

**CLASS VII
MATHEMATICS
CHAPTER-I
INTEGERS
MODULE-6/8**

In the previous module we have discussed about Closure property, Commutative property and Associative property under addition , subtraction and multiplication

Recall the following

1. Natural numbers (N) , and Whole numbers(W) are closed under addition, and multiplication and they are not closed under subtraction But integers are closed under addition, subtraction and multiplication.
2. Natural numbers(N) , Whole numbers(W) and Integers (I) are commutative under addition and Multiplication and not commutative under subtraction
3. Natural numbers (N) ,Whole numbers (W) and Integers (I) are associative under addition and multiplication and not associative under subtraction.

In this Module 6/8 we will discuss about the properties under division

I. Integers (I)

a) Closure property under division

For any two Integers 'a' and 'b' $a \div b$ is not always an Integers

Ex. For any two Integers 20 and - 4

$20 \div (-4) = -20/4 = -5$, is an integer but

$(-4) \div 20 = -4/20 = -1/5$ is not an Integers. So Integers are not closed under division

- Similarly the Natural Numbers (N) and Whole numbers (W) are also not closed under division.

b) Commutative property under division. For any two Integers 'a' and 'b' , $a \div b$ is not always equal to $b \div a$

Ex for any two Integers 20 and -4

$$20 \div (-4) = -20/4 = -5$$

$$(-4) \div 20 = -1/5 , \quad \text{so } -5 \neq -1/5$$

$$20 \div (-4) \neq (-4) \div 20$$

So Integers are not commutative under division.

- Similarly the Natural numbers(N) and Whole numbers(W) are also not commutative under division.

c) Associative property under division.

For any three Integers 'a' , 'b' and 'c'

$a \div (b \div c)$ is not always equal to $(a \div b) \div c$

Ex. For any three Integers 20 , 10 and 2

$$20 \div (10 \div 2) = 20 \div 5 = 4$$

$$(20 \div 10) \div 2 = 2 \div 2 = 1$$

$$4 \neq 1$$

$$20 \div (10 \div 2) \neq (20 \div 10) \div 2$$

So Integers are not associative under division

Similarly the Natural numbers(N) and whole numbers (W) are also not associative under division.

So finally we conclude

- Natural Numbers(N) , Whole Numbers (W) and integers (I) are not closed under Division.
- Natural Numbers(N) , Whole Numbers (W) and integers (I) are not Commutative under Division.
- Natural Numbers(N) , Whole Numbers (W) and integers (I) are not Associative under Division.

DIVISION OF INTEGERS

1. When we divide a positive integers by a positive integers , then the quotient is Positive.

$$(+) \div (+) = +$$

Ex. For 125 and 25

$$125 \div 25 = + 5$$

2. When we divide a Positive integer by a negative integer (or) a negative integer by a positive integer , then the quotient is negative.

$$(+) \div (-) = -$$

$$(-) \div (+) = -$$

Ex. $35 \div (-7) = -5$

$$(-85) \div (5) = -17$$

3. When we divide a negative integer by a negative integer , then the quotient is positive

$$(-) \div (-) = +$$

Ex. $(-52) \div (-4) = +13$

4. Division by 1

When we divide any integer by 1 we get the same integer

Ex. $36 \div 1 = 36$
 $(-36) \div 1 = -36$
 $0 \div 1 = 0$

5. Division involve zero (0)

a) When we divide zero (0) by any in number we get the zero

$$0 \div 28 = 0$$

$$0 \div (-28) = 0$$

b) zero division is not defined

we can not divide any number by zero. It is not defined.

Ex. $36 \div 0 = \text{not defined}$

$$(-45) \div 0 = \text{not defined.}$$

$$0 \div 0 = \text{not defined}$$

ASSIGNMENT.

1. Fill in the blanks

i) $201 \div 1 = \underline{\hspace{2cm}}$

ii) $(-67) \div 1 = \underline{\hspace{2cm}}$

iii) $32 \div (-1) = \underline{\hspace{2cm}}$

iv) $(-33) \div (-1) = \underline{\hspace{2cm}}$

v) $0 \div 99 = \underline{\hspace{2cm}}$

vi) $0 \div (-99) = \underline{\hspace{2cm}}$

vii) $(-34) \div 0 = \underline{\hspace{2cm}}$

viii) $34 \div 0 = \underline{\hspace{2cm}}$

viii) $0 \div 0 = \underline{\hspace{2cm}}$

2. find the value of

i) $65 \div 5$

ii) $(-305) \div 5$

iii) $633 \div (-3)$

iv) $(-5555) \div (-11)$

S.Sahadeva Rao

TGT.SS

AECS -2 Hyd.