to understand the concept of fractions. It should not be assumed that all dyslexics have DD, as the two conditions are distinct. However, the percentage of children with DD who also have dyslexia may be very high, or that all dyslexics have DD. This co-occurrence may well be a result of shared underlying factors.</p>
	<p>Developmental Dyscalculia (DD) is a specific learning disorder characterized by impairments in learning basic arithmetic facts and performing accurate calculations. These difficulties are not due to a lack of motivation or intelligence, but rather to a specific impairment in the ability to understand and work with numbers. What is expected for an individual's chronological age and educational level is not met. DD can significantly impact an individual's ability to perform mathematical tasks in educational or daily activities.</p>
	<p>Because mathematics is a core subject, any insecurity or uncertainty about mathematical skills will impact on later topics, hence the need for early intervention and support.</p>
	<p>Because definitions and diagnoses of dyscalculia are often contradictory, it is difficult to determine the prevalence, but research suggests that it affects around 6-7% of the population. However, 'mathematical learning difficulties' are more prevalent and often devastating in their impact on an individual's education and jobs. The prevalence of DD in the UK is estimated to be around 6-7%.</p>



**Ancient Babylonians** did math in **base 60** instead of base 10. That is why we have **60 seconds** in a minute and **360 degrees** in a circle.

<http://www.factslides.com/s-Math>

**Multiplying 21987 by 4** reverses the order of the numbers: 87912

<http://www.factslides.com/s-Math>

● Task 18. Read again the text you have arranged in Task 17. Then, answer the questions that follow.

---

- 1 What is the top
- 2 Find the synonyms of
  - a diffic
  - b avo
  - c ofte
  - d high
  - e wea

- 3 Paraphrase the fol

*Because mathematics is very developmental, an  
impact on later topics, hence to need*

- 4 What is the topic sentence of the following paragraph

*Because definitions and diagnoses of dyscalculia are  
contradictory, it is difficult to suggest a prevalence.  
However, 'mathematical learning difficulties' are  
prevalent and often devastating in their impact on  
jobs. Prevalence in the*

- 5 What is the conclusion that you get after  
Dyscalculia

●● Task 19. Now, in a group of 3, please find any articles related to mathematics. Then, identify the topic, main idea, and supporting details for each paragraph.

---

- 1 Title of the article :
- 2 The writer of the article :
- 3 Source of the article :
- 4 Topic of the article :
- 5 Main idea of the article :
- 6 Supporting details of the article :
- 7 List of difficulties :

# Let's Evaluate

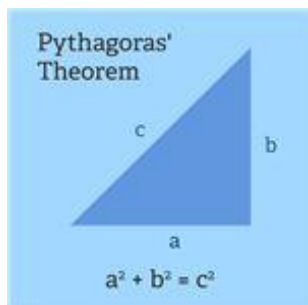
- Task 20. In this task, you will read a text entitled **Pythagoras's Theorem Used in Real Life Experiences**. You may open your dictionary to find the meaning. Then, answer the questions that follow.

## Pythagoras's Theorem Used in Real Life Experiences

written by: rosy • edited by: rosy

Pythagoras was a Greek mathematician. Whether you know it or not, Pythagoras's theorem, named after him, is used in many real life experiences.

### • Uses of Pythagoras's Theorem



You may have heard about Pythagoras's theorem (or the Theorem) in your class, but what you may not know is that Pythagoras's theorem is used often in many real-world examples. According to Pythagoras's theorem the sum of the squares of a right triangle is equal to the square of the hypotenuse. If the two sides of the right triangle be  $a$ , the other be  $b$ , and the hypotenuse be  $c$ . According to Pythagoras's theorem:

$$a^2 + b^2 = c^2$$

This is taught in every classroom, but what isn't taught is how it is applied outside of the classroom.

### • Real Life Applications

Some real life applications to introduce the concept to school students are:

1) **Roads** Let's say two friends are meeting at a playground. Maria lives 3 miles away from the playground and her friend Bob needs to get there taking the shortest route. If the road is a right-angled triangle, he can follow the road by first heading south 3 miles and then east 4 miles. The total distance covered following the road is 7 miles. But if there is a direct road by cutting through some open fields, the distance will be less.

Pythagoras's theorem to calculate the distance:

$$(3^2 + 4^2 = c^2)$$

$$9 + 16 = c^2$$

$$c^2 = 25$$

$$c = \sqrt{25}$$

Walking through the field will be 5 miles.

2) **Painting** Painters use ladders to paint on high walls. To determine the height of the wall, they use Pythagoras's theorem to compare the length of the ladder (hypotenuse) with the distance from the base of the wall to the foot of the ladder (base). They need to determine the height of the wall (perpendicular) in order to safely place the base of the ladder.

1. What is the topic of the text about?
2. What is the main idea of the text about?
3. What is the topic sentence for each main idea?
4. What is the supporting detail for each main idea?

- 5 How many present tenses did you find from the text above? Write them down.
- 6 How many pronouns did you find from the text above? Write them down and also give the references for
- 7 Decide whether the statements are true or false.
  - b People never use mathematics in the real world.
  - c Mathematics will not be used when making a decision.
  - d Pythagoras theorem will be used in many real-world situations.
  - e Pythagoras will not be able to solve real-world problems.
  - f Mathematics is a skill that does not change over time.

## SUMMARY

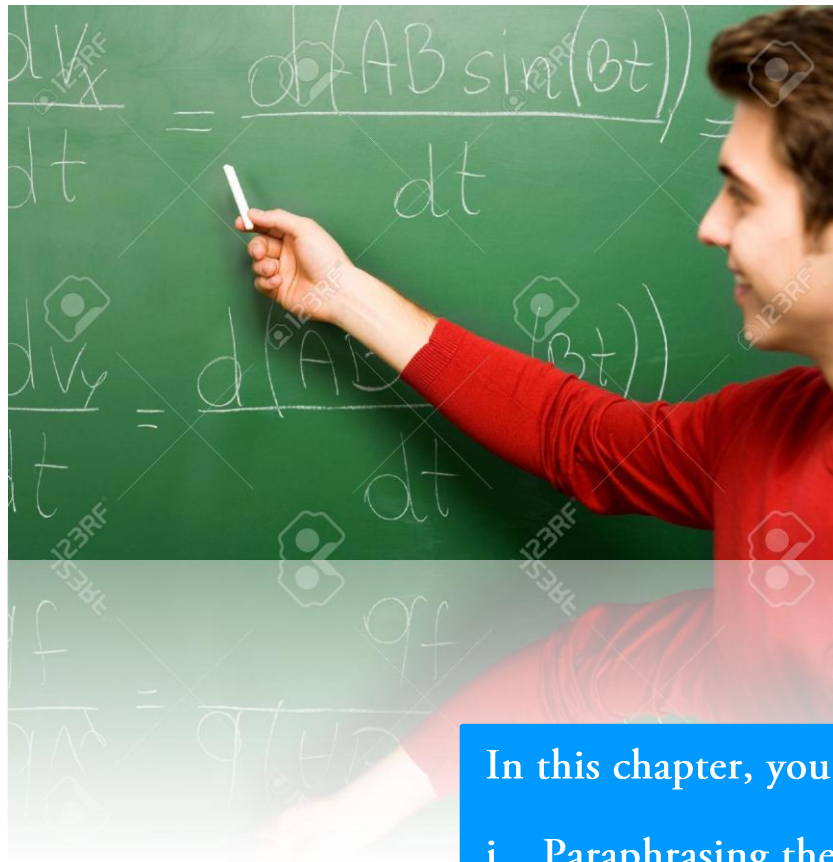
- a There are differences when identifying topic, topic sentence and main idea.
- b The topic sentence is usually first, but could be in any position in the paragraph.
- c There are implied and stated main ideas.
- d The simple present tense in English is used to describe an action that is regular, true or normal.

## REFLECTION

How much improvement have you made?  
Put a thick (√) in the right column to

Aspects	Very much	Much	Little
Identifying topic and topic sentence			
Identifying main idea and supporting details			
Finding synonyms			
Understanding the simple present tense			

# MATH IS FUN

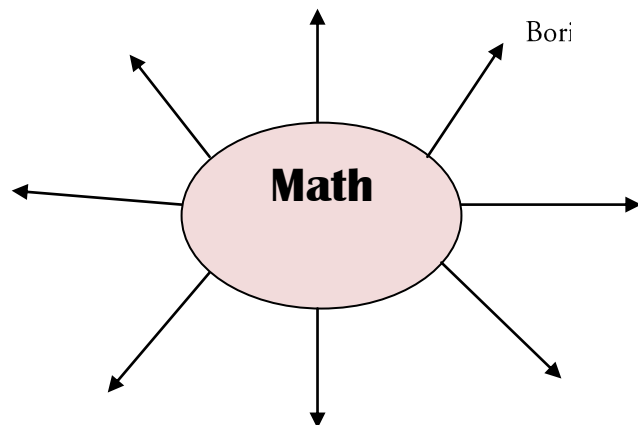
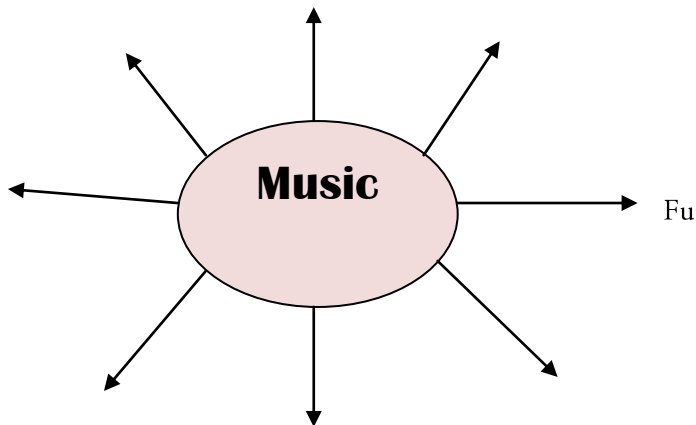


In this chapter, you will learn:

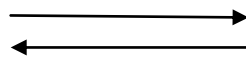
- i. Paraphrasing the paragraph
- j. Summarizing
- k. Finding antonyms
- l. Identifying simple past tense
- m. Inferring unknown vocabulary

# Get Ready!

- Task 1. You will find two different words in this task. What do you think of when you read these words? Write your ideas in the boxes below.



- Task 2. Do you like to play music? Is there any relationship between music and math? What do you think? How can you say it?



- a Both of them
- b .....
- c .....
- d .....
- e .....



## Let's Start

- Task 3. Below are words that you will find in Task 4. Try to find Indonesian meanings and identify the part of speech. You may open your dictionary.

No	Words	Pronunciation	Part of Speech	Meaning
1	Musical pieces	/'mʃ ˌzɪkəl/ / ˌzɪl		
2	Represent	/ˌɛpɪˈzɛnt		
3	Shape	/ʃeɪp/		
4	To indicate	/ˌɪŋˈkeɪt/		
5	Signify	/'sɪgnɪfaɪ/		
6	Correctly	/kəˈrɛkt/		
7	Infiniely	/'ɪnɪnəti/		
8	Arrange	/ə'reɪn(ə)z/		
9	Midway	/'mɪdweɪ/		
10	Lengthens	ˈlɛŋ(θ)ən		

- Task 4. Read and study the text below. It is about **Music, Math, and Pattern**. After that, answer the questions that follow.

### Music, Math, Natasha

Math and music are usually organized into over. It ends to be that people are two elements could not be indeed related and we commonly use numb

of art and mus  
In actuality, math

#### Reading Notes and i

Musical pieces are read much like some bit of informat measures or bars. Each measure embodie measure is divided are all Fractions are used a musical piece, information about signature is above the other. musician which note in the piece gets a



The symbol: Musical pieces are divid into equal portic mathematical divi in music to indicat the rhythm c generally written as The number on th The top num

musicians how many notes are in each measure. Numbers can tell us a lot about musical

Each note has a different shape to show how long it lasts for time. Notes are classified in terms of number of measures. There are whole notes (one note per measure), half notes (two notes per measure), quarter notes (four notes per measure), eighth notes (eight notes per measure), and sixteenth notes (sixteen notes per measure). These numbers signify how long the notes last. That is, a whole note would last for one measure whereas a quarter note would only last  $\frac{1}{4}$  of the measure. A half note lasts for two quarter notes in a measure. This can be expressed mathematically as  $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$ . A whole note with a dot after it lengthens the note to  $\frac{3}{4}$  of a measure.

For example, a quarter note with a dot after it lasts for  $\frac{3}{4}$  of a measure.

$$\frac{1}{4} + \frac{1}{2} \left( \frac{1}{4} \right) = \frac{3}{4}$$

Three eighths of a measure is midway between a quarter and a half note. It is important for musicians to understand the relationship between notes to correctly hold

### *Fibonacci*



The Fibonacci sequence is a well-known mathematical sequence that follows as: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ... and so on, adding each number to the previous one to create the next. That is,  $5 + 8 = 13$ ,  $8 + 13 = 21$ ,  $13 + 21 = 34$ , and so on. In music, the Fibonacci sequence can be found in many places. For example, the C scale on the piano has 12 notes, which is the sum of 5 and 7.

from C to C; eight white keys and five black keys. This is a total of 13 keys, which is the 7th number in the Fibonacci sequence.

In the Fibonacci sequence, the ratio between consecutive numbers approaches a constant value known as the Golden Ratio, approximately 1.618.

### *Pythagoras*

It was Pythagoras who realized that different musical notes have different frequencies and vibrations. This led to his discovery that the frequencies of notes are proportional to the lengths of the strings that produce them. Strings that are half the length of another string vibrate at twice the frequency, producing a note one octave higher. In essence, the shorter the string, the higher the frequency. He also realized that notes of certain frequencies are related by simple ratios. For example, a note of 220Hz (A4) is related to a note of 440Hz (A5) by a ratio of 2:1, and a note of 660Hz (A6) is related to a note of 330Hz (A5) by a ratio of 2:1.

The closest tie between music and mathematics is the relationship between musical pitch and frequency. Musical pitch is the perceived frequency of a sound, and frequency is the number of cycles of a periodic waveform that occur in a given time interval. In mathematics, we look for patterns and relationships between numbers and shapes. When looking at musical notation, we can see how the notes on a staff are related to the frequencies of the sounds they represent. Musicians look for notes they like and dislike, and mathematicians look for patterns in numbers and shapes. In this way, notes and numbers are related in a way that is both musical and mathematical. Relationships are created between notes and numbers, and these relationships are what make music so interesting and beautiful.

<http://mathcentral.uregina.ca/bey>

- 1 What is the main idea of the passage?  
.....  
.....
- 2 What is the author's purpose when people read this passage?  
mathematics symbol  
.....  
.....
- 3 What is the closest tie between music and mathematics?  
.....  
.....
- 4 How can you say that music and mathematics have a relationship?  
.....  
.....
- 5 Do you agree that music and mathematics are related?  
thinks  
.....  
.....

- **Task 5. Do you know how to paraphrase? Below is the information about paraphrasing. Read and study the information.**
- 

### How to paraphrase?

Paraphrasing is putting the ideas of an author into your own words. Paraphrasing helps the quality of your paper by explaining another person's thoughts in your own writing style, improving the flow and readability.

Tips for effective paraphrasing:

- The statement must be in your own words.
- If you use any phrases that are in the original quote, place them in quotation marks.
- Add a citation—even if a paraphrase is in your own words, it is still someone else's idea.
- If you're having difficulty paraphrasing, make a short list of the quote's main idea(s) and words that relate to it.
- Incorporate these concepts and words in your paraphrase.

<http://content.easybib.com/students/research-guide/paraphrasing-patchwriting-direct-quotes/how-to-paraphrase/>

- **Task 6. In pairs, try to paraphrase these following sentences.**
- 

- 1 Math and music are usually organized into two categories. It ten to be that people are going to mix the two or art and music, as if the two are placed to follow a logic. In actuality, math and music are interconnected. Numbers and math to do with logic.

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- 2 Each note has a different strength or length. Notes are classified by numbers. There are whole notes (one note per measure), quarter notes (four notes per measure), eighth notes (eight notes per measure), and sixteenth notes (sixteen notes per measure).

.....

.....

3 It was Pythagoras who realized that different sounds can be made with different weights and vibrat This led to his discovery of a vibrating string is proportional to and can be controlled by

.....  
 .....

4 When looking at a musical piece, musicians look for size to find notes that are rare (high low) and le In this way, notes r

.....  
 .....

5 Musical pieces are read much like The symbols repre ne bit of informat ut the

.....  
 .....

**Task 7. Now, your task is to paraphrase the following main ideas. After finishing your work, you may compare your answers with other students.**

1 The studen d that the professor excuses her at

The student requested that the professor exc

2 There will be a music concert next to Vie

\_\_\_\_\_

3 International Center is hosting English -native speaker practice their Engli

\_\_\_\_\_

4 The office of International Students and Scholars :

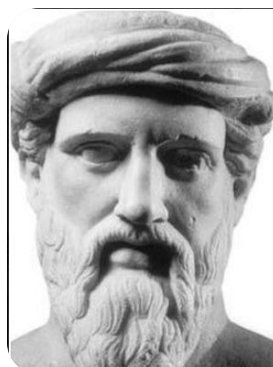
\_\_\_\_\_

5 The car that was pulled over l care

just had an accident.

\_\_\_\_\_

## Quote Corner



There is geometry in the humming of the strings, there is music in the spacing of the spheres.

— Pythagoras —

AZ QUOTES

AZ QUOTES

Task 8. Now, in a group of 3, please find a short article. You may take the article from the newspaper, magazine, or internet. Then, paraphrase each paragraph from the article.

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Paragra

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Paragra

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Paragra

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Etc.

- Task 9. Study the following information. It is about the simple past tense. Then, answer the questions that follow by underlining the correct answer.

The simple past is used to talk about a **completed action** in a time **before now**. Duration is not important. The time of the action can be in the recent past or the distant past.

You always use the simple past when you say **when** something happened, so it is associated with certain past time expressions

- **frequency:** *often, sometimes, always*  
I sometimes **walked** home at lunchtime.  
I often **brought** my lunch to school.
- **a definite point in time:** *last week, when I was a child, yesterday, six weeks ago*  
We **saw** a good film *last week*.  
*Yesterday*, I **arrived** in Geneva.  
She **finished** her work at *seven o'clock*  
I **went** to the theatre *last night*
- **an indefinite point in time:** *the other day, ages ago, a long time ago* People **lived** in caves a *long time ago*.
- She **played** the piano *when she was a child*.

**Note:** the word *ago* is a useful way of expressing the distance into the past. It is placed **after** the period of time: *a week ago, three years ago, a minute ago*

<http://www.edufind.com/english-grammar/simple-past-tense/>

- 1 Jessie and I (**go / went**) to a mathematics and science conference three months ago.
- 2 (**Do / did**) he (**come/ came**) on time yesterday?
- 3 The conference (**starts / started**) at 10.00 a.m.  
(pesta mulai jam sepuluh pagi.)
- 4 (**Did / do**) you (**finish / finished**) with your math homework last night?
- 5 I (**studying / studied**) mathematics for almost 4 years.  
(saya belajar teknik sipil selama hampir 4 tahun.)

- Task 10. Below are sentences with the simple present tense forms. Then, change these sentences into simple past tense. You may work in pairs.

Change the verbs in the sentences into the past tense.

