



Suan Sunandha Rajabhat University

English for Mathematics Instructions



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FACULTY OF EDUCATION SUAN SUNANDHA RAJABHAT UNIVERSITY

FACULTY MEMBERS : ENGLISH LANGUAGE



Ms. Yu Mon Kyaw

EDUCATIONAL BACKGROUND:

MASTER: ABBREVIATION (BRANCH NAME)

– Master of Education in Educational Management. Mahidol University

BACHELOR'S DEGREE: ABBREVIATION (BRANCH NAME)

– Bachelor of Education (English) Yangon University of Education

Fun fact about me

"Quietly
Hilarious"



Course Outline

14th July 2026

- 1.Course Introduction and Course objectives**
- 2.Mathematics English Challenge (Warm up)**
- 3.Why Mathematics teachers need English**
- 4.Vocabulary Discovery**
- 5.Reading Activity**
- 6.Mathematics ArithmeticAcademic
Operations and Number Properties**
- 7.Academic Verbs for Mathematics English**
- 8.Essential Classroom English for Mathematics**
- 9.Reflection Activity (Exit Ticket)**
- 10.Assignment**

1.Course Introduction

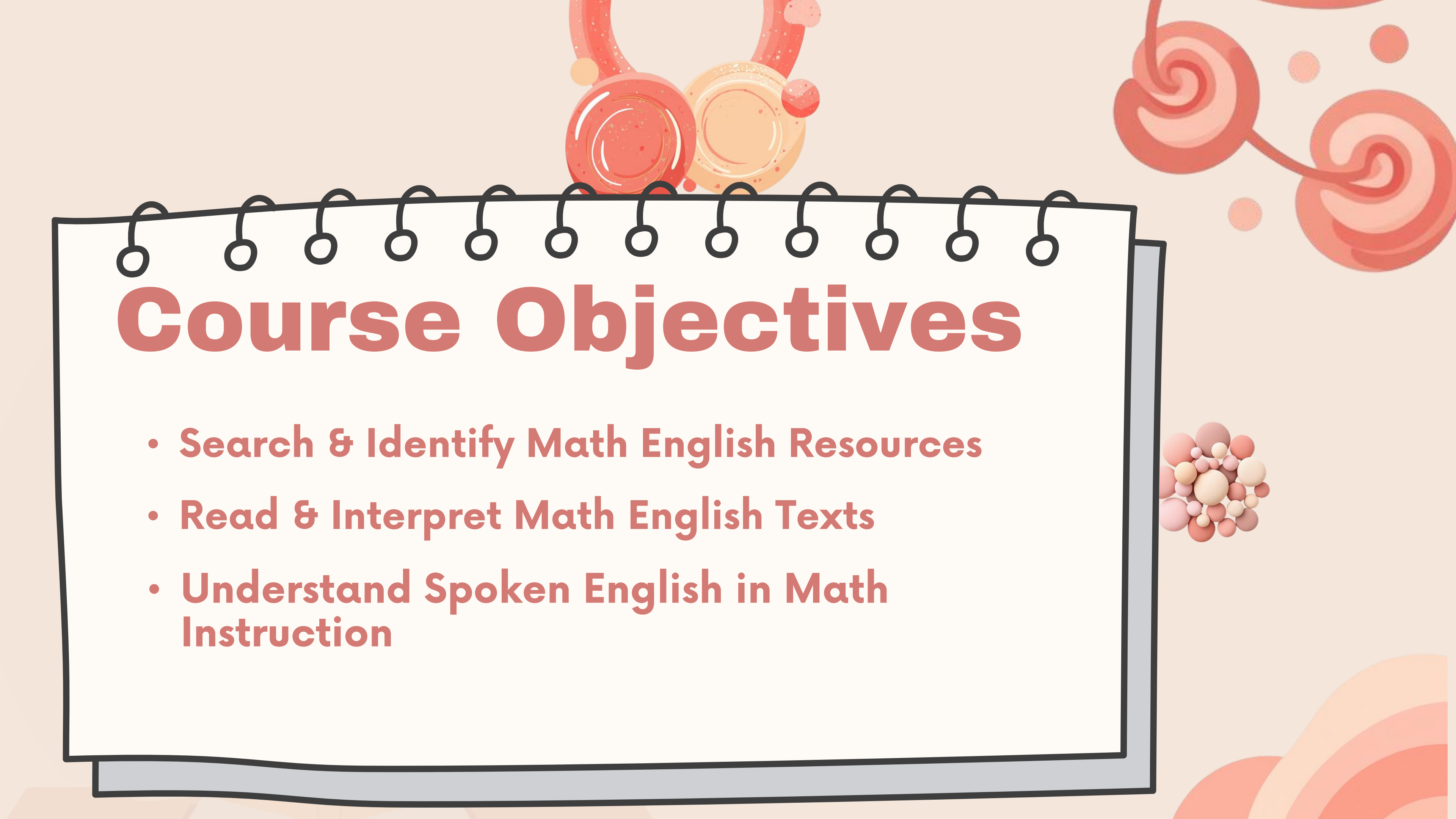
Overview of the Course Purpose and Scope

