

DELHI MODERN PUBLIC SCHOOL PAMPORE

Subject: Mathematics

Term Ist: Study Material

Class: 6th

Chapter No: 8

Topic: Integers

Day 1: Introduction

Integers are the set of numbers containing whole numbers and their opposites. Integers can either be positive integers (at the right side of the number line) or negative integers (located at the left side of the number line) and has a zero located in between positive and negative integers.

Absolute value: The distance of an integer from zero irrespective of the direction is called absolute value. The absolute value of an integer is its numerical value regardless of its sign. The absolute value is always positive. It is denoted by the symbol $| \quad |$ (called modulus)

- **Note:** The greatest negative integer is -1 , while the greatest positive integer is not known.
- The smallest positive integer is $+1$ but the smallest negative integer is not known.

Innings 8.1

Q.No.1: (a) -1 (b) $+3$ (c) $-Rs\ 414$

Do other parts by yourself.

Q.No.2: Sol: $+13$ represent 13 units towards east.

Q.No.3: Zero and negative integers are the integers that are not natural numbers.

Q.No.4: (a) 45 (b) 15 (c) 0 (d) -3 (e) 1000 (f) 799
(g) 67 (h) -5

Q.No.5: Four integers greater than -3 are $-2, -1, 0, 1$

Two integers less than -8 are $-9, -10$

Day 2:

Q.No.6: There are six integers between -2 and 5 ($-1, 0, 1, 2, 3, 4$)

Q.No.7: All the integers greater than -15 and smaller than -6 having all absolute value are $-14, -13, -12, -11, -10, -9, -8, -7$.

Q.No.8: (a) $>$ (b) $<$ (c) $<$ (d) $>$

Do other parts by yourself.

Q.No.9: (a) 34, 6, 0, - 6, - 9, - 23

(b) Do it yourself.

Q.No.10: (a) 465

(b) 45

(e) Predecessor of $- 89 = - 89 - 1$

(f) Successor of $0 = 1$

$$= - 90$$

$$\therefore | 1 | = 1$$

$$\therefore | - 90 | = 90$$

Do other parts by yourself.

Day 3:

Rules for addition of integers:

- If the two integers are of the same sign, we add the absolute values and the sum takes the common sign.
- If the two integers have opposite signs, we find the difference between their absolute values and the answer has the sign of the integer with the greater absolute value.

Properties of addition of integers:

1. **Closure property:** If a and b are two integers, then $a + b$ is also an integer.
2. **Commutative property:** If a and b are two integers, then $a + b = b + a$.
3. **Associative property:** For any three integers a, b and c, $a + (b + c) = (a + b) + c$.
4. **Additive identity:** If 0 is added to any integer, the result is the integer itself. Thus, if a is any integer, then $a + 0 = 0 + a$. The number '0' is called the additive identity.
5. **Additive inverse:** If a is any integer, then $a + (- a) = 0$ and both are called additive inverse of each other.

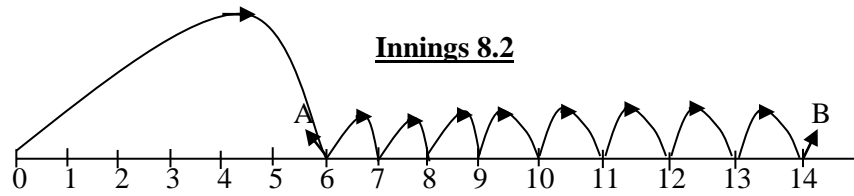
Key points:

- The sign convention used in addition and subtraction of integers is as follow
 $+ (- a) = - a$, $- a (- a) = a$
 $- (+a) = - a$, $+ (+a) = a$
- For any two integers a and b, $a - (- b)$ is the same as $a+b$.

Day 4:

Innings 8.2

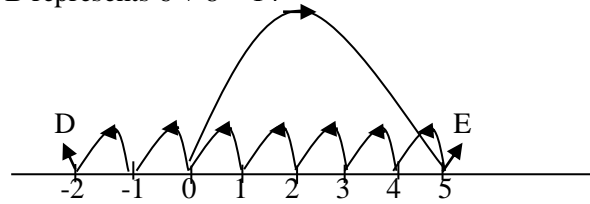
Q.No.1: (a)



$$6 + 8 = 14$$

Point B represents $6 + 8 = 14$

(b)



$$5 + (-7) = -2$$

Point B represents $5 + (-7) = -2$

Do other parts by yourself.

