

## 3.5 - Order of Operations with Rational Numbers

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### Math 9

Name: \_\_\_\_\_

### 3.5 - Order of Operations with Rational Numbers

Date: \_\_\_\_\_

The order of operations for all Rational Numbers is the same as that for Integers. They follow the rules of **BEDMAS**.

1. Evaluate the following:

a.  $-0.8 + 1.2 \div (-0.4) \times 2.1$

$$-0.8 + \underline{-3} \times 2.1$$

$$-0.8 + \underline{-6.3}$$

$$-0.8 - 6.3$$

$$\underline{-7.1}$$

b.  $-4.5 - 2.7 \div [-1.1 + 0.8]^2$

$$-4.5 - 2.7 \div \underline{(-0.3)^2}$$

$$-4.5 - \underline{2.7 \div 0.09}$$

$$-4.5 - 30$$

$$= -34.5 //$$

c.  $\frac{1}{2} \times \left(-\frac{3}{2}\right) - \frac{5}{4} \div 1\frac{1}{2}$

$$-\frac{3}{4} - \frac{5}{4} \div \frac{3}{2}$$

$$-\frac{3}{4} - \frac{5}{4} \times \frac{2}{3}$$

$$-\frac{3}{4} - \frac{5}{6} \quad \text{LCD} = 12$$

$$-\frac{9}{12} - \frac{10}{12}$$

$$\frac{-9-10}{12} = \frac{-19}{12}$$

$$= -1\frac{7}{12} //$$

d.  $\left(-\frac{1}{2}\right)^2 - \left(-\frac{2}{3}\right) \div \left[\frac{1}{3} + \left(-\frac{3}{12}\right)\right]$

non-calc

LCD = 12

$$\left(-\frac{1}{2}\right)^2 - \left(-\frac{2}{3}\right) \div \left[\frac{4}{12} - \frac{3}{12}\right]$$

$$\left(-\frac{1}{2}\right)^2 - \left(-\frac{2}{3}\right) \div \frac{1}{12}$$

$$-\frac{1}{2} \times -\frac{1}{2} \rightarrow \frac{1}{4} + \frac{2}{3} \div \frac{1}{12}$$

$$\frac{1}{4} + \frac{2}{3} \times \frac{12}{1}$$

$$\frac{1}{4} + \frac{8}{1} \quad \text{LCD} = 4$$

$$\frac{1}{4} + \frac{32}{4}$$

$$= \frac{1+32}{4} = \frac{33}{4}$$

$$= 8\frac{1}{4} //$$

$$= 8 \frac{1}{4}''$$

2. To convert temperatures in Fahrenheit to Celsius, we use the formula,  $C = \frac{F - 32}{1.8}$ . If the temperature is  $-4.9^\circ \text{F}$ , what is the temperature in degrees Celsius?

Celsius = Fahren.  $- 32$  and then  $\div 1.8$

$$C = (F - 32) \div 1.8$$

$$\begin{aligned} C &= (-4.9 - 32) \div 1.8 \\ &= -36.9 \div 1.8 \\ &= -20.5^\circ \text{C} \end{aligned}$$

Another look at adding/subtracting decimal numbers by hand...

a.  $3.4 + 2.7 = \boxed{+6.1}$

Both nos. are +  
 $\Rightarrow$  answer is +

Value: add the nos.

$$\begin{array}{r} +3.4 \\ +2.7 \\ \hline 6.1 \end{array}$$

c.  $-3.4 - 2.7 = \boxed{-6.1}$

Both nos. are -  
 $\Rightarrow$  answer is -

Value: add the nos.

$$\begin{array}{r} 3.4 \\ +2.7 \\ \hline 6.1 \end{array}$$

e.  $-2.6 + 4.8$

b.  $3.4 - 2.7 = +0.7$

Signs are diff.  $\Rightarrow$  sign of answer = sign of bigger no.

$$\begin{array}{r} 3.4 \\ -2.7 \\ \hline 0.7 \end{array}$$

d.  $-3.4 + 2.7 = -0.7$

$$\begin{array}{r} 3.4 \\ -2.7 \\ \hline 0.7 \end{array}$$

f.  $-2.9 + 1.2$

g.  $6.8 - 3.6$

h.  $-10.8 - 2.5 = -13.3$

$$\begin{array}{r} 10.8 \\ \hline \end{array}$$

g.  $0.0 - 3.0$

h.  $-10.0 - 2.0 = 12.0$

$$\begin{array}{r} 1 \\ 10-8 \\ 2-5 \\ \hline 13-3 \end{array}$$

Assignment: 3.5: p. 140: 3-5, 7, 8, 11, 12, 13, 17

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Review worksheets I, II, III on website.