

2.5 Order of Operations

PEMDAS

Order of Operations

1. Perform all operations within parentheses, brackets, or other grouping symbols such as fraction bars, starting with the innermost set. |2|
2. Evaluate any expressions with exponents.
3. Multiply or divide from left to right.
4. Add or subtract from left to right.

2.5 Objective A: Simplify Expressions by Using the Order of Operations.**Ex. 1.**

a. $(-2)^4 = 16$
 $(-2)(-2)(-2)(-2)$

b. $-2^4 = -16$
 $-2 \cdot 2 \cdot 2 \cdot 2$

c. $4 \cdot 3^2 = 36$

Ex. 2.

a. $\frac{-25}{5(-1)} = 5$

b. $\frac{-18+6}{-3-1} = 3$

c. $-2^3 + (-4)^2 + 1^5 = 9$

Ex. 3.

a. $(20 - 5) \div 5 - 15 = -12$

b. $|8 - 24| \cdot (-2) \div (-2) = 16$

c. $2(8 - 10)^2 - 5(1 - 6)^2$
 $2(-2)^2 - 5(-5)^2$
 $2(4) - 5(25)$
 $8 - 125$
 -117

d. $-3[5 + 2(-4 + 9)] + 15$
 $-3[5 + 2(5)] + 15$
 $-3[5 + 10] + 15$
 $-3[15] + 15$
 $-45 + 15$
 -30

2.5 Objective B: Evaluate an Algebraic Expression.

Ex. 4. Evaluate x^2 and $-x^2$ when

| | | | | | |
|-------|-----------------|-------------------|-----------|----------|---------|
| | x^2 | $-x^2$ | $x = -15$ | $x = -4$ | $x = 4$ |
| -15 | $(-15)^2 = 225$ | $-(-15)^2 = -225$ | | | |
| -4 | 16 | -16 | | | |
| 4 | 16 | -16 | | | |

2.5 Objective C: Find the Average of a List of Numbers.

$$+ \text{average} = \frac{\text{sum of numbers}}{\text{number of numbers}}$$

Ex. 5 Find the average of each list of numbers.

a. $-10, 8, -4, 2, 7, -5, -12$

b. $-17, -26, -20, -13$

$$\underline{-10 + 8 + -4 + 2 + 7 + -5 + -12}$$

$$= \frac{-14}{7} = \boxed{-2}$$

$$\boxed{-19}$$

$$= \frac{-76}{4}$$

Group Review: pg. 140 #56, 58, 62, 66, 72, 76, 82