- 1 Yesterday, I \_\_\_\_\_ library university.  
*Yesterday, I went to the library.*
- 2 We drive around the city \_\_\_\_\_ notes in order to find a parking space.  
\_\_\_\_\_
- 3 When we \_\_\_\_\_ the class, the lesson is \_\_\_\_\_.  
\_\_\_\_\_
- 4 The lecturer asks me if I have understood and the instructor \_\_\_\_\_.  
\_\_\_\_\_
- 5 I say, "Don't forget to finish his homework."  
\_\_\_\_\_
- 6 The lecturer tells us to come back to the lecture hall.  
\_\_\_\_\_
- 7 My brother and I slowly walk \_\_\_\_\_.  
\_\_\_\_\_
- 8 Then I find a mathematical proof.  
\_\_\_\_\_
- 9 We stop at the office and meet our professor.  
\_\_\_\_\_
- 10 That is better than what we have done.  
\_\_\_\_\_

- Task 11. These are the words from text in Task 4. Please find the **antonyms** for each word below. You may open your dictionary.

No	Words	Antonyms
1	Familiar	
2	Represent	
3	Realize	
4	Indicate	
5	Signify	
6	Correct	
7	Infinitely	
8	Arrange	
9	Closest	
10	Differ	



● Task 12. Do you know how to summarize a paragraph? Read the information below before doing the next task.

---

### What is summarizing?

Summarizing involves taking the main ideas from a piece of text and rewriting them in your own words. A summary is significantly shorter than the original text and tends to give an overview of a topic area.

### *Tips for summarizing*

- Highlight the main ideas in the text you want to summarize (do not include any minor details)
- Combine these ideas together in your own words
- Correctly interpret the original
- Do not include your own opinion or add extra information
- Use your own words and not those of the original author (unless using quotation marks)
- Remember to cite your source using a recognised referencing format
- Keep reminding your reader that you are summarising the work of someone else
- The author goes on to say that ...
- The text further states that ...

<http://www.library.dmu.ac.uk/Support/Heat/index.php?page=489>

● Task 13. In pairs, summarize the following paragraph taken from VOA website. You may open your dictionary to find the meaning.

---

“Many thousands of Chinese are studying at school  
says the students are following an exam

- 1 Mr. Leibovitz and writer Matt the story of the s  
book, “Fortunate Sons.” The book says China ser  
about developments that could help moderniz  
Country’s First Exchan na, Voice of America, learr

*“Fortunate Sons” tells the story of Chinese exchange students who came to the US in the 1870s to learn how to help China. Many Chinese students are doing the same today.*

- 2 “Illiteracy is a problem of the world’s population. Even in wealthy countries, many children are illiterate. But in 19th-century America, the volunteers of Experience Children’s Country [United States], the volunteers of Experience Children’s Country, all over 50, were teaching children to read in low-income areas.” (Older Americans Resource Project)

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- 3 “Women entrepreneurs in the developing world are achieving success and growth. They have more access to education than men, and they are financing on their own. But with an understanding of business, they can overcome such as planning, financing, and marketing. – they can overcome. That’s where the 10,000 Women Initiative comes in. A focus on education with dividends that benefit the business and national economies.” (Goldman Sachs investment strategy, Voice of Women)

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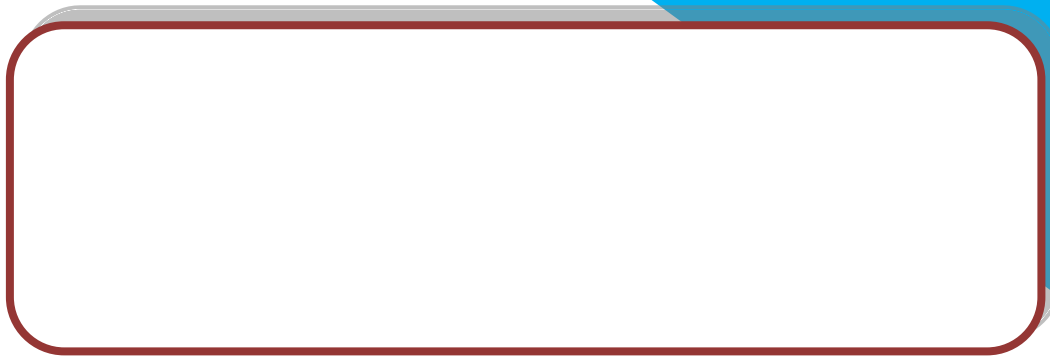


**Task 14.** Now, your task is to summarize the text in Task 4. You can work in a group of 3. Then, compare your work with other groups.

**Write one sentence for each paragraph.**

- a. 1<sup>st</sup> paragraph:
- b. 2<sup>nd</sup> paragraph:
- c. 3<sup>rd</sup> paragraph:
- d. 4<sup>th</sup> paragraph:
- e. 5<sup>th</sup> paragraph:
- f. 6<sup>th</sup> paragraph:

**Now tie the sentences together to make one short paragraph. Write the final summary below. Use only the words which are absolutely necessary.**



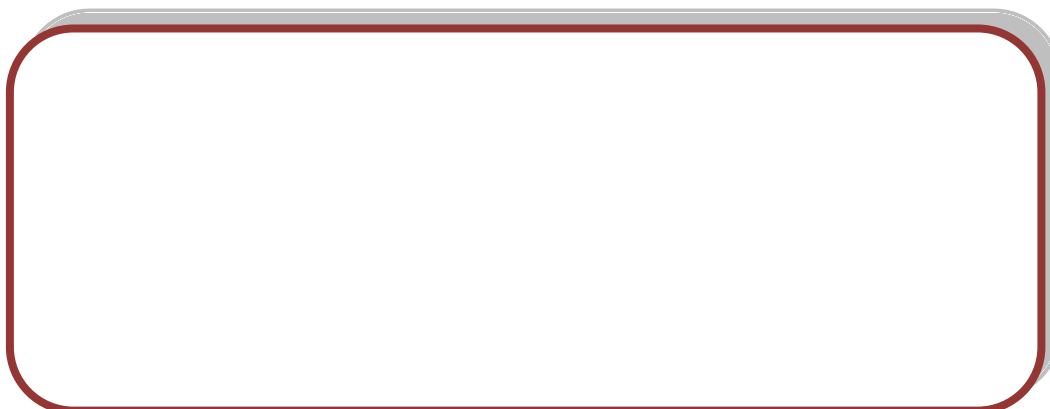
**Task 15. In a group of 3, please find an article from newspaper, magazine, or internet. Then, summarize the article. Use the step like in the Task 14. Do not forget to write the source of the article.**

---

**Write one sentence for each paragraph.**

- a. 1<sup>st</sup> paragraph
- b. 2<sup>nd</sup> paragraph
- c. 3<sup>rd</sup> paragraph
- d. 4<sup>th</sup> paragraph
- e. 5<sup>th</sup> paragraph
- f. 6<sup>th</sup> paragraph

**Now tie the sentences together to make one short paragraph. Write the final summary below. Use only the words which are absolutely necessary.**



- Task 16. Read and study the following information. It is about 'inferring unknown vocabulary' or inferring words from context.

### Handling Unknown Vocabulary

When reading academic materials, you will most likely find difficult or unknown words. It is impossible, even for students whose first language is English, to know the exact meaning of every word on the page.

There are some strategies to infer unknown words from context:

1. Ignore unknown vocabulary items.
2. Use your knowledge to infer the meaning of an unknown word.
3. Use associations to infer the meaning of an unknown word.
4. Look for a definition in the sentence.

[http://www.hawaii.edu/eli/online/eli72/unknownvocab\\_ch5.htm](http://www.hawaii.edu/eli/online/eli72/unknownvocab_ch5.htm)

- Task 17. Read and study the following text. Underline the difficult words from this text. Try to guess the meaning without open your dictionary.

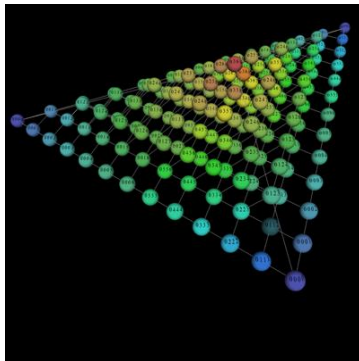
### Geometrical Music

by Mark Clifton

With apologies to the musical Grease, mathematics and music go together like a de dinga dong. You need to look at the links between the two to see how the links between them have fascinated researchers for centuries — see the mathematics articles tagged with the word music.

Mark Clifton from Florida State University, Ian Cliff from Yale University and Dmitri Tymoczko from Princeton University — all professors — have developed a new structure of music.

Their paper, *Geometrical Music Theory*, published in the April 18 edition of *Science*, outlines their theory that musical concepts, such as transpositions, can be expressed as symmetries of n-dimensional space.



For n-note chords in geometrical music theory — the collections of notes form a tetrahedron, with the colours indicating the spacing between the individual notes in a sequence. In the blue spheres, the notes are clustered; in the warmer colours, they are farther apart. The red ball at the top of the pyramid is the diminished seventh chord. Near it are all the most familiar chords of Western music. (courtesy Dmitri Tymoczko)

They categorise sequences such as scales and scales into mathematical "families". The families are represented by points on the complex plane, and different families produce different geometrical spaces through this method researchers will be able to

understand how music has changed over time. They categorise many kinds of Western music into Western styles because the theory is based on concepts such as the "chord", which are present in Western musical styles.

The basis of geometrical music theory is that it provides a way to describe events that are described differently depending on the sequence. For example, a "C" followed by the "E" and "G" above it is an ascending C major arpeggio, "a major chord." The authors describe different methods of categorising such collections of notes. The theory of OPTIC representing a different categorisation method for notes according to their order of play, or how many times each note is played, is one aspect of the music, ignoring the others. The theory produces different musical concepts for n-note chords and other chord types.

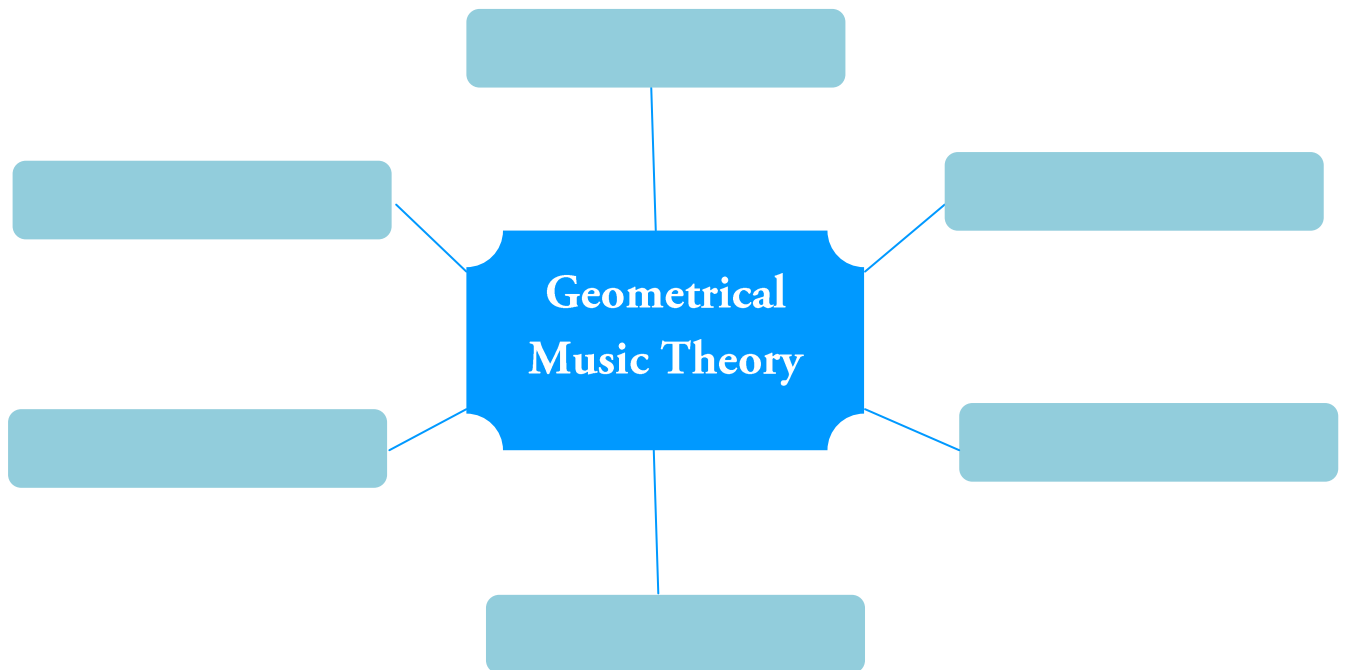
Tymoczko believes that their theory can be used to understand music. "Our methods are not so general as those from The Rolling Stones might allow you to visualise some of the differences between classical and modern music, but they certainly help you understand more deeply how classical music works."

The authors even hope that through their work, new kinds of musical instruments or new kinds of visual shows that could be created. Imagine going to a classical music concert and seeing the music being translated into a visual representation.

So next time you go see a visually spectacular musical performance, you might learn something new about the music.

<https://plus.maths.org/content/Geometrical-music-theory>

- Task 18. After reading the previous text, please write the ideas that you get from the text. After that, please make a summary at least one paragraph. You may use ideas that you get to help you summarize the text.
- 



.....

.....

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.....

.....



DID YOU KNOW?

2,520 is the smallest number that can be exactly divided by all the numbers 1 to 10.

<http://www.factslides.com/s-Math>

● Task 19. You have underlined the difficult words from the text in Task 17. Please write them down into following space. Then, find the antonyms and the meaning of each word.

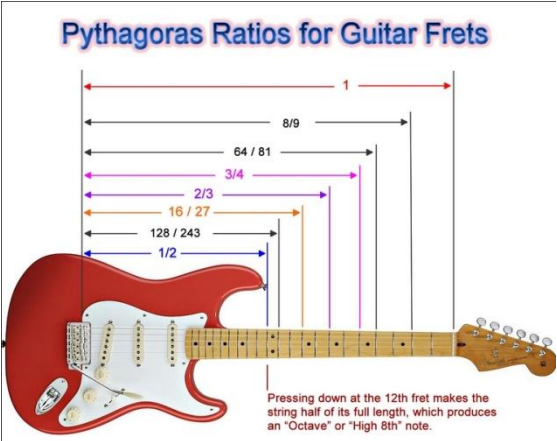
Word	Mean	Antonyms

Let's Evaluate

● Task 20. You will read a text entitled “What is the relationship between classical music and mathematics?” Then answer the questions.

What is the relationship between classical music and mathematics?

To say the least, this is a complex question on which many opinions have been expressed. Based on what I've read about this topic, I think or feel that there are some similarities between the two fields. I believe there is a proven, direct link between them. To begin, let's look at how mathematics and music are inseparable "intellectual" fields of intellectual activity and yet bound together by one another. They would demonstrate the hidden bond which draws us into the revelation of mathematics, thus leading us to surmise unconscious intelligence (qtd. in the text).



Pythagoras Ratios for Guitar Frets

Pressing down at the 12th fret makes the string half of its full length, which produces an "Octave" or "High 8th" note.

Bonded they may be, but note how Helmholtz characterizes the “bond”. One might then think that mathematics and music are not exactly on the same plane, but somehow seemingly related, the link

We only have to refer to Guy Warrack’s wry observation that one does not become a mathematician until you’ll excel

How often has it been said in conversation that ‘Music is more absurd than most other things’, or that mathematics is certainly no less so . . . Certainly, many people are interested in music, and many people are interested in mathematics, but that proves nothing. It would be surprising to find that deaf mathematicians and to ask a mathematician if his tax return is correct (and if not, how to fix it)



What then, are we left with when we talk about Music? The answer is good suggestions.

Music and Mathematics are intricately related [but the relationship is not obvious] and we should not spend time looking for it. There are mathematical structures inherent in all works of music, and these structures can be used to help understanding and communication. The language of mathematics is a powerful tool for understanding and communicating structure . . . [so as] to find a good way to hear a piece of music (Fiore 5).

Needless to say, everyone will have his or her own way of understanding music. Theorists, mathematicians, and musicians all have their own ways of understanding music.

<http://www.nlb.gov.sg/blogs/> -is-th -rela -nsh -betw -class -mu -an -mathen



1. What is the main idea of the text above?
2. In what aspect do mathematics and music have a relationship?
3. Do you understand what the text is about?
4. Does the author agree that these two subjects have a relationship?
5. Do you find the simple past tense from the text? If yes, write it down.
6. Please paraphrase the following paragraph.

Music and Mathematics are intricately related [but there] is not an equation that will model all works of music and we should not spend time looking for it. Nevertheless, there are certain mathematical structures inherent in all works of music, and these mathematical structures are not given by equations. The language of mathematics is a convenient tool for comprehending and communicating this underlying structure . . . [so as] to find a good way to hear a piece of music and to communicate that way of hearing (Fiore 5).

7. Please write a summary based on the text above.

## SUMMARY

1. There are some techniques to paraphrase a sentence and summarize a paragraph.
2. Inferring unknown vocabulary is an important technique in order to understand the text.
3. The simple past is used to talk about a **completed action** in a time **before now**.

## REFLECTION

How much improvement have you made?  
Put a thick (✓) in the right column to

Aspects	Very much	Much	Little
Paraphrasing a sentence			
Summarizing a paragraph			
Finding antonyms			
Understanding the simple past tense			

**APPENDIX F**  
**THE EXPERT JUDGMENT QUESTIONNAIRE**

## SURAT PERMOHONAN *EXPERT JUDGEMENT*

Hal : Permohonan Kesediaan *Expert Judgement*  
Lampiran : 1 bendel

Kepada Yth.

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Dosen Jurusan Pendidikan Bahasa Inggris  
Fakultas Bahasa dan Seni UNY  
Di Yogyakarta

Dengan hormat,

Sebagai salah satu syarat dalam pembuatan Tugas Akhir Skripsi, bersama ini saya:

Nama : Tias Mafazatu Ma'arah  
NIM : 11202244025  
Judul Penelitian : *Developing English for Special Purposes-Based Reading Learning Materials for International Mathematics Education Study Program of Yogyakarta State University.*

Memohon kesediaan Bapak/Ibu untuk memberikan *Expert Judgement* pada produk yang telah saya buat berupa tiga unit materi *reading* bahasa Inggris untuk mahasiswa jurusan pendidikan matematika internasional Universitas Negeri Yogyakarta berdasarkan tujuan akademik.

Demikian permohonan saya sampaikan, atas bantuan dan kesediaan Bapak/Ibu, saya ucapkan terima kasih.

Yogyakarta, .....2015  
Pemohon

Tias Mafazatu Ma'arah  
NIM. 11202244025

**ANGKET EVALUASI**  
**MATERI PEMBELAJARAN *READING* BAHASA INGGRIS**  
**UNTUK MAHASISWA JURUSAN PENDIDIKAN MATEMATIKA**  
**INTERNASIONAL**

**A. DATA RESPONDEN**

Nama :

.....

Jenis Kelamin : L/P (lingkari salah satu)

Pekerjaan :

.....

Pendidikan : ( ) D3 ( ) S1 ( ) S2 ( ) S3

Lama Bekerja:

.....

**B. EVALUASI MATERI PEMBELAJARAN**

Berilah tanda centang (✓) pada salah satu kolom SS/S/TS/STS yang sesuai dengan pendapat Bapak/Ibu. Bapak/Ibu juga dapat menuliskan pendapat tambahan pada kolom yang disediakan.

