Teacher Support Materials
Equations and Expressions
Lesson Overview

STRAND

Algebra, grade 6

LESSON

Equations and Expressions

LESSON OBJECTIVE

Terminal Objective

In this lesson, students will understand and identify numbers and symbols in an equation or expression.

Enabling Objectives

- Define an algebraic expression
- Define an algebraic equation
- Identify a constant in an equation or expression
- Identify a coefficient in an equation or expression
- Identify a variable in an equation or expression

INSTRUCTIONAL BLOCKS

Mini-Lesson
Investigation
Math Workshop
Game
Quiz

NCTM STANDARDS

Develop an initial conceptual understanding of different uses of variables

PREREQUISITES

Lessons in *Mathematics Series 2*
Place Value to Thousandths

Other prerequisites
Counting to 1,000

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ASSESSMENT TIPS

The following are informal questions that can be asked to ascertain whether students are making progress toward mastering the objective (equations and expressions).

Give students a word problem such as this:

Karina charges parents $10 per hour to baby-sit one child and an extra $5 per hour for each additional child (*c*). Karina wants to earn $20 in one hour. The following equation shows how many children she would have to watch for one hour to earn a total of $20.

$10 + 5c = 20$

Then ask students the following questions:

In the equation above, what are the constants? (10, 5, 20)

What is the coefficient? (5)

What is the variable? (*c*)

What are the expressions? ($10 + 5c$, 20)

What value for the variable *c* will balance the equation?

SAMPLE ASSESSMENT ITEMS

1. Which of the following is an expression that is part of the equation $5p + 2 = 12$?

   a) $2 = 12$

   b) $5p + 2$ (correct)

   c) $5p + 2 = 12$

   d) $+ 2$

2. What are all of the constants in the equation $2z + 9 = 29$?

   a) 2 and *z*

   b) *z* and 29

   c) 9 and 29

   d) 2, 9, and 29 (correct)

3. Which of the following is an equation?

a) 5 + 3*w* = 20 (correct)

b) 3

c) 5 + 3*w*

d) *w*

CLASSROOM IMPLEMENTATION PLAN

Lesson Overview: This lesson provides students with an opportunity to explore the concepts of equations and expressions. In the Mini-Lesson, students will come to understand and identify the various parts of an expression or equation, including variables, constants, and coefficients. In the Warm-Up, students will review and identify the various components of an equation. In the Challenge, students will label the parts of given equations, write word problems that correspond to these equations, and solve the equations using mental math. In the Quiz and the Game, students will demonstrate their ability to correctly identify the various components of equations and expressions.

Classroom Implementation Plan

ACTIVITIES WITH MANIPULATIVES

To underscore the idea that an equation is a number sentence where everything on one side of the equal sign balances everything on the other side, use a pan balance. First, use numeric equations:

(2 × 3) + 3 = 3 × 3

Then use algebraic equations where a larger block, or other object represents the unknown quantity.

What value for *x* balances this equation? (2)

x + 4 = 6

RETEACHING TIPS

- The abstract qualities of algebraic expressions and equations can be a major roadblock for students. Just as it is important to get students comfortable working with complete sentences before introducing fragments of sentences, it is important to present the idea of equations before presenting expressions.
- Students tend to see the equal sign (=) as a prompt to calculate, not as an expression of equality. So when they begin working with equations, their goal may be to solve the number sentence, not to find the value for the variable that will make the two quantities equal. Help them to understand that expressions are another way of writing a quantity, and that variables can be used alone or with other numbers to represent a quantity. Emphasize that an equation is a sentence that shows that two quantities are equal.

  One way to reinforce this concept is to play a game where students come up with as many ways to express a number as they can, using as many operations as they want. For example,

  $10 = 11 - 1 = 9 - 1 + 2 = 2 \times 2 + 7 - 1 = (5 \times 4) \div 2 + 2 - 2$. They can progress from numeric to algebraic, e.g., $10 = x - x + 10$.
- The concept of a variable is difficult for some students to grasp. They are used to the letter *x* being a multiplication symbol. Explain that *x* is also commonly used to represent a variable, and emphasize that when *x* is used as a variable, it is always italicized (*x*).
- Students get confused when different symbols (☐, ❍, x, n, etc.) are used as variables. They believe that the variable represents an object rather than a number. For example, students will believe that $7w + 22$ represent something different than $7n + 22$. Emphasize that any symbol can be used to represent an unknown quantity.
- Students may become confused when identifying coefficients because, for example, we use $3b$ to mean $3 \times b$, but in numeric equations, 3×5 is not the same as 35. Remind students that when a variable is multiplied by a number (coefficient), a multiplication sign is not necessary because it is implied. Emphasize that in contrast, when two numbers are multiplied together, the multiplication sign is necessary.
- There may be more than one correct expression for a given word problem. For example, If Angel has 8 apples and Amy has 5, write the equation that tells how many more apples Angel has. Both $8 - 5 = x$ and $5 + x = 8$ are correct. Support the various correct answers students arrive at.

EXTENSION ACTIVITIES

Materials

The Same on Both Sides

In this activity, students will write a word problem that can be represented by an algebraic equation. They will write the algebraic equation that best represents the word problem. The equation must contain at least one constant, at least one variable, and at least one coefficient. Then they will identify the parts of the equation: the expressions, constant(s), coefficient(s), and variable(s). Students will record their work in the handout.