Mastering English instructions in mathematics is essential for academic success.

This course helps SSRU students confidently

- read,
- understand, and
- communicate math concepts in English —
- building the skills needed to master in math-related studies and beyond.

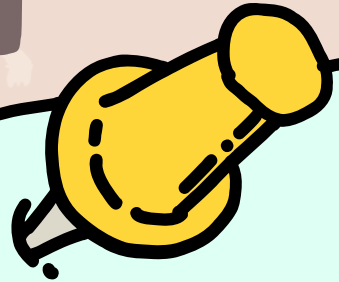




Course Objectives

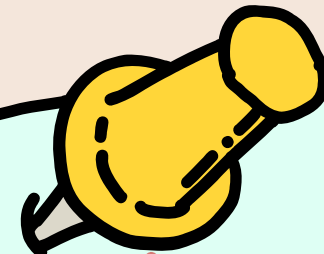
- Search & Identify Math English Resources
- Read & Interpret Math English Texts
- Understand Spoken English in Math Instruction

Course Objectives



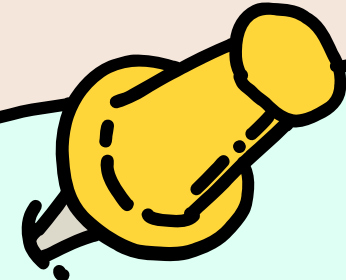
Explain, Question & Give Instructions

Clearly explain math concepts, ask questions, and give step-by-step instructions in English.



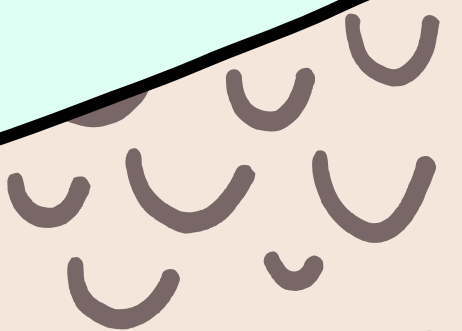
Communicate Effectively in Math Classrooms

Speak and write confidently in English during classroom math activities and discussions.



Present Math Information with Strong Skills

Deliver clear and effective English presentations on math-related topics and findings.



Assessment Methods

How your performance is evaluated throughout the course

Coursework & Exams

Assignments: 30 marks
Mid-term Exam: 20 marks
Final Exam: 20 marks

Participation & Presentation

Presentation: 20 marks
Attendance & Participation: 10 marks
Total: 100 marks



Why do English Instructions Matter in Mathematics

The Power of Clear Communication in Mathematics

Clear English communication

- reduces errors and
- deepens understanding
- builds students' confidence,
- encourages participation, and
- prepares them for academic and professional success in math-related fields.



1. Mathematics English Challenge

Students work in pairs

Pair Work

“What do these words mean?”

Discuss with your partner and write down the definitions.



