10 Ways to Practice Mathematics Vocabulary

It is imperative to emphasize mathematics vocabulary in the classroom. What follows are ideas with examples about how to practice mathematics vocabulary.

1. Teach vocabulary explicitly.
2. Use graphic organizers, like Frayer models.
3. Create math vocabulary cards.
4. Create vocabulary glossaries.
5. Create word walls.
6. Do crosswords or seek-and-finds.
7. Play memory with vocabulary terms and definitions.
8. Create an oral vocabulary routine.
9. Incorporate mathematics writing.
10. Play the Hot Seat game.

1. Teach vocabulary explicitly

Before teaching new mathematics content, it may be necessary to explicitly teach new vocabulary. The teaching of vocabulary should include: (a) an introduction of the term, (b) a student-friendly definition, and (c) a connection to a mathematics concept or procedure. As students practice mathematics content, review vocabulary often.
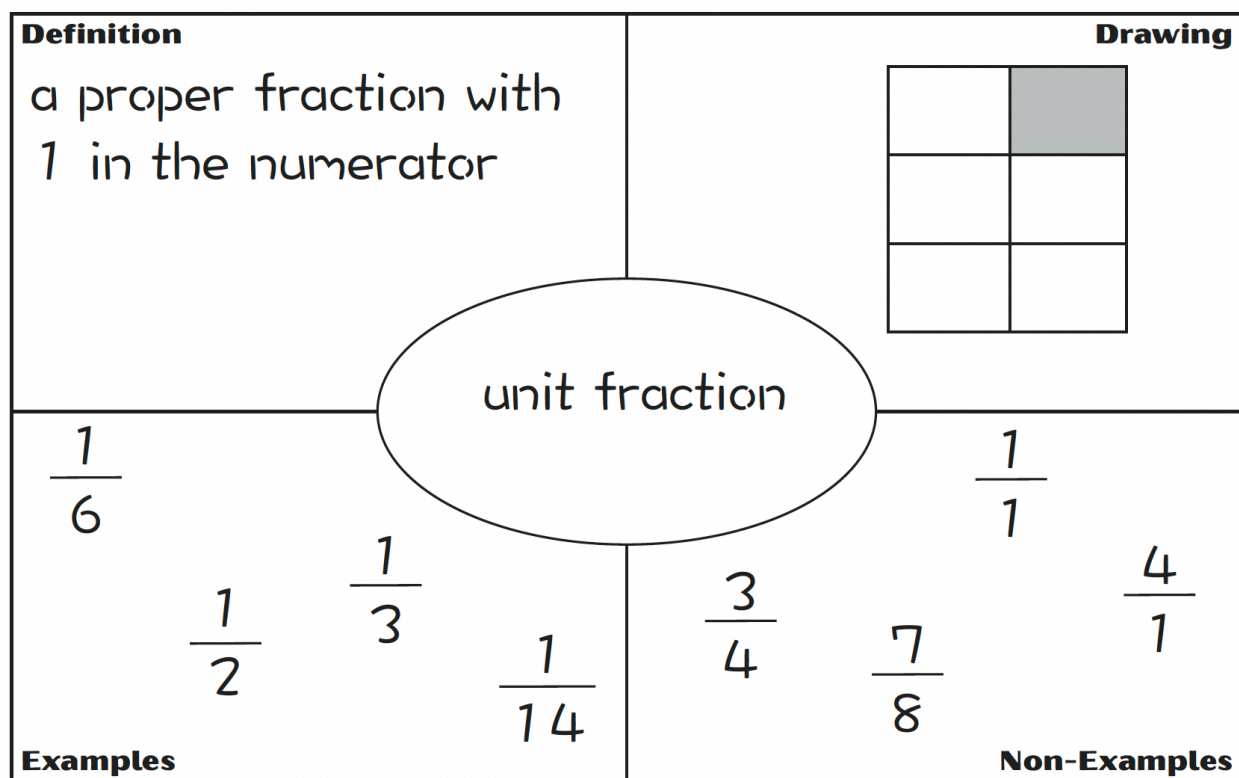
Here is an example of the explicit teaching of mathematics vocabulary.