Keterangan:

SS : Sangat Setuju (4)

TS : Tidak Setuju (2)

S : Setuju (3)

STS : Sangat Tidak Setuju (1)

**UNIT 1**  
**“WHY DO YOU LOVE MATH?”**

No	Pernyataan	SS	S	TS	STS
<b>KELAYAKAN ISI</b>					
1	Topik unit materi pembelajaran relevan dengan konteks kehidupan mahasiswa pendidikan matematika internasional.				
2	Teks dalam materi pembelajaran sesuai dengan konteks kehidupan mahasiswa pendidikan matematika internasional.				
3	Materi yang disusun mengarahkan mahasiswa untuk mengembangkan <i>reading skills</i> .				
4	Materi yang disusun mengarahkan mahasiswa untuk mengembangkan <i>vocabulary skills</i> .				
5	Materi yang disusun mengarahkan mahasiswa untuk memahami fitur-fitur linguistik dari teks yang dibahas.				
<b>KELAYAKAN BAHASA</b>					
6	Bahasa yang digunakan dalam penjelasan dan instruksi jelas dan mudah dipahami.				
7	Bahasa yang digunakan dalam materi pembelajaran sesuai dengan kaidah Bahasa Inggris yang tepat.				
8	Bahasa pesan atau materi yang disajikan dalam satu bagian/bab/subbab/paragraf kalimat mencerminkan keruntutan penyampaian makna.				
9	Bahasa yang digunakan dalam materi pembelajaran konsisten menggunakan satu variasi bahasa Inggris.				
<b>KELAYAKAN PENYAJIAN</b>					
10	Materi disusun secara teratur dan sistematis, berurutan dari yang paling mudah ke yang lebih sulit.				

11	Materi disusun memiliki keseimbangan dalam bentuk teks, ilustrasi dan lambang.				
12	Materi disusun mendukung mahasiswa untuk mendapatkan informasi dari suatu teks.				
13	Terdapat bagian pendahuluan, materi inti dan penutup pada materi yang disusun.				
14	Materi disusun dilengkapi dengan kosakata yang sesuai dengan materi yang dibahas.				
15	Materi disusun mencakup evaluasi bagi mahasiswa untuk mengukur tingkat pemahaman mahasiswa terhadap materi yang sudah dipelajari.				
16	Dalam tiap unit materi dilengkapi dengan pernyataan tujuan pembelajaran.				
<b>KELAYAKAN KEGRAFIKAN</b>					
17	Materi pembelajaran yang dikembangkan dicetak dengan kertas ukuran standar ISO (A4, A5, B5)				
18	Desain isi buku menggunakan unsur tata letak judul bab, sub judul, angka halaman, ilustrasi dan keterangan gambar ( <i>caption</i> ) yang baik.				
19	Penggunaan <i>font</i> dalam penyajian materi tidak berlebihan.				
20	Pemilihan ukuran <i>font</i> penyajian materi tidak terlalu kecil dan tidak terlalu besar.				
21	Pemilihan warna dalam penyajian materi tidak mengganggu penyampaian makna.				
22	Penyajian gambar bersifat estetik dan fungsional.				

## **TANGGAPAN UMUM TENTANG MATERI PEMBELAJARAN**

Tuliskan jawaban Bapak/Ibu pada tempat yang telah disediakan.

1. Secara umum, bagaimana pendapat Bapak/Ibu tentang materi yang telah disusun?

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2. Menurut Bapak/Ibu, apakah kekurangan dari materi yang telah disusun?

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3. Apakah saran Bapak/Ibu untuk memperbaiki materi yang telah disusun?

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## REKOMENDASI

Mengacu kepada hasil penilaian di atas, materi pembelajaran *reading* bahasa Inggris untuk mahasiswa pendidikan akuntansi internasional UNIT 1 dengan judul “WHY DO YOU LOVE MATH?” dinyatakan:

- ☐ Layak tanpa revisi
- ☐ Tidak layak
- ☐ Layak dengan revisi sebagai berikut:

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\*Berilah tanda centang (✓) pada pilihan yang sesuai dengan pendapat Anda.

Yogyakarta, ..... 2015

Evaluatur materi,

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NIP.

**UNIT 2**  
**“MATH AND OUR REAL LIFE”**

No	Pernyataan	SS	S	TS	STS
<b>KELAYAKAN ISI</b>					
1	Topik unit materi pembelajaran relevan dengan konteks kehidupan mahasiswa pendidikan matematika internasional.				
2	Teks dalam materi pembelajaran sesuai dengan konteks kehidupan mahasiswa pendidikan matematika internasional.				
3	Materi yang disusun mengarahkan mahasiswa untuk mengembangkan <i>reading skills</i> .				
4	Materi yang disusun mengarahkan mahasiswa untuk mengembangkan <i>vocabulary skills</i> .				
5	Materi yang disusun mengarahkan mahasiswa untuk memahami fitur-fitur linguistik dari teks yang dibahas.				
<b>KELAYAKAN BAHASA</b>					
6	Bahasa yang digunakan dalam penjelasan dan instruksi jelas dan mudah dipahami.				
7	Bahasa yang digunakan dalam materi pembelajaran sesuai dengan kaidah Bahasa Inggris yang tepat.				
8	Bahasa pesan atau materi yang disajikan dalam satu bagian/bab/subbab/paragraf kalimat mencerminkan keruntutan penyampaian makna.				
9	Bahasa yang digunakan dalam materi pembelajaran konsisten menggunakan satu variasi bahasa Inggris.				
<b>KELAYAKAN PENYAJIAN</b>					
10	Materi disusun secara teratur dan sistematis, berurutan dari yang paling mudah ke yang lebih sulit.				

11	Materi disusun memiliki keseimbangan dalam bentuk teks, ilustrasi dan lambang.				
12	Materi disusun mendukung mahasiswa untuk mendapatkan informasi dari suatu teks.				
13	Terdapat bagian pendahuluan, materi inti dan penutup pada materi yang disusun.				
14	Materi disusun dilengkapi dengan kosakata yang sesuai dengan materi yang dibahas.				
15	Materi disusun mencakup evaluasi bagi mahasiswa untuk mengukur tingkat pemahaman mahasiswa terhadap materi yang sudah dipelajari.				
16	Dalam tiap unit materi dilengkapi dengan pernyataan tujuan pembelajaran.				
<b>KELAYAKAN KEGRAFIKAN</b>					
17	Materi pembelajaran yang dikembangkan dicetak dengan kertas ukuran standar ISO (A4, A5, B5)				
18	Desain isi buku menggunakan unsur tata letak judul bab, sub judul, angka halaman, ilustrasi dan keterangan gambar ( <i>caption</i> ) yang baik.				
19	Penggunaan <i>font</i> dalam penyajian materi tidak berlebihan.				
20	Pemilihan ukuran <i>font</i> penyajian materi tidak terlalu kecil dan tidak terlalu besar.				
21	Pemilihan warna dalam penyajian materi tidak mengganggu penyampaian makna.				
22	Penyajian gambar bersifat estetik dan fungsional.				

## **TANGGAPAN UMUM TENTANG MATERI PEMBELAJARAN**

Tuliskan jawaban Bapak/Ibu pada tempat yang telah disediakan.

1. Secara umum, bagaimana pendapat Bapak/Ibu tentang materi yang telah disusun?

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2. Menurut Bapak/Ibu, apakah kekurangan dari materi yang telah disusun?

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3. Apakah saran Bapak/Ibu untuk memperbaiki materi yang telah disusun?

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## REKOMENDASI

Mengacu kepada hasil penilaian di atas, materi pembelajaran *reading* bahasa Inggris untuk mahasiswa pendidikan akuntansi internasional UNIT 2 dengan judul “MATH AND OUR REAL LIFE” dinyatakan:

- ☐ Layak tanpa revisi
- ☐ Tidak layak
- ☐ Layak dengan revisi sebagai berikut:

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\*Berilah tanda centang (✓) pada pilihan yang sesuai dengan pendapat Anda.

Yogyakarta, ..... 2015

Evaluator materi,

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NIP.

**UNIT 3**  
**“MATH IS FUN”**

No	Pernyataan	SS	S	TS	STS
<b>KELAYAKAN ISI</b>					
1	Topik unit materi pembelajaran relevan dengan konteks kehidupan mahasiswa pendidikan matematika internasional.				
2	Teks dalam materi pembelajaran sesuai dengan konteks kehidupan mahasiswa pendidikan matematika internasional.				
3	Materi yang disusun mengarahkan mahasiswa untuk mengembangkan <i>reading skills</i> .				
4	Materi yang disusun mengarahkan mahasiswa untuk mengembangkan <i>vocabulary skills</i> .				
5	Materi yang disusun mengarahkan mahasiswa untuk memahami fitur-fitur linguistik dari teks yang dibahas.				
<b>KELAYAKAN BAHASA</b>					
6	Bahasa yang digunakan dalam penjelasan dan instruksi jelas dan mudah dipahami.				
7	Bahasa yang digunakan dalam materi pembelajaran sesuai dengan kaidah Bahasa Inggris yang tepat.				
8	Bahasa pesan atau materi yang disajikan dalam satu bagian/bab/subbab/paragraf kalimat mencerminkan keruntutan penyampaian makna.				
9	Bahasa yang digunakan dalam materi pembelajaran konsisten menggunakan satu variasi bahasa Inggris.				
<b>KELAYAKAN PENYAJIAN</b>					
10	Materi disusun secara teratur dan sistematis, berurutan dari yang paling mudah ke yang lebih sulit.				

11	Materi disusun memiliki keseimbangan dalam bentuk teks, ilustrasi dan lambang.				
12	Materi disusun mendukung mahasiswa untuk mendapatkan informasi dari suatu teks.				
13	Terdapat bagian pendahuluan, materi inti dan penutup pada materi yang disusun.				
14	Materi disusun dilengkapi dengan kosakata yang sesuai dengan materi yang dibahas.				
15	Materi disusun mencakup evaluasi bagi mahasiswa untuk mengukur tingkat pemahaman mahasiswa terhadap materi yang sudah dipelajari.				
16	Dalam tiap unit materi dilengkapi dengan pernyataan tujuan pembelajaran.				
<b>KELAYAKAN KEGRAFIKAN</b>					
17	Materi pembelajaran yang dikembangkan dicetak dengan kertas ukuran standar ISO (A4, A5, B5)				
18	Desain isi buku menggunakan unsur tata letak judul bab, sub judul, angka halaman, ilustrasi dan keterangan gambar ( <i>caption</i> ) yang baik.				
19	Penggunaan <i>font</i> dalam penyajian materi tidak berlebihan.				
20	Pemilihan ukuran <i>font</i> penyajian materi tidak terlalu kecil dan tidak terlalu besar.				
21	Pemilihan warna dalam penyajian materi tidak mengganggu penyampaian makna.				
22	Penyajian gambar bersifat estetik dan fungsional.				

## **TANGGAPAN UMUM TENTANG MATERI PEMBELAJARAN**

Tuliskan jawaban Bapak/Ibu pada tempat yang telah disediakan.

1. Secara umum, bagaimana pendapat Bapak/Ibu tentang materi yang telah disusun?

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2. Menurut Bapak/Ibu, apakah kekurangan dari materi yang telah disusun?

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3. Apakah saran Bapak/Ibu untuk memperbaiki materi yang telah disusun?

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## REKOMENDASI

Mengacu kepada hasil penilaian di atas, materi pembelajaran *reading* bahasa Inggris untuk mahasiswa pendidikan akuntansi internasional UNIT 3 dengan judul “MATH IS FUN” dinyatakan:

- ☐ Layak tanpa revisi
- ☐ Tidak layak
- ☐ Layak dengan revisi sebagai berikut:

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\*Berilah tanda centang (✓) pada pilihan yang sesuai dengan pendapat Anda.

Yogyakarta, ..... 2015

Evaluatur materi,

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NIP.

**APPENDIX G**  
**THE EXPERT JUDGMENT DATA**

## THE EXPERT JUDGMENT DATA

### The Result of the Expert Judgment of Unit I

The Appropriateness of the Content		
1	The topic of the unit of the developed materials is relevant with the students of International Mathematics Education study program.	3
2	The developed materials are in accordance with the learning context of the students of International Mathematics Education study program.	3
3	The developed materials lead the students to perform and develop their reading skills.	4
4	The developed materials lead the students to perform and develop their vocabulary skills.	4
5	The developed materials lead the students to understand the linguistic features of the discussed text.	4
Mean ( $\bar{x}$ )		3.6
The Appropriateness of the Language		
6	The language used in the explanations and instructions are clear and understandable.	3
7	The language used in the developed materials is grammatically correct.	3
8	The language used in the developed materials is cohesive and coherent.	3
9	The developed materials consistently use one variation of English.	3
The Appropriateness of the Presentation		
10	The tasks are arranged systematically from the easiest to the most difficult.	4
11	The developed materials are balance in terms of texts, illustrations and symbols.	4
12	The developed materials support the students to get information within the texts.	4

13	The developed materials contain opening activities, main activities and closing activities.	4
14	The developed materials are completed with vocabulary list related to the unit topic.	4
15	The developed materials provide evaluation part for the students to check their understanding.	4
16	The learning objectives are stated in every unit of the developed materials.	4
<b>Mean (x)</b>		<b>4</b>
<b>The Appropriateness of the Layout</b>		
17	The developed materials are printed on ISO-standardized size paper (A4, A5, B5).	4
18	The layout of the developed materials use the appropriate placement of the unit title, sub-title, page number, illustrations and captions.	3
19	The developed materials use the appropriate variation of fonts.	4
20	The fonts used are not too big or too small.	3
21	The color usage of the developed materials is not disturbing the readers.	2
22	The illustration and graphic design in the developed materials are aesthetic and functional.	3
<b>Mean (x)</b>		<b>3.1</b>

## The Result of the Expert Judgment of Unit II

<b>The Appropriateness of the Content</b>		
1	The topic of the unit of the developed materials is relevant with the students of International Mathematics Education study program.	3
2	The developed materials are in accordance with the learning context of the students of International Mathematics Education study program.	3
3	The developed materials lead the students to perform and develop their reading skills.	4
4	The developed materials lead the students to perform and develop their vocabulary skills.	4
5	The developed materials lead the students to understand the linguistic features of the discussed text.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.6</b>
<b>The Appropriateness of the Language</b>		
6	The language used in the explanations and instructions are clear and understandable.	3
7	The language used in the developed materials is grammatically correct.	3
8	The language used in the developed materials is cohesive and coherent.	3
9	The developed materials consistently use one variation of English.	3
<b>The Appropriateness of the Presentation</b>		
10	The tasks are arranged systematically from the easiest to the most difficult.	4
11	The developed materials are balance in terms of texts, illustrations and symbols.	4
12	The developed materials support the students to get information within the texts.	4
13	The developed materials contain opening activities, main activities	4

	and closing activities.	
14	The developed materials are completed with vocabulary list related to the unit topic.	4
15	The developed materials provide evaluation part for the students to check their understanding.	4
16	The learning objectives are stated in every unit of the developed materials.	4
<b>Mean (x)</b>		<b>4</b>
<b>The Appropriateness of the Layout</b>		
17	The developed materials are printed on ISO-standardized size paper (A4, A5, B5).	4
18	The layout of the developed materials use the appropriate placement of the unit title, sub-title, page number, illustrations and captions.	3
19	The developed materials use the appropriate variation of fonts.	4
20	The fonts used are not too big or too small.	3
21	The color usage of the developed materials is not disturbing the readers.	2
22	The illustration and graphic design in the developed materials are aesthetic and functional.	3
<b>Mean (x)</b>		<b>3.1</b>

### The Result of the Expert Judgment of Unit III

<b>The Appropriateness of the Content</b>		
1	The topic of the unit of the developed materials is relevant with the students of International Mathematics Education study program.	3
2	The developed materials are in accordance with the learning context of the students of International Mathematics Education study program.	3
3	The developed materials lead the students to perform and develop their reading skills.	4
4	The developed materials lead the students to perform and develop their vocabulary skills.	4
5	The developed materials lead the students to understand the linguistic features of the discussed text.	4
<b>Mean (<math>\bar{x}</math>)</b>		<b>3.6</b>
<b>The Appropriateness of the Language</b>		
6	The language used in the explanations and instructions are clear and understandable.	3
7	The language used in the developed materials is grammatically correct.	3
8	The language used in the developed materials is cohesive and coherent.	3
9	The developed materials consistently use one variation of English.	3
<b>The Appropriateness of the Presentation</b>		
10	The tasks are arranged systematically from the easiest to the most difficult.	4
11	The developed materials are balance in terms of texts, illustrations and symbols.	4
12	The developed materials support the students to get information within the texts.	4
13	The developed materials contain opening activities, main activities	4

	and closing activities.	
14	The developed materials are completed with vocabulary list related to the unit topic.	4
15	The developed materials provide evaluation part for the students to check their understanding.	4
16	The learning objectives are stated in every unit of the developed materials.	4
<b>Mean (x)</b>		<b>4</b>
<b>The Appropriateness of the Layout</b>		
17	The developed materials are printed on ISO-standardized size paper (A4, A5, B5).	4
18	The layout of the developed materials use the appropriate placement of the unit title, sub-title, page number, illustrations and captions.	3
19	The developed materials use the appropriate variation of fonts.	4
20	The fonts used are not too big or too small.	3
21	The color usage of the developed materials is not disturbing the readers.	2
22	The illustration and graphic design in the developed materials are aesthetic and functional.	3
<b>Mean (x)</b>		<b>3.1</b>



## **APPENDIX H**

### **THE FINAL DRAFT OF THE MATERIALS**



# ENGLISH SUPPLEMENTARY READING MATERIALS

FOR INTERNATIONAL MATHEMATICS EDUCATION  
OF YOGYAKARTA STATE UNIVERSITY

INTERMEDIATE  
LEVEL

**Author : Tias Mafazatu M.**  
**Supervisor : Ella Wulandari, M.A.**  
**Validator : Suharso, M.Pd.**

## PREFACE

**English reading learning materials** is a supplementary book designed for students of International Mathematics Education of Yogyakarta State University. This supplementary book is designed in order to improve the English reading skills of International Mathematic Education students.



This book presents reading texts related to Mathematics study in general like fun things of math, math in a real life, and why do people love math? The materials are divided into 3 units which consist of 20-22 activities. This supplementary book provides reading skills activities such as skimming, scanning, previewing, finding implicit meaning, paraphrasing, summarizing, and reading to present related to the topics being discussed. Each unit is also provided with pre-activities, main activities, and self assessment. The tasks are also arranged from guided activities, less guided activities, and free guided activities.

These English reading learning materials are significantly different from other English learning materials since the materials are developed based on the result of needs analysis that has been conducted before. It is hope that the learners will find reading English texts easy and fun after learning some provided texts in these reading materials.

