LEVEL H

Number Worlds™

Accelerate Math Success

English Learner Support Guide

Mc Graw Hill Education

Unit 3
Algebra

Unit at a Glance

In this unit, students will learn the vocabulary associated with ***Number Worlds,*** Level H, Algebra. They will review fraction vocabulary and equation vocabulary, including the terms *expression, constant,* and *variable*. They will also be introduced to the concept of inequality. Before beginning the unit, assess students' general knowledge of math vocabulary using the Individual Oral Assessment on page 57.

How Students Learn Vocabulary

Using visuals and manipulatives creates familiarity for English learners and has an immediate impact on learning language. For this unit, have fraction tiles and balance scales on hand so students will be able to see the reality of the operations they will be conducting. Students will also benefit from ample speaking practice. Have students work with a partner or in a group to maximize opportunities for using new vocabulary.

Academic Vocabulary Taught in Unit 3

Week 1

common denominators Any nonzero number that is a multiple of the denominators of two or more fractions

denominator The number below the line in a fraction; the denominator indicates the number of equal parts into which the whole or a set is divided

equivalent fractions Fractions that have different numerators and denominators but name the same number. For example, $\frac{2}{3}$ and $\frac{6}{9}$ are equivalent fractions.

fraction A number in the form $\frac{a}{b}$, where a and b are integers and b is not 0

numerator The part of a fraction written above the line; the numerator tells how many parts are being referred to

Week 2

algebraic expression A group of symbols, such as numbers, operation signs, variables, and grouping symbols, that represents a number

equivalent Equal in value, but in a different form

evaluate To calculate; to determine the value of

Week 3

constant A value that remains the same, such as 3 in the expression $3 + x$

equation A mathematical sentence that states the equality of two expressions

equivalent Equal in value, but in a different form

expression A group of mathematical symbols (numbers, operations signs, variables, grouping symbols) that represents a number

variable A symbol that represents a quantity

Week 4

algebraic expression A group of symbols, such as numbers, operation signs, variables, and grouping symbols, that represents a number

equation A mathematical sentence that states the equality of two expressions

Week 5

Distributive Property A property stating that the sum of two numbers multiplied by a third number is equal to the sum of the products of each number and the third number

Week 6

inequality A number sentence stating that two quantities are not equal. Relation symbols for inequalities include $<$ (is less than), $>$ (is greater than), and $\neq$ (is not equal to).

Unit 3 Individual Oral Assessment

Directions: Read each question to the student, and record his or her oral responses.
Some questions have teacher directions. Teacher directions are indicated in italics.
Allow students to use pencil and paper to work their responses.

1. Which number is a **fraction?** *Write* 0.75, 75, *and* $\frac{75}{100}$. **$\frac{75}{100}$**
2. What is the **numerator?** **75**
3. What is the **denominator?** **100**
4. Do these fractions have **common denominators?** *Write* $\frac{75}{100}$ *and* $\frac{3}{4}$. **no**
5. Which are **equivalent fractions?** *Write* $\frac{75}{100}$, $\frac{3}{8}$, $\frac{25}{100}$, and $\frac{3}{4}$. **$\frac{75}{100}$ and $\frac{3}{4}$**
6. Is this an **expression** or an **equation?** *Write* $\frac{9}{x}$. **expression**
7. What is the **constant** in the expression? **9**
8. What is the **variable** in the expression? ***x***
9. How many **variables** are in the equation? *Write* $16 + \frac{1}{2}x = y$. **two**
10. Is this an **equation** or an **inequality?** *Write* $\frac{4}{3}x \leq 20$. **inequality**
11. **Solve** for *x*. *Write* $x - 5 = 15$. ***x* = 20**
12. Say this **expression** in words. *Write* $6b - 3$. **three less than the product of 6 and *b***
13. **Evaluate** the expression, if $b = 4$. **21**

- **Beginning English Learners:** 0–3 of Questions 1–10 correct
- **Intermediate English Learners:** 4–7 of Questions 1–10 correct
- **Advanced English Learners:** 8–10 of Questions 1–10 correct
- If the student is able to answer Questions 11–13, then he or she can understand the mathematics taught in this unit but may still have difficulty with the academic vocabulary.

Use the Student Assessment Record, page 146, to record the assessment results.

Week 1

Objective

Students will understand fraction vocabulary.