Teacher:	Before we work on our fractions, let's review important vocabulary about fractions. First, what is a *whole?*
Students:	All the parts of a shape.
Teacher:	Yes! A *whole* is all of the parts of a shape. If you have a rectangle that you will divide into equal parts, the *whole* is the entire rectangle. What's another example of a *whole?*
Students:	A circle that will be divided into equal parts.
Teacher:	A *whole* also can mean all the parts of a set. If I have a box of markers, and I focus on the fraction of red markers within the box, the box is the *whole*. What's another example of a *whole* with a set?
Students:	With a carton of eggs, the carton is the *whole.*
Teacher:	In a fraction, the *whole* represents the *denominator*. Let's say that term together.
Students:	*Denominator.*
Teacher:	What is a denominator?
Students:	The number of equal parts in the whole.
Teacher:	That's right. The whole is the number of equal parts of the whole. What's the *denominator* in the fraction two-thirds?
Students:	Three.
Teacher:	Yes, in the fraction two-thirds, the *denominator* is 3.

2. Use graphic organizers, like Frayer models

For vocabulary terms that students will use often or for terms that are difficult for students, use a graphic organizer to explore the properties of a term. One example of a graphic organizer is the Frayer model. With the Frayer model, the term is written in the middle of the organizer, and then students write a student-friendly definition, draw the term, list examples, and list non-examples. Students should develop their Frayer models instead of looking at already-prepared models.

Here is an example of the Frayer model for the term *unit fraction*.

Definition	Drawing
a proper fraction with 1 in the numerator	

unit fraction

Examples

$\frac{1}{6}$ $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{14}$

Non-Examples

$\frac{1}{1}$ $\frac{3}{4}$ $\frac{7}{8}$ $\frac{4}{1}$

3. Create math vocabulary cards

For vocabulary terms that students will use often or for terms that are difficult for students, ask students to create their own set of vocabulary cards. Vocabulary cards should feature (a) the term, (b) a student-friendly definition, and (c) a visual that represents the term.

Here are examples of vocabulary cards from the Inclusion in Texas Math Modules (www.inclusionintexas.org).

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decimal

A number based on powers of ten.

34.107

tens ones tenths hundredths thousandths

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expanded form

Writing a number to show the place value of each digit.

9,217

Expanded form: 9,000 + 200 + 10 + 7

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tenths

The digit in representing $\frac{1}{10}$ **.**

In the number 4.23, 2 is in the tenths place.

4. Create vocabulary glossaries

Ask students to create their own mathematics vocabulary glossary. One idea is to create a notebook with one letter (A through Z) on each page. When students learn new vocabulary, they can add terms, definitions, and examples to their glossary.

Here is an example of the E page of a glossary.