NUMBER



INTEGER



FRACTION



SUM



PRODUCT



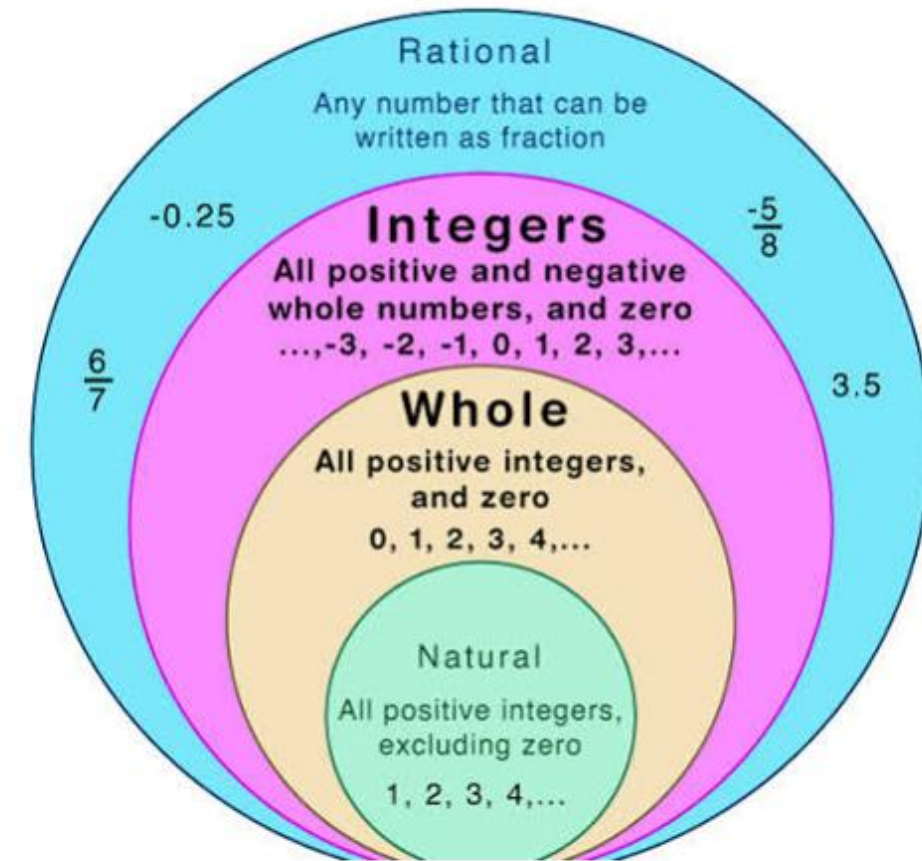
DECIMAL

Speaking Practice

Vocabulary	Simple Definition
Number	A mathematical value used for counting, measuring, or calculating.
Integer	A whole number that can be positive, negative, or zero.
Fraction	A number that shows part of a whole.
Sum	The answer to an addition problem.
Product	The answer to a multiplication problem.
Decimal	A number that contains a decimal point.

Usage Examples

- **5** is a number
- $\frac{1}{2}$ is a fraction
- **3.5** is a decimal
- **-3, 0, and 7** are integers
- The **sum** of 4 and 6 is 10



Speaking Challenge

Use the following pattern to present:

A/An _____ is _____.

e.g., "A number is a mathematical value."

2👉 Do mathematics teachers really need English?

Please discuss with your partner for one minute.



Think about your future career as a mathematics teacher.



Why might English be useful for you?



Accessing global resources (e.g., academic papers, online tools)



Professional development (e.g., conferences, international workshops)



Collaboration with international colleagues



Teaching international students



Preparing students for a globalized world

Academic Materials

- Reading books 
- Reading textbooks 
- Using the Internet 

Research & Professional Development

- Reading research articles 
- Reading research papers 
- Attending conferences 

International Engagement

- Teaching international students 
- Studying abroad 
- Teaching through EMI 
- International communication 

DISCUSSION QUESTIONS

"What problems might you face if you cannot read English textbooks?"

- Difficult to understand content
- Limited resources
- Depend on translations
- Miss new information

"Raise your hand if you have ever read a research article before."

"Don't worry if you haven't."

"This course will help you develop the English skills needed to read academic articles."

"What opportunities could English create for your future career?"

- Scholarships
- Study abroad
- International schools
- Research collaboration
- Professional development

"Which reason is the most important for you and why?"

Key Message

- 📌 English helps mathematics teachers access more learning resources
- 📌 English gives teachers access to global educational research.
- 📌 English helps teachers participate in international academic communities.
- 📌 English prepares teachers for bilingual and international classrooms.

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3. Vocabulary Discovery

Group Work · 15–20 minutes

Make a group with the same items.

