Pre-algebra
Skill-Builder # I – 7
Performing Combined Operations on Integers

Follow the order of operations

Parentheses
Exponentiation
Multiplication/**D**ivision
Addition/**S**ubtraction

Note:
  a. Multiplication and division as well as addition and subtraction are performed in the order in which they appear from left to right.
  b. When there is more than one set of parentheses or symbols of grouping, perform the operation(s) inside the innermost parentheses or symbols of grouping first.

Examples

1) $-3 \cdot 7 + 12 \div (-6)$

  Solution:

  $$-3 \cdot 7 + 12 \div (-6)$$

  $= -21 \ + \ (-2)$ **M**ultiply and **D**ivide first.

  $= -23$ Then **A**dd.

2) $-4 \cdot 3^2 \div 6 \cdot 5$

  Solution:

  $$-4 \cdot 3^2 \div 6 \cdot 5$$

  $= -4 \cdot 9 \div 6 \cdot 5$ Perform the **E**xponentiation first.

  $= -36 \div 6 \cdot 5$ **M**ultiply and **D**ivide as the operations appear

  $= \quad -6 \cdot 5$ from left to right.

  $= \quad -30$

3) $8 - 5(4 - (6 - 9))$

  Solution:

  $$8 - 5\left(4 - (6 - 9)\right)$$

  $= 8 - 5\underbrace{(4 - (-3))}_{4+3}$ Perform the **S**ubtraction inside the innermost **P**arentheses.

  $= 8 - 5 \cdot 7$ Perform the **S**ubtraction inside the outermost **P**arentheses.

  $= 8 - 35$ **M**ultiply next.

  $= -27$ Finally **S**ubtract.

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Find the following.

1) $-25 \div 5 + (-6) \cdot (-4)$

2) $-8 \cdot 4 - 16 \div (-2)$

3) $3^2 + (4-9)^2$

4) $(2-6)^2 - (3-4)^2$

5) $-50 \div 5 \cdot (5-2)$

6) $(8-2)^2 \div (-9) \cdot (3)$

7) $\dfrac{2^2 - \left(3^2 - 2^3\right)}{-2 - (3-2)}$

8) $\dfrac{2 \cdot 5^2 - \left(8 - (4-2)\right)}{-2^4 + 2 \cdot 3 - 1}$

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Answer Key:

1) 19

2) −24

3) 34

4) 15

5) −30

6) −12

7) −1

8) −4