



## 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?*

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

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

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

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 ?

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

Step 2 -  $\left(\frac{1}{4} \div \frac{5}{3}\right) = \frac{3}{20}$

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