Q.No.2: (a) $23 + (-4)$

$$= 23 - 4$$

$$= 19$$

(b) $-13 + (-45)$

$$= -13 - 45$$

$$= -58$$

(c) $43 + (-64)$

$$= 43 - 64$$

$$= -21$$

(i) $-65 + (-890) + (-657)$

$$= -65 - 890 - 657$$

$$= -1612$$

Do other parts by yourself.

Q.No.3: (a) $1204 + (-598)$

$$= 1204 - 598$$

$$= 606$$

(b) $-876 + 876$

$$= 0$$

(c) $-6753 + 456$

$$= 6297$$

(f) $(-9) + (-78) + (-13)$

$$= -9 - 78 - 13$$

$$= -100$$

(h) $(-27) + 16 + (-27) + (-27) + 1$

$$= -26 + 16 - 27 - 27 + 1$$

$$= -64$$

Do other parts by yourself.

Q.No.4: (a) $>$

(b) $=$

(c) $>$

(d) $>$

(e) $=$

(f) $<$

(g) $<$

Q.No.5: (a) $-600 + |-75|$

$$= -600 + 75 = -525$$

(b) Do yourself

Day 5:

Q.No.6: (a) The additive inverse of -26 is 26 .

$$(b) 765 + (-435)$$

$$= 330$$

The additive inverse of 330 is -330 .

(c) Predecessor of $0 = -1$

\therefore the additive inverse of $-1 = 1$

Do other parts by yourself.

Q.No.7: Largest 3-digit positive integer = 999

Smallest 2-digit negative integer = -99

$$\therefore \text{sum} = 999 + (-99)$$

$$= 999 - 99$$

$$= 900$$

Q.No.8: The example of a negative and a positive integer whose sum is -5 is $(-12, 7)$

$$-12 + 7 = -5$$

Q.No.9: Successor of $-99 = -99 + 1$

$$= -98$$

Predecessor of $-10 = -10 - 1$

$$= -11$$

$$\therefore -98 + (-11)$$

$$= -98 - 11$$

$$= -109$$

Q.No.10: Let the no. be x

$$\therefore -45 + x = 45$$

$$\Rightarrow x = 45 + 45 = 90$$

Thus, we must add 90 to -45 to get 45.

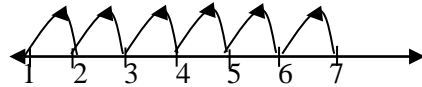
Q.No.11: Aakriti's bank balance = Rs 1050 + Rs 75 + Rs 217 + Rs 135 + Rs 71 - Rs 105 - Rs 507

$$= \text{Rs } 1548 - 105 - 507$$

$$= \text{Rs } 936$$

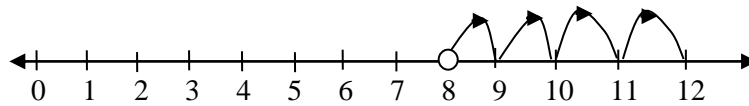
Day 6:

Q.No.1: (a)



$$7 - 6 = 1$$

(b)



$$8 - (-4) = 12$$

Do other parts by yourself.

Q.No.2: (a) Sol: $-9 - 27$ (b) $50 - 56$ (c) $-3 - 0$ (d) $0 - 51$

$$= -36$$

$$= -6$$

$$= -3$$

$$= -51$$

(e) $1000 - 3069$

(f) $-217 - (-127)$

$$= -2069$$

$$= -217 + 127$$

$$= -90$$

Do other parts by yourself.

Q.No.3: (a) $21 + (-3) - (-5)$

$$= 21 - 3 + 5$$

$$= 23$$

(b) $18 - (-7) - (-1)$

$$= 18 + 7 + 1$$

$$= 26$$

(c) $-200 + (-11) - (-32)$

$$= -200 - 11 + 32$$

$$= -179$$

(d) $-317 - (-9) - (-41)$

$$= -317 + 9 + 41$$

$$= -267$$

Do other parts by yourself.

Q.No.4: Sol: $-4 - (-7) = 3$

$\therefore -4$ exceed 3 from -7 .

Q.No.5: Do yourself.

Day 7:

Q.No.6: Sum of -2197 and $315 = -2197 + 315$

$$= -1882$$

$$\therefore 1930 - (-1882)$$

$$= 1930 + 1882$$

$$= 2812$$

Q.No.7: Sum of -120 and $97 = -120 + 97$

$$= -23$$

$$\therefore -23 - 119$$

$$= -142$$

Q.No.8: Largest 4-digit positive integer which is a multiple of 5 = 9995

Smallest 3-digit negative integer which is a multiple of 2 = -998

$$\therefore \text{Difference} = 9995 - (-998)$$

$$= 9995 + 998$$

$$= 10993$$