Property of Division of Integers

(1) **closure property** → The closure property is not valid for integers. if a and b are two integers, then $a \div b$ is not necessarily an integer.

Eg $a = 7$, $b = 3$ | $a \div b$

$\Rightarrow 7 \div 3 = \frac{7}{3}$ = is not an integer.

(2) **Commutative Property** → if a and b are two different integers, then $(a \div b) \neq (b \div a)$, division of integers is not commutative.

Eg $a = 3$, $b = 6$ | $3 \div 6 \neq 6 \div 3$

$\frac{1}{2} \neq 2$

(3) **Associative Law** → If a, b, and c are three integers such that $b \neq 0$ and $c \neq 0$, then $(a \div b) \div c \neq a \div (b \div c)$. The result division of associative integers is not.

(4) **Property of zero** → Zero divided by any non-zero integer a is equal to zero.

ie, $0 \div a = \frac{0}{a} = 0$

where $a \neq 0$

Example $0 \div 5 = \frac{0}{5} = 0$

note $a \div 0$ is meaningless, ie, division by 0 is not defined.

$$\frac{a}{0} = \infty$$

(5) **Division by 1** → if a is any integer, then $a \div 1 = a$

ie, any integer divided by 1 remains as it is.

Eg – $5 \div 1 = \frac{5}{1} = 5$

(6) **Division of integer by itself**

Any non-zero integer a, divided by itself gives 1 as the answer,

ie, $a \div a = \frac{a}{a} = 1$

Eg – $6 \div 6 = \frac{6}{6} = 1$

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Order of operations and use of Brackets

∇ BODMAS

1. V = Vinculum (Bar)
2. B = Bracket [{( )}]
3. O = OF (3 of 5)
4. D = Divide (÷)
5. M = Multiply (X)
6. A = Addition (+)
7. S = Subtraction (−)

Ex

6−3

3X5

6÷3

6X3

8+3

6−3

Note

use of Brackets

[{( )}]

( ) → Small Bracket

{ } = middle Bracket

[ ] = Big Bracket

Example

$49 \div [49 + \{49 - (49 + 49 - 49)\}]$

Ans ⇒ $49 \div [49 + \{49 - (49 + 0)\}]$

⇒ $49 \div [49 + \{49 - 49\}]$

⇒ $49 \div [49 + \{0\}]$

⇒ $49 \div [49]$

⇒ $49 \div 49$

⇒ 1