A

Group A

Numbers

B

Group B

Operations

C

Group C

Properties

D

Group D

Academic Verbs

E

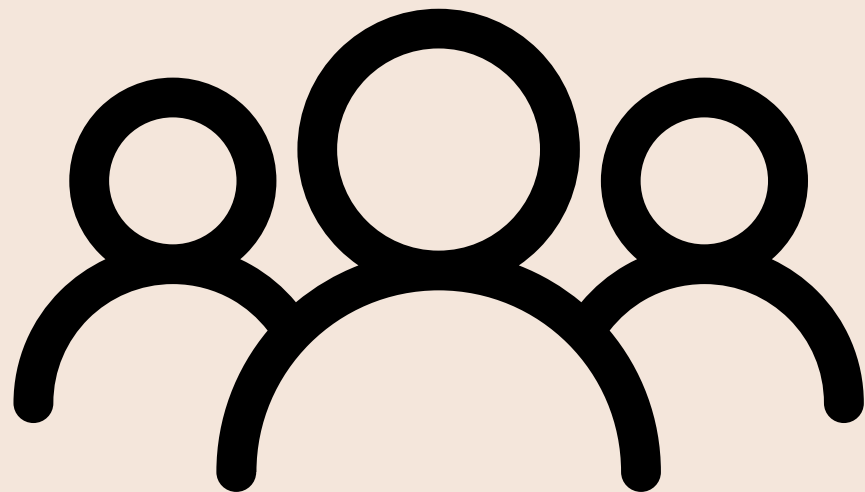
Group E

Fractions

Categorize the items from the provided vocabulary list according to your group name.

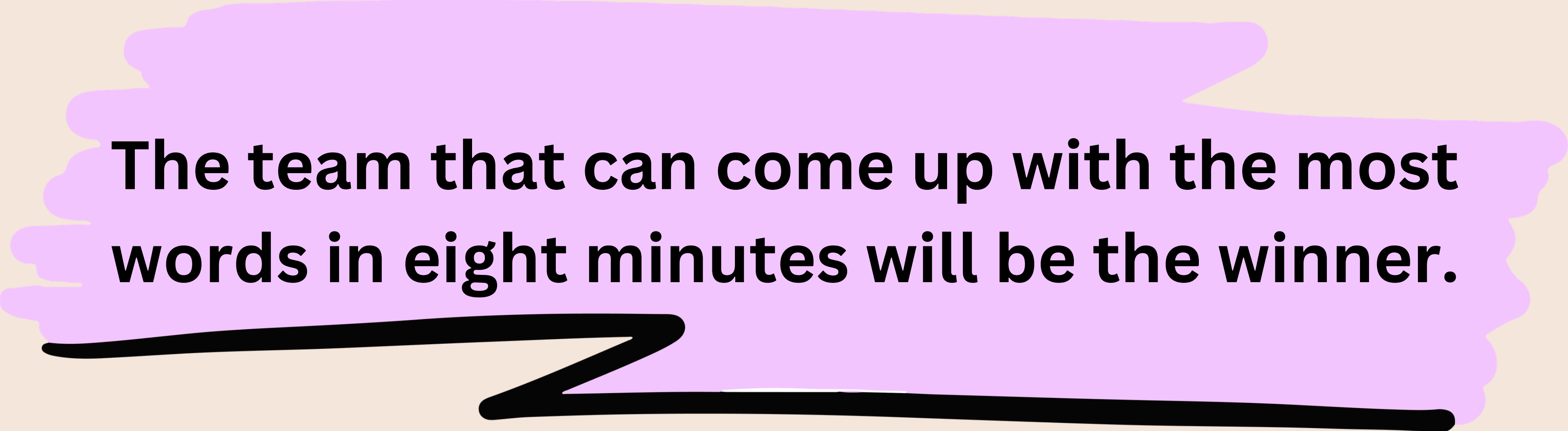
- each of you will receive a card with a symbol, number, or label on it.
- move around the classroom and find classmates who have the same item as yours.
- For example, if you receive a card with number, you need to find everyone else with number and form a group together.
- Once you have found your group members, sit together

- After sitting together, you will receive a Mathematics Vocabulary list.
- Look for as many words as you can in your group category.
- For example, Group A Number lists number words. Write at least ten words.





WINNER



The team that can come up with the most words in eight minutes will be the winner.

4. Reading Passage Activity 1: Skimming

Read the short passage and answer the following questions.

A real number is any number on the number line. Real numbers include integers, fractions, and decimals. Zero is neither positive nor negative. Integers include positive and negative whole numbers and zero.