E

equal

when two things are the same

$$2 + 2 = 4$$

equation

a math statement with an equal sign

$$3 \times 5 = 15$$

equivalent fractions

two fractions that have the same value

$$1/2 = 2/4$$

$$3/4 = 6/8$$

expression

a math statement without an equal sign

$$3 \times 5$$
$$9 + 2$$

5. Create word walls

For vocabulary terms that students will use often or for terms that are difficult for students, create a word wall to hang on the classroom wall. There are word walls available for purchase, but a better idea is to create a word wall with the students. Each card on a word wall should feature (a) the term, (b) a student-friendly definition, and (c) a visual that represents the term.
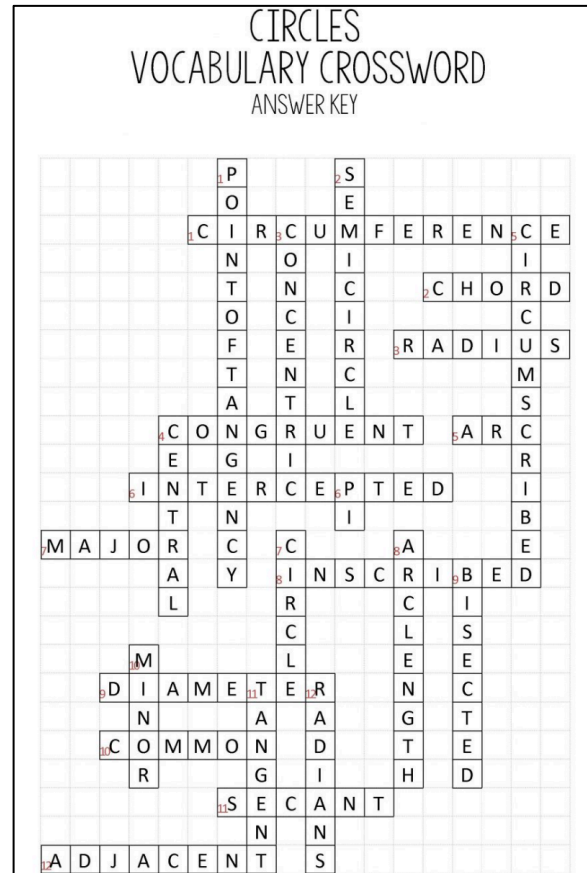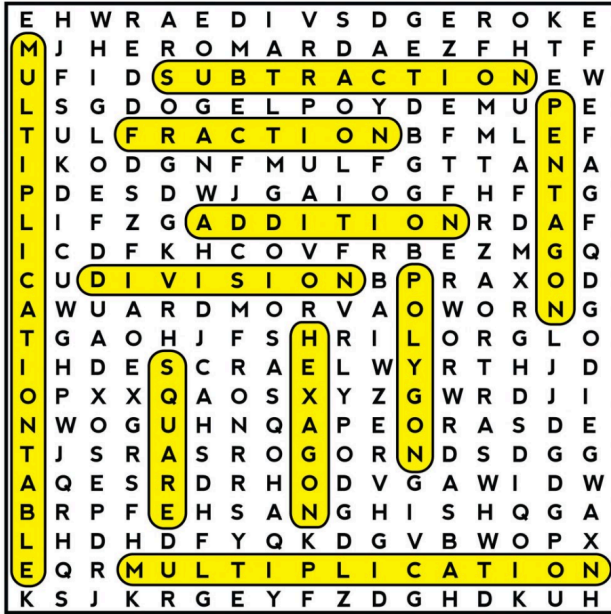
Here is a sample word wall.
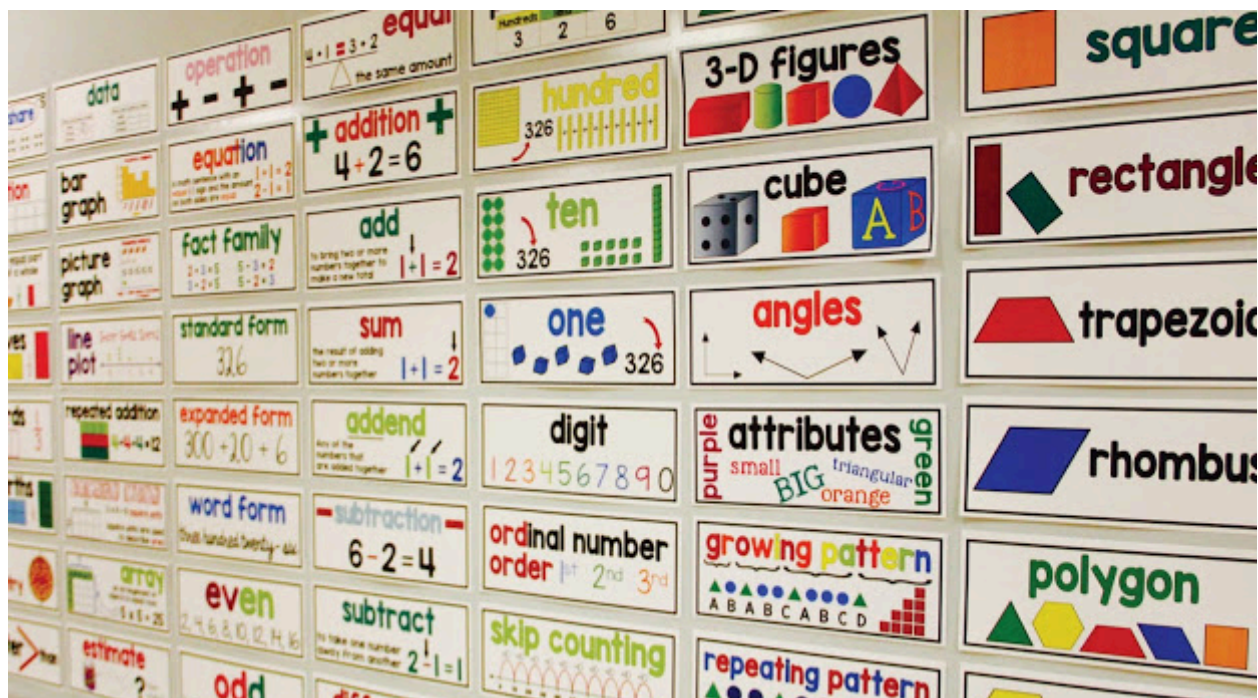
6. Do crosswords or seek-and-finds