Yogyakarta, 10 September 2015

Author

# MAP OF THE BOOK

TOPICS/ UNIT	MATERIALS			ACTIVITIES	TYPE OF MODE *)
	READING SKILLS	VOCABULARY SKILLS	GRAMMAR		
<b>Why Do You Love Math?</b>	<ul style="list-style-type: none"><li>• Skimming for the whole text</li><li>• Scanning for details</li><li>• Finding implicit meanings</li></ul>	<ul style="list-style-type: none"><li>• Identifying pronouns and their referents</li></ul>	-	<ul style="list-style-type: none"><li>• Reading some texts</li><li>• Answering essay questions</li><li>• Answering true false questions</li><li>• Identifying pronouns and their referents</li><li>• Identifying the part of speech</li><li>• Matching the words with their parts of speech</li></ul>	
<b>Math and Our Real Life</b>	<ul style="list-style-type: none"><li>• Identifying topic and topic sentence</li><li>• Identifying main idea and supporting details</li></ul>	<ul style="list-style-type: none"><li>• Finding synonyms</li><li>• Identifying the parts of speech</li></ul>	<ul style="list-style-type: none"><li>• Identifying the simple present tense</li></ul>	<ul style="list-style-type: none"><li>• Matching the topic</li><li>• Matching the synonyms</li><li>• Finding topic and topic sentence</li><li>• Analyzing the simple</li></ul>	
				<ul style="list-style-type: none"><li>• present tense</li><li>• Identifying main idea</li><li>• Writing sentences by using the</li></ul>	

				<ul style="list-style-type: none"> <li>simple present tense</li> <li>Finding the topic sentence and supporting details</li> <li>Rearranging the jumbled paragraph</li> <li>Finding an article, then identify the topic, main idea, and supporting details</li> </ul>	
	<ul style="list-style-type: none"> <li>Paraphrasing the paragraph</li> <li>Summarizing</li> <li>Reading to present</li> </ul>	<ul style="list-style-type: none"> <li>Finding antonyms</li> <li>Inferring unknown vocabulary</li> </ul>	<ul style="list-style-type: none"> <li>Identifying the simple past tense</li> </ul>	<ul style="list-style-type: none"> <li>Paraphrasing a paragraph</li> <li>Paraphrasing a paragraph through an article, magazine, or internet</li> <li>Identify the simple past tense</li> <li>Changing the sentences with the simple present tense into the simple past tense</li> <li>Finding antonyms</li> <li>Summarizing a paragraph</li> </ul>	

\*)

Individually

In pairs

In group



# KEY TO PRONUNCIATION

## CONSONANT

<b>p</b>	pen, copy, happen
<b>b</b>	back, baby, job
<b>t</b>	tea, tight, button
<b>d</b>	day, ladder, odd
<b>k</b>	key, clock, school
<b>g</b>	get, giggle, ghost
<b>tʃ</b>	church, march, nature
<b>dʒ</b>	judge, age, soldier
<b>f</b>	fat, coffee, rough, photo
<b>v</b>	view, heavy, move
<b>θ</b>	thing, author, path
<b>ð</b>	this, other, smooth
<b>s</b>	soon, cease, sister
<b>z</b>	zero, music, roses, buzz
<b>ʃ</b>	ship, sure, national
<b>ʒ</b>	pleasure, vision
<b>h</b>	hot, whole, ahead
<b>m</b>	more, hammer, sum
<b>n</b>	nice, know, funny, sun
<b>ŋ</b>	ring, anger, thanks, sung
<b>l</b>	light, valley, feel
<b>r</b>	right, wrong, sorry, arrange
<b>j</b>	yet, use, beauty, few
<b>w</b>	wet, one, when, queen
<b>ʔ</b>	(glottal stop) department, football

## VOWELS

<b>ɪ</b>	kit, bid, hymn, minute
<b>e</b>	dress, bed, head, many
<b>æ</b>	trap, bad
<b>ɒ</b>	lot, odd, wash
<b>ʌ</b>	strut, mud, love, blood
<b>ʊ</b>	foot, good, put
<b>iː</b>	fleece, sea, machine
<b>eɪ</b>	face, day, break
<b>aɪ</b>	price, high, try
<b>ɔɪ</b>	choice, boy
<b>uː</b>	goose, two, blue, group
<b>əʊ</b>	goat, show, no
<b>aʊ</b>	mouth, now
<b>ɪə</b>	near, here, weary
<b>eə</b>	square, fair, various
<b>aɪ</b>	start, father
<b>ɔɪ</b>	thought, law, north, war
<b>ʊə</b>	poor, jury, cure
<b>ɜː</b>	nurse, stir, learn, refer
<b>ə</b>	about, common, standard
<b>ɪ</b>	happy, radiate, glorious
<b>u</b>	thank you, influence, situation
<b>ɪ</b>	suddenly, cotton
<b>ɪ</b>	middle, moral
<b>ˈ</b>	(stress mark)

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Reflection .....	65

# WHY DO YOU LOVE MATH?

## UNIT 1

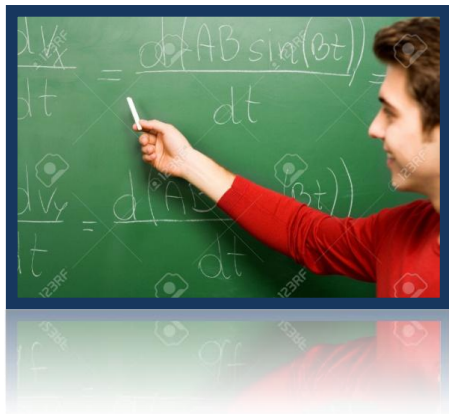
In this chapter, you will learn:

- Skimming for the whole text
- Scanning for details
- Finding implicit meanings from text
- Identifying pronouns and finding their referents



## Get Ready!

- **Task 1.** Look at the pictures below. Have you ever felt the same way when you do something related to math? Thick (✓) the picture that show your feeling about math subject.



I love math. Math is a fun  
about math is a picture



I hate math. It is a complicated  
with math formulas. It is boring  
there

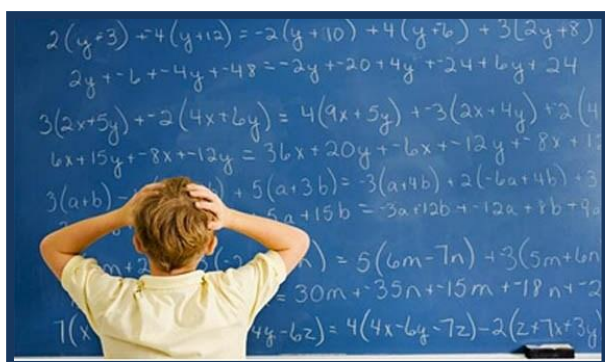


## Math Symbols

+	plus/ p	≠	is not equal
-	minus/ r	<	is less
×	multipl	>	is greater
÷	divide	≤	is less than or equal
=	Equal	≥	is greater than or equal

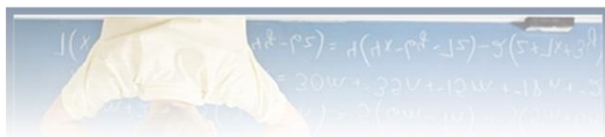
- **Task 2.** Look at the pictures below. There are two pictures and lists of words in this task. Choose the best words to describe these pictures.

easy	hard	fun subject	complicated	a game	logic
rational	irrational	useful	boring		



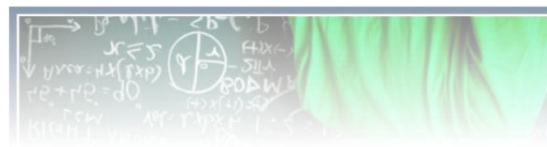
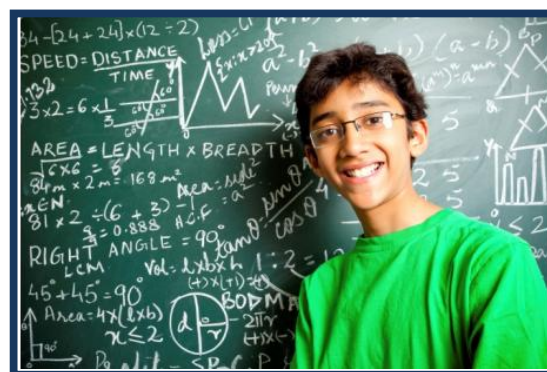
Related to this picture, it seems that math is

- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....



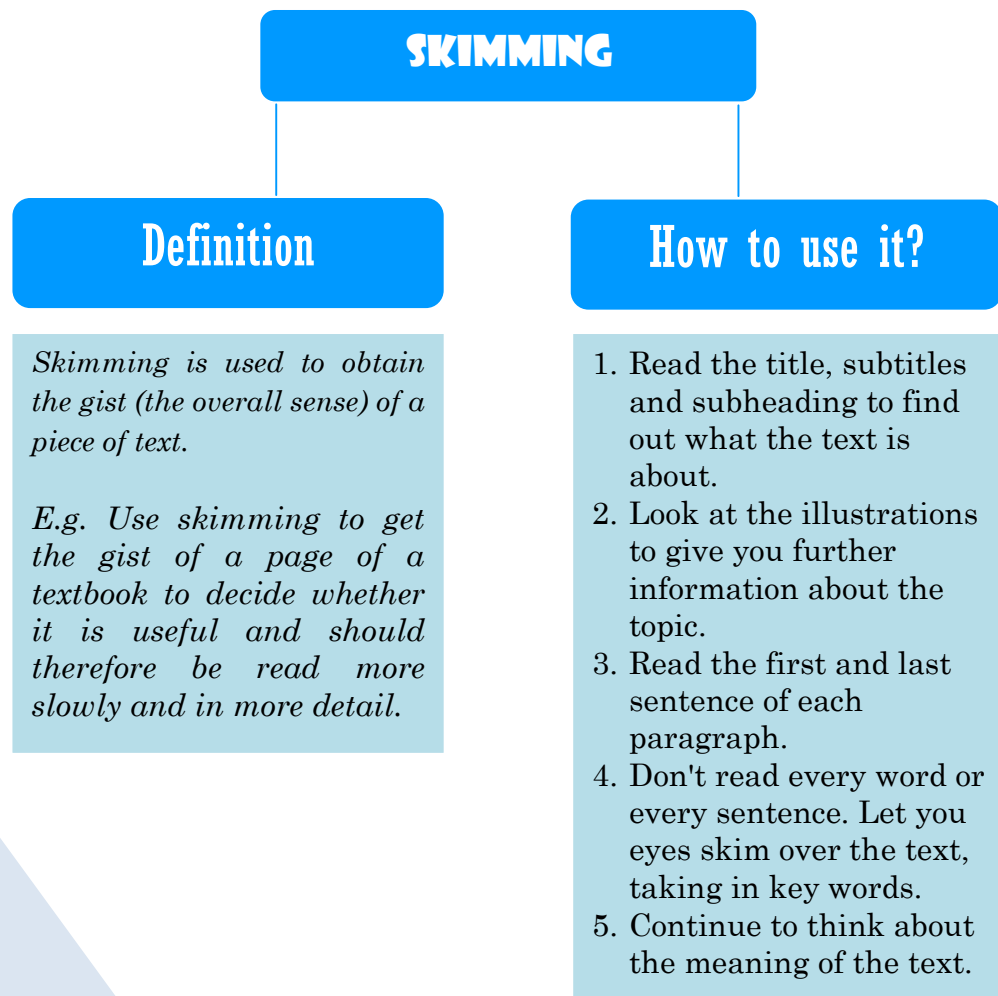
Related to this picture,

- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....



## Let's Start

- **Task 3.** Have you ever done skimming for the whole text? Do you know how to use it? These are the short explanation of 'skimming'. Study the following information carefully. You will do skimming for the whole text in Task 4.

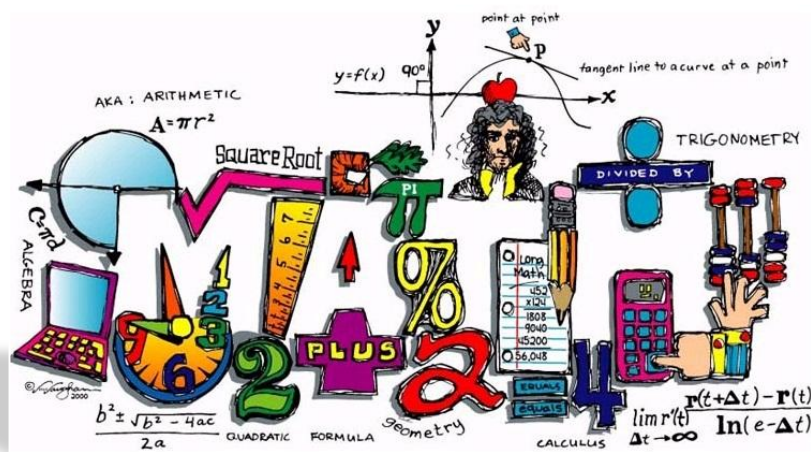


Source: <http://readingstrategies.1>

- **Task 4. Read the following text entitled ‘What is Mathematics?’. Please use skimming techniques that you have learned before. Then, write the ideas that you get in the provided space.**

## What is Mathematics?

By Elaine | August 15, 201.



Mathematics is the science that deals with the logic of shape, quantity and arrangement. Math is all around us, in everything we do. It is the building block for everything in our daily lives including mobile devices, architecture (ancient and modern), engineering, and

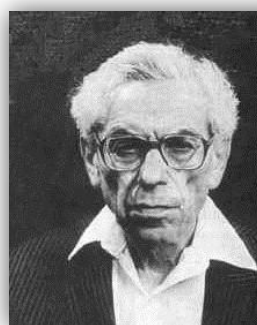
Since the b

recorded history, mathematic discovery has been at in even the n e of cultures. The needs of math arose more complex a society, the more complex the n more than the ability to count, but also rel physics of

he sun a

<http://www.livesci-mathema>

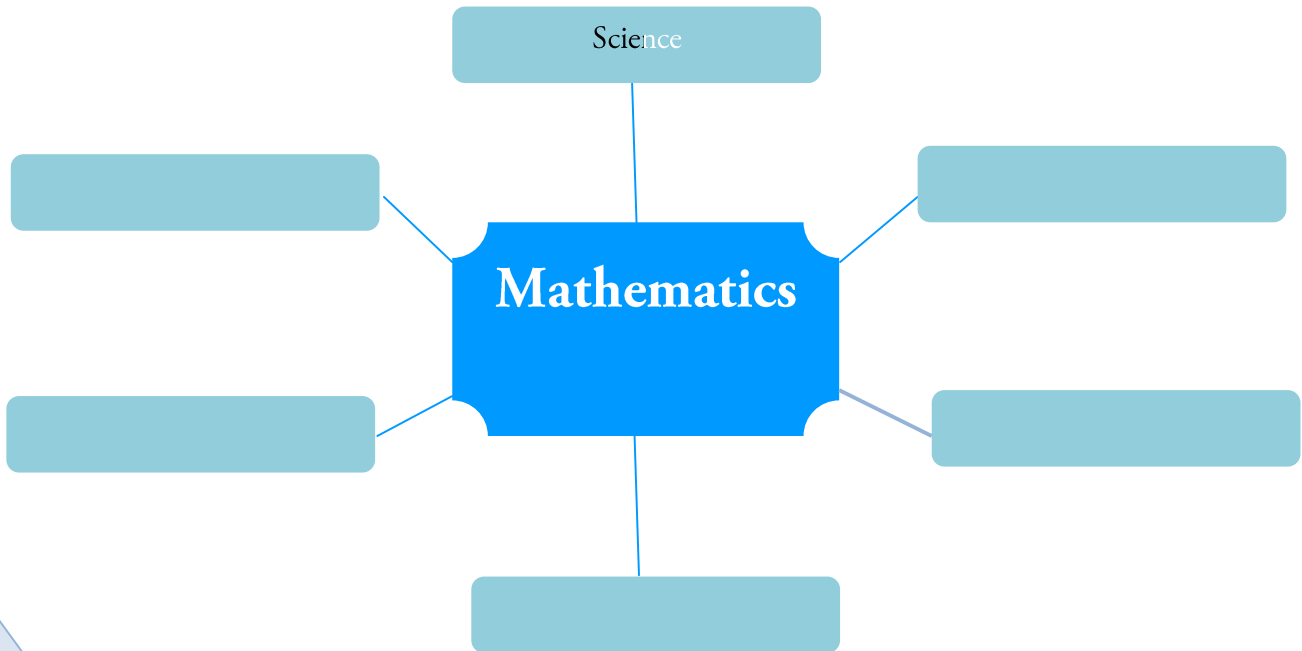
### Quote Corner



**"God may not play dice with the universe, but something strange is going on with the prime numbers."**

**Paul Erdos**

**Write down your ideas into following space.**



**Task 5. Read again the text in Task 4. Then answer the following questions.**

1. What is the topic sentence?  
.....

2. What is the topic sentence?  
.....

Mathematics is the science that deals with the logic of shape, quantity and arrangement. It is the building block of modern science, technology, devices, architecture (ancient and modern), and many other aspects of our world.

.....

3. Do you agree that mathematics is an applicable science? Why?  
.....

4. Do you love mathematics? Is it an interesting science?  
.....

5. Are the statements true or false?
- Mathematics is related to science.
  - Mathematics is not used in our daily life.

● **Task 6. Study the information below. This is the tips for you to do skimming effectively.**

**Guidelines for Effective Skimming**

1. Read the title.
2. Read the introduction or the first paragraph.
3. Read the first sentence of every other paragraph.
4. Read any headings and sub-headings.
5. Always work as fast as you can.
6. Always keep in mind your reason for skimming.
7. Be flexible when you are skimming. How much you skim in a passage depends on your purpose and on the passage.
8. Notice any pictures, charts, or graphs.
9. Notice any italicized or boldface words or phrases.
10. Read the summary or last paragraph.

<http://pioneer.netserv.chula.ac.th/~pkanchan/html/skim.htm>

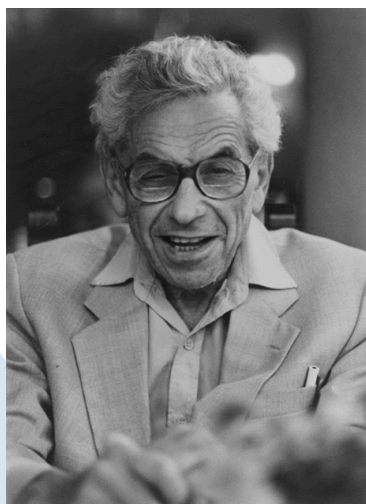
● **Task 7. Study the following words. You will find these words in Task 8.**

No	Words	Pronunciation	Part of Speech	Meaning
1	companionship	/kəm'pæniənʃɪp/	noun	persahabatan
2	oddness	/ˈɒdnəs/	noun	keanehan
3	warmth	/wɔːmθ/	noun	kehangatan
4	declare	/dɪ'kleɪ/	verb	menyatakan
5	fuel	/fjuel/	verb	didorong
6	arguably	/ˈɑːɡjʊəbəl/	adverb	dapat dibuktikan, c
7	constantly	/ˈkɒnstənt/	adverb	terus-menerus
8	prolific	/prə'lifɪk/	adjective	produktif
9	strange	/streɪndʒ/	adjective	aneh
10	obsessed	/əb'sesəd/	adjective	terobsesi
11	indispensable	/ɪndɪ'spensəbəl/	adjective	sangat penting
12	marvelous	/ˈmɑːvələs/	adjective	menakutkan
13	vivid	/ˈvɪvɪd/	adjective	jelas
14	extraordinary	/ɪk'strɔːdnəri/	adjective	luar biasa

- **Task 8.** The following text is a book review of *The Man Who Loved Only Numbers: The Story of Paul Erdos and the Search for Mathematical Truth*. You may use the techniques of skimming.