LESSON GLOSSARY

The following glossary terms are used in this lesson:

Glossary Term	Definition
balancing an equation	**Balancing an equation** means making both sides of an equation have the same quantity or mass.
coefficient	A **coefficient** is a number that is multiplied by a variable. *Example* In the expression $3x + 2$, 3 is the coefficient.
constant	**Constants** are numbers in an equation or expression that are known and do not change. *Example* In the expression $3x + 2$, 3 and 2 are the constants.
expression	An **expression** is one or more numbers, variables, and/or operational symbols. *Example* $6p + 2$ is an expression.
variable	A **variable** is a symbol or letter that represents an unknown quantity in an equation or expression.

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Equations and Expressions
Mini-Lesson

STRAND

Algebra, grade 6

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LESSON OBJECTIVE

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Enabling Objectives

- Define an algebraic expression
- Define an algebraic equation
- Identify a constant in an equation or expression
- Identify a coefficient in an equation or expression
- Identify a variable in an equation or expression

MINI-LESSON OBJECTIVE

In this Mini-Lesson, students will understand and identify numbers and symbols in equations and expressions. They will identify and define variables, constants, and coefficients.

DESCRIPTION

The lesson starts by guiding students through the process of writing mathematical sentences. It illustrates the distinction between an equation and an expression and highlights the difference between a variable, a constant, and a coefficient. Onscreen interactions will allow students to identify numbers and symbols in equations and expressions.

SETTING

Whole group, small group, or individual

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MATERIALS

No materials are needed to complete this Mini-Lesson.

HOW TO TEACH THE MINI-LESSON

A Menu precedes the instruction. Clicking a topic from the menu allows you to jump to that piece of instruction. Here are the Menu choices:

- Define an equation (Step 1)
- Identify variables (Step 2)
- Define an expression (Step 3)
- Identify constants (Step 4)
- Identify coefficients (Step 6)
- Summary (Step 7)

Step 1: Introduction

This step guides students through the process of making mathematical sentences. It then defines these sentences as equations.

Ask students to read the word problem shown onscreen:
Zach is taking a trip to Italy with his family. To prepare for his trip, he rented videos about Italy. He spent 8 hours last week and 7 hours this week watching these videos, for a total of 15 hours.

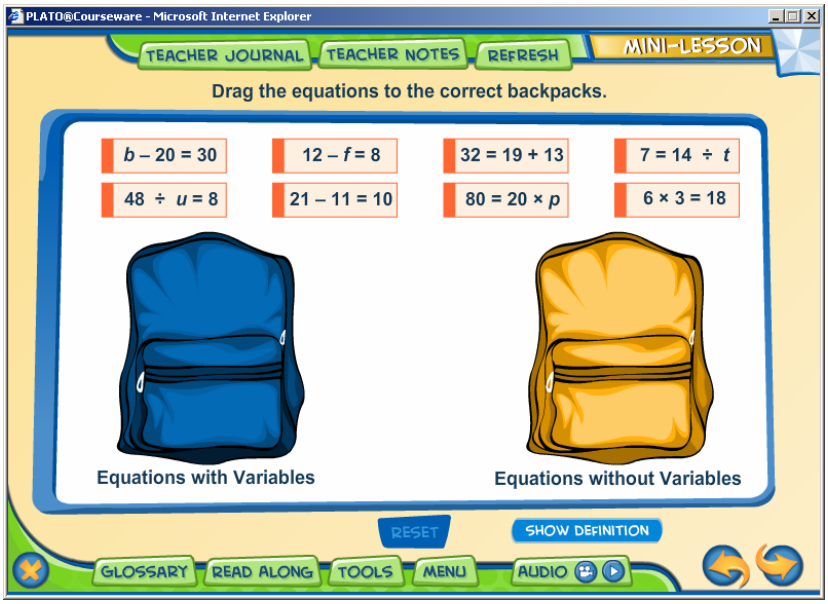
Ask students to state the number sentence for this word problem. Then click the Show Equation button to demonstrate how the equation 8 + 7 = 15 is formed. Then define an equation as a number sentence or mathematical statement in which everything on one side of the equal sign balances everything on the other side. Emphasize that in this equation, everything on the left side (8 + 7) balances everything on the right side (15).

Next, click the Problem 2 and Problem 3 buttons and invite students to come up to the computer and fill in the missing number so that everything on the left of the equal sign balances everything on the right. When they click the Done button, audio feedback will tell them whether the answer is right or wrong. In the event of a wrong answer, feedback will remind them of the definition of an equation. The Show Definition button also displays the definition of an equation,

If more practice is needed, present students with more completed equations as well as some equations in which they must fill in a missing number to balance both sides.

Step 2: Instruction

In this step, students will identify the variable in an equation.



Present the following scenario to students:

Zach's friend Yoni is joining Zach's family on their trip to Italy. Yoni and Zach collected a bunch of cool stamps in Italy. They gave 15 of them to Zach's brother, and now they have 25 left. But neither Zach nor Yoni can remember how many stamps they originally collected. Let's look at the equation they wrote to figure this out.