Vocabulary

- **common denominators** Any nonzero number that is a multiple of the denominators of two or more fractions
- **denominator** The number below the line in a fraction; the denominator indicates the number of equal parts into which the whole or a set is divided
- **equivalent fractions** Fractions that have different numerators and denominators but name the same number. For example, $\frac{2}{3}$ and $\frac{6}{9}$ are equivalent fractions.
- **fraction** A number in the form $\frac{a}{b}$, where *a* and *b* are integers and *b* is not 0
- **numerator** The part of a fraction written above the line; the numerator tells how many parts are being referred to

Materials

Program Materials

- Vocabulary Cards: *denominator, equivalent fractions, fraction, numerator*
- Fractions Bingo!, p. 137
- Fraction Tiles

1 WARM UP

Introduce each vocabulary word to students. Say the word aloud and have students repeat it.

Show the *fraction, numerator,* and *denominator* ***Vocabulary Cards***. Model the words again for students and have them repeat. Write several fractions and decimals on the board and have volunteers identify the fractions and then the numerator and denominator of each.

Practice identifying fractions and their parts using complete sentences. Model and have students practice the following sentences:

- The fraction is _____.
- The numerator of the fraction is _____.
- The denominator of the fraction is _____.

Using the sentences above, dictate a few fractions and have students write them on paper. Then have them check with a partner.

As students' abilities allow, have partners dictate fractions to each other.

Play Fractions Bingo!

2 ENGAGE

Hold up two $\frac{1}{2}$ tiles from the set of Fraction Tiles.

- ► **What is this fraction?** $\frac{1}{2}$ Repeat for the second fraction.
- ► **What is the denominator?** 2
- ► **Do they have the same denominator?** yes

Tell students that when two fractions have the same denominator, they have *common denominators*. Say *common denominators* and have students repeat. Write *common denominators* on the board.

Check students' understanding of the term by showing examples and nonexamples of fractions with common denominators.

Distribute a set of Fraction Tiles to each pair of students. Have students show the one whole fraction tile.

- ► **What is this?** 1
- ► **Can we write this as a fraction?** yes Write $\frac{1}{1}$ on the board.

Have students show the $\frac{1}{2}$ tile.

- ► **What fraction is this?** $\frac{1}{2}$
- ► **How many $\frac{1}{2}$ tiles equal one whole tile?** 2 Write $\frac{1}{1} = \frac{2}{2}$ on the board.

Repeat the process with $\frac{1}{3}$ tiles and $\frac{1}{4}$ tiles. Soon you will have $\frac{1}{1} = \frac{2}{2} = \frac{3}{3} = \frac{4}{4}$ on the board. Point to the fractions on the board and say *equivalent fractions*. Have students repeat the term as you write it on the board.

Check students' understanding of equivalent fractions. Have students show the $\frac{1}{2}$ tile.

- ► **What fraction is this?** $\frac{1}{2}$
- ► **How many $\frac{1}{4}$ tiles equal this $\frac{1}{2}$ tile?** 2 Write $\frac{1}{2} = \frac{2}{4}$ on the board.
- ► **Are these equivalent fractions?** yes

Repeat with other examples. Have partners use the Fraction Tiles to discover other equivalent fractions.

Play Fractions Bingo again! This time you may choose to include the following directions:

- Find two fractions with common denominators.
- Find two fractions that are equivalent fractions.

Teacher Note

Knowing how cognates work can help English learners accelerate their acquisition of English and increase their comprehension of content concepts. Spanish cognates are spelled almost the same way they are spelled in English, and they are often pronounced similarly. Cognates share Greek and Latin roots, so they are common in Romance languages. Words that end in *-or* in English, such as *factor, denominator,* and *numerator,* are similar to these words in Spanish. Tell students to look for and collect words that end in *-or* in English to see whether they have the same meanings in Spanish.

Progress Monitoring

If… students need more practice identifying equivalent fractions,	**Then…** allow them to explore with the fraction tiles with a partner to find different combinations of fractions that are equivalent.

3 REFLECT

Extended Response

- **How do we use fractions every day?**
- **Are fractions confusing? Why?**
- **What does the denominator tell us?**

Encourage student discussion of these questions and answers.

Progress Monitoring

If… students are hesitant to participate,	**Then…** have them formulate their answers with a partner before sharing with the group.

4 ASSESS

Informal Assessment

Have students complete the following activity to make sure they understand the vocabulary. As students use each word:

1. Check understanding.
2. Correct errors.
3. Recheck for understanding.

- Write the fraction $\frac{3}{7}$ on the board. Have students name the fraction and then tell the numerator and denominator.
- Write the following fractions on the board: $\frac{1}{2}, \frac{1}{4}, \frac{5}{6}, \frac{3}{4}, \frac{6}{8}, \frac{3}{9}$.
- Have students find two fractions with a common denominator and a pair of equivalent fractions.