## The Man Who Loved Story of Paul Erdos M: hematica

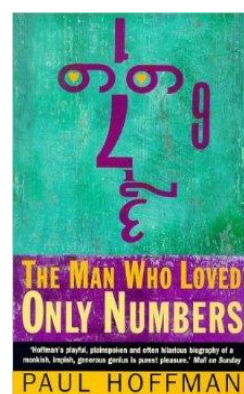
By: Paul



The biography of a mathematical  
prolific pure mathematician in his  
too. 'A mathematical genius of the  
obsessed his soul - he thought and wrote  
nineteen hours a day until he died  
out of a passion had no interest in food.  
After all that is usually indispensable  
in this marvellous biography, gives  
portrait of this singular creature,  
Erdos's genius and his oddness, but  
the joyfulness of his strange

had no job, no hobbies, no wife, no  
a virgin. Instead he travelled the world  
doorstep of esteemed mathematicians  
travelled until his death at 83, racing across  
theorems as possible, fuelled by a diet  
more than 1,500 papers written -written, a daily routine  
mathematics a day, seven days a week. Paul Erdos was considered  
extraordinary thinkers of our times.

<http://www.amazon.com/exec/obidos/ASIN/1857028295/antoniocangia-20/ref=nosim/>





**Task 9. Read again the previous text. Then, answer the following questions. Compare your answers with another student.**

1 Does this seem likely to motivate people to learn math?

.....  
.....  
.....

2 Is this a good book if you are a revision student?

.....  
.....  
.....

3 Did the reviewer think this was a good book? Why?

.....  
.....  
.....

4 Is this a good book for students of math?

.....  
.....  
.....

5 Would you like to read this book?

.....  
.....  
.....

## Grammar in Focus

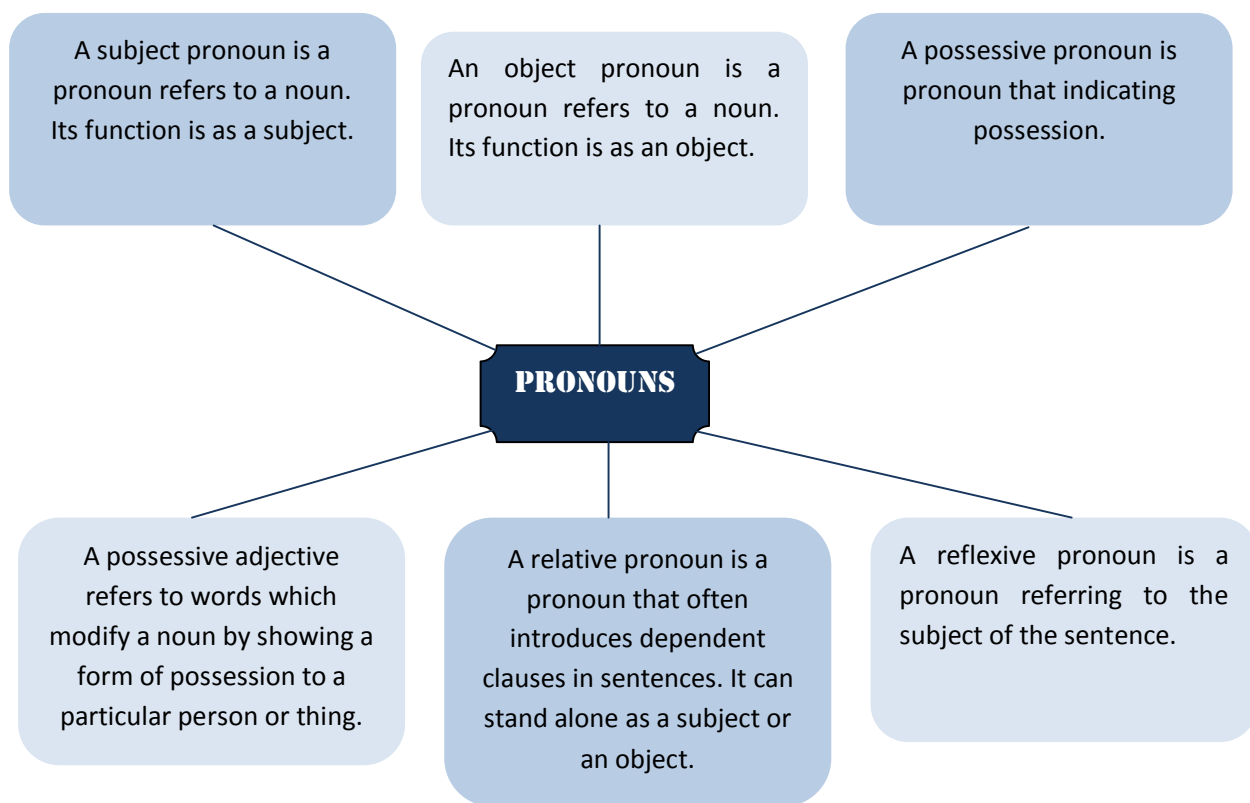
**Task 10. Study the following information about pronouns.**

A **pronoun** (*I, me, he, she, herself, you, it, that, they, each, few, many, who, whoever, whose, someone, everybody, etc.*) is a word that takes the place of a noun.

Examples:

1. Kate is a smart student. She really loves math.
2. Zack gave me a mathematics book. I don't remember its title.





Subject Pronouns	Object Pronouns	Possessive Pronouns	Reflexive Pronouns	Possessive Adjectives
I	Me	Mine	Myself	My
You (singular)	You	Yours	Yourself	Your
He	Him	His	Himself	His
She	Her	Hers	Herself	Her
It	It	-	Itself	Its
We	Us	Ours	Ourselves	Our
You (plural)	You	Yours	Yourselves	Your
They	Them	Theirs	Themselves	Their

INDIFINITE PRONOUNS	
Singular	another, anybody, anyone, anything, each, either, everybody, everyone, everything, little, much, neither, nobody, no one, nothing, one, other, somebody, someone, something
Plural	both, few, many, others, several
Singular or Plural	all, any, more, most, none, some, such
RELATIVE PRONOUNS	
Who	Used for people
Whi	Used for
That	Used for people and things

● **Task 11. Study the following words. You will find these words in Task 12.**

No	Words	Pronunciation	Part of Speech	Meaning
1	napkin	/ˈnæp̩ ɪn/	noun	seret
2	fridge	/fɪdʒ/	noun	kulk
3	approach	/əˈpʁoʊtʃ/	noun	pendek
4	insight	/ˈɪnːsaɪt/	noun	wawak
5	realize	/ˈrɪəlaɪz/	noun	menyati
6	neatness	/ˈniːtnəs/	noun	kerap
7	scratch	/skɹætʃ/	verb	mengg
8	shrug	/ʃrʌɡ/	verb	mengang
9	limitless	/ˈlɪmɪtəs/	adjective	tak ter
10	strict	/sɹɪkt/	adjective	ket
11	glorious	/ˈɡlɔːrɪəs/	adjective	mulia, agur

- **Task 12.** The following text tells you the reason why the writer loves math so much. Read it carefully.

### WHY DO YOU LOVE

It's a really hard question – if you asked someone why they love math, they'd probably shrug and say "because it's fun." But I think there's more to it than that. For me, math is a language. It's a way of thinking that's completely limitless and at the same time, it's a tool that you can use to solve problems. There are loads of things that you can do with math – on one hand, it's this beautiful, abstract world of numbers and shapes, but on the other hand, it's a practical tool that you can use to solve real-world problems. I love that you can find math anywhere, on restaurant napkins, on the train, on envelopes, and even in the most unlikely places. I remember the first time I realized I was making a mistake in a calculation. It was a small mistake, but it felt like a big one. I was so proud of myself for getting it right, and then I realized I was wrong. It was a humbling experience, but it also taught me that math is a process, not just a set of rules. I love battling against a puzzle until I find a solution. I love the feeling of finding a mistake and putting it right. I love the insight that comes from realizing I'm making a mistake. I love the feeling of finally solving a problem. But above all, I love math because it's a language that everyone can understand. It's a language that's always with you, and it's a language that's always growing. It's glorious. And there's always a new challenge waiting for you. It's a language that's always with you, and it's a language that's always growing. It's glorious. And there's always a new challenge waiting for you.

<http://www.flyingcoloursmaths.co.uk/student-asks-love-maths-much/>

- **Task 13.** In a group of 3, please find pronouns from text in Task 8. Write down the pronouns and also the referents. Find as many as you can.

No	Pronoun	Line	Referent
1	It	Line 1	Ref: to math
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Task 14. Based on the text in Task 12, answer the following questions. Check your answer with your partner.**

- 1 Do you understand the pair? What is it about?  
.....  
.....  
.....
- 2 What does the word 'mathematics' mean?  
.....  
.....  
.....
- 3 The word 'it' in line 1 refers to what?  
.....
- 4 Are these statements true or false?  
a Mathematics cannot be applied to everything.  
b The writer loves mathematics.  
c You can find mathematics everywhere.  
5 Do you agree that mathematics is a useful subject?  
.....  
.....  
.....

**Task 15. Study the following information about the part of speech.**

**PART OF SPEECH**

It is a group of words in a language that may occur in similar positions or fulfill similar functions in a sentence. The chief parts of speech in English are noun, pronoun, adjective, determiner, adverb, verb, preposition, conjunction, and interjection.

<http://dictionary.reference.com/browse/part-of-speech>

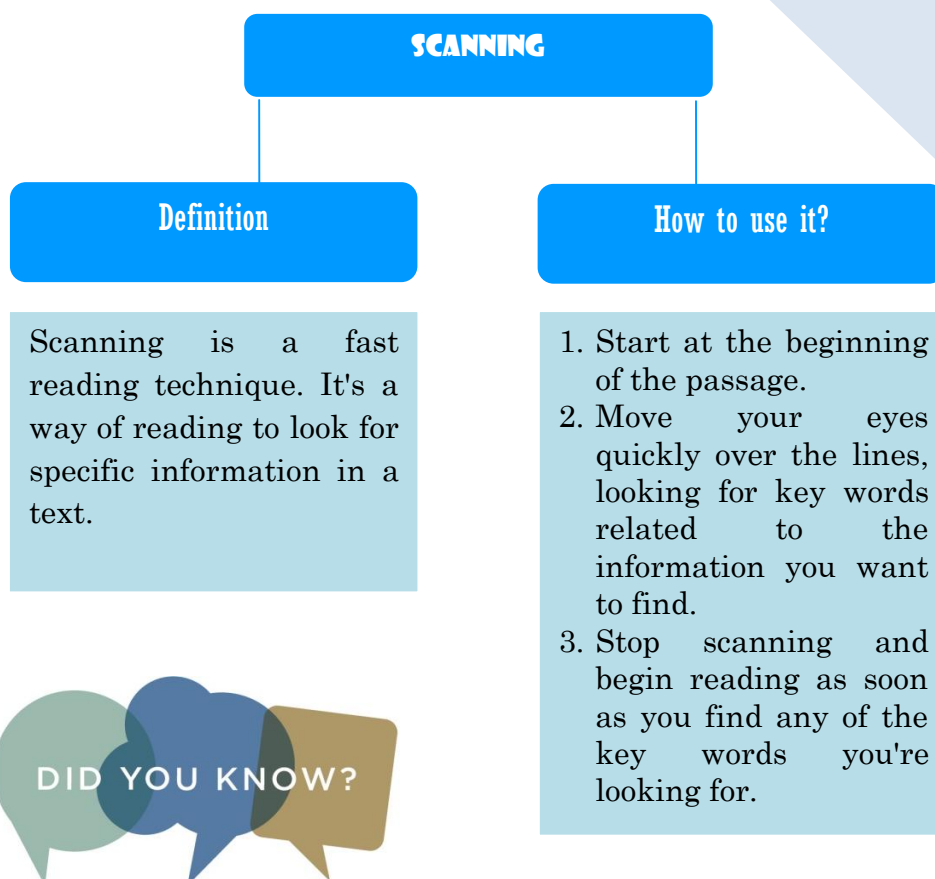
- 1 Three little words are articles (determiners).  
▶▶ a, an, the.
- 2 A noun is the name of a person, place, thing, or idea.  
▶▶ A: school, garden, house, swimming pool.
- 3 Adjectives tell the kind or quality of a noun.  
▶▶ A: great, small, pretty, white, colorful.
- 4 Instead of a noun, a pronoun stands for a noun.  
▶▶ He, her, his, her, your, my, him.
- 5 Verbs tell of something that is done or that happens.  
▶▶ To read, count, laugh, sing, jump, run.
- 6 How things are done or felt are adverbs.  
▶▶ A: slowly, quickly, it, we.
- 7 Conjunctions join the words in a sentence.  
▶▶ As, when, and, but, or, yet.
- 8 The preposition shows the relationship between a noun and another word.  
▶▶ at, in, on, through, a, do.
- 9 The interjection shows strong feeling.  
▶▶ A: Oh, How, pret, Al, How.

● **Task 16. Identify the part of speech and find the meaning of the words below. You will find these words in Task 18.**

No	Words	Pronunciation	Part of Speech	Meaning
1	require	/ɪ'rekvaɪə/		
2	provide	/prə'vaɪd/		
3	see	/si:/		
4	knowledge	/'nɒlɪdʒ/		
5	firsthand	/fɜ:st'hænd/		
6	biomedical engineering	/bi'medɪkəl'endʒɪnɪrɪŋ/		
7	food technology	/fu:d'teknɒlədʒi/		
8	building technology	/bɪlɪŋ'teknɒlədʒi/		
9	chemical science	/kɛ'mɪkəl'saɪəns/		

10	civil and structural engineering	/ˈsɪvəl/ ənd /ˈstʌktʃ(ə)r əl/ /ɛnʃɪˈniəriŋ/		
11	prosthetic	/pɹɒsˈθetɪk/		
12	survey	/ˈsɜːveɪ/		
13	various	/ˈvɛːrɪəs/		
14	occupation	/ˈɒkʊˈpeɪʃ(ə)n/		

- **Task 17. You have learnt skimming for the whole text. Now, you will learn ‘scanning for details’. Study the information below.**



Mathematician Paul Erdos could **calculate** in his head, given a person's age, how many **seconds** they had lived, when he was just **4 years** old.

<http://www.factslices.com/s-Math>

**Isaac Newton's Principia Mathematica** contained a simple calculation error **that went unnoticed for 300 years**

<http://www.factslices.com/s-Math>

- **Task 18. Read the following text about ‘why do we need to learn math?’. How many nouns did you find? Underline them.**

### Why do we need

There are actually thousands of different jobs t  
Here are more than 30 t Mathematici telling what s  
math majors are doing, from an Air Traffic Co:  
Capture Facility Troubleshooter

Exactly How Is Math , from the Mathematic  
British Columbia Institute of Technology, prc  
engineering, food te technology, chemical scien  
engineering, graphi -aided drawing (CAD), electri  
mechanical engineering, mining technology, nu  
technology cs, forestry and wildlife, .

Examining How Mathematic by Annie and Joh  
Mathematical Association of Am Research Sampler,  
of studies on how much mathematics is used in v  
Production; Proportional Reasoning by Nurse  
Mathematical Models: and How do Scientis

<http://mathforum.org/dr.math/faq/faq.why.math.html>

- **Task 19. The following information will discuss about noun. Please read the information carefully.**

Nouns	
<b>Common nouns</b>	General names that refer to people, a E.g., book, langua , et
<b>Proper nouns</b>	Proper / spe names that refer to people, animals, days, etc. E.g. Yogyakarta State University, , et
<b>Singular nouns</b>	Words that used to indicate that there is onl E.g., boy, girl, materia , stud , et
<b>Plural nouns</b>	Words that used to indicate here is more than one pers or idea. E.g., boys, girls, m *Plural form, singular meaning news, politics, mathematic etc.

● **Task 20. In this task, you will find some statements. Please decide whether the statements below are true (✓) or false (X).**

---

- 1 There are some jobs that require knowledge of mathematics (.....)
- 2 Mathematical knowledge is not required in the work related to health (.....)
- 3 No research study has claimed that mathematical knowledge is needed on the job (.....)
- 4 The author of this article implicitly states that knowledge of mathematics is very important (.....)
- 5 Mathematics is a requirement for an engineer (.....)
- 6 Environment has strong relationship with knowledge of mathematics (.....)
- 7 Mathematics has no effect on technology development (.....)
- 8 Scientists need to learn mathematics (.....)

● **Task 21. The information below is about how to do scanning effectively. Read the information carefully.**

---

**Guidelines for Effective Scanning**

1. State the specific information you are looking for.
2. Try to anticipate how the answer will appear and what clues you might use to help you locate the answer. For example, if you were looking for a certain date, you would quickly read the paragraph looking only for numbers.
3. Use headings and any other aids that will help you identify which sections might contain the information you are looking for.
4. Selectively read and skip through sections of the passage.

<http://pioneer.netserv.chula.ac.th/~pkanchan/html/skim.htm>



- **Task 22.** Read the words in the following table. Then, analyze their parts of speech by matching the words in the right and left column with appropriate part of speech.

entirely	noun	remember
doing	verb	wherever
fundamental	adverb	challenge
scientists	adjective	fellow
borrowed		recent

## Let's Evaluate

- **Task 23.** In this final task, you will read a text entitled “Mathematics is a Game of Life”. Then, answer the questions that follow. You may open your dictionary.

### Mathematics is

Jun Liu uses statistics

By William

Gazette

Jun Liu remembers being interested in mathematics and to pursue in the waning years of the Cultural Revolution in him. He didn't own a calculator. Mathematics

Jun's parents, both teachers, scrounged books wherever professors who had hidden them away. His father copied one book entirely by hand.

"I couldn't tell [ ] from college texts, so I read everything," Liu recalls. "Doing math was like a game you could play with only a piece of paper and pencil. On Sundays, I rode my bike for an hour to meet friends [ ] problems."

Sitting in his office at [ ], Liu, now 35, still shows a youthful enthusiasm for math problems. He wants to find answers to fundamental questions about genes and how they control life. "Every cell in your body contains a complete set of genes; each cell could become a part of your eye, your hand, or your brain. The question that challenges many scientists is how cells decide to be part of one organ [ ]"

Liu thinks he may be able to get some of the answers [ ] statistics more quickly than biologists can with exper

Commenting on Liu's recent tenure appointment, fellow [ ] statistics Donald Rubin called him "a great asset to the University both as a teacher [ ] Harvard needs his strength in computational biology. In addition [ ], soft-spoken but with a fabulous sense of l

<http://news.harvard.edu/gazette/2001/02.01/03-mathematics.html>

1 Do you understand the par

.....  
.....  
.....  
.....

2 Does this seem like a good life exp

.....  
.....  
.....

3 What is Liu opinion

.....  
.....  
.....

4 Did the author feel i life expe

.....  
.....  
.....

5 How was Ju with his hard times

.....  
.....  
.....

- 6 How does Prof. Donk on Jun's tenure  
.....  
.....
- 7 How many p you nd? Write them down write the  
for each p  
.....  
.....  
.....
- 8 How many adjectives do you get f  
.....  
.....  
.....
- 9 Please find at least 5 nouns and 5 verbs from of eac  
wor  
.....  
.....  
.....  
.....
- 10 What can you learn from  
.....  
.....  
.....

