



## Properties of Rational Numbers

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

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

a)  $\frac{a}{b} + \frac{c}{d}$  is an integer

b)  $\frac{a}{b} + \frac{c}{d}$  is a rational number

c)  $\frac{a}{b} + \frac{c}{d}$  is a whole number

d) both a and c

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

**Step 1** -  $\left(\frac{1}{4} + \frac{1}{6}\right) = \left(\frac{4}{4} + \frac{6}{6}\right)$

**Step 2** -  $\left(\frac{1}{4} + \frac{1}{6}\right) =$  \_\_\_\_\_

**Step 3** - Simplest form of  $\frac{10}{24} =$  \_\_\_\_\_

**Step 4** - Thus, the sum of two rational numbers  $\left(\frac{1}{4} + \frac{1}{6}\right) = \frac{5}{12}$  is also a \_\_\_\_\_.



4) **Closure property of subtraction:** The difference of any two rational numbers is always a \_\_\_\_\_.

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

a)  $\frac{a}{b} - \frac{c}{d}$  is a whole number

b)  $\frac{a}{b} - \frac{c}{d}$  is an integer

c)  $\frac{a}{b} - \frac{c}{d}$  is a rational number

d) both a and c

6) If  $a = \frac{1}{3}$ ,  $b = \frac{1}{2}$ , then show that the difference of a and b follows the closure property of subtraction?

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

Step 2 -  $\left(\frac{1}{3} - \frac{1}{2}\right) =$  \_\_\_\_\_

Step 3 - Thus, the difference of two rational numbers  $\left(\frac{1}{3} - \frac{1}{2}\right) =$  is also a \_\_\_\_\_.

7) Addition and subtraction follow closure property: a) yes b) no