Lesson 3
Order of Operations

NAME:

Start by navigating to the Online Lesson for instructions.

Objectives

- Simplify using order of operations, including expressions containing absolute value and exponents
- Simplify an expression with terms to the second or third power

Why?

We follow the order of operations so everyone solves math problems the same way and gets the same answer. Knowing how to simplify expressions with exponents and absolute value helps you calculate area, energy, or distance. You will also be able to complete more complicated math problems in algebra and science. When you simplify correctly, you're showing that you can think logically, follow steps, and make sense of how numbers work together.

Explore

Order of Operations

Fill in the notes as you watch the video in the Online Lesson.

- Use the acronym _____ to help you remember the order to simplify expressions.
- PEMDAS stands for _____ arentheses, _____ xponents, _____ ultiplication/ _____ ivision, and _____ ddition/_____ ubtraction.
- Parentheses means any _____ symbol including absolute value bars.
- _____ include any square roots since exponents and square roots are related.
- Multiplication/division are simplified from _____ across the expression.
- Addition/subtraction are simplified from left to right across the _____.
- The addition/subtraction symbols are natural breaks in the expression. You can simplify a large expression into a few smaller ones by adding _____ _____ where you find addition and subtraction symbols.

Example 1

Complete the example as you watch the video in the Online Lesson.

Evaluate.

$$3^3 + 4 \div \left(\frac{1}{2}\right)^2 - 4(1-3)^2 + |-5+3| + \sqrt{25}$$

Implement

Explain

- Group the expression using the addition and subtraction symbols
- P: parentheses
- E: exponents
- M/D: multiply or divide from left to right
- A/S: add or subtract from left to right

Example 2

Complete the example as you watch the video in the Online Lesson.

Evaluate.

$$-4|-3-2| + 2^3 - (5+1)^2 \div 12$$

Implement

Explain

- Group the expression using the addition and subtraction symbols

Practice

Complete the problems. Show your work.

1) $4^2 \div 8 + 3(1-2)^4 - |-5|$

2) $\left|2^3 - 3^3\right| + 15 \div 5 - 2 + \sqrt{16}$

3) $|5-(-2)| - 6(-3) + 3|-4| \div 6$

4) $-6^2 \div 3 - 2^2(83-81)^2$

5) $\sqrt{4^2+3^2} + (2-4)^2$

6) $(3 + |7-8| \cdot 9)^2 \div (5 + |-6-11|)$

Complete the problems. Show your work.

7) $|78-75|\cdot(-15)+5^2\cdot 3\div 5$

8) $-\sqrt{81}\div 3+16\cdot\frac{1}{2}\div\sqrt{64}$

9) $(128-(5(2+1))+6(10-8))\div 5$

10) $2^3-\frac{1}{3}\sqrt{81}\cdot 4+\frac{4}{5}\sqrt{100}$

11) $\left|13-(8-2)^2+\sqrt{121}\right|$

12) $17-30\div 2\cdot 3+85$

To continue, return to the Online Lesson.