# LET'S READ!

123 is one hundred twenty-three.	1/10 is one tenth.
123.123 is one hundred twenty-three point one two three.	9/10 is nine tenths.
1,000.000 is one thousand point zero zero zero.	10/11 is ten over eleven.
3.1415929 is three point one four one five nine two six.	14/100 is fourteen hundredths.
0.0 is zero point zero.	14/10000 is fourteen over ten thousand.
0.00 is just zero.	14/ 100000000000000 is fourteen slash ten trillion.
1,500,000 is 1 point 5 million.	-

## SUMMARY

- 1 There are some techniques for the whole text scanning for general information
- 2 Skimming can help you get general information
- 3 Scanning can help you find specific information
- 4 In order to understand the meaning of the text, you need to understand the information

## REFLECTION

How much improvement have you made in the following aspects?  
 Mark (✓) in the right column to indicate the level of improvement.

Aspects	Very much	Much	Little
Skimming for the whole text			
Scanning for details			
Identifying the parts of speech			
Identifying implicit meanings			
Identifying pronouns and their referents			

# MATH AND OUR REAL LIFE

## UNIT 2



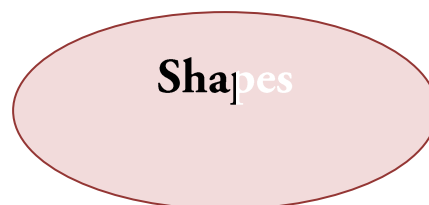
In this chapter, you will learn:

- Identifying topic and topic sentence
- Identifying main idea and supporting details
- Finding synonyms
- Understanding the simple present tense
- Identifying the parts of speech

- Task 1. Let us try to classify the **topic** for each number below by matching the words in the left side with the best topic in the right side.

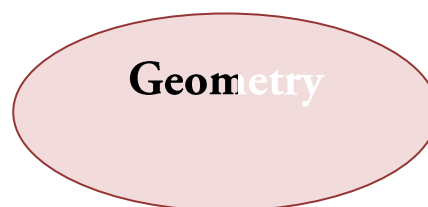
1.

Shapes
Size
Figures
Two and three dimensional objects



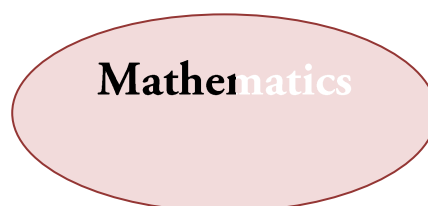
2.

Derivatives
Definite integrals
Indefinite integrals
Limits



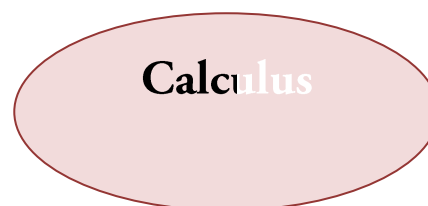
3.

Rectangle
Oval
Square
Triangle



4.

Trigonometry
Calculus
Geometry
Algebra



- Task 2. Now, the task is different from previous task. In this task, the **topics** are **given**. Write a list of things that fit the topic.
- 

1 Mathem:

2 Mather – Related Pi

3 Natural N

4 Trigonc

5 Mathematic

Let's  
Start

- Task 3. Up to this point, have you understood what the '**topic**' is? Here is the information for you. Read and study the information carefully.
- 



A broad ca  
general sul  
your pi  
writing i .

[http://faculty the/cdromminigra](http://faculty.the/cdromminigra)

- Task 4. After finishing the previous task, we will have another activity. Before we start, please study the following information about **topic sentence**. You have to be able to differentiate between **topic** and **topic sentence**. Here is the information for you.

## TOPIC SENTENCE

The vehicle that  
introduce the main idea  
define the limits

<http://faculty.scf.edu/smithe/cd>

### Rules for Finding the Topic

The topic sentence is usually at the beginning of the paragraph, but could be at the end or in the middle.

A topic sentence is usually more general than the other sentences in the paragraph. That is, it talks about many things. Sometimes it refers to more than one idea. Words like "many", "numerous", or "several" are often used in topic sentences.

Developing sentences are more "specific" than the topic sentence. That is, they usually talk about one or two ideas of an idea. Also, the words "for example", "second", "third", etc., and "in addition" are often used in developing sentences.

Most of the developing sentences support, give examples, or talk about, or point toward the main idea.

How can you be sure that you have found the topic sentence?

-- Switch the sentence around into a question. If it seems to "answer" the question, then you have found the topic sentence.

<http://english.glendal>

- Task 5. Read and study the words below. You will find these words in Task 6. You may open your dictionary to find the meaning.

No	Words	Pronunciation	Part of Speech	Meaning
1	manufacture	/məˈʊʃəl ʃə/	noun	
2	Acronym	/ˈæk rənɪm/	noun	
3	development	/ˌdɪvələpmənt/	noun	
4	Release	/rɪˈliːs/	verb	
5	Diversity	/ˌdɪvəˈsɪtɪ/	verb	
6	Intend	/ɪnˈtend/	verb	



7	stuck	/s ʌk/	verb	
8	Ingrained	/ɪn'greɪnd/	Adjective	
9	approximately	/ə'pɪksɪmətli/	adverb	
10	During	/'dʊərɪŋ/	Preposition	

**Task 6.** In this task, you will read two different paragraphs. In a group of 3, write the best **topic** and **topic sentence** for each paragraph. Share and discuss your answer with another group.

### 1 1961: First Electronic Desktop Calculator

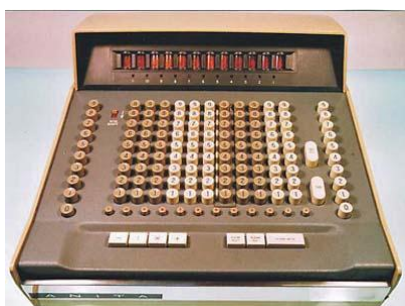


Photo Credit: [Anita-8 Calculator](#)  
 Device: ANITA-8  
 Invented by: Bell Laboratories

A Brief History: In 1950, [Bell Laboratories](#) of Great Britain set out to diversify from manufacturing ticket punchers to electronic desktop calculator codenamed [Vintage Calculator](#). [Web Magazine](#), the vacuum tube-based calculator was released as the ANITA-8. The machine featured approximately 10,000 Dekatron decade counter tube and 10,000 diodes.

Topic Sentence: *The history of electronic calculators*  
 Topic Sentence: *In 1950, [Bell Laboratories](#) of Great Britain set out to diversify from manufacturing ticket punchers to electronic desktop calculator codenamed ANITA-8.*

2 Interestingly, the acronym ANITA was intended only for the machine, but the name was so ingrained in the company that it stuck. The acronym has been used for "Automatic Numerical Instrument for Accounting" or "A New Inspiration to Arithmetic," and the name was used by the company's designers.

Topic Sentence: \_\_\_\_\_

Topic Sentence: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- Task 7. Refer to the text in Task 6, discuss and match the words in column A to their **synonyms** in column B below with your partner. Please do not open your dictionary.

rele	throu
inte	Evol
duri	affa
prod	alm
deve	disch
approx	elabor
develop	ain
reac	goss
run	alil
als	prep

- Task 8. In this text you will read a text entitled **The Use of Mathematics in Everyday Life**. Choose the best **topic** and **topic sentence** for each paragraph. You may work in pairs.

## The Use of Mathema

by Linda Emma,

1. Even those suffering from math-related anxieties or phobias have a certain presence in their lives. In the classroom, at work and in everyday life, math is everywhere. Whether using measurements in a recipe or calculating the distance to make the destination, we all use math. It is a good thing that many reluctant math learners turn to real world examples to ignite their interest.

Topic:

\_\_\_\_\_

Topic sentence:

\_\_\_\_\_

\_\_\_\_\_

2. At Home

Some people aren't even out of bed before encountering math. If they're a heavy sleeper, they may quickly need to calculate the new weight of a bathroom scale and decide that they'll skip those calculations.

medication need to understand different dosages, whether in grams or milliliters. Recipes call for ounces and cups. Gardeners use math for all measurements, all math. And decorators need to know that the dimensions of their furnishings and rugs will match the area of their rooms.

Top

Topic se

### 3 In Travel

Travelers often compare prices per gallon when fueling up for daily trips, but they might need to calculate anew when faced with a long-distance trip. They also consider the cost in miles, time and money. Air travelers need to know departure and arrival schedules. They also need to know the weight of their luggage to avoid paying for the hefty baggage surcharges. Once on board, they may need to calculate fuel consumption. Math-related math such as speed, altitude and

Top

Topic se

### 4 At School :

Students can't avoid math -- most take it every day. However, in science classes they may need to know a little math. In history, they may need to calculate how they'll bring that 100-year-old artifact to life. Basic math skills. Jobs in business and finance need math. Even when you read profit and earning statements or how much money you've made, you need to know if their working hours paych

Top

Topic se

### 5 At the

Whether buying coffee or a car, basic principles of math are required. Whether you're buying a house or a car, you need to understand the cost and affordability of the purchase. Whether you're buying a house or a car, you need to understand the cost and affordability of the purchase. Whether you're buying a house or a car, you need to understand the cost and affordability of the purchase.

purchases may require knowledge of interest rates  
 mortgage may be much more expensive than choosing a place to have lunch  
 money and resources

Top

---

Topic search

---



---

## 6 Pastime

Even free time can be math time. Baseball fans know a lot about statistics, considering win-loss ratios, batting averages, and home runs. Football fans know about yardage gains and passing statistics. Bikers, sailors or hikers, often have their own special mileage to track.

Top

---

Topic search

---



---

<http://everydaylife.com/math/everyday-life-14225>

DID YOU KNOW?

**Ancient Babylonians** did math in **base 60** instead of base 10. That is why we have **60 seconds** in a minute and **360 degrees** in a circle.

<http://www.factslides.com/s-Math>

**Multiplying** 21987 by 4 **reverses the order of the numbers:** 87912

<http://www.factslides.com/s-Math>

- Task 9. We have talked about topic and topic sentence. Now, you will identify **main idea** and **supporting details** of the paragraph. Please read the information below before identifying paragraphs in Task 11.
- 

A more narrowly focused idea--the main point the writer is making about the topic

## MAIN IDEA

## SUPPORTING DETAILS

All of the other information within a paragraph that is needed to support, explain, elaborate on or prove the topic sentence

**How to Find the Main Idea** (It's written directly in the text)

- 1 Read the paragraph.
- 2 Ask this question to yourself: "What is the main point?"
- 3 In your own words, explain the answer in one sentence.
- 4 Look for a sentence in the text that matches your answer.

**How to Find the Main Idea** (the author doesn't directly state it)

- 1 Read the paragraph.
- 2 Ask this question to yourself: "What do each of the details have in common?"
- 3 In your own words, find the common bond among the details. What point about the topic are they all making?
- 4 Compose a short sentence stating the main idea of the paragraph about the topic.

<http://faculty.scf.edu/smithe/cd>

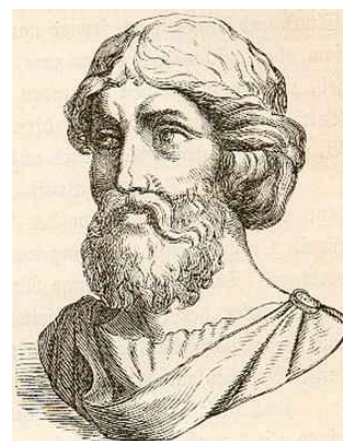
- Task 10. Read and study the words below. You will find these words in Task 11. You may open your dictionary to identify the part of speech and to find the meaning.

No	Words	Pronunciation	Part of Speech	Meaning
1	commonly	/'kɒmənəl		
2	worthwhile	/v ə:θ'wɪl/		
3	satisfy	/'saɪsɪfaɪ/		
4	generally	/'dʒenərəli		
5	measurement	/'meʒəmənt		
6	perspective	/pɜ'spektɪv/		
7	increase	/ɪn'kri:z/		
8	lost	/lɒst		
9	instruction	/ɪn'strʌkʃ(ə)n		
10	arguably	/'ɑ:gjuəbl		
11	proof	/pru:f/		
12	influence	/'ɪnfluəns		
13	consider	/kən'sɪdə/		

- Task 11. In this task, you will find 3 different paragraphs. Please write the main idea for each paragraph.

### 1. Pythagoras

Greek Mathematician Pythagoras was one of the first great mathematicians. He lived around 570-495 BC, in modern day Italy. He founded the Pythagorean cult, which was one of the first groups to study mathematics. He is also credited with the Pythagorean Theorem within mathematics. Some sources doubt that it was him who constructed it (Some attribute it to his students, or even some 300 years earlier in India). However, such, as with large portions of fundamental mathematics commonly felt today, with the theorem playing a large role in modern measurements and technological equipment. A large portion of other areas and theorems in mathematics have a bearing on the development of geometry, and thus, mathematics as a worthwhile endeavor. Thus, he is considered a mathematician.

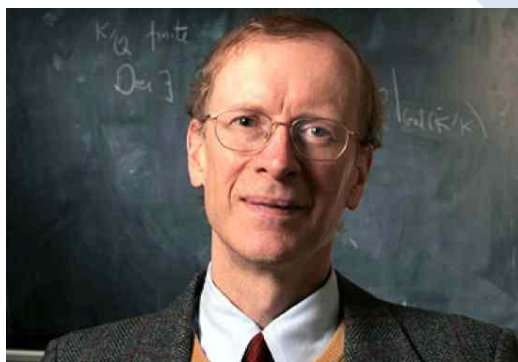


opening the door

<http://listverse.com>

-1(-great mathematician)

## 2 Andrew



The only currently living mathematician on this list, Andrew Wiles is most well known for his proof of Fermat's Last Theorem: That no positive integers,  $a$ ,  $b$  and  $c$  can satisfy the equation  $a^n + b^n = c^n$  For  $n$  greater than 2. (If  $n=2$  it is the Pythagoras Formula). Although the contributions to math are not, perhaps,

as grand as other on this list, he did 'invent' large parts of the mathematics for his proof of the theorem. Besides, his dedication was extraordinary most, as he quite literally shut himself away for 7 years to formulate a solution. When it was found to contain an error, he returned to solitude for a further year before returning to the world in perspective. The number of mathematicians in the world on one hand who were inspired by his work, and the number of mathematicians who were disappointed by his proof. Nonetheless, the effects of such are far-reaching and more people can

<http://listverse.com> -10 -grea -mathema

## 3 Euc



Living around 300BC, he is considered the father of geometry and his magnum opus: Elements. His mathematical works in history have been studied in education up until the 20th century. Little is known about his life, and what he was like. His presumed instruction of the rigorous, logical framework of mathematics, conjectures. Such a framework is

arguably, he has had the greatest influence on the history of mathematics. His Elements were five other surviving works, though the topic of Geometry or Number theory. They have been lost through

<http://listverse.com> -10 -grea -mathema

Please identify whether the main idea is stated or implied. Then, write the best main idea for each number.

Parag	A stated n	An in d mair
1		
2		
3		

## Grammar in Focus

### ● Task 12. Before doing the exercise in Tasks 13 and 14, study the information below about **the simple present tense**.

The simple present tense in English is used to describe an action that is regular, true or normal.

We use the present tense:

#### 1. For repeated or regular actions in the present time period.

- I **take** the train to the office.
- The train to Berlin **leaves** every hour.
- John **sleeps** eight hours every night during the week.

#### 2. For facts.

- The President of The USA **lives** in The White House.
- A dog **has** four legs.
- We **come** from Switzerland.

#### 3. For habits.

- I **get up** early every day.
- Carol **brushes** her teeth twice a day.
- They **travel** to their country house every weekend.

#### 4. For things that are always / generally true.

- It **rains** a lot in winter.
- The Queen of England **lives** in Buckingham Palace.
- They **speak** English at work.

<http://www.grammar.cl/PresentSimple.html>

### Quote Corner

**"A MATHEMATICIAN IS A DEVICE FOR TURNING COFFEE INTO THEOREMS."**

PAUL ERDOS

© Lifehack Quotes



● **Task 13.** In pairs, complete the following sentences by underlining (\_\_\_\_) the correct form.

---

- 1 For some people, mathematics (is / are) a very difficult subject.
- 2 I (like/ likes) to memorize mathematical formulas since senior high school.
- 3 My best friend (work/ works) as a mathematics teacher in SMA N 1 Yogyakarta.
- 4 My sister (like/ likes) to do her homework while listening to music.
- 5 Life (is/am/are) like math, if it (go/ goes) something (is/ are) wrong.

● **Task 14.** Now, please write at least 5 sentences by using the simple present tense. You may open your dictionary.

---

- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....

● **Task 15.** In this task, you will find 2 different texts. Work in pairs, and then identify the **topic sentence** and **supporting details** for each paragraph

---

1 Ma

From adolescence, data show that males outperform females in mathematical reasoning, despite differences in IQ. The current research on mathematical ability show that males perform better than females when performance is measured using a third grade arithmetic test. This finding is questionable because the intelligence quotient in this age group is not average in the population. The finding of a difference in math performance is questionable because the finding that arouses curiosity as to whether the difference is nature or nurture is a combination of factors.

<http://testprep.about.com/od/reading/>

---

Topic Sentence :

Supporting Details :

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## 2 Dyscalculia

Developmental Dyscalculia (DD) is a specific impairment in learning basic arithmetic facts, procedures, and concepts. These difficulties must be quantifiable for an individual's chronological age, and must interfere with academic activities or by intelligence.

<http://www.bdadyslexia.org>

Topic Sentence :

Supporting Sentence :

---



---

- Task 16. Read again the text in Task 15. Please identify the simple present forms used in the text. Then, write them down to the provided space.

- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....

- Task 17. Read and study the following words. You will find this words in Task 18..

No	Words	Part of Speech	Meaning
1	developmental disorder	noun	gangguan perkembangan
2	infancy	noun	masa pertumbuhan, masa bayi
3	prevalence	noun	kelaziman, meratanya
4	contradictory	noun	kontradiktif, yang bertentangan
5	execute	verb	melaksanakan, menandatangani
6	avoid	verb	Menghindari
7	appear	verb	tampak, muncul
8	assume	verb	Menganggap
9	quantifiable	verb	dapat diukur
10	impairment	verb	pelemahan, kerusakan

- Task 18. In pairs, rearrange the jumbled paragraph below by giving the number in the provided spaces. This paragraph is about 'Dyscalculia'. You may open your dictionary to find the meaning.

	Currently (January 2015) a search for 'dyscalculia' on the Department for Education's website gives 0 results as compared to 44 for dyslexia, so the definition below comes from the American Psychiatric Association (2013):
1	Dyscalculia is usually perceived of as a specific learning difficulty for mathematics, or, more appropriately
	<p>Typical symptoms of dyscalculia/learning difficulties</p> <ul style="list-style-type: none"> <li>• Has difficulty when calculating</li> <li>• Has a poor sense of number</li> <li>• Has difficulty in remembering 'basic facts' despite many hours of practice/rote learn</li> <li>• Has no strategies to compensate for lack of knowledge, e.g. to use counting.</li> <li>• Has difficulty in understanding place value, e.g. 100 in the Arabic/Hindu system</li> <li>• Has no sense of whether any calculation is more or less right or nearly right.</li> <li>• Tends to be slower to perform calculations. May use fingers, rather than mental calculation</li> <li>• Forgets mathematical procedures, especially multiplication tables, for example 'long multiplication'</li> <li>• Addition is often the only operation. The other operations are rarely used, or are executed (or avoided) incorrectly</li> <li>• Avoids tasks that are perceived as difficult</li> <li>• Weak mental arithmetic</li> <li>• High levels of mathematical anxiety</li> </ul>
	Developmental Dyscalculia often occurs in association with other learning disorders, such as dyslexia or dysgraphia. The co-occurrence of learning disorders rather than the separate occurrence is generally assumed. Identifying the factors that are shared between disorders, for example, is important. It is not be assumed that all dyslexics have problems with mathematics. The prevalence may be very high, or that all dyscalculics have problems with reading and writing. The prevalence of developmental dyscalculia may well be a lot lower.
	Developmental Dyscalculia (DD) is a specific learning difficulty that impairs the ability to perform accurate and fluent calculations. This is despite the fact that what is expected for an individual's chronological age is achieved in other educational or daily activities or in other areas of learning.
	Because mathematics is very developmental, any initial difficulties can have a significant impact on later topics, hence the need for early intervention.
	Because definitions and diagnoses of dyscalculia are inconsistent, it is difficult to suggest a prevalence, but it is estimated that 6-7% of the population have 'mathematical learning difficulties' a condition that is prevalent and often devastating in their educational and professional lives. Prevalence in the general population is estimated to be 6-7%.