Point out to students that Zach and Yoni wrote the following equation to find how many stamps they originally collected:

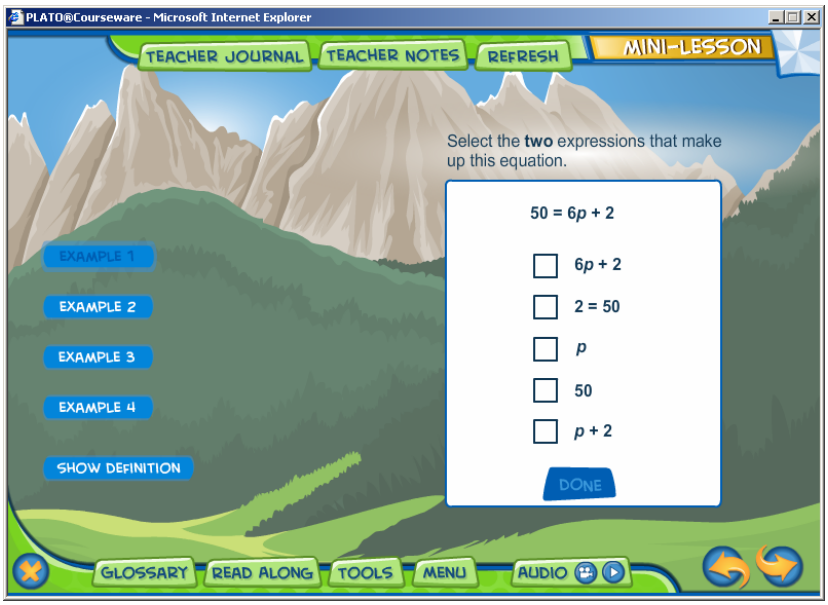
$s - 15 = 25$

Explain that since they don't remember how many stamps they started with, Zach and Yoni hold that place in their equation with the letter *s* for stamps. In Algebra, we can use any letter or symbol to represent an unknown quantity. So in this case we can use the letter *s* for stamps. Point out that we could use the letter *u* for the unknown quantity, or even use a triangle or other symbol. State that when letters and shapes are used to represent an unknown, we call them variables.

The screen displays a list of equations and two backpacks. One backpack is labeled Equations with Variables, and the other backpack is labeled Equations without Variables. Invite students to the computer to sort the equations into the correct backpacks. Audio feedback will inform them whether they have placed each equation in the correct backpack.

Step 3: Instruction

In this step, students will define an expression.



Present the scenario to students:

Yoni and Zach's family plan to hike the Dolomite Mountains in Italy. To get in shape, they've been doing push-ups during the week. Zach can now do 50 push-ups. That's 6 times as many as he could do before, plus 2 more.

Ask students to refer to the equation that represents this word problem: $50 = 6p + 2$.

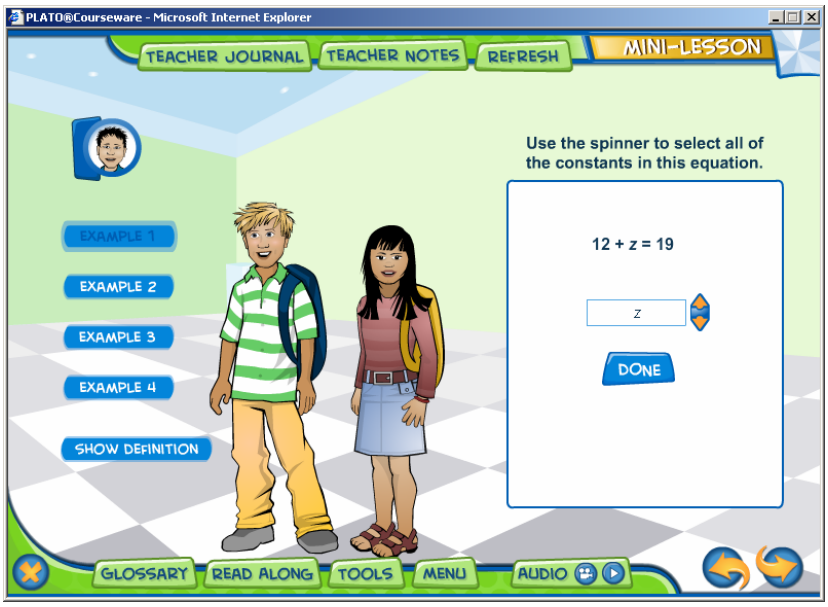
Ask students to focus on the right side of the equation. Point out that $6p + 2$ is referred to as an expression. Then point to the number 50 and state that it is also called an expression. Explain that every equation has 2 expressions: everything on the left of the equal sign is one expression, and everything on the right is the other expression. The expressions in this equation are $6p + 2$ and 50.

State that an expression can contain numbers, variables, and operations. Point out that an expression is not the same as an equation. It doesn't include an equal sign. Select the expressions of the equation and click the Done button. Then click the other Example buttons and invite students to select the expressions of the equations. In the case of a wrong answer, audio feedback will remind students of

the definition of an expression. Clicking the Show Definition button will also display the definition of an expression.

Step 4: Instruction

In this step, students will identify the constants in equations.



Present the scenario to students:

Zach and Yoni plan to take pictures. Before they left on vacation, they put all of their film together. 12 rolls belong to Yoni, but Zach can't remember how many are his. There are 19 rolls of film altogether. How many rolls belong to Zach?

Point out to students that the equation, $12 + z = 19$, describes this scenario.

