



## Properties of Rational Numbers

- 1) **Commutative property:** While **multiplying**, any two rational numbers can be \_\_\_\_\_ in any order, and yet their \_\_\_\_\_ remains the same.
- 2) If  $a$  and  $b$  are integers and  $b \neq 0$ , 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)  $\frac{a}{b} \times \frac{c}{d} = \frac{c}{d} \times \frac{a}{b}$
- 3) Which of the following operations is **not** commutative for rational numbers?
- a) Addition      b) Subtraction      c) Multiplication      d) both a and c
- 4) 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)  $\frac{-2}{3} \div \frac{5}{7} = \frac{5}{7} \div \frac{-2}{3}$



5) The product of any rational number and 1 is the \_\_\_\_\_ itself.

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

6) The **multiplicative identity** for every rational number is \_\_\_\_\_

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

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

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

10) Verify:  $\frac{1}{3}, \frac{2}{7}$  follows the commutative property of **multiplication**

|  |  |
|--|--|
| $\frac{1}{3} \times \frac{2}{7} = \frac{1 \times 2}{3 \times 7}$ | $\frac{2}{7} \times \frac{1}{3} = \frac{2 \times 1}{7 \times 3}$ |
| Product = $\frac{\quad}{21}$                                     | Product = $\frac{\quad}{21}$                                     |

**commutative property of multiplication** is verified \_\_\_\_\_