● Task 19. Read again the text you have arranged in Task 17. Then, answer the questions that follow.

- 1 What is the top
- 2 Find the synonyms of the following words:
  - a difficult
  - b avoid
  - c often
  - d high
  - e weak
- 3 Paraphrase the following sentence:
 

*Because mathematics is very developmental, an impact on later topics, hence to need*
- 4 What is the topic sentence of the following paragraph?
 

*Because definitions and diagnoses of dyscalculia are contradictory, it is difficult to suggest a prevalence. However, 'mathematical learning difficulties' are very not in their infancy, prevalent and often devastating in their impact on children's jobs. Prevalence in the*
- 5 What is the conclusion that you get after reading the text about Dyscalculia?

●● Task 20. Now, in a group of 3, please find any articles related to mathematics. Then, identify the topic, main idea, and supporting details for each paragraph.

- 1 Title of the article : \_\_\_\_\_
- 2 The writer of the article : \_\_\_\_\_
- 3 Source of the article : \_\_\_\_\_
- 4 Topic of the article : \_\_\_\_\_
- 5 Main idea of the article : \_\_\_\_\_
- 6 Supporting details of the article : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- 7 List of difficulties faced by the writer : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**PATCH YOUR ARTICLE HERE !!**

## Let's Evaluate

- **Task 21.** In this task, you will read a text entitled **Pythagoras's Theorem Used in Real Life Experiences**. You may open your dictionary to find the meaning. Then, answer the questions that follow.

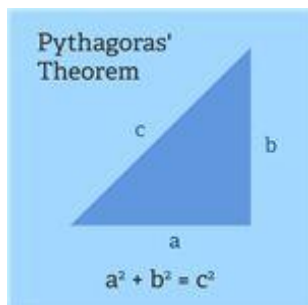
### Pythagoras's Theorem Use

written by: rosy • edi

er

Pythagoras was a Greek philosopher and mathematician. Pythagoras's theorem, named after him, is used in many real-life situations.

#### • Uses of Pythagoras's Theorem



You may have heard about the theorem (or the Pythagorean Theorem) in your math class, but very few people understand it. Pythagoras's theorem is used often in many real-world examples. According to the theorem, the sum of the squares of the two sides of a right triangle is equal to the square of the hypotenuse. If the sides of the right triangle are  $a$ ,  $b$ , and  $c$ , then  $a^2 + b^2 = c^2$ .

$$a^2 + b^2 = c^2$$

This is taught in every classroom throughout the world, and it is also applied outside of the classroom.

#### • Real Life Applications

Some real-life applications to introduce the concept to school students are given below.

**1) Road Trip:** Let's say two friends are meeting at a play. One friend, Alice, needs to get there taking the shortest route. She can follow the roads or she can cut through some open fields. The total distance covered following the roads is 7 miles. The total distance covered following the shortest route is 5 miles. The distance covered by cutting through the open fields is 2 miles.

Pythagoras's theorem can be used to calculate the distance.

$$(3)^2 + (4)^2 =$$

$$9 + 16 = C^2$$

$$\sqrt{25} = C$$

$$5 \text{ Miles} = C$$

Walking through the field will be 2 miles shorter.

**2) Painting on a Wall:** Painters use ladders to paint on high walls. They need to determine the height of the wall. The painter needs to determine the height of the wall in order to safely place the base of the ladder away from the wall.

the ladder itself will be the hypotenuse. Take for example a painter who has to paint a wall which is about 3 m high. The painter has to put the base of the ladder 2 m away from the wall to ensure it won't tip. What will be the length of the ladder required by the painter to complete his work?

You can calculate it using the Pythagorean theorem:

$$(5^2 + 4^2 = 25 + 16 = 41)$$

$$\sqrt{41}$$

5.3 m

Thus, the painter will need a ladder of length 5.3 m.

**3) Buying a Suitcase** Mr. Harry wants to purchase a suitcase. The shopkeeper tells Mr. Harry that he has a 30 inch of suitcase available. The diagonal of the suitcase is 18 inches. Calculate the actual length of the suitcase using the Pythagorean theorem. It is calculated as follows:

$$(18^2 + b^2 = 30^2)$$

$$324 + b^2 = 900$$

$$b^2 = 900 - 324$$

$$b = \sqrt{576}$$

$$= 24 \text{ in}$$

**4) What Size TV?** Mr. James saw a 40 inch screen television of a T.V. in a shop where it is mentioned that the T.V. is 16 inches high. Calculate the actual length of its screen for Mr. James using the Pythagorean theorem. It can be calculated as follows:

$$(16^2 + l^2 = 40^2)$$

$$256 + l^2 = 1600$$

$$\sqrt{1344} = l$$

$$36.66 \text{ inches approx.}$$

**5) Finding the Right Computer** Mary wants to get a computer monitor which can hold a 22 inch monitor. She has found a computer monitor of 28 inches. Will the computer fit into the monitor using the Pythagorean theorem to check?

$$(18^2 + 22^2 = 324 + 484 = 808)$$

$$\sqrt{808} = 28.42 \text{ inches approx.}$$

<http://www.brighthubed.com/math/help/3-how-to-apply-the-pythagorean-theorem-to-real-life-problems/>

1. What is the topic of the lesson?
 

.....

.....
2. What is the main idea of the lesson?
 

.....

.....

3 What is the topic sentence

.....  
 .....

4 What is the supporting detail

.....  
 .....  
 .....

5 How many simple phrases did you find from the text above?

.....  
 .....  
 .....  
 .....

6 How many did you find from the text above? Write the references for

.....  
 .....  
 .....  
 .....

7 Decide whether the statement is true (T) or false (F).

- a. People never use mathematics. (...)
- b. Mathematics will not be used when people have computers. (...)
- c. Pythagoras' theorem is still used in our daily lives. (...)
- d. Pythagoras will not live for ever. (...)
- e. Mathematics is a skill that does not change with time. (...)
- f. Mathematics is a skill that does not change with time. (...)

**LET'S  
 READ!**

$ab \sin x$	a b sine of x
$a + \frac{b}{c} + d$	a + b over c + d
$\frac{a+b}{c} + d$	a + b quantity over c + d
$a + \frac{b}{c+d}$	a + b over quantity c + d
$a + \frac{b}{c+d} + e$	a + b over quantity c + d all + e or a + b over quantity c + d all times e
$(a + b) / (c + d)$	a + b all over quantity c + d
$(a + b) / c + d$	a + b all over c + d



## SUMMARY

1. There are differences when identifying topic, topic sentence and main idea.
2. The topic sentence is usually first, but could be in any position in the paragraph.
3. There are implied and stated main ideas.
4. The simple present tense in English is used to describe an action that is regular, true or normal.

## REFLECTION

How much improvement have you made :  
thick (✓) in the right column to in

Aspects	Very much	Much	Little
Identifying topic and topic sentence			
Identifying main idea and supporting details			
Finding synonyms			
Understanding the simple present tense			

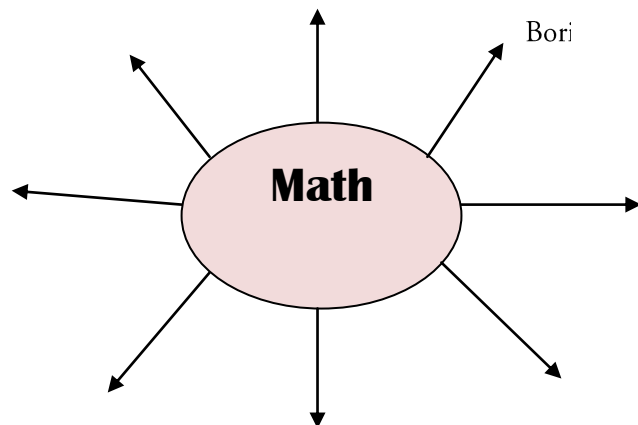
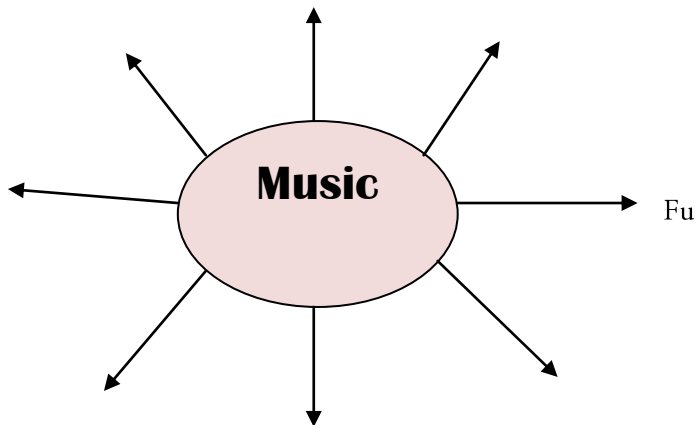
# MATH IS FUN

## UNIT 3

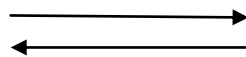
In this chapter, you will learn:

- a. Paraphrasing the paragraph
- b. Summarizing
- c. Finding antonyms
- d. Identifying the simple past tense
- e. Inferring unknown vocabulary
- f. Reading to present

- Task 1. You will find two different words in this task. What do you think of when you read these words? Write your ideas in the boxes below.



- Task 2. Do you like to play music? Is there any relationship between music and math? What do you think? How can you say it?



- a Both of them
- b .....
- c .....
- d .....
- e .....

- Task 3. Below are words that you will find in Task 4. Try to find Indonesian meanings and identify the part of speech. You may open your dictionary.

No	Words	Pronunciation	Part of Speech	Meaning
1	musical pieces	/'mʃ ˌzɪkəl/ / ˌsɪl		
2	represent	/ˌɛpɪˈzɛnt		
3	shape	/ʃeɪp/		
4	to indicate	/ˌɪ ʊ/ ˈɪndɪˈkeɪt/		
5	signify	/'sɪgnɪfaɪ/		
6	correctly	/kəˈrɛk(t)/		
7	infinitely	/'ɪnɪˈnɪtli		
8	arrange	/ə'reɪn(ə)z/		
9	midway	/'mɪdweɪ/		
10	lengthens	'lɛŋ(θ)(ə)n		

- Task 4. Read and study the text below. It is about **Music, Math, and Pattern**. After that, answer the questions that follow.

## Music, Math, Natasha

Math and music are usually organized without overlap. It tends to be that people are not aware that the elements could not be put together. In actuality, math and music are related and we commonly use them in our daily lives.

without a doubt, math and music are related. In actuality, math and music are related and we commonly use them in our daily lives.

### Reading Notes and Questions

Musical pieces are read much like some bit of information. Musical pieces are divided into measures or bars. Each measure contains a certain amount of time. Furthermore, each measure is divided into equal portions called notes. These all mathematical divisions are used in music to indicate time. In a musical piece, the time signature tells the musician information about the rhythm. The time signature is generally written as two integers. The top number tells the musician which note in the piece is the basic unit of time.



The symbol for a musical piece is divided into measures. Each measure contains a certain amount of time. Furthermore, each measure is divided into equal portions called notes. These all mathematical divisions are used in music to indicate time. In a musical piece, the time signature tells the musician information about the rhythm. The time signature is generally written as two integers. The top number tells the musician which note in the piece is the basic unit of time.

tells the musician how many of ... each measure. Numbers can tell us a lot about musical

Each note has a different shape to ... or time. Notes are classified in terms of num ... There are wh ... e note per measure), half notes (two notes per measure), quarter notes (four notes per measure), and sixteenth notes (eight notes per measure). These numbers signify how long the not ... That is, a v ... would last through the entire ... whereas a quarter note would only last  $\frac{1}{4}$  of the measure and thus one me ... This can be expressed mathe ... A note with ... after it len ... ns the not

For example, a quarter note with a of a meas

$$\frac{1}{4} + \frac{1}{2} \left( \frac{1}{4} \right) = \frac{3}{8}$$

Three eights of a measure is midway b ... It important for musicians to unc ... values of fractio correctly h

### *Fibor*



three ar

The Fibonacci sequen we -known sequence that fc 8, 13, 21, 34, 55, 89, ... term to the one before it That is,  $5 + 8 = 13$ ,  $8 +$  and continuir In musi Fibonacci sequence can For example, the C scale 13 keys from C to C; ei black keys ack keys arrange

In the Fibonacci sequence, the ratio between known as the

### *Pythagoras ar*

It was Pythagoras who realized that different and vibr This led to his discovery that the pitch and can be contro Strings that are th are one oc He also rea For exar notes of certain frequencies sound best For exar note of 220Hz sou es of 440Hz, 660

The closest tie between music and mathematics is the repeating choruses or bridge. In mathematics, we look at the musical piece, musicians look for notes they repeat. When looking at the relationship between music and mathematics, notes are fundamental to mathematics, creating a strong link between the two.

<http://mathcentral.uregina.ca/bey>

- 1 What is the main idea of the passage?  
.....  
.....
- 2 What is the difference between music and mathematics?  
.....  
.....
- 3 What is the closest tie between music and mathematics?  
.....  
.....
- 4 How can you say that music and mathematics are related?  
.....  
.....
- 5 Does the author agree that mathematics is fundamental to music?  
.....  
.....

- **Task 5. Do you know how to paraphrase? Below is the information about paraphrasing. Read and study the information.**

### How to paraphrase?

Paraphrasing is putting the ideas of an author into your own words. Paraphrasing helps the quality of your paper by explaining another person's thoughts in your own writing style, improving the flow and readability.

Tips for effective paraphrasing:

- The statement must be in your own words.
- If you use any phrases that are in the original quote, place them in quotation marks.
- Add a citation—even if a paraphrase is in your own words, it is still someone else's idea.
- If you're having difficulty paraphrasing, make a short list of the quote's main idea(s) and words that relate to it.
- Incorporate these concepts and words in your paraphrase.

<http://content.easybib.com/students/research-guide/paraphrasing-patchwriting-direct-quotes/how-to-paraphrase/>

- **Task 6. In pairs, try to paraphrase these following sentences.**

1. Math and music are usually organized into two parts. It ten to be that people are going to see art and music as two elements placed together logically. In actuality, math and music are interconnected numbers and math to describe.

Even though math and music are two different categories,

2. Each note has a different shape to represent it. Notes are classified in terms of numbers as well. There are whole notes (one measure), half notes (two measure), quarter notes (four notes per measure), and sixteenth notes (sixteen notes per measure).

.....  
.....

3 It was Pythagoras who realized that different sounds can be made with different weights and vibrat This led to his discovery that the pitch of a vibrating string is proportional to and can be controlled by

.....

.....

4 When looking at a musical piece, musicians look for \_\_\_\_\_ size to find notes that are rare (high or low) ar In this way, notes r

.....

.....

5 Musical pieces are read much like \_\_\_\_\_ The symbols repre \_\_\_\_\_ ne bit of information ab

.....

.....

**Task 7. Now, your task is to paraphrase the following main ideas. After finishing your work, you may compare your answers with other students.**

1 The student requested that the professor \_\_\_\_\_ refus

The student requested that the professor exc

2 There will be a music concert next to Vie

\_\_\_\_\_

3 International Center is hosting English \_\_\_\_\_ -native speaker practice their Engli

\_\_\_\_\_

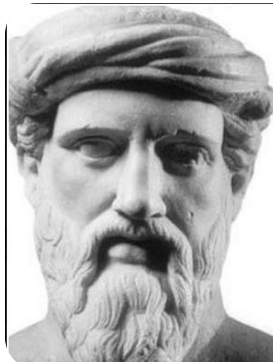
4 The office of Intern: \_\_\_\_\_ d Scholars at Purdue Universit

\_\_\_\_\_

5 The car that was pulled over by the police officer : care

\_\_\_\_\_

## Quote Corner



There is geometry in the humming of the strings, there is music in the spacing of the spheres.

— Pythagoras —

AZ QUOTES

VEONQIES



Task 8. Now, in a group of 3, please find a short article. You may take the article from the newspaper, magazine, or internet. Then, paraphrase each paragraph from the article.

Paragra

.....  
 .....  
 ..... .....

Paragra

.....  
 .....  
 .....

Paragra

.....  
 .....  
 .....  
 .....

Paragra

.....  
 .....  
 .....

**LET'S READ!**

$a_0 + x (a_1 + x (a_2 + \dots))$	a sub 0 + x times c x times quantity dot
$((a_3x + a_2)x + a_1)x + a_0$	a sub 3 x + a sub 2 quantity times x + a sub 1 quantity times x + a sub 0
$a_{(n-1)^2+1}$	a sub quantity n minu
$a_n^2 - a_{n-1}^2$	a sub n squared minus quantity a sub quantity n minus 1 all all squared
$a_n - a_{n-1}^2$	quantity a sub 1 quantity n minu
$(a_n - a_{n-1})^2$	a sub n minus a sub quantity n minus 1 all all squared
$x^3$	x to the third (n x to the th x to the j x raised to t x cu

- Task 9. Study the following information. It is about the simple past tense. Then, answer the questions that follow by underlining the correct answer.

The simple past is used to talk about a **completed action** in a time **before now**. Duration is not important. The time of the action can be in the recent past or the distant past.

You always use the simple past when you say **when** something happened, so it is associated with certain past time expressions

- **frequency:** *often, sometimes, always*  
I sometimes **walked** home at lunchtime.  
I often **brought** my lunch to school.
- **a definite point in time:** *last week, when I was a child, yesterday, six weeks ago*  
We **saw** a good film *last week*.  
*Yesterday*, I **arrived** in Geneva.  
She **finished** her work at *seven o'clock*  
I **went** to the theatre *last night*
- **an indefinite point in time:** *the other day, ages ago, a long time ago* People **lived** in caves a *long time ago*.
- She **played** the piano *when she was a child*.

**Note:** the word *ago* is a useful way of expressing the distance into the past. It is placed **after** the period of time: *a week ago, three years ago, a minute ago*

<http://www.edufind.com/english-grammar/simple-past-tense/>

- 1 Jessie and I (**go / went**) to a mathematics and science conference three months ago.
- 2 (**Do / did**) he (**come/ came**) on time yesterday?
- 3 The conference (**starts / started**) at 10.00 a.m.  
(pesta mulai jam sepuluh pagi.)
- 4 (**Did / do**) you (**finish / finished**) with your math homework last night?
- 5 I (**studying / studied**) mathematics for almost 4 years.  
(saya belajar teknik sipil selama hampir 4 tahun.)

- Task 10. Below are sentences with the simple present tense forms. Then, change these sentences into simple past tense. You may work in pairs.

Change the verbs in the sentences into the past tense.