Create crossword puzzles or seek-and-finds for students to practice mathematics vocabulary.

Here are some examples.

CIRCLES
VOCABULARY CROSSWORD
ANSWER KEY

7. Play memory with vocabulary terms and definitions

For vocabulary terms that need to be used with precision, develop a memory game in which students match the term with its definition.

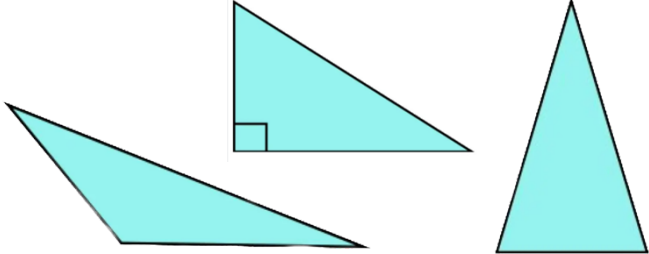Here is an example of memory for 6 terms related to the operations.

addend	factor	dividend
divisor	difference	quotient
one of the numbers added together for a sum	one of the numbers multiplied together for a product	in division, the number that is divided by the divisor
in division, the number that divides the dividend	the result of subtraction	the result of division

8. Create an oral vocabulary routine

Display an image that can be described using a list of vocabulary terms and provide a word bank. Explicitly model describing the image using some of the terms. Give your students a turn. Have them share out or work with a partner.

Here are some examples of place value and geometry.

Image	Word Bank
12.34	Decimal Tens place Digit Tenths place Hundredths place Value Ones place

Students might say...

*In this number, the **digit** 3 has a **value** of three-tenths.*

*In this number, there is a 4 in the **hundredths place**.*

*In this number, there is a 1 in the **tens place** that has a **value** of ten.*

Image	Word Bank
	Acute triangle Greater than Angle Less than Degrees Obtuse triangle Equal to Right triangle

Students might say...

*The first triangle is an **obtuse triangle** because it has an **angle** that is **greater than** 90 **degrees**.*

*The second triangle is a **right triangle** because it has an **angle** that is **equal to** 90 **degrees**.*

*The third triangle is an **acute triangle** because all three **angles** are **less than** 90 **degrees**.*

9. Incorporate mathematics writing

Any topic in mathematics can be written about, and mathematics writing helps students explore their mathematical ideas and vocabulary. Provide sentence stems and word banks to support students' use of formal vocabulary. When students write about a topic in mathematics for the first time, make sure to model an example first. Highlight strong examples of students' writing to encourage students' best work.

Here is an example of a sentence stem and word bank with a student's mathematics writing sample.

Compare the two fractions and justify your reasoning. Include as many words from the word bank as you can and underline them.

$$\frac{3}{5} \qquad \frac{7}{10}$$

Word bank: Denominator, fifths, greater than, less than, numerator, tenths

Three-<u>fifths</u> is equal to six-<u>tenths</u>. The <u>numerator</u> of seven-<u>tenths</u> is seven, which means that seven-<u>tenths</u> is <u>greater than</u> three-<u>fifths</u>, and three-<u>fifths</u> is <u>less than</u> seven-<u>tenths</u>.

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10. Play the Hot Seat game

This whole-group game is similar to Taboo. Place a chair in front of the class. Students take turns being in the "hot seat." Display a mathematics vocabulary term behind the student in the hot seat so that the rest of the class can read it. The student in the hot seat will call on students when they raise their hands. Students take turns describing the term until the student in the hot seat guesses the term correctly! Provide a word bank to support.

Vertices

Where the sides of a 2D shape meet!

A triangle has three of these!

2D and 3D shapes have these!