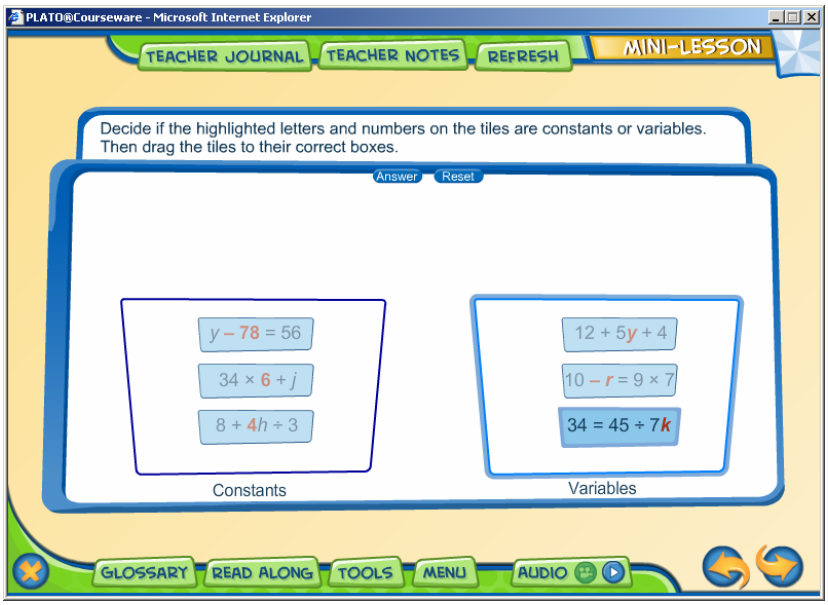
Tell students that apart from variables, equations also contain specific numbers that do not change. Such numbers are called constants because their value never changes. Explain that in this equation, the numbers 12 and 19 are constants.

Ask students if the letter *z* can also be called a constant. Explain that the letter *z* is a variable; it represents an unknown quantity, so it cannot be called a constant. Constants in an equation are numbers that represent a known quantity, and variables are letters or symbols that always represent an unknown quantity.

Invite students to the computer to select the constants in the other examples. Students must give explanations for their selections. Then ask them to click Done to check their work. Instruct students to click the Mentor button if they need help. In the case of a wrong answer, audio feedback will remind them of the definition of a constant. Clicking the Show Definition button will also display the definition of a constant onscreen.

Step 5: Check Student Understanding

In this step, students will identify variables and constants in equations and expressions.

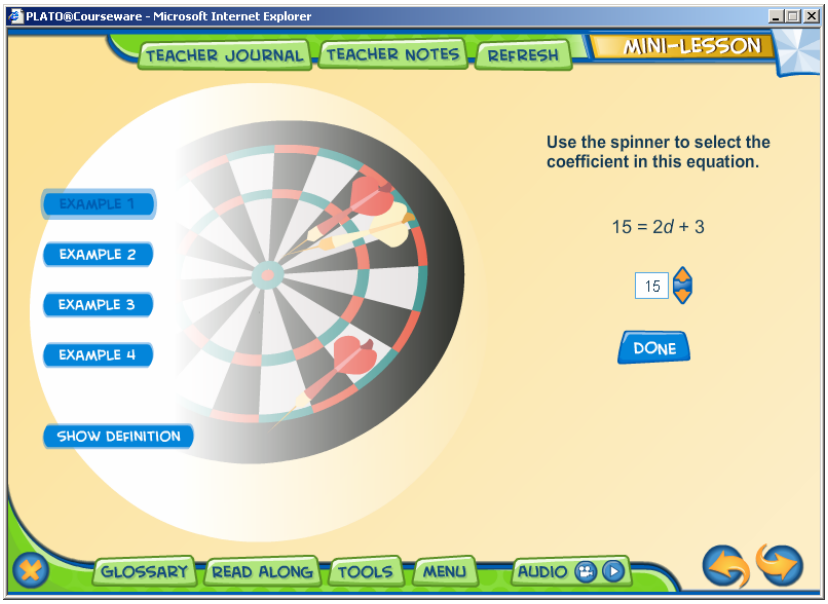


In this activity, students must drag the equations and expressions to the correct boxes. Encourage active participation by inviting students to the computer to drag the answers to the correct boxes.

After dropping an equation or expression into a box, students will get appropriate feedback. If they place a constant in the Variable box, they will receive the following feedback: "A variable is a letter or symbol that represents an unknown quantity." If they place a variable in the Constant box, they will receive the following feedback: "A constant is a known quantity. It is a number that does not change." After six incorrect answers, an Answer button will appear. Clicking this button will display the correct answers.

Step 6: Instruction

In this step, students will identify the coefficient in an equation.



Present the scenario to students:

Zach and Yoni visited their friend's place in Italy. They played a game of darts in the backyard. Zach scored 15 points, which is 2 times Yoni's score, plus 3. How much did Yoni score?

Point out to students that Zach and Yoni came up with the following equation to determine Yoni's score: $15 = 2d + 3$.

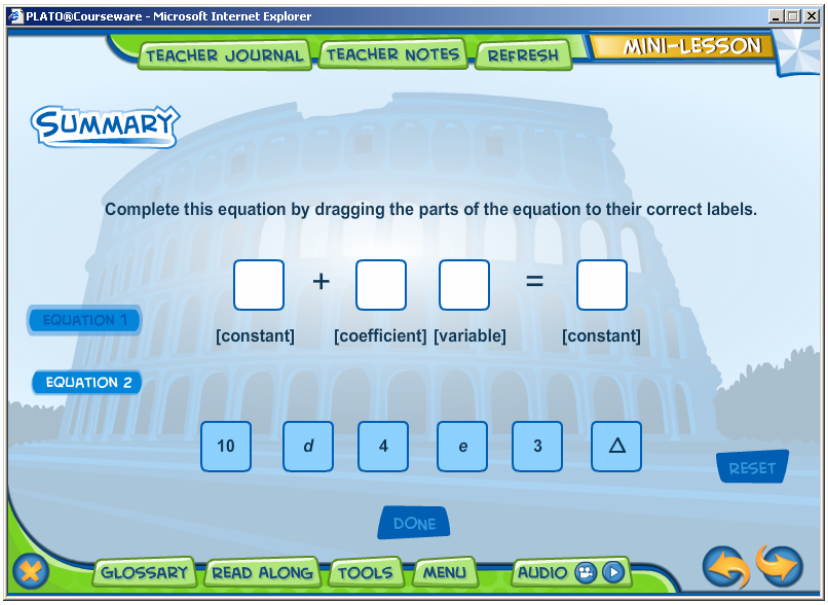
Ask students to note that the variable *d* is multiplied by the number 2. The number 2 is called a coefficient. Explain that a coefficient is a number that is multiplied by a variable. In this case, the number 2 is a constant as well as a coefficient.