For each word, use the following rubric to assign a score.

The student can repeat the word when prompted. (1 point)

The student knows the word but does not know its meaning. (2 points)

The student has a vague idea of the word's meaning. (3 points)

The student knows the word and can use the word in context. (4 points)

Week 2

Objective

Students can understand the meanings of the terms *equivalent* and *algebraic expression*.

Vocabulary

- **algebraic expression** A group of symbols, such as numbers, operation signs, variables, and grouping symbols, that represents a number
- **equivalent** Equal in value, but in a different form
- **evaluate** To calculate; to determine the value of

Materials

Program Materials

- Vocabulary Cards: *constant, expression, equation, variable*
- Expressions and Equations, p. 138

1 WARM UP

Introduce each vocabulary word to students. Say the word aloud and have students repeat it.

Write $9x + 3 = y$ on the board. Show the *constant*, *equation*, and *variable* ***Vocabulary Cards***. Have students identify the vocabulary in the equation on the board.

- ▶ **What is this called?** an equation
- ▶ **Which values are variables?** *x* and *y*
- ▶ **Which values are constants?** 9 and 3
- ▶ **What does the equal sign mean?** that both sides are equal, or in balance

Tell students that when an equal sign is present, the values on either side of the equal sign are *equivalent*. Say *equivalent,* and have students repeat the word. Write *equivalent* on the board.

Show the *expression* ***Vocabulary Card,*** and remind students that an *expression* is a group of mathematical symbols that represent a number. Give examples, such as: 6, $3 + 3$, $\frac{12}{2}$, and 2×3.

2 ENGAGE

Write 6, $3 + 3$, $\frac{12}{2}$, and 2×3 on the board.

- ▶ **Which of these expressions are equivalent?** all of them

Now change the expressions on the board as follows: 6, $x + 3$, $\frac{18}{x}$, and $2 \times x$.

- ▶ **Are these still equivalent?**

Tell students that these are four different *algebraic expressions* for the same number. An *expression* is a group of mathematical symbols that represent a number. Say *algebraic expression,* and have students repeat the term. Write *algebraic expression* on the board.

- ▶ **If all these expressions are equivalent, who knows what *x* equals?** 3

Point to the expression $x + 3$.

- ▶ **Is this an expression?** yes
- ▶ **If $x = 1$, what does $x + 3$ equal?** 4

Repeat for $x = 2, 3, 4,$ and 5. Tell student that when they *evaluate* an expression, they figure out its value. In this case, they are using a value for *x* to evaluate the expression. Say *evaluate* and have students repeat. Write *evaluate* on the board.

Tell students that the value of *x* can change.

- ▶ **What do we call a value that can change?** a variable

Return to the expression $x + 3$.

- ▶ **Is the number 3 a variable?** no
- ▶ **How do you know?** because its value does not change
- ▶ **What do we call a value that does not change?** a constant

Distribute a copy of Expressions and Equations to each student. Have students complete the worksheet and review their work with a partner.

Teacher Note

English learners may already understand the mathematical concepts being taught but lack the English vocabulary to express them. Use this to your advantage when introducing words by allowing students to describe a process in their native tongue before they describe the process in English.

Progress Monitoring	
If… students seem to understand the mathematical idea, but are having trouble with appropriate use of vocabulary,	**Then…** review the vocabulary with students individually.

3 REFLECT

Extended Response

- **What does *express* mean?**
- **What does this sentence mean? *He had a sad expression on his face.***
- **How is an algebraic expression different from an equation?**
- **What is a variable?**
- **Can a decimal be a constant? Why or why not?**

Encourage student discussion of these questions and answers.

Progress Monitoring	
If… students have mastered the vocabulary,	**Then…** have partners create and evaluate their own equations that consist of constant, variables, and expressions.

4 ASSESS

Informal Assessment

Have students complete the following activity to make sure they understand the vocabulary. As students use each word:

1. Check understanding.
2. Correct errors.
3. Recheck for understanding.

- Have students define *equivalent* in their own words.
- Have students define *algebraic expression* and give an example of an algebraic expression.
- Supply a value for the variable in students' expressions and have students evaluate it.

For each word, use the following rubric to assign a score.

