

**Math 9**  
**Section 3.6 Order of Operations**

When an expression contains more than one operation, the value of the expression depends on the order in which we perform the operations. To make sure everyone evaluates expressions consistently, we have to follow the rules for the order of operations.

We remember the order with the acronym, **BEDMAS**.

**Brackets** - if the expression contains parentheses, ( ), perform the operation inside the parentheses first.

**Exponents** - Next, perform any operations involving exponents or radical expressions.

**Division & Multiplication** - Then, working from left to right, perform operations involving division & multiplication.

**Addition & Subtraction** - Then, working from left to right, perform operations involving addition and subtraction.

**NOTE: It is important to do one step at a time!**

ex's (a)  $9 + 4 \times 3$

$$= 9 + 12$$

$$= 21$$

(b)  $-3 + 2(6 - 2)$

$$= -3 + 2(4)$$

$$= -3 + 8$$

$$= 5$$

(c)  $\frac{(19+3)}{(6+5)} - 6$

$$= \frac{22}{11} - 6$$

$$= 2 - 6$$

$$= -4$$

(d)  $(-5 + 3)(-2 - 4) - (4 + 3)(5 - 6)$

$$= (-2)(-6) - (7)(-1)$$

$$= (+12) - (-7)$$

$$= (+12) + (+7)$$

$$= 19$$

(e)

$$4 \times 6 - 3^2 \div 3 - 2^3$$

$$= 4 \times 6 - 9 \div 3 - 8$$

$$= 24 - 9 \div 3 - 8$$

$$= 24 - 3 - 8$$

$$= 13$$

**EX. 1** (a)  $\frac{7}{10} - \frac{1}{2} \times \frac{2}{5}$  : multiply before adding

$$= \frac{7}{10} - \frac{2}{10}$$

$$= \frac{5}{10} = \frac{1}{2}$$
 : always have answer in simplest form

(b)  $\frac{1}{4} - 3\left(\frac{2}{3} + 4\right)$  : Brackets first

$$= \frac{1}{4} - 3\left(\frac{2}{3} + \frac{4}{1}\right)$$
 : LCD = 3

$$= \frac{1}{4} - 3\left(\frac{2}{3} + \frac{12}{3}\right)$$
 : add fractions

$$= \frac{1}{4} - 3\left(\frac{14}{3}\right)$$
 : simplify before multiply

$$= \frac{1}{4} - \frac{14}{1}$$
 : LCD = 4

$$= \frac{1}{4} - \frac{56}{4} = -\frac{55}{4} = -13\frac{2}{4} = -13\frac{1}{2}$$

(c)

$$\begin{aligned} & \frac{1}{3} - \frac{1}{2} \left( -\frac{1}{3} \right)^2 \\ &= \frac{1}{3} - \frac{1}{2} \left( \frac{1}{9} \right) \\ &= \frac{1}{3} - \frac{1}{18} \\ &= \frac{6}{18} - \frac{1}{18} \\ &= \frac{5}{18} \end{aligned}$$

(d)

$$\begin{aligned} & \left( -\frac{2}{3} + \frac{1}{2} \right) \times \left( -\frac{3}{2} \right)^2 \\ &= \left( -\frac{4}{5} + \frac{3}{6} \right) \times \left( -\frac{3}{2} \right)^2 \\ &= \left( -\frac{1}{6} \right) \times \left( -\frac{3}{2} \right)^2 \\ &= \left( -\frac{1}{6} \right) \times \left( \frac{9}{4} \right) \\ &= -\frac{9}{24} \\ &= -\frac{3}{8} \end{aligned}$$