

Math 9 Section 1.5 – Order of Operations

Homework: Section 1.5 on Pg. 27; 1-4 left, 6all, 8, 9– Answers on Pg. 363

When we complete math calculations, the order that we do our steps is important. Otherwise, we won't agree on what the answer is.

Adding first

$$4 + 5 \cdot 2$$

$$= 9 \cdot 2$$

$$= 18$$

OR

Multiplying first

$$4 + 5 \cdot 2$$

$$= 4 + 10$$

$$= 14$$

We use an acronym to help us remember the order of operations when we do math questions:

B rackets
R oots
E xponents
D ivision
M ultiplication
A ddition
S ubtraction

Here are the rules that go with the acronym

1. Do all calculations inside brackets first. When you have brackets inside other brackets, start with the brackets furthest inside, then work out.
2. Simplify the inside of all square roots, then evaluate the square root
3. Evaluate all exponents
4. Do all the division and multiplication from left to right
5. Do all addition and subtraction from left to right

For example

$$\begin{aligned} & 7^2 + 100 + 10 \\ &= 49 + 100 \div 10 \\ &= 49 + 10 \\ &= \boxed{59} \end{aligned}$$

$$\begin{aligned} & (4^2 - 6)(3 - 9) \\ &= (16 - 6)(3 - 9) \\ &= (10)(-6) \\ &= \boxed{-60} \end{aligned}$$

multiply

$$\begin{aligned} & (4 \cdot 2^2 - 10)^2 \\ &= (4 \cdot 4 - 10)^2 \\ &= (16 - 10)^2 \\ &= (6)^2 \\ &= \boxed{36} \end{aligned}$$

$$\begin{aligned} & \frac{5(4) + 6}{7 - (3 \cdot -2)} \\ &= \frac{(20 + 6)}{(7 + (+6))} \\ &= \frac{26}{13} \\ &= \boxed{2} \end{aligned}$$

$$\begin{aligned} & 3\left(\frac{4^2}{2} - (5 + 3(-7))\right) \\ & 3\left(\frac{4^2}{2} - (5 + (-21))\right) \\ & 3\left[\frac{4^2}{2} - (-16)\right] \\ &= 3\left(\frac{16}{2} - (-16)\right) \\ &= 3(8 + (+16)) \\ &= 3(24) = \boxed{72} \end{aligned}$$

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