The student can repeat the word when prompted. (1 point)

The student knows the word but does not know its meaning. (2 points)

The student has a vague idea of the word's meaning. (3 points)

The student knows the word and can use the word in context. (4 points)

Week 3

Objective

Students can understand the meanings of the terms *equivalent, expression, variable,* and *constant*.

Vocabulary

- **constant** A value that remains the same, such as 3 in the expression $3 + x$
- **equation** A mathematical sentence that states the equality of two expressions
- **equivalent** Equal in value, but in a different form
- **expression** A group of mathematical symbols (numbers, operations signs, variables, grouping symbols) that represents a number
- **variable** A symbol that represents a quantity

Materials

Program Materials
Vocabulary Cards: *constant, equation, equivalent, expression, variable*

Additional Materials
balance scales

1 WARM UP

Introduce each vocabulary word to students. Say the word aloud and have students repeat it.

After students have had some practice listening to the words, show them the *constant, expression, equation,* and *variable* ***Vocabulary Cards***.

Show students a balance scale. Say *balance scale,* and have students repeat the term. Demonstrate balance by putting identical objects on each side of the scale. Then show students what happens when you put objects of different weights on the scale.

Organize students into groups. Distribute a balance scale to each group. Allow students to experiment with the scales. Encourage students to find objects that are different but have equal weights. Tell students that although the items may be different, they are *equivalent* in weight. Say *equivalent*, and have students repeat the word. Write *equivalent* on the board.

2 ENGAGE

Write *10, 5 + 5,* $\frac{50}{5}$, and 2×5 on the board. Have students identify the variables and constants.

► **Are these expressions?** yes

► **Which of these are equivalent?** all of them

Now change the expressions on the board as follows: 10, $x + 5$, $\frac{50}{x}$, and $2 \times x$.

► **Are these still expressions?** yes

► **If all these expressions are equivalent, what does *x* equal?** 5

Point to the expression $x + 5$.

Repeat with other examples of equivalent expressions.

Write several expressions on the board: $x + 6$, $8x$, $12 - x$, $3(x + 5)$. Have partners evaluate each expression for $x = 2, 3, 4,$ and 5. For each value of x, are there any equivalent expressions? Encourage them to use the following communication guide:

- If $x =$ _____, then $x + 6 =$ _____.
- If $x =$ _____, then $8x =$ _____.
- If $x =$ _____, then $12 - x =$ _____.
- If $x =$ _____, then $3(x + 5) =$ _____.
- The expressions _____ and _____ [are/aren't] equivalent when $x =$ _____.

Teacher Note

Review the meaning of *order*. Have students tell the order of steps when brushing their teeth. Students may have differing responses.

Then remind students that in math, there is a special order they must follow for solving algebraic equations. Review the meanings of *parentheses, exponent, multiplication, division, addition,* and *subtraction*. Then write the acronym, PEMDAS, on the board. Tell student that if they can remember these letters, they should be able to remember the correct order of operations when solving math problems.

3 REFLECT

Extended Response

- **What does *equal* mean?**
- **What do you notice about the following words: *equal, equation, equivalent?***
- **Explain what a variable is.**
- **Can a fraction be a constant? Why or why not?**

Encourage student discussion of these questions and answers.

Progress Monitoring	
If… students seem slow to respond in the Extended Response activity,	**Then…** give them a little extra time to formulate their answers, or conduct the activity in pairs or groups to maximize speaking opportunities.

4 ASSESS

Informal Assessment

Have students complete the following activity to make sure they understand the vocabulary. As students use each word:

1. Check understanding.
2. Correct errors.
3. Recheck for understanding.

- Write the expression $x - 7$ on the board. Have student identify the variable and the constant.
- Have students determine the value of x to make the expression equivalent to 10.

For each word, use the following rubric to assign a score.

The student can repeat the word when prompted. (1 point)

The student knows the word but does not know its meaning. (2 points)

The student has a vague idea of the word's meaning. (3 points)

The student knows the word and can use the word in context. (4 points)

Week 4

Objective

Students will understand and use the terms *algebraic expression* and *equation*.

Vocabulary

- **algebraic expression** A group of symbols, such as numbers, operation signs, variables, and grouping symbols, that represents a number
- **equation** A mathematical sentence that states the equality of two expressions

Materials

Program Materials
Vocabulary Cards: *difference, product, quotient, sum*

Additional Materials
- envelopes
- large strips of paper

1 WARM UP

Introduce each vocabulary word to students. Say the word aloud and have students repeat it.

