



## Properties of Rational Numbers

1) *Closure property of multiplication:* The product of any two rational numbers is always a \_\_\_\_\_.

2) Which of the following demonstrates the closure property of multiplication for any two rational numbers  $\frac{a}{b}$  and  $\frac{c}{d}$  ?

- a)  $\frac{a}{b} \times \frac{c}{d}$  is a whole number
- b)  $\frac{a}{b} \times \frac{c}{d}$  is an integer
- c)  $\frac{a}{b} \times \frac{c}{d}$  is a rational number
- d) both b and c

3) If  $a = \frac{2}{3}$ ,  $b = \frac{-4}{7}$ , then show that the product of a and b follows the closure property of multiplication?

$$\text{Step 1} - \left( \frac{2}{3} \times \frac{-4}{7} \right) = \left( \frac{2}{3} \quad \frac{-4}{7} \right)$$

$$\text{Step 2} - \left( \frac{2}{3} \times \frac{-4}{7} \right) = \text{_____}$$

$$\text{Step 3} - \text{Is } \frac{-8}{21} \text{ Simplest form } \text{_____}$$

Step 4 - Thus, the product of two rational numbers  $\left( \frac{2}{3} \times \frac{-4}{7} \right) = \frac{-8}{21}$  is also a \_\_\_\_\_.



4) *Closure property of division: The quotient of any two rational numbers is may or may not be a \_\_\_\_\_.*

5) *Which of the following demonstrates the closure property of division for any two rational numbers  $\frac{a}{b}$  and  $\frac{c}{d}$  ?*

- a)  $\frac{a}{b} \div \frac{c}{d}$  is an integer
- b)  $\frac{a}{b} \div \frac{c}{d}$  is a rational number
- c)  $\frac{a}{b} \times \frac{c}{d}$  is a whole number
- d) both a and c

6) *If  $a = \frac{1}{4}$ ,  $b = \frac{5}{3}$ , then show that the quotient of a and b follows the closure property of division ?*

$$\text{Step 1} - \left( \frac{1}{4} \div \frac{5}{3} \right) = \left( \frac{1}{4} \quad \frac{3}{5} \right)$$

$$\text{Step 2} - \left( \frac{1}{4} \div \frac{5}{3} \right) = \text{_____}$$

*Step 3 - Thus, the quotient of two rational numbers  $\left( \frac{1}{4} \div \frac{5}{3} \right) = \frac{3}{20}$  is also a \_\_\_\_\_.*

7)  $\frac{2}{3} \div 0 = \text{_____}$