

learning focus:

- ✓ generate equivalent expressions using order of operations
- ✓ write and evaluate expressions
- ✓ apply properties of operations to generate equivalent expressions

EXPRESSIONS UNIT

6th
GRADE

10 DAY CCSS-ALIGNED UNIT



A MANEUVERING THE MIDDLE ® RESOURCE

EXPRESSIONS



a 10 day CCSS-aligned unit

CCSS: 6.EE.1, 6.EE.2, 6.EE.2a-c, 6.EE.3, 6.EE.4

**ready-to-go, scaffolded
student materials**

EXPRESSIONS UNIT

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student friendly + real-world
application

Unit: Expressions
Homework 3

Name _____
Date _____ Pd _____

EVALUATING EXPRESSIONS

Match each correct answer to a letter to complete the riddle below.

1. $5x + 9y$, when $x = 8$, $y = 11$

2. $a^3 - c + b$, when $a = 3$, $b = 6$, $c = 8$

3. $4(g - h) + 10$, when $g = 12$, $h = 7$

4. $8 - 2z + 3(x + y)$, when $x = 4$, $y = 9$

5. $k^3 - 4j + 12$, when $k = 8$, $j = 2$

| | | |
|-------|--------|------|
| W: 25 | C: 12 | U: 5 |
| M: 68 | B: 127 | F: - |
| Y: 77 | Q: 969 | D: 2 |

WHAT DO VARIABLES AS

2 7 6 8 10 3

interactive
practice

Evaluating expressions is commonly used when _____ values into formulas to solve real world problems. Use the formulas to complete the tables below by evaluating the expressions.

6 cm
2.7 cm

11 cm

| FORMULA | $A = bh$ |
|------------|----------|
| EXPRESSION | |
| SIMPLIFY | |

Apply your understanding of evaluating

6. Darius is building a fence around his garden are shown below. Use the formula to find the total distance around the garden.

7. Two squares are shown below. Evaluate the area of the two squares.

8. Renee made an error as she evaluated her error and then correctly evaluate the

Summarize today's lesson:

Unit: Expressions
Student Handout 3

Name _____
Date _____ Pd _____

EVALUATING EXPRESSIONS

Farmer Marcell is harvesting fruit from her orchards. The picture at the right shows a symbolic expression for the number of pieces of fruit in her basket.

a. Substitute the value of each fruit to determine the total amount of fruit harvested.

$\text{Apple} = 13$ $\text{Pear} = 14$ $\text{Cherry} = 30$

b. Rewrite the expression using the letters "a", "p" and "c" to represent each fruit symbol.

EXPRESSIONS

- An expression is a mathematical phrase that contains _____, _____, and _____.
- A _____ is used in mathematical expressions to represent an unknown numerical value.

Label all the parts of the expression below.

$4d - 9$

For 1-3, evaluate the expression if $x = 7$, $y = 3$, and $z = 2$.

| | | |
|--|---|----------------|
| 1. $x + (y + z)$ | 2. $z(x) + y - z$ | 3. $y^2 - z^2$ |
| 4. Evaluate $7x + 5y + 3$, if $x = 8$ and $y = 6$. | 5. List all the parts of the expression in example 4. Terms: _____ Variables: _____ Coefficients of variables: _____ Constants: _____ | |

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skill application

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streamline your planning
process with unit overviews

EXPRESSIONS OVERVIEW



STANDARDS

- 6.EE.1** Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.2** Write, read, and evaluate expressions in which letters stand for numbers.
- 6.EE.2a** Write expressions that record operations with numbers and with letters standing for numbers.
- 6.EE.2b** Identify parts of an expression using mathematical terms; view one or more parts of an expression as a single entity.
- 6.EE.2c** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order.
- 6.EE.3** Apply the properties of operations to generate equivalent expressions.
- 6.EE.4** Identify when two expressions are equivalent.

PIC IDEAS

- Expressions are mathematical statements.
- An expression can include numbers, variables, and operations.
- Expressions are used in real-world problems.

ESSENTIAL QUESTIONS

- What process can you use to write an expression?
- Why do properties of operations matter?
- Why is there a process for simplifying expressions?
- Why do we differentiate between expressions and equations?

