# Tender Heart High School, Sec.-33B Chd.

Class: VII
Subject: Mathematics
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Topic: Chapter 1: Integers
Teacher: Deepti

**Natural Numbers:** (N) Counting numbers. It is the collection of numbers starting from 1 to infinity.

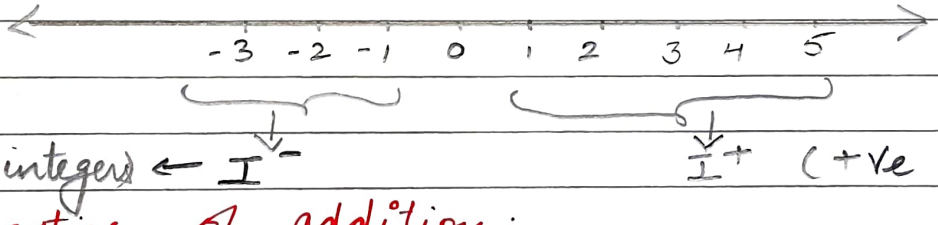
$\{1, 2, 3, \ldots\}$

**Whole Numbers:** (W) Collection of all the counting numbers including 0.

$\{0, 1, 2, 3, \ldots\}$

**Integers:** (I) Collection of all the +ve, -ve numbers including 0.

$\{\ldots -2, -1, 0, 1, 2 \ldots\}$




(-ve integers) ← $I^-$ $I^+$ (+ve integers)

**Properties of addition:**

1. **Closure property:** If $a \in I$ and $b \in I$ then $\exists$ (there exist) $a+b \in I$
2. **Commutative property:** If $a, b \in I$ then $a+b = b+a$
3. **Associative property:** If $a, b, c \in I$ then $(a+b)+c = a+(b+c)$
4. **Additive identity:** '0' is the additive identity i.e $a+0 = 0+a = a$
5. **Additive inverse:** for every $a \in I$, $\exists$ $-a \in I$, so that $a+(-a) = 0$

★ Subtraction is not closed under commutative and associative.

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Properties of multiplication:

1. Closure property: If $a \in I$, $b \in I$ then $a \times b \in I$
2. Commutative property: If $a \in I$, $b \in I$ then $a \times b = b \times a$
3. Associative property: If $a, b, c \in I$ then $(a \times b) \times c = a \times (b \times c)$
4. Multiplicative identity: for every $a \in I$, $\exists$ 1 such that $a \times 1 = 1 \times a$ (except '0'), so 1 is the multiplicative identity
5. Multiplicative inverse: The multiplicative inverse of $a$ is $\frac{1}{a}$.

Try all the questions in the register.

Quest 1: (i) Write three consecutive numbers succeeding $-42$.
(ii) Write four even integers succeeding $-59$.
(iii) Write five odd integers preceeding $-41$.

Quest 2: Mark all the given integers on the number line (Use only one number line)
(i) 4 (ii) $-3$ (iii) $-5$ (iv) 0

Quest 3: Simplify and write the answers clearly with sign.
(i) $-6 + (-25)$
(ii) $4 - (-63)$
(iii) $-8 - (-64)$
(iv) $24 - (+94)$
v) $-8 - 19 - 23$

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Quest. 4: Find the product.

(i) $-6 \times -5$
(ii) $+5 \times -9$
(iii) $-2 \times 13 \times -6$
(iv) $13 \times (-8)$

Quest. 5: Find the quotient.

(i) $(-105) \div 5$
(ii) $(-124) \div (-2)$
(iii) $(-15) \div (-3)$
(iv) $(819) \div (-9)$

Quest. 6: Simplify

(i) $2 \times 6 - \{5 \div 28 - (6 \times 3 + 5)\}$
(ii) $8 - \{6 - (24 - (6+3))\}$

Quest 7: Mental maths.

(i) _____ is the additive identity.
(ii) _____ is the multiplicative identity.
(iii) The additive inverse of $44 =$ _____
(iv) The multiplicative inverse of $\frac{1}{14} =$ _____
v) The product of 2 negative number is always _____.
vi) Name the property _____
$(-4 \times 6) \times (-5) = (-4) \times (6 \times -5)$