Write *ADD, SUBTRACT, MULTIPLY,* and *DIVIDE* on the board. Show the *difference, product, quotient, sum* ***Vocabulary Cards***. Have students say each word. Then have volunteers write each word under the proper category on the board. Have the entire class brainstorm words that are associated with each operation. Allow students to refer to the wall chart they created during Unit 2. Review any terms students have forgotten or are unfamiliar with.

2 ENGAGE

Have students get ready to write. Tell them that you will say an algebraic expression in words. They should write the expression in numbers and symbols. Some examples include:

- Six increased by a number *m*
- Twelve less than a number *r*
- The product of a number *q* and 8
- The quotient of 30 and a number *k*

After a few examples, turn the expression into an equation by adding "is _____" to your words. Tell students they will now have an *equation,* and their sentences will have an equal sign.

After students have had plenty of listening and writing practice, have partners work together to say and write equations using different words.

Have students work in pairs. Tell students to create two algebraic equations using numbers and symbols. They should write their equations using large, clear letters, numbers, and symbols on large strips of paper. When they are done, have them fold their equations, and put each one in its own envelope.

Have students trade envelopes with another pair. Partners should then work together to write the algebraic sentence in words. Encourage them to use the words they brainstormed during the Warm Up activity.

This activity can be extended in many ways. For example, have students write algebraic sentences using words and then trade with another pair who will write the sentence with numbers and symbols. Alternatively, students could create word jumbles from their algebraic sentences and challenge other students to decipher the sentence and write the sentence with numbers and symbols.

Teacher Note

Creating the algebraic sentences in words will be a challenge for many English learners. Beginning students will struggle to put any type of sentence together. Challenge them with simpler equations, such as $x + 4 = 12$, and give them a sentence frame: (*x*) and (4) is (12) .

Intermediate students will benefit from the sentence frames as well. Give them more options for extending language. For example: *(x) increased by (4) is (12),* or *(4) more than (x) is (12)* .

Progress Monitoring

If… beginning students still struggle to express the algebraic equation in words,

Then… have them practice with one expression at a time: *4 more than x.*

3 REFLECT

Extended Response

- **How is an algebraic expression different from an equation?**
- **How are algebraic expressions used every day?**
- **How is an algebraic equation used in a grocery store?**

Encourage student discussion of these questions and answers.

Progress Monitoring	
If… students are unsure how to answer the discussion questions,	**Then…** give examples to guide them. For example, *Josie buys three oranges and one apple at the store. Her total bill is $1.75.* Ask students if they can see how to create an algebraic equation using the example.

4 ASSESS

Informal Assessment

Have students complete the following activity to make sure they understand the vocabulary. As students use each word:

1. Check understanding.
2. Correct errors.
3. Recheck for understanding.

- Write the equation on the board: $3x + 7 = 28$. Have the student write or say the algebraic equation using words.
- Have students write the following in number/symbol form: *The quotient of 25 and a number* k *is 5*.

For each word, use the following rubric to assign a score.

The student can repeat the word when prompted. (1 point)

The student knows the word but does not know its meaning. (2 points)

The student has a vague idea of the word's meaning. (3 points)

The student knows the word and can use the word in context. (4 points)

Week 5

Objective

Students practice describing equivalence and can understand the meaning of the term *Distributive Property*.

Vocabulary

- **Distributive Property** **A property stating that the sum of two numbers multiplied by a third number is equal to the sum of the products of each number and the third number**

Materials

Program Materials	**Additional Materials**
Vocabulary Cards: ***Distributive Property, variable***	**balance scales**

1 WARM UP

Introduce each vocabulary word to students. Say the word aloud and have students repeat it.

Show students the *Distributive Property* and *variable* ***Vocabulary Cards***. Invite students to give an example of each, if possible.

Display an empty balance scale. Students have seen it before and should remember how to know when the scale is balanced. (Both sides are even; one side isn't higher than the other.)

► **Is this scale balanced?** yes

Put a weight on one side.

► **Is this scale balanced?** no

Put a weight on the other side to balance the scale.

► **Is this scale balanced?** yes

Continue with more examples to create a visual for students: when we add the same weight to both sides of the scale, it will be equal. If not, it will not be in balance.

2 ENGAGE

Write the following equation on the board: $2x + 1 = y$.

Point to the *x*.

► **What is this called?** a variable

Point to the 2.

► **What is this called?** a constant

Point to the entire equation.

► **Is this an equation?** yes

► **Are both sides equivalent?** yes

► **I want to put an elephant on one side.** Draw an elephant on one side.

► **Did I add or subtract the elephant?** add

► **Is it still balanced?** no

► **What do I need to do?** add an elephant to the other side Draw an elephant on the other side of the equation.

