Properties of Multiplication of Rational Numbers

A. Write the Missing Terms to Complete the Sentences:

1. The product of any rational number and 1 is _____.

2. Multiplication of rational numbers is _____, i.e., a × b = b × a.

3. Rational numbers are _____ under multiplication.

4. The multiplicative identity of rational numbers is _____.

5. The product of a rational number and its reciprocal is always _____.

B. Mark each sentence with a True (✔) or False (✗):

1. Multiplication of rational numbers is associative.

2. The reciprocal of 0 is 1.

3. For any rational number a, a × (−1) = −a.

4. Multiplication of rational numbers is not commutative.

5. If a × b = 0, then either a = 0 or b = 0.

C. Challenge yourself with these questions:

1. Ravi has $\frac{3}{4}$ of a bag of rice. He gives $\frac{2}{5}$ of it to his neighbor. How much rice did he give?

2. If a bottle contains $\frac{2}{3}$ liters of juice, how much juice is there in 4 such bottles?

3. Ritika's notebook weighs $\frac{5}{6}$ kg. What will be the total weight of 3 such notebooks?

4. A machine produces $\frac{3}{5}$ meters of cloth in one minute. How much cloth will it produce in 10 minutes?

5. Multiply and simplify: $(-\frac{3}{4}) \times (\frac{2}{5}) \times (-\frac{1}{3})$. Show whether the result remains the same if the order of multiplication is changed. Which property does this verify?