EXPRESSIONS PACING GUIDE



| DAY 1 | DAY 2 | DAY 3 | DAY 4 | DAY 5 |
|---------------------------------|---------------------------------|------------------------|--------------------------|------------------|
| Intro to Exponents | Order of Operations | Evaluating Expressions | Properties of Operations | Expressions Quiz |
| Student Handout 1 Homework 1 | Student Handout 2 Homework 2 | | | |
| DAY 6 | DAY 7 | | | |
| Distributive Property | Writing Expressions | | | |
| Student Handout 5 Homework 5 | Student Handout 6 Homework 6 | | | |

EXPRESSIONS OVERVIEW



| TOPIC | TEACHING TIPS |
|--------------------------|--|
| Order of Operations | <ul style="list-style-type: none">Order of operations can be a tricky concept for students. Consider emphasizing the process and following specific steps.A fun engagement piece is to bring in a recipe for a batch of cookies. If you wanted to get creative, you could bring some of the ingredients and "make" the recipe out of order. Have students discuss why the order is important and then relate it to order of operations.Note: Students need to underline each step. I usually taught it this way and required the work. You could also have them highlight or use a colored pencil. |
| Evaluating Expressions | <ul style="list-style-type: none">This is a great activity for dry erase markers and color tiles. Have students write the expression on their desk and have each color tile represent a different variable. Students can work with a partner to check their work and coach each other. Just a quick idea to change it up a bit. |
| Properties of Operations | <ul style="list-style-type: none">Properties are a struggle to recall and apply. I would suggest creating a large anchor chart with a three-column table. Include the name of the property and an example of two equivalent expressions. The key concept students should be able to recognize is that each property results in an equivalent expression; the property does not change the problem. |
| Writing Expressions | <ul style="list-style-type: none">Have students work in groups of four and sketch a graphic organizer similar to a Frayer model on the butcher paper. In the middle of a large piece of butcher paper write an expression, and then have students come up with four different verbal expressions that are equivalent. Let students use markers to make it a bit more fun! |
| Real World Application | <ul style="list-style-type: none">It is easy for students to get confused when comparing two unknowns. Encourage students to determine what the variable is and then compare the other unknown to it.I have also found it helps when students use variables other than x to describe the different situations. For example, the first letter of a person's name in the problem or w for width. |

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teaching
ideas

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unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Expressions
Quiz 1

Name _____
Date _____ Pd _____

QUIZ: EXPRESSIONS

Solve each of the problems below. Be sure to show your thinking.

1. What is the value of the expression $6 + 5 \cdot (8 \div 2)^2$?

2. Which expression is not equivalent to 6^3 ?

A. 6^3
B. $6 \cdot 6 \cdot 6$
C. $8 \cdot 6^2$
D. $3^3 \cdot 8$

For questions 3-4, evaluate the expression.

3. $(z - y^2) + x$

Determine which property is being used to write the equation.

5. $16 + 7 + 9 = 7 + 9 + 16$

A. commutative property of addition
B. additive identity property
C. multiplicative identity property
D. associative property of addition

Answers

1. _____
2. _____
3. _____

Unit: Expressions
Review

Name _____
Date _____ Pd _____

EXPRESSIONS STUDY GUIDE

Solve each of the problems below. These represent the types of questions on your test. Be sure to ask questions if you need more help with a topic.

I CAN WRITE AND EVALUATE NUMERICAL EXPRESSIONS INVOLVING WHOLE NUMBER EXPONENTS.

1. Evaluate each expression below.

a. $5^3 =$ _____
d. $6^3 =$ _____

2. Write each expression in expanded form.

a. 18^1 _____
b. 9^3 _____
c. 6^7 _____
d. 7^6 _____

I CAN WRITE EXPRESSIONS IN WORDS.

4. The product of a number and eight.

6. Twelve dollars times the number of items.

8. Two times a number decreased by five.

SIXTH GRADE CURRICULUM

EXPRESSIONS

UNIT SEVEN: ANSWER KEYS

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answer keys
included