



## Properties of Rational Numbers

1) Two rational numbers can be \_\_\_\_\_ in any order, and yet their \_\_\_\_\_ remains the same.

2) If  $a = \frac{3}{4}$  and  $b = \frac{5}{6}$ , then which of the following is **true** for the commutative property?

a)  $a + b = b - a$

c)  $a + b = b + a$

b)  $a + b = b - a$

d)  $a - b = b - a$

3) Two rational numbers can be \_\_\_\_\_ in any order, and yet their \_\_\_\_\_ remains the same.

4) If  $a$  and  $b$  are integers, which of the following demonstrates the commutative property of multiplication for rational numbers  $\frac{a}{b}$  and  $\frac{c}{d}$ ?

a)  $\frac{a}{b} + \frac{c}{d} = \frac{c}{d} - \frac{a}{b}$

c)  $\frac{a}{b} - \frac{c}{d} = \frac{c}{d} - \frac{a}{b}$

b)  $\frac{a}{b} \div \frac{c}{d} = \frac{c}{d} \div \frac{a}{b}$

d)  $\frac{a}{b} \times \frac{c}{d} = \frac{c}{d} \times \frac{a}{b}$

5) Which of the following operations is **not** commutative for rational numbers?

a) Addition    b) Subtraction    c) Multiplication    d) both a and c



6) Which expression demonstrates the commutative property of

addition for rational numbers  $\frac{2}{3}$  and  $\frac{3}{4}$  ?

a)  $\frac{2}{3} + \frac{3}{4} = \frac{3}{4} + \frac{2}{3}$

b)  $\frac{2}{3} - \frac{3}{4} = \frac{3}{4} - \frac{2}{3}$

c)  $\frac{2}{3} + \frac{3}{4} = \frac{3}{4} - \frac{2}{3}$

d)  $\frac{2}{3} - \frac{3}{4} = \frac{3}{4} + \frac{2}{3}$

7) Which expression demonstrates the commutative property of

multiplication for rational numbers  $\frac{-2}{3}$  and  $\frac{5}{7}$  ?

a)  $\frac{-2}{3} \times \frac{5}{7} = \frac{5}{7} \div \frac{-2}{3}$

b)  $\frac{-2}{3} \times \frac{5}{7} = \frac{5}{7} \times \frac{-2}{3}$

c)  $\frac{-2}{3} \div \frac{5}{7} = \frac{5}{7} \times \frac{-2}{3}$

d)  $\frac{-2}{3} \div \frac{5}{7} = \frac{5}{7} \div \frac{-2}{3}$

8) The sum of any rational number and 0 is the \_\_\_\_\_ itself.

Thus,  $\frac{a}{b} + 0 = 0 + \frac{a}{b} = \frac{a}{b}$  .

9) The **additive identity** for every rational number is \_\_\_\_\_

10)  $\frac{13}{11} + 0 = \text{-----}$  a)  $0 + \frac{13}{11}$  b)  $\frac{13}{11}$  c)  $\frac{11}{13}$  d) both a and b



11) The product of any rational number and 1 is the -----

itself. Thus,  $\frac{a}{b} \times 1 = 1 \times \frac{a}{b} = \frac{a}{b}$ .

12) The **multiplicative identity** for every rational number is -----

13)  $\frac{-9}{17} \times 1 =$  ----- a)  $1 \times \frac{-9}{17}$  b)  $\frac{-9}{17}$  c)  $\frac{17}{-9}$  d) both a and b

14) **Zero property of multiplication:** The product of any rational number and 0 is the ----- . Thus,  $\frac{a}{b} \times 0 = 0 \times \frac{a}{b} = 0$ .

15)  $\frac{3}{5} \times 0 =$  ----- a)  $0 \times \frac{3}{5}$  b)  $\frac{3}{5}$  c) 0 d) both a and c

16) Match the following

a)  $\frac{4}{7} \times 0 =$   $-\frac{1}{8}$

b)  $\frac{7}{15} =$  0

c)  $\frac{-1}{8} + 0$  additive identity

d) Multiplicative identity  $\frac{7}{15} \times 1$

e) 0 1