**Adding, Subtracting, Multiplying, and Dividing Rational Numbers**

***Adding Three or More Rational Numbers:***

Ex (1): Find the sum of 1.2 + 3.4 + 5.6

 1.2 + 3.4 + 5.6 = **10.2**

\*\*If calculating **manually**, make sure that all **decimals are lined up** before adding

Ex (2): Find the sum of ¼ + 5.5 + 5/8

 0.25 + 5.5 + 0.625 = 6.375

\*\*When calculating fractions and decimals in the same problem, convert the fractions into decimals then add.

***Subtracting Positive Rational Numbers:***

Ex (3): Find the sum of 1/2 - (1 2/3). Leave answer as a fraction.

$$\frac{1}{2} - \left(1\frac{2}{3}\right)= \frac{1}{2}-\left(\frac{5}{3}\right)= \frac{\left(1 x 3\right)}{2 x 3}-\frac{5 x 2}{3 x 2}= \frac{3}{6}-\left(\frac{10}{6}\right)=-\frac{7}{6}= -1\frac{1}{6}$$

Answer:$-\frac{7}{6} as a fraction or -1\frac{1}{6} as a mixed number$

***Subtracting Negative Rational Numbers*:**

Ex (4): Find the sum of $-\frac{1}{3} - \left(-\frac{5}{6}\right)$. Leave answer as a fraction.

$$-\frac{1}{3}-\left(-\frac{5}{6}\right) = \frac{-1 x 2}{3 x 2}-\left(-\frac{5}{6}\right) = -\frac{2}{6} +\frac{5}{6} = \frac{-2+5}{6} = \frac{3}{6} = \frac{1}{2} $$

***Signs for positive/negative signs for both Multiplying and Dividing***:

Note: It is important to pay attention to the signs of the numbers.

**Like signs** result in a positive sign

1. positive (x or ÷) positive = **positive**
2. negative (x or ÷) negative = **positive**

**Unlike signs** result in a negative sign

1. positive (x or ÷) negative = **negative**
2. negative (x or ÷) positive = **negative**

***Multiplying more than two Rational Numbers*:**

Ex (5): Find the product of $(-\frac{1}{2})(-\frac{1}{4})(-\frac{3}{5})$

$$\left(-\frac{1}{2}\right)\left(-\frac{1}{4}\right)\left(-\frac{3}{5}\right) = \frac{(-1) x(-1) x(-3)}{2 x 4 x 5} = -\frac{3}{40}$$

 Three Neg Fractions 🡪Multiply numerator with numerator 🡪 Negative Answer

 Multiply denominator with denominator

Ex (6): Find the product of $(-\frac{1}{5})(-\frac{7}{8})(2.5)$. Leave as a decimal answer.

 $\left(-\frac{1}{5}\right)\left(-\frac{7}{8}\right)\left(2.5\right) = \left(-0.2\right)\left(-0.875\right)\left(2.5\right) = 0.4375$

Two Negative Values 🡪 Multiply two negative #’s with one positive # 🡪 pos ans

***Quotients of Rational Numbers***:

Ex (7): Find the quotient of $-\frac{323.75}{5}$

 $-\frac{323.75}{5} = -64.75$

Ex (8): Find the quotient of $\frac{\frac{1}{3}}{\frac{1}{7}} $\*This is a complex fraction (Dividing two fractions)

 $\frac{\frac{1}{3}}{\frac{1}{7}} = \frac{1}{3} ÷ \frac{1}{7} = \frac{1}{3} x \frac{7}{1} = \frac{7}{3} = 2\frac{1}{3}$

Note: When dividing using the calculator, you type the numerator in first then the denominator to get your answer (With **negative numbers** type the negative with the numerator value. If the negative is attached to the denominator then type the negative with the denominator)

Ex. $\frac{(-)numerator}{denominator} $