Invite students to the computer to select the coefficients in the other examples. Students must explain their selections. Then ask them to click Done to check their work.

In case of a wrong answer, audio feedback will remind the students of the definition of a coefficient. A Show Definition button is also available to display this information onscreen.

Step 7: Summary

This step summarizes the main points of the lesson.



This step shows two buttons labeled Equation 1 and Equation 2. When they are clicked, the skeleton of an equation appears onscreen. Students have to form equations by dragging the appropriate constants, variables, or coefficients to the labeled boxes in the equations.

Review by asking students to explain their understanding of the following terms: *equation*, *variable*, *constant*, *expression*, and *coefficient*. Help them to identify the various components of an equation and complete the equations to make them true sentences. Ask them to click the Done button when they are finished. If a wrong answer is entered, audio feedback will provide the definitions of a variable, a coefficient, and a constant.

COMMON MISCONCEPTIONS

- The concept of variables is extremely difficult for some students to grasp for a variety of reasons:
  - Some students are used to the letter *x* being a multiplication symbol.
  - Students may be intimidated by variables because they believe that variables represent difficult math.
- Students may be intimated when new terminology is used, such as *expression*, *constant*, *equation*, *coefficient*, and *variable*.

TEACHING THIS ACTIVITY WITHOUT A COMPUTER

Your ideas:

EXTENSION ACTIVITIES

Materials

The Same on Both Sides

In this activity, students will write a word problem that can be represented by an algebraic equation. They will write the algebraic equation that best represents the word problem. The equation must contain at least one constant, at least one variable, and at least one coefficient. Then they will identify the parts of the equation: the expressions, constant(s), coefficient(s), and variable(s). Students will record their work in the handout.

The Same on Both Sides

Many situations can be represented by algebraic equations. Here are two examples. Olivia gave away 3 flowers and now has 12 left. How many did she start with? Pablo has 12 dimes, 5 quarters, and 6 nickels. So how many pennies could he trade for those coins?

In this activity, you'll write your own word problem and represent it with an algebraic equation. Be as creative as possible. Your word problem should have the following components:

- At least one variable
- At least one constant
- At least one coefficient

After you write your word problem, write the algebraic equation that represents it. Then identify the expressions, variable(s), constant(s), and coefficient(s) in your equation. Record your work in the chart. An example is shown to help you get started.

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Example

Word problem	**Aryn and her best friend, Olivia, play together on the soccer team. Aryn and Olivia scored all of the points for their team during the last game. Their team won the game with a score of 6 to 3. Olivia scored twice as many points as Aryn plus 4. How many points did Aryn score?**
Equation	**$2a + 4 = 6$**
Expression 1	**$2a + 4$**
Expression 2	**6**
Variable(s)	***a***
Constant(s)	**4, 6**
Coefficient(s)	**2**

Your turn

Word problem	
Equation	
Expression 1	
Expression 2	
Variable(s)	
Constant(s)	
Coefficient(s)	

MATHEMATICS SERIES 2

Teacher Support Materials
Equations and Expressions
Game

STRAND

Algebra, grade 6

LESSON

Equations and Expressions

LESSON OBJECTIVE

Terminal Objective

In this lesson, students will understand and identify numbers and symbols in an equation or expression.

Enabling Objectives

- Define an algebraic expression
- Define an algebraic equation
- Identify a constant in an equation or expression
- Identify a coefficient in an equation or expression
- Identify a variable in an equation or expression

GAME OBJECTIVE

In this Game, students will identify the numbers and symbols in an equation or expression.

DESCRIPTION

In this Game, the student is the captain of a small tugboat trying to get away from four pirate ships. The fastest way to escape is through Danger River. Students have to be careful as there are alligators, hippopotamuses, and sharks lurking in the water to block their course. Students need to drive these animals away so their ship can move forward. By correctly identifying the elements of algebraic equations and expressions, they remove the threatening animals and proceed safely.

This Game has three levels. Here is a summary of each:

- Level 1: Students identify variables and constants in equations and expressions.
- Level 2: Students identify variables, constants, and coefficients in equations and expressions.

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- Level 3: Students identify variables, constants, and coefficients in equations and expressions.

At the end of the Game, students receive a math score, which is calculated as follows:

Score = 100 × (number of correct answers/number of questions)

The math score will be reported to the management system.

SETTING

This is an online Game. This Game can be played by one player or by a group of players working together.

Encourage students who have trouble identifying variables, constants, and coefficients to work with peers who can help them identify the components of an equation or expression.

MATERIALS

No additional materials are needed to complete this Game.

HOW TO TEACH THE GAME

Introducing the Game

Introduce this Game by explaining to students that they must get through the animal blockades or the pirate ships will catch them.

To pass through safely, students need to correctly identify the highlighted components of equations and expressions. The two horns on the tugboat help students select the correct answer.

Tell students that if they give two correct answers in a row, they get to play a bonus game. Here, students can feed the creatures so that they move out of their path. To feed the creatures, students must click the correct answer horn to aim the food into the creature's mouth. Tell students that if they successfully play the bonus game, 50 extra points will be added to their score.