► **Is it balanced now?** yes

► **I wish the elephant wasn't in my equation. How can I undo it?** take away both elephants

► **I can take away the elephants. Do I add or subtract elephants?** subtract

► **Is that the opposite of add?** yes

Allow students to be your guide as you conduct the inverse operation of add to take away the elephants from the equation.

Write $43 \times 6 = ?$ on the board. Then, write it another way: $(40 \times 6) + (3 \times 6) = ?$ Have students solve both problems.

► **Are the answers the same?** yes

► **What is the answer?** 258

Tell students that breaking down a two-digit number into tens and ones in a multiplication problem is using the *Distributive Property*. Say *Distributive Property,* and have students repeat the term.

Teacher Note

Students may recall learning about inverse operations. Remind them that inverse operations *undo* each other. Ask students what the word *do* means. Then point out the prefix *un-*. Tell them that *un-* means "not" (as in *uncooked*) or "reversal of" (as in *untied* or *uncovered*). So, *undo* means to reverse something that was done.

Progress Monitoring

If… students are capable of more advanced language,	**Then…** encourage or require them to answer your questions with a complete sentence: *Yes, sides are equivalent. No, that side has more than this side.*

3 REFLECT

Extended Response

- **Where do you see balance scales? Why are they used? What do they tell us?**
- **Why is order of operations important?**
- **Why is the Distributive Property useful?**
- **How do we use equations every day?**

Encourage student discussion of these questions and answers.

Progress Monitoring

If… some students tend to monopolize the discussion,	**Then…** ask them to be the "teacher" and guide the discussion by asking questions and encouraging answers but not giving any answers away.

4 ASSESS

Informal Assessment

Have students complete the following activity to make sure they understand the vocabulary. As students use each word:

1. Check understanding.
2. Correct errors.
3. Recheck for understanding.

- Have students define and give examples of the Distributive Property.
- Have students write an equation and tell what will happen if they add *m* to one side.
- Have students tell how to make the equation balance when *m* is added to one side.

For each word, use the following rubric to assign a score.

The student can repeat the word when prompted. (1 point)

The student knows the word but does not know its meaning. (2 points)

The student has a vague idea of the word's meaning. (3 points)

The student knows the word and can use the word in context. (4 points)

Week 6

Objective

Students will practice comparing rational numbers and will learn the term *inequality*.

Vocabulary

- **inequality A number sentence stating that two quantities are not equal. Relation symbols for inequalities include $<$ (is less than), $>$ (is greater than), and $\neq$ (is not equal to).**

Materials

Program Materials

Vocabulary Cards: *integer, fraction, decimal, positive number, negative number*

Additional Materials

- container
- small sticky notes

1 WARM UP

Introduce each vocabulary word to students. Say the word aloud and have students repeat it. Show students ***Vocabulary Cards:*** *integer, fraction, decimal, positive number, negative number.* Have students say the words, and have volunteers give an example of each.

Draw a number line on the board. Label the number line from -10 to 10 with zero in the center.

Write the numbers 1 through 10 and -1 through -10 on sticky notes. Also write five fractions and five decimals—some positive, some negative. Place all sticky notes in a container. Have the first student draw a sticky note and show it to the class.

- **Is this number a positive number or a negative number?**
- **Is this an integer, fraction, or decimal?**

Have students name the type of number. Have the student mark the number line in the correct place with the sticky note for that number. If the number is a fraction or decimal, have the student move the note to the approximate place on the number line.

- **Is this number greater than or less than zero?**

Have students repeat the answer. If possible, have students answer in a complete sentence.

Continue this activity until all the numbers have been used.

Place the numbers back in the container and repeat this activity until students are comfortable with identifying the terms *integer, fraction, decimal, greater than,* and *less than*.

2 ENGAGE

Review the meaning of the *greater than/less than* symbols, $>$ and $<$. Write some examples of inequalities on the board and have volunteers draw in the correct symbol and then say the proper sentence: _____ is [greater/less] than _____.

Write *3.44 ○ 4.33* on the board. Point to both sides of the circle.

- **Are these sides equal?** no

Tell students that this is an example of an *inequality*. Say *inequality* and have students repeat. Write *inequality* on the board. Have students select the proper symbol to put in the circle ($<$).

Write $\geq$, $\leq$, and $\neq$ on the board. Introduce and model their meanings: *greater than or equal to, less than or equal to,* and *not equal to*. Have students repeat the terms. Point out the little line under the *greater/less than* symbols. Tell students one way to remember the "equal to" part is to think of the little line as part of an equal sign.

