Performing Combined Operations on Integers

Follow the order of operations

- Parentheses
- Exponentiation
- Multiplication/Division
- Addition/Subtraction

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) \(-3 \cdot 7 + 12 ÷ (-6)\)

Solution:

\[
\begin{align*}
-3 \cdot 7 + 12 ÷ (-6) &= -21 + (-2) \\
&= -23 \quad \text{Multiply and Divide first.}
\end{align*}
\]

2) \(-4 \cdot 3^2 ÷ 6 \cdot 5\)

Solution:

\[
\begin{align*}
-4 \cdot 3^2 ÷ 6 \cdot 5 &= -4 \cdot 9 ÷ 6 \cdot 5 \\
&= -36 ÷ 6 \cdot 5 \quad \text{Perform the Exponentiation first.}
\end{align*}
\]

\[
\begin{align*}
&= -6 \cdot 5 \quad \text{Multiply and Divide as the operations appear from left to right.}
\end{align*}
\]

\[
\begin{align*}
&= -30
\end{align*}
\]

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

Solution:

\[
\begin{align*}
8 - 5(4 - (6 - 9)) &= 8 - 5(4 - (-3)) \\
&= 8 - 5 \cdot (-7) \quad \text{Perform the Subtraction inside the innermost Parentheses.}
\end{align*}
\]

\[
\begin{align*}
&= 8 - 35 \quad \text{Perform the Subtraction inside the outermost Parentheses.}
\end{align*}
\]

\[
\begin{align*}
&= -27 \quad \text{Multiply next.}
\end{align*}
\]

\[
\begin{align*}
&= -27 \quad \text{Finally Subtract.}
\end{align*}
\]
Pre-algebra
Skill-Builder # I – 7
Performing Combined Operations on Integers

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) \(\frac{2^2 - (3^2 - 2^3)}{-2 - (3 - 2)}\)

8) \(\frac{2 \cdot 5^2 - (8 - (4 - 2))}{-2^4 + 2 \cdot 3 - 1}\)
Performing Combined Operations on Integers

Answer Key:

1) 19

2) \(-24\)

3) 34

4) 15

5) \(-30\)

6) \(-12\)

7) \(-1\)

8) \(-4\)

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