Scoring

- In level 1, players are awarded 10 points per correct answer.
- In level 2, players are awarded 100 points per correct answer.
- In level 3, players are awarded 500 points per correct answer.

For each bonus game, players are awarded 50 points.

COMMON MISCONCEPTIONS

- The concept of variables is extremely difficult for some students to grasp for a variety of reasons:
  - Some students are used to the letter *x* being a multiplication symbol.
  - Students may be intimidated by variables because they believe that variables represent difficult math.
- Students may be intimated when new terminology is used, such as *expression*, *constant*, *equation*, *coefficient*, and *variable*.
- Students may become confused when identifying coefficients because, for example, we use 3*b* to mean $3 \times b$, but in numeric equations, 3×5 is not the same as 35.

TEACHING THIS ACTIVITY WITHOUT A COMPUTER

Your ideas:

EXTENSION ACTIVITIES

There are no extension activities for this Game.

MATHEMATICS SERIES 2

Teacher Support Materials
Expressions and Equations
Quiz

STRAND

Algebra, grade 6

LESSON

Expressions and Equations

LESSON OBJECTIVE

Terminal Objective

In this lesson, students will understand and identify numbers and symbols in an equation or expression.

Enabling Objectives

- Define an algebraic expression
- Define an algebraic equation
- Identify a constant in an equation or expression
- Identify a coefficient in an equation or expression
- Identify a variable in an equation or expression

QUIZ OBJECTIVE

In this Quiz, students will demonstrate their ability to identify numbers and symbols in equations and expressions.

DESCRIPTION

The Quiz contains two sets of six practice questions each and two sets of six test questions each. The practice questions give students the chance to practice identifying numbers and symbols in equations and expressions. The test questions feature problems similar to those found on standardized tests. All Quiz questions are multiple choice. For practice questions, students can click Mentor buttons to hear hints.

SETTING

Individual

MATERIALS

No materials are needed for this Quiz.

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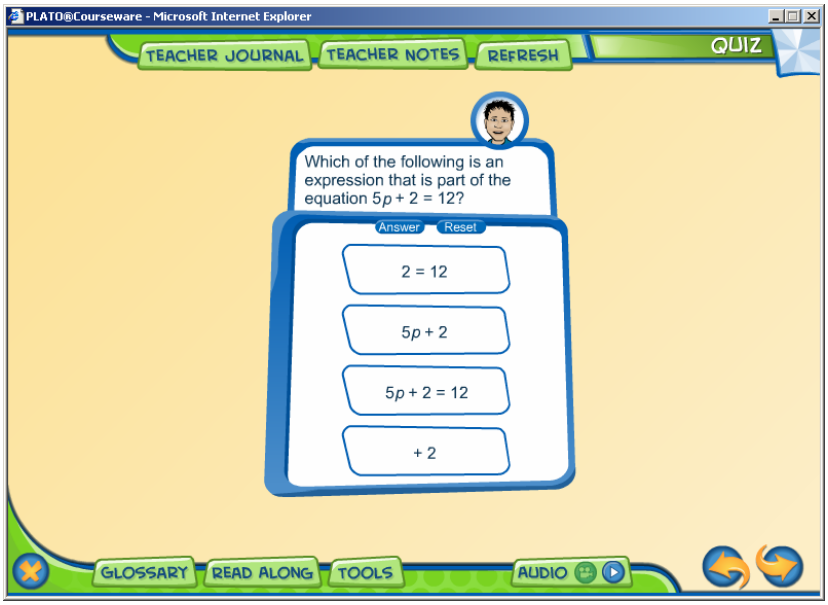
HOW TO TEACH
THE QUIZ

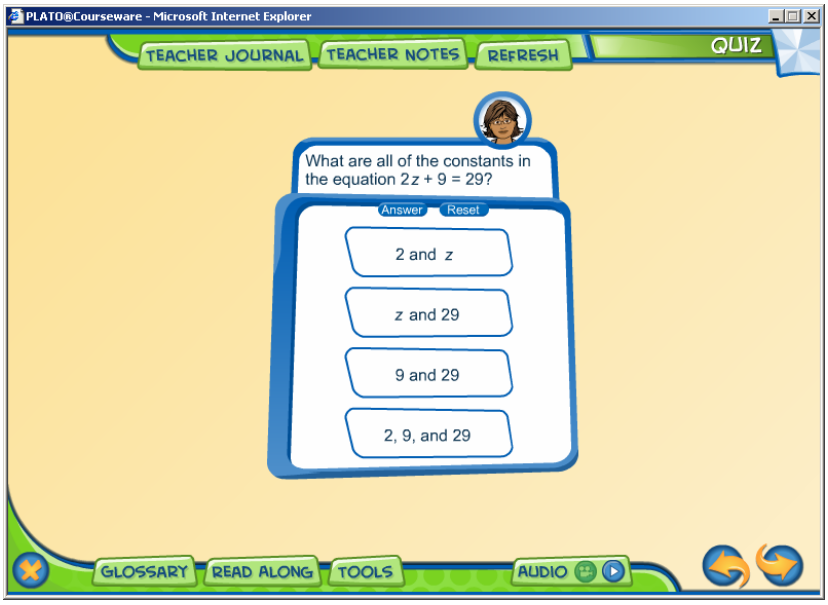
This Quiz includes the following types of questions:

Sample question 1



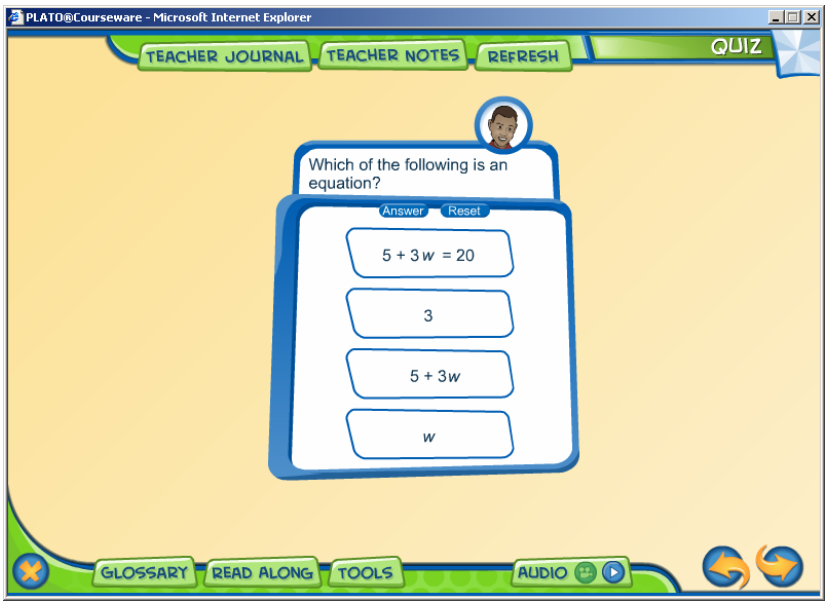
Mentor Hint: I know that an expression is everything on either side of an equal sign. There are two expressions in every equation.

Sample question 2



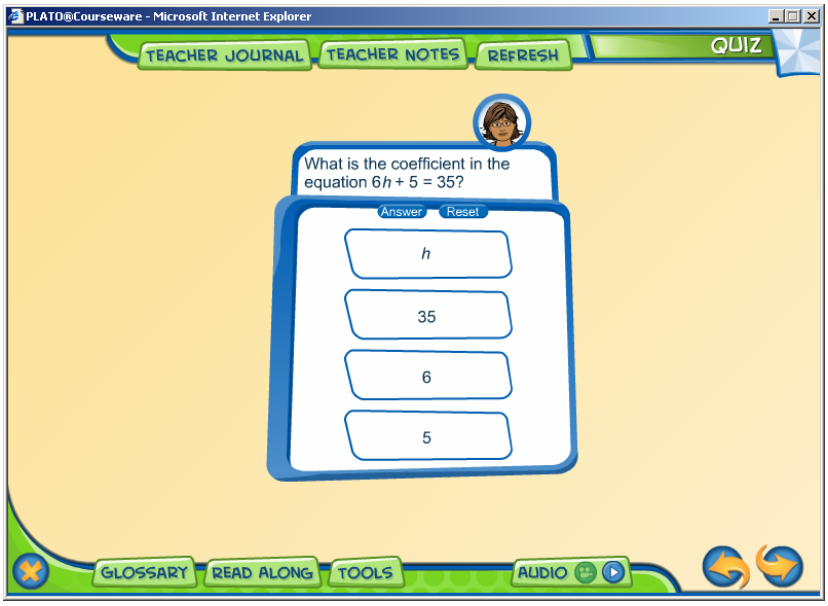
Mentor Hint: I remember that constants are known quantities. They are numbers that never change.

Sample question 3



Mentor Hint: I know that an equation is a number sentence in which everything on one side of the equal sign balances everything on the other side.

Sample question 4



Mentor Hint: A coefficient is a number that is multiplied by a variable.

COMMON MISCONCEPTIONS

The concept of variables is extremely difficult for some students to grasp for a variety of reasons:

- Some students are used to the letter *x* being a multiplication symbol.
- Students may be intimidated by variables because they believe that variables represent difficult math.

- Students may be intimated when new terminology is used, such as *expression*, *constant*, *equation*, *coefficient*, and *variable*.
- Students may become confused when identifying coefficients because, for example, we use 3*b* to mean 3 × *b*, but in numeric equations, 3 × 5 is not the same as 35.

TEACHING THIS ACTIVITY WITHOUT A COMPUTER

The offline Quiz provides a close derivative of the online version. There are two offline quizzes available.

Quiz 1

Quiz 2

These Answer Keys provide the correct answers for the offline version of the Quiz.

Answer Key, Quiz 1

Answer Key, Quiz 2

Your ideas:

EXTENSION ACTIVITIES

There are no extension activities for the Quiz.

Equations and Expressions

Quiz 1

Circle the correct answer.

Practice

Question 1	Which of the following is an expression that is part of the equation $5p + 2 = 12$? a) $2 = 12$ b) $5p + 2$ c) $5p + 2 = 12$ d) $+ 2$
Question 2	What are all of the constants in the equation $2z + 9 = 29$? a) 2 and z b) z and 29 c) 9 and 29 d) 2, 9, and 29
Question 3	Which of the following is an equation? a) $5 + 3w = 20$ b) 3 c) $5 + 3w$ d) w
Question 4	What are all of the constants in the equation $4k + 12 = 20$? a) 4 and k b) 4, 12, and 20 c) 4 and 20 d) 4 and 12

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Question 5	What is the coefficient in the equation $6h + 5 = 35$? a) h b) 35 c) 6 d) 5
Question 6	What is the variable in the equation $w - 2 = 8$? a) $w - 2$ b) w c) 2 d) 8

Test

Question 1	Which of the following is an expression that is part of the equation $20 – 3k = 5$? a) $– 3k$ b) $= 5$ c) $20 – 3k$ d) k
Question 2	What is the coefficient in the equation $5s + 17 = 42$? a) 17 b) 5 c) 42 d) $5s$
Question 3	Which of these is an equation? a) 25 b) $5m + 8$ c) $7m + 2 = 30$ d) $4(5 + 2)$
Question 4	What are all of the constants in the equation $6y + 15 = 33$? a) 15 and 33 b) 6, 15, and 33 c) 6, 15, and y d) 6 and 33
Question 5	What is the coefficient in the equation $4 = 8z – 12$? *a)* z b) 12 c) 4 d) 8

Question 6	What is the variable in the equation $38 = 4n + 18$? a) 4 *b) n* c) 18 d) 38

Quiz 1

The correct answers are in **bold**.

