

**Properties of division**

**Closure property:**

For any two whole numbers a and b, a ÷ b is not always a whole number. Hence closure property is not applicable to division.

E.g.  68 and 5 are whole numbers but 68 ÷ 5 is not a whole number.

**Commutative property:**

For any two whole numbers a and b, a ÷ b ≠ b ÷ a. This means division of whole number is not commutative.

 E.g. 16 ÷ 4 ≠ 4 ÷ 16

 **Associative property:**

For any 3 whole numbers a, b and c,(a ÷ b)  ÷ c ≠ a ÷ (b ÷ c)   E.g. consider (80 ÷ 10) ÷ 2 = 8 ÷ 2 = 4

 80 ÷ (10 ÷2) = 80 ÷ 5 = 16

(80 ÷ 10) ÷ 2 ≠80 ÷ (10 ÷2)

Hence division does not follow associative property.

**Division by 1**

For any whole number a, a ÷ 1 = a, this means any whole number divided by 1 gives the quotient as the number itself.

E.g. 14 ÷ 1 = 14;                  26 ÷ 1 = 26

**Division of 0 by any whole number**

For any whole number, a ≠ 0, 0 ÷ a = 0, this shows zero divided by any whole number (other than zero) gives the quotient as zero.

E.g. 0 ÷ 1 = 0;                       0 ÷ 25 = 0;

**Division by 0**

To divide any number, say 7 by 0, we first have to find  out a whole number which when multiplied by 0 gives us 7. This is not possible.  Therefore, **division by 0 is not defined**.

***Question***: Is (6 ÷ 3) same as (3 ÷ 6)? Justify it by taking few more combinations of whole numbers.

***Solution***:(6 ÷ 3) = 2 but  (3 ÷ 6) = 1/2  ≠ 2. Therefore (6 ÷ 3) is not same as (3 ÷ 6).

Few examples

(8 ÷ 4) = 2 but  (4 ÷ 8) = 1/2  ≠ 2. Therefore (8 ÷ 4) is not same as (4 ÷ 8).

(20 ÷ 5) = 4 but  (5 ÷ 20) = 1/4  ≠ 2. Therefore (20 ÷ 5) is not same as (5 ÷ 20).