Teacher Note

When doing an activity that involves one student at a time (as in the Warm Up activity), maximize speaking time for the rest of the students by allowing them to "assist" the first student in performing a task. Students in the audience will have to practice using clear and concise language, while the student who is performing the task will need to practice good listening skills.

Using Student Worksheets

After students complete the activity, help them to complete the appropriate Practice for their levels of English development.

Beginning, p. 70

Intermediate, p. 71

Advanced, p. 72

3 REFLECT

Extended Response

- **What does *inequality* mean?**
- **Why is it useful to understand inequality?**
- **Write an example of an inequality on the board. Describe it.**
- **What does *greater than or equal to* mean?**

Encourage student discussion of these questions and answers.

4 ASSESS

Informal Assessment

Have students complete the following activity to make sure they understand the vocabulary. As students use each word:

1. Check understanding.
2. Correct errors.
3. Recheck for understanding.

- Write $\frac{4}{7} \bigcirc \frac{6}{7}$. Have students insert the proper symbol: $>$ or $<$. Then have them say the sentence to describe the inequality using *greater than* or *less than*.
- Write $x - 1 \geq 18$. Have students express this inequality in words.

For each word, use the following rubric to assign a score.

The student can repeat the word when prompted. (1 point)

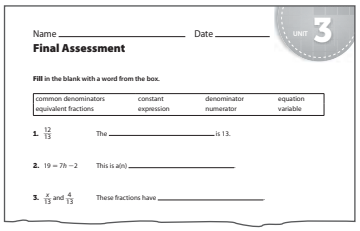
The student knows the word but does not know its meaning. (2 points)

The student has a vague idea of the word's meaning. (3 points)

The student knows the word and can use the word in context. (4 points)

Final Assessment

Distribute a copy of the Final Assessment, p. 73, to each student. Use the following rubric to determine each student's level of English development.


Name _____ Date _____

UNIT 3

Final Assessment

Fill in the blank with a word from the box.

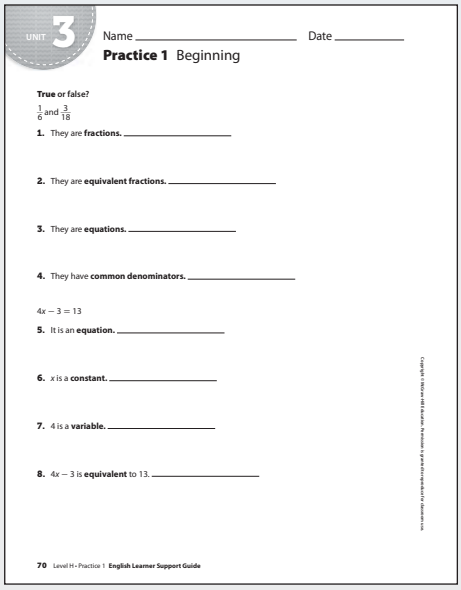
common denominators equivalent fractions	constant expression	denominator numerator	equation variable

1. $\frac{12}{13}$ The _____ is 13.
2. $19 = 7h - 2$ This is a(n) _____
3. $\frac{x}{13}$ and $\frac{4}{13}$ These fractions have _____

Final Assessment, p. 73

- **Beginning English Learners:** 0–3 of Questions 1–8 correct
- **Intermediate English Learners:** 4–6 of Questions 1–8 correct
- **Advanced English Learners:** 7–8 of Questions 1–8 correct

Use the Student Assessment Record, page 146, to record the assessment results.


UNIT 3

Name _____ Date _____

Practice 1 Beginning

True or **false**?

$\frac{1}{6}$ and $\frac{3}{18}$

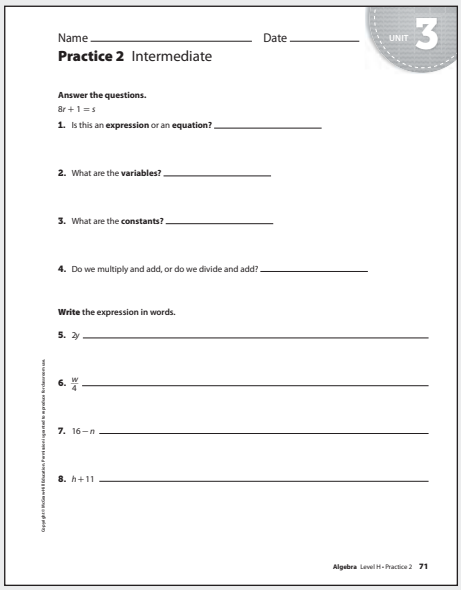
1. They are **fractions.** _____
2. They are **equivalent fractions.** _____
3. They are **equations.** _____
4. They have **common denominators.** _____

