

Math 9 – Unit 1: Real Numbers

Lesson #4a: Order of Operations

Name: Mr. HagnDate: Nov 17, 2020**Learning Goal:** We are learning to work with the Order of Operations

Evaluate the following expressions on your own, without anybody's help:

$$\begin{aligned}
 &40 + 10 \times 2 \div 5 - 4 \\
 = &40 + 20 \div 5 - 4 \\
 = &40 + 4 - 4 \\
 = &40
 \end{aligned}$$

$$\begin{aligned}
 &2(7 - 4)^2 - 9 \div (5 - 2) + 1 \\
 = &2(3)^2 - 9 \div (3) + 1 \quad \rightarrow 3^2 = 3 \times 3 \\
 = &2(9) - 9 \div (3) + 1 \\
 = &18 - 3 + 1 \\
 = &16
 \end{aligned}$$

Without order, there is chaos. Math cannot have chaos, so logically there must be an order. The order of operations (sometimes known as BEDMAS) gives the structure or algorithm to solve mathematical questions.

The order is:

Brackets
 Exponents
 Division
 Multiplication
 Addition
 Subtraction

B E M D S A

Left to Right

Left to right

Answers to the questions on the following page:

- 1) 11
5) 65
9) 4.83

- 2) 3
6) 67
10) 126.94

- 3) 103
7) 17

- 4) 5
8) 100

Evaluate each expression.

1) $12 - 2 \div 2$

2) $\frac{(15)}{(15 - 10)} \div$

3) $9^2 + 11 \times 2$

4) $\frac{5 \times 3}{15 - 12}$

5) $(13 \times 7) \div (15 - 8) \times 5$

6) $14 + 4 \times 8 + 5^2 - 4$

7) $30 \div (6 \times 1^3) \times 9 - (13 + 15)$

8) $((14 - 8) \times 4 - (5 - 3 + 12)) \times 10$

9) $14.4 \div 9.6(6.6 - (12.98 - 9.6))$

10) $(2.8 + 10)^2 - (2.1 - 1.6) - 4 \times 9.1$