1. What is the topic? The topic is “Real numbers”.
2. How many number types are mentioned?
3. Which number is neither positive nor negative?

Reading Passage

Understanding Numbers in Mathematics

Numbers are an important part of mathematics. We use numbers every day for counting, measuring, and calculating. For example, we use numbers to tell the time, count money, and measure distance.

A **real number** is any number on the number line. Real numbers include integers, fractions, and decimals. Most numbers that we use in daily life are real numbers.

An **integer** is a whole number that can be positive, negative, or zero. Examples of integers are -5, -2, 0, 3, and 10. Integers do not contain fractions or decimal points.

A **fraction** is a number that represents part of a whole. Fractions have two parts: a numerator and a denominator. Examples of fractions are $\frac{1}{2}$, $\frac{3}{4}$, and $\frac{5}{8}$.

A **decimal** is a number that contains a decimal point. Examples of decimals are 0.5, 2.75, and 3.14. Fractions and decimals can represent the same value. For example, $\frac{1}{2}$ is equal to 0.5.

The difference between a fraction and a decimal is the way they are written. A fraction uses a numerator and a denominator, while a decimal uses a decimal point.

Zero is a special number. It is neither positive nor negative. It is also an integer and a real number.

Real numbers are important in mathematics because they help us describe quantities, solve problems, and perform calculations. Without real numbers, mathematics would be difficult to use in everyday life.

Some students think integers are the easiest number type to understand because they are simple whole numbers. Others may think decimals are easier because they are commonly used in money and measurements. Different students may have different opinions.

Pair Activity

- Work with a partner. Student "A" get the reading paragraph and student "B" get the question set.
- Student "B" ask the questions and student "A" answer the questions.
- Use complete sentences.
- Give examples whenever possible.

1. What is a number?
2. What is an integer?
3. What is a fraction?
4. What is a decimal?
5. What is the difference between a fraction and a decimal?
6. What is a real number?
7. What is zero?
8. Why are real numbers important in mathematics?
9. Which number type do you think is easiest to understand? Why?

Language Frame

Use the following language when you answer the questions.

"A _____ is..."

"It refers to..."

"It means..."

"For example..."

Sum

Difference

Product

Quotient

5. Mathematics Arithmetic Operations

Result of Addition

+ Sum**+**

Result of Subtraction

− Difference**−****× Product****×****÷ Quotient****÷**

$$8 + 5 = 13$$

$$15 - 7 = 8$$

$$4 \times 6 = 24$$

$$20 \div 4 = 5$$

Result of Multiplication

13 is the sum

8 is the difference.

24 is the product.

5 is the quotient.

Result of Division

8 plus 5 equals 13

15 minus 7 equals 8

4 times 6 equals
24.20 divided by 4
equals 5.The answer, 13, is
called the sum.The answer, 8, is called the
difference.24, is called the
product.5, is called the
quotient.

What is the sum of 6 and 4?

The sum of _____ and _____ is _____.

What is the difference between 10 and 4?

The difference between _____ and _____ is _____.

What is the product of 5 and 8?

The product of _____ and _____ is _____.

What is the quotient of 18 and 3?

The quotient of _____ and _____ is _____.

Operation	Academic Word	Example
Addition	Sum	$4 + 5 = 9$
Subtraction	Difference	$9 - 4 = 5$
Multiplication	Product	$4 \times 5 = 20$
Division	Quotient	$20 \div 5 = 4$

Sum = Answer to addition
Difference = Answer to subtraction
Product = Answer to multiplication
Quotient = Answer to division

When you see addition, think of sum.

When you see subtraction, think of difference.

When you see multiplication, think of product.

When you see division, think of quotient.

**As future mathematics teachers, using these academic words makes
your explanations more professional.**

Properties of Real Numbers



Real numbers include both

- rational numbers (such as fractions and integers) and
- irrational numbers (such as π and $\sqrt{2}$).

They are fundamental to all mathematical operations and reasoning — forming the foundation of everything we calculate and communicate in mathematics!



Rational Numbers (Repeating or Terminating Decimals)

- $\frac{1}{2} = 0.5$
- $\frac{3}{4} = 0.75$
- $\frac{1}{3} = 0.333333... \text{ (repeats 3)}$
- $\frac{2}{11} = 0.18181818... \text{ (repeats 18)}$

Irrational Numbers (Never End and Never Repeat)

Examples of Irrational Numbers

Irrational Number

Decimal Form

π (pi)

3.14159265358979323846...