$4x - 3 = 13$

5. It is an **equation.** _____
6. x is a **constant.** _____
7. 4 is a **variable.** _____
8. $4x - 3$ is **equivalent** to 13. _____

70 Level H • Practice 1 **English Learner Support Guide**

Practice 1, Beginning, p. 70


Name _____ Date _____

UNIT 3

Practice 2 Intermediate

Answer the questions.

$8r + 1 = s$

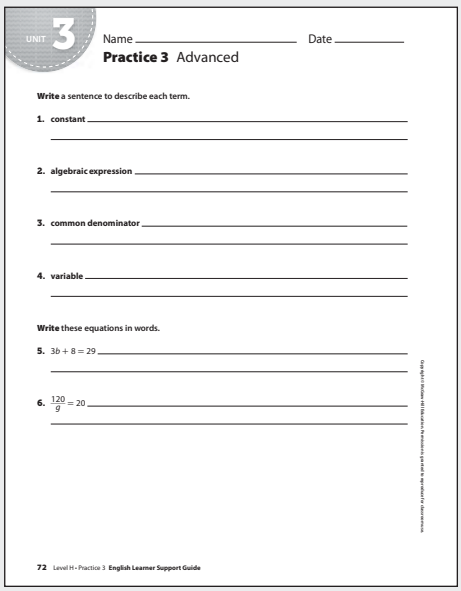
1. Is this an **expression** or an **equation?** _____
2. What are the **variables?** _____
3. What are the **constants?** _____
4. Do we multiply and add, or do we divide and add? _____

Write the expression in words.

5. $2y$ _____
6. $\frac{w}{4}$ _____
7. $16 - n$ _____
8. $h + 11$ _____

Algebra Level H • Practice 2 **71**

Practice 2, Intermediate, p. 71


UNIT 3

Name _____ Date _____

Practice 3 Advanced

Write a sentence to describe each term.

1. **constant** _____
2. **algebraic expression** _____
3. **common denominator** _____
4. **variable** _____

Write these equations in words.

5. $3b + 8 = 29$ _____
6. $\frac{120}{g} = 20$ _____

72 Level H • Practice 3 **English Learner Support Guide**

Practice 3, Advanced, p. 72

UNIT 3

Name _____ Date _____

Practice 1 Beginning

True or false?

$\frac{1}{6}$ and $\frac{3}{18}$

1. They are **fractions.** _____

2. They are **equivalent fractions.** _____

3. They are **equations.** _____

4. They have **common denominators.** _____

$4x - 3 = 13$

5. It is an **equation.** _____

6. x is a **constant.** _____

7. 4 is a **variable.** _____

8. $4x - 3$ is **equivalent** to 13. _____

Name _____ Date _____

UNIT 3

Practice 2 Intermediate

Answer the questions.

$8r + 1 = s$

1. Is this an **expression** or an **equation?** _____

2. What are the **variables?** _____

3. What are the **constants?** _____

4. Do we multiply and add, or do we divide and add? _____

Write the expression in words.

5. $2y$ _____

6. $\frac{w}{4}$ _____

7. $16 - n$ _____

8. $h + 11$ _____

UNIT 3

Name _____ Date _____

Practice 3 Advanced

Write a sentence to describe each term.

1. **constant** _____

2. **algebraic expression** _____

3. **common denominator** _____

4. **variable** _____

Write these equations in words.

5. $3b + 8 = 29$ _____

6. $\frac{120}{g} = 20$ _____

Name _____ Date _____

UNIT 3

Final Assessment

Fill in the blank with a word from the box.

common denominators	constant	denominator	equation
equivalent fractions	expression	numerator	variable

1. $\frac{12}{13}$ The _____ is 13.

2. $19 = 7h - 2$ This is a(n) _____.

3. $\frac{x}{13}$ and $\frac{4}{13}$ These fractions have _____.

4. $3 + p$ The _____ is 3.

5. $\frac{2}{7}$ The _____ is 2.

6. $4q$ The _____ is q.

7. $\frac{1}{2}$ and $\frac{7}{14}$ These are _____.

8. $\frac{52}{t}$ This is a(n) _____.

LEVEL H

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