Practice

Question 1	Which of the following is an expression that is part of the equation $5p + 2 = 12$? a) $2 = 12$ **b) $5p + 2$** c) $5p + 2 = 12$ d) $+ 2$
Question 2	What are all of the constants in the equation $2z + 9 = 29$? a) 2 and z b) z and 29 c) 9 and 29 **d) 2, 9, and 29**
Question 3	Which of the following is an equation? **a) $5 + 3w = 20$** b) 3 c) $5 + 3w$ d) w
Question 4	What are all of the constants in the equation $4k + 12 = 20$? a) 4 and k **b) 4, 12, and 20** c) 4 and 20 d) 4 and 12

ANSWER KEY

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Question 5	What is the coefficient in the equation $6h + 5 = 35$? a) h b) 35 **c) 6** d) 5
Question 6	What is the variable in the equation $w - 2 = 8$? a) $w - 2$ **b) *w*** c) 2 d) 8

ANSWER KEY

Test

Question 1	Which of the following is an expression that is part of the equation $20 - 3k = 5$? a) $-3k$ b) $= 5$ **c) $20 - 3k$** d) k
Question 2	What is the coefficient in the equation $5s + 17 = 42$? a) 17 **b) 5** c) 42 d) $5s$
Question 3	Which of these is an equation? a) 25 b) $5m + 8$ **c) $7m + 2 = 30$** d) $4(5 + 2)$
Question 4	What are all of the constants in the equation $6y + 15 = 33$? a) 15 and 33 **b) 6, 15, and 33** c) 6, 15, and y d) 6 and 33

ANSWER KEY

Question 5	What is the coefficient in the equation $4 = 8z - 12$? a) z b) 12 c) 4 **d) 8**
Question 6	What is the variable in the equation $38 = 4n + 18$? a) 4 **b) *n*** c) 18 d) 38

ANSWER KEY

Quiz 2

Circle the correct answer.

Practice

Question 1	Which of the following is an expression that is part of the equation $3d + 10 = 19$? a) d b) $+ 10$ c) 19 d) $3d + 10 = 19$
Question 2	Which of the following statements is true of equations? a) Not all equations include an equal sign. b) Everything on either side of the variable is balanced. c) Equations are the same as expressions. d) Everything on one side of the equal sign balances everything on the other side.
Question 3	Which of these is an equation? a) $6j + 2$ b) 12 c) $3j + 5 = 11$ d) $3(2 + 3)$
Question 4	What are all of the constants in the equation $12 + 5b = 22$? a) 12, 5, and 22 b) 2 and b c) 5 and 12 d) 12 and 22

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Question 5	What is the coefficient in the equation $8 + 4y = 12$? a) 8 b) y c) 4 d) 12
Question 6	Which of the following statements is true of variables? a) A variable represents a known quantity. b) A variable represents an unknown quantity. c) A variable is a number multiplied by an unknown.

Test

Question 1	Which of the following is an expression that is part of the equation 5 + *a* = 12? a) *a* = 12 b) + *a* c) 12 d) 5 + *a* = 12
Question 2	What are all of the constants in the equation *n* + 6 = 30? a) 6 and 30 b) 6 c) 30 d) 6, 30, and *n*
Question 3	Which of these statements about coefficients is true? a) A coefficient is a number multiplied by a variable. b) A coefficient is everything on one side of the equal sign. c) A coefficient is not a constant.
Question 4	Why is 15 ÷ 3 + 6 *not* an equation? a) because there is no variable b) because there is no coefficient c) because there is no equal sign d) because it has two operations
Question 5	What is the coefficient in the equation 8 = 4 + 2*g*? a) *g* b) 2 c) 4 d) 8

Question 6	What is the variable in the equation 30 – 12 + 4 = *d*? a) 30 b) 4 c) 12 d) *d*

Quiz 2

The correct answers are in **bold.**

Practice

Question 1	Which of the following is an expression that is part of the equation $3d + 10 = 19$? a) d b) $+ 10$ **c) 19** d) $3d + 10 = 19$
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ANSWER KEY

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ANSWER KEY

Test

Question 1	Which of the following is an expression that is part of the equation 5 + *a* = 12? a) *a* = 12 b) + *a* **c) 12** d) 5 + *a* = 12
Question 2	What are all of the constants in the equation *n* + 6 = 30? **a) 6 and 30** b) 6 c) 30 d) 6, 30, and *n*
Question 3	Which of these statements about coefficients is true? **a) A coefficient is a number multiplied by a variable.** b) A coefficient is everything on one side of the equal sign. c) A coefficient is not a constant.
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ANSWER KEY

Question 6	What is the variable in the equation 30 – 12 + 4 = *d*? a) 30 b) 4 c) 12 **d) *d***

ANSWER KEY