$\sqrt{2}$

1.41421356237309504880...

$\sqrt{3}$

1.73205080756887729352...

$\sqrt{5}$

2.23606797749978969640...

Properties of Real Numbers



Commutative Property

Addition: $a + b = b + a$
Multiplication: $a \times b = b \times a$
Order does not change the result.

Associative Property

Addition: $(a+b)+c = a+(b+c)$
Multiplication: $(ab)c = a(bc)$
Grouping does not change the result.

Distributive Property

$a(b + c) = ab + ac$
Multiply across the sum.
Links multiplication and addition.



Properties



Additive Identity

Adding zero to any number leaves it unchanged. $a + 0 = a$. Zero is the additive identity element.

Inverse Properties

Additive: $a + (-a) = 0$.
Multiplicative: $a \times (1/a) = 1$. Every number has an additive and multiplicative inverse.

Multiplicative Identity

Multiplying any number by one leaves it unchanged.
 $a \times 1 = a$.
One is the multiplicative identity.



Properties of Real Numbers



Multiplying /dividing by 1

don't change a number
when we multiply or divide
by one

$$a * 1 = a, a / 1 = a$$

Multiplying by zero

Anything times zero
equals zero

$$a * 0 = 0, 0 * 1 = 0$$

The Zero Product Property

If the product of two
numbers is zero, one of
the factors must be
zero.

$$a * b = 0, \text{ then } a = 0 \text{ OR } b = 0$$



Properties



Dividing a number by itself

any non-zero number is divided by itself, the quotient has to equal 1.

If

$$\frac{2}{2} = 1$$

$$\frac{3}{3} = 1$$



Real Number Properties: Examples



Commutative Property (Addition): $a + b = b + a \rightarrow 3 + 5 = 5 + 3 = 8$

"Add the numbers in any order — the sum stays the same."

Distributive Property: $a(b + c) = ab + ac \rightarrow 2(3 + 4) = 2 \times 3 + 2 \times 4 = 14$

"Multiply the outside number by each term inside the brackets, then add the results."



Mini Discussion
Questions

1. Which mathematics term is easiest to remember?
2. Which term is difficult?
3. Why is mathematics vocabulary important for teachers?

6. Essential Academic Verbs for Mathematics English

- define
- explain
- describe
- compare
- identify
- classify
- convert

- simplify
- estimate
- Calculate
- Evaluate
- determine
- solve
- interpret

- justify
- demonstrate
- represent
- analyze
- conclude
- verify
- divide

7. Essential Classroom English for Mathematics Instruction/Questions

- Please read the question carefully.
- Work with your partner.
- Discuss your answer.
- Compare your results.
- Explain your reasoning.
- Write your answer clearly.
- Check your work again.
- Present your findings.

- What does this term mean?
- Can you explain it in your own words?
- Why do you think so?
- What information is important?
- Which keyword helps you understand the problem?

7. Essential Classroom English for Mathematics Instruction

- Read the problem carefully.
- Identify the key information.
- Explain your reasoning.
- Compare your answers.
- Justify your solution.

- Present your findings.
- Check your calculations.
 - Interpret the result.
- Work with a partner.
- Discuss your ideas.

Reflection Activity

Exit Ticket

Students answer:

1. Three new words I learned today:
2. One word I still find difficult:
3. Why is English important for mathematics instruction?

Assignment

Mathematics Vocabulary

Select 20 words from the chapter and complete the table.

Word	Definition	Example Sentence
1. Integer	Whole number including negatives and zero	An integer can be negative or positive.
2.		
3.		

Search one mathematics education article from:

- Google Scholar
- ERIC

Write:

- Title**
- Author**
- Three mathematics vocabulary words found in the article**

Next Week

Mathematics Vocabulary Sharing Activity

Each group receives one vocabulary category:

Group 1: Numbers and Number Types

Group 2: Arithmetic Operations

Group 3: Mathematical Properties

Group 4: Academic Verbs

Task

Prepare a short presentation.

Requirements:

- Explain 5 vocabulary words.
- Give simple definitions.
- Use each word in a sentence.
- Teach the words to classmates.



Thank you!