- 1 Yesterday, I \_\_\_\_\_ library university.  
*Yesterday, I went to the library.*
- 2 We drive around the parking lot for 20 minutes.  
\_\_\_\_\_
- 3 When we \_\_\_\_\_ the class, the lesson is \_\_\_\_\_.  
\_\_\_\_\_
- 4 The lecturer asks me if I have understood the lesson.  
\_\_\_\_\_
- 5 I say, "Don't forget to finish his homework."  
\_\_\_\_\_
- 6 The lecturer tells us to come back to the lecture.  
\_\_\_\_\_
- 7 My brother and I slowly walk to the library.  
\_\_\_\_\_
- 8 Then I find a mathematical proof.  
\_\_\_\_\_
- 9 We stop at the office and meet our lecturer.  
\_\_\_\_\_
- 10 That is better than what we have done.  
\_\_\_\_\_

- Task 11. These are the words from text in Task 4. Please find the **antonyms** for each word below. You may open your dictionary.

No	Words	Antonyms
1	familiar	
2	represent	
3	realize	
4	indicate	
5	signify	
6	correct	
7	infinitely	
8	arrange	
9	closest	
10	different	

● Task 12. Do you know how to summarize a paragraph? Read the information below before doing the next task.

### What is summarizing?

Summarizing involves taking the main ideas from a piece of text and rewriting them in your own words. A summary is significantly shorter than the original text and tends to give an overview of a topic area.

### Tips for summarizing

- Highlight the main ideas in the text you want to summarize (do not include any minor details)
- Combine these ideas together in your own words
- Correctly interpret the original
- Do not include your own opinion or add extra information
- Use your own words and not those of the original author (unless using quotation marks)
- Remember to cite your source using a recognised referencing format
- Keep reminding your reader that you are summarising the work of someone else
- The author goes on to say that ...
- The text further states that ...

<http://www.library.dmu.ac.uk/Support/Heat/index.php?page=489>

● Task 13. In pairs, summarize the following paragraph taken from VOA website. You may open your dictionary to find the meaning.

“Many thousand \_\_\_\_\_ are studying at schools in the United States. \_\_\_\_\_ says the students are following an exam \_\_\_\_\_”

- 1 Mr. Leibovitz and writer Matthew Miller joined book “Fortunate Sons.” The book says China sent out \_\_\_\_\_ about developments that could help modernize \_\_\_\_\_ Country’s First Exchange Students from China.

ews.c

*“Fortunate Sons” tells the story of Chinese exchange students who came to the US in the 1870s to learn how to help China. Many Chinese students are doing the same today.*

- 2 “Illiteracy is a problem in many countries. Even wealthier nations have illiterate people. In the United States, many children are illiterate. But in 19 cities in the country [United States], the volunteers of Experience the World are helping to solve the problem. The volunteers, all from the United States, are teaching illiterate children to read. Voice of the Children Learn to Read, Voice of the Children.

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- 3 “Women entrepreneurs in the developing world often face challenges in achieving success and growth. They often have less access to financing on their own. But with an understanding of the challenges and the resources available, such as planning, financing, and marketing, they can overcome them. That's where the 10,000 Women Initiative comes in. The initiative provides women with education with dividends that can be used to start a business or invest in local communities. national economies.” (Goldman Sachs invests in women's entrepreneurship in America, voice of the children)


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 **Task 14. Now, your task is to summarize the text in Task 4. You can work in a group of 3. Then, compare your work with other groups.**

**Write one sentence for each paragraph.**

- 1<sup>st</sup> paragraph:
- 2<sup>nd</sup> paragraph:
- 3<sup>rd</sup> paragraph:
- 4<sup>th</sup> paragraph:
- 5<sup>th</sup> paragraph:
- 6<sup>th</sup> paragraph:

Now tie the sentences together to make one short paragraph. Write the final summary below. Use only the words which are absolutely necessary.



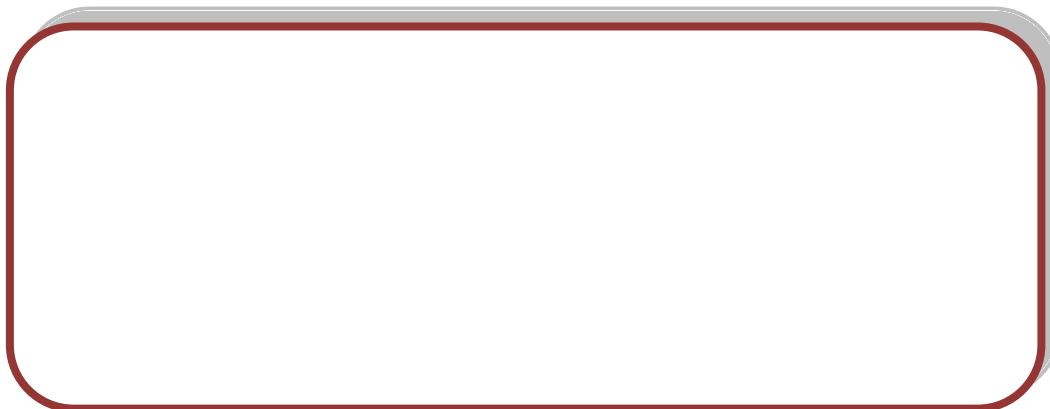
**Task 15.** In a group of 3, please find an article from newspaper, magazine, or internet. Then, summarize the article. Use the step like in the Task 14. Do not forget to write the source of the article.

---

**Write one sentence for each paragraph.**

- a. 1<sup>st</sup> paragraph
- b. 2<sup>nd</sup> paragraph
- c. 3<sup>rd</sup> paragraph
- d. 4<sup>th</sup> paragraph
- e. 5<sup>th</sup> paragraph
- f. 6<sup>th</sup> paragraph

Now tie the sentences together to make one short paragraph. Write the final summary below. Use only the words which are absolutely necessary.



- Task 16. Read and study the following information. It is about **'inferring unknown vocabulary'** or inferring words from context.

### Handling Unknown Vocabulary

When reading academic materials, you will most likely find difficult or unknown words. It is impossible, even for students whose first language is English, to know the exact meaning of every word on the page.

There are some strategies to infer unknown words from context:

1. Ignore unknown vocabulary items.
2. Use your knowledge to infer the meaning of an unknown word.
3. Use associations to infer the meaning of an unknown word.
4. Look for a definition in the sentence.

[http://www.hawaii.edu/eli/online/eli72/unknownvocab\\_ch5.htm](http://www.hawaii.edu/eli/online/eli72/unknownvocab_ch5.htm)

- Task 17. Read and study the following text. Underline the difficult words from this text. Try to guess the meaning without open your dictionary.

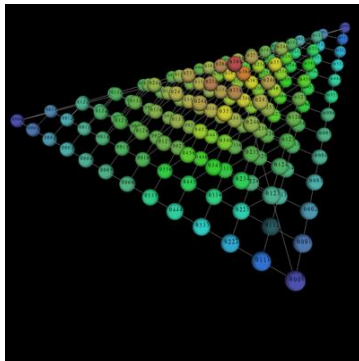
### Geometrical Music

by Mariela

With apologies to the musical Grease, mathematics and music go together like a de dinga dong. You need to look no further than *Ph* to see how the links between mathematics and music have fascinated researchers for centuries — see all *Ph* articles tagged *mathematics and music*.

Clifton Callender from Florida State University, Ian Q. Frisk from Yale University and Dmitri Tymoczko from Princeton University — all professors of mathematics — have developed a new way of analysing music called "geometrical music theory" that is based on the mathematical structure of music.

Their : *Geometrical Music*, published in the April 18 edition of *Science*, outlines their theory that musical operations, such as transposition, are expressed as symmetries of n-dimensional space.



For -note chords in geometric music theory — the collections of notes form a tetrachord, with the colours indicating the spacing between the individual notes in a sequence. In the blue spheres, the notes are clustered; in the warmer colours, they are farther apart. The red ball at the top of the column is the diminished seventh chord. Near it are all the most familiar chords of Western music. — courtesy Dmitri Tymoczko.

They categorise sequences such as rhythms and scales into mathematical "families". The points on the complex plane represent different types of organisation and produce different geometrical space. Through this method researchers will be able

understand how music has changed over time. The composer he compa  
many kinds of Western music. -Western styles. This is bec  
on concepts such as the "chord", which are present in -West  
style

The basis of traditional music theory is that it provides a taxonomy of musical events that are described differently depending on the context. For example, a "C" followed by the "E" is a "C major chord" or an "ascending C major arpeggio," "a major chord" and many other things. There are many methods of categorising such collections of notes. The purpose of OPTIC represents a different categorisation method that may, depending on the notes are in, their order of play, or how many times they are played. One aspect of the music, ignoring the context, is that the notes can be combined to produce different musical concepts. For example, a "C major chord" and a "C major 7-note chords end up being different doughnuts while other chord types are not.

Tymoczko believes that their theoretical differences between the two styles. "Our methods are not so great at distinguishing between the two styles, but they might allow you to visualise some of the differences between the two styles. They certainly help you understand more deeply how classical and atonal music differ."

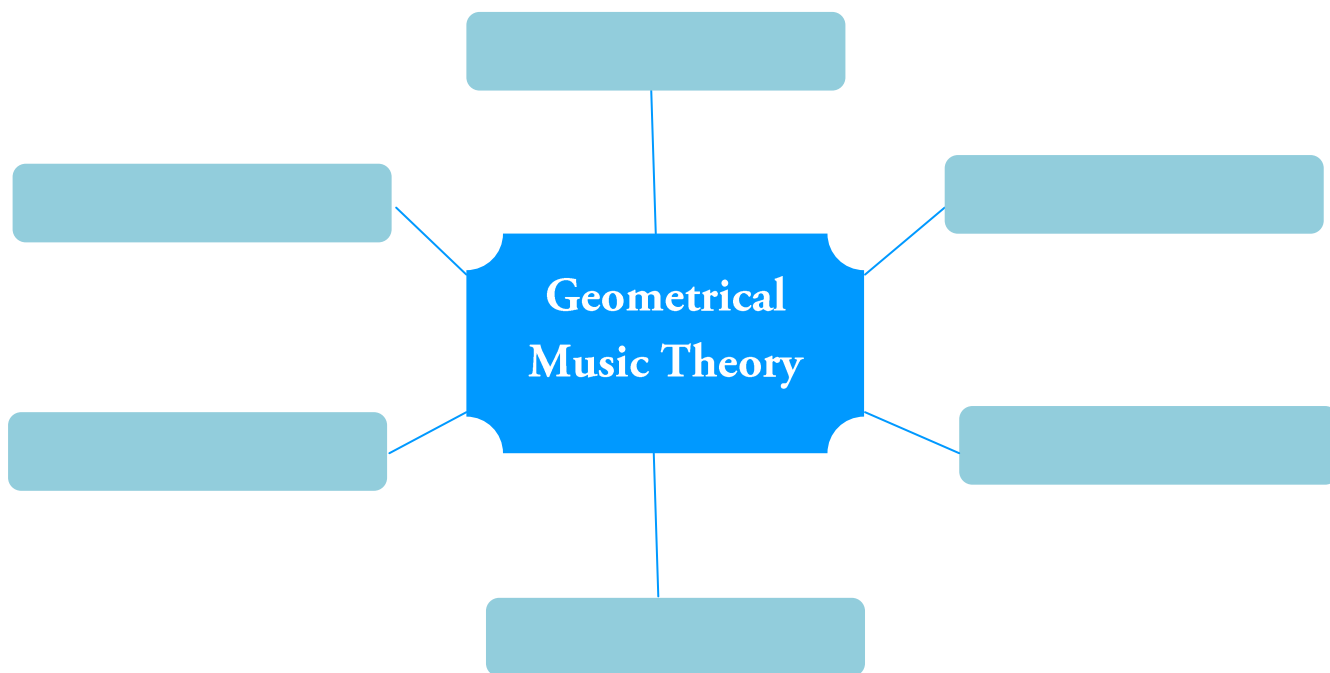
The authors even hope that through their work "You could create new kinds of musical toys," said Tymoczko. They envisaged new visual shows that could accompany the music, and even a place where the music was being made.

So next time you go see a visually spec at the big — you might lear .

<https://plus.maths.org> -mu -theo



- Task 18. After reading the previous text, please write the ideas that you get from the text. After that, please make a summary at least one paragraph. You may use ideas that you get to help you summarize the text.



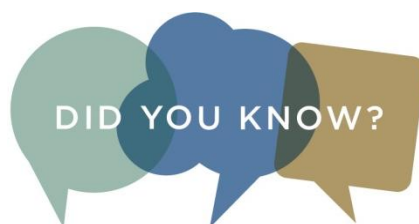
.....

.....

.....

.....

.....



DID YOU KNOW?

2,520 is the smallest number that can be exactly divided by all the numbers 1 to 10.

<http://www.factslides.com/s-Math>

● Task 19. You have underlined the difficult words from the text in Task 17. Please write them down into following space. Then, find the antonyms and the meaning of each word.

Word	Mean	Antonyms

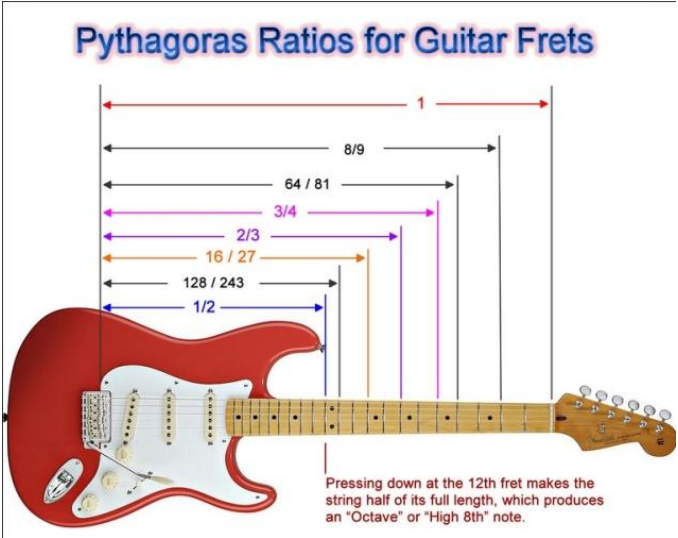
Let's Evaluate

● Task 20. You will read a text entitled “**What is the relationship between classical music and mathematics?**” Then answer the questions that follows.

What is the relationship between classical music and mathematics?

To say the least, this is a complex question on which there is no proven, agreed relationship between the two.

To begin, let's look at the relationship between mathematics and music. Helmholtz describes music as highly contrasting to the "intellectual" activity which one can bound together using one another as if they would demonstrate together all activities of our mind, and which also in unconscious expressions of a mysteriously



**Pythagoras Ratios for Guitar Frets**

Pressing down at the 12th fret makes the string half of its full length, which produces an "Octave" or "High 8th" note.

Bonded they may be, but note how Helmholtz characterizes the “mathematical bond”. One might then say that mathematics is not intrinsically related to music, but by one and the same link somehow seemingly related, the link of mathematics to music.

We only have to refer to Guy Warrack’s wry observation that the study of one does not necessarily shed light on the other.

How often has it been said in conversation that ‘Music is more absurd than mathematics’?

More absurd than mathematics, but it is not more generalizations, but it is not more . . . Certainly many people are interested in mathematics and many are interested in music. In mathematics, but in music. It would be easy to say that many deaf mathematicians are interested in mathematics, but many musicians are interested in music.



Mathematics is more than a tax return ([and] probably goes beyond it).

What then, are we left with when we talk about music? Fiore gives a good answer.

Music and Mathematics are intricately related [but the relationship is not obvious]. It takes time looking for it. Nevertheless, the mathematical structures inherent in all works of music, and these structures are not obvious.

The language of mathematics is a convenient tool for understanding this uncertainty. . . [so as] to find a good way to hear a piece of music (Fiore 5).

Needless to say, everyone will have his or her own definition of music. Music theorists, mathematicians and musicians have different definitions of music.

<http://www.nlb.gov.sg/blogs/librariesplanade/2013/04/10/mathematics-is-there-a-relation-between-music-and-mathematics/>

- 1 What is the main idea of the passage?  
.....  
.....
- 2 In what ways do mathematics and music have a relationship?  
.....  
.....
- 3 Do you understand why the author says that mathematics is the language of music?  
.....  
.....
- 4 Do you agree that these two fields are closely related?  
.....  
.....
- 5 Do you find the simple past tense form of verbs in the passage?  
.....  
.....
- 6 Please paraphrase the following paragraph.  

Music and Mathematics are intricately related [but not identical]. The language of mathematics is a conversational tool that we use to describe the structures inherent in all works of music, and vice versa. In other words, there are certain mathematical patterns that are found in all types of music, and these patterns can be described using mathematical equations. The language of mathematics is a conversational tool that we use to describe the structures inherent in all works of music, and vice versa. In other words, there are certain mathematical patterns that are found in all types of music, and these patterns can be described using mathematical equations.

this underlying [so as] to find a good way to hear a piece of music that way of hearing it.

.....  
.....  
.....  
.....
- 7 Please write a summary based on the passage.  
.....  
.....  
.....  
.....

## SUMMARY

1. There are some techniques to paraphrase a sentence and summarize a paragraph.
2. Inferring unknown vocabulary is an important technique in order to understand the text.
3. The simple past is used to talk about a **completed action** in a time **before now**.

## REFLECTION

How much improvement have you made after  
Put a thick (✓) in the right column to

Aspects	Very much	Much	Little
Paraphrasing a sentence			
Summarizing a paragraph			
Finding antonyms			
Understanding the simple past tense			

**APPENDIX I**  
**THE PERMIT LETTER**



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS NEGERI YOGYAKARTA  
**FAKULTAS BAHASA DAN SENI**

Alamat: Karangmalang, Yogyakarta 55281 ☎ (0274) 550843, 548207 Fax. (0274) 548207  
<http://www.fbs.uny.ac.id/>

FRM/FBS/33-01  
10 Jan 2011

Nomor : 429k/UN.34.12/DT/III/2015  
Lampiran : 1 Berkas Proposal  
Hal : Permohonan Izin Penelitian

Yogyakarta, 30 April 2015

Kepada Yth.  
Dekan Pendidikan Matematika, FMIPA UNY

Kami beritahukan dengan hormat bahwa mahasiswa kami dari Fakultas Bahasa dan Seni Universitas Negeri Yogyakarta bermaksud mengadakan **Penelitian** untuk memperoleh data awal guna menyusun Tugas Akhir Skripsi (TAS)/Tugas Akhir Karya Seni (TAKS)/Tugas Akhir Bukan Skripsi (TABS), dengan judul :


*Developing English for Specific Purpose-Based Reading Learning Materials for  
International Mathematics Education Study Program of Yogyakarta State University*

Mahasiswa dimaksud adalah :

Nama : TIAS MAFAZATU MA'ARAH  
NIM : 11202244025  
Jurusan/ Program Studi : Pendidikan Bahasa Inggris  
Waktu Pelaksanaan : April-Mei 2015  
Lokasi Penelitian : Pendidikan Matematika, FMIPA UNY

Untuk dapat terlaksananya maksud tersebut, kami mohon izin dan bantuan seperlunya.

Atas izin dan kerjasama Bapak/Ibu, kami sampaikan terima kasih.

a.n. Dekan  
Kasubag Pendidikan FBS,  
  
Indun Probo Utami, S.E.  
NIP 19670704 199312 2 001

