

Negative Numbers and Integers

Exercise 5.1

Negative Numbers and Integers – Exercise – 5.1 – Q.1

Ans.

- (i) Decrease of population.
- (ii) with drawing money from a bank
- (iii) Spending money.
- (iv) Going South
- (v) Loosing a weight of 4 kg.
- (vi) A gain of Rs 1000.
- (vii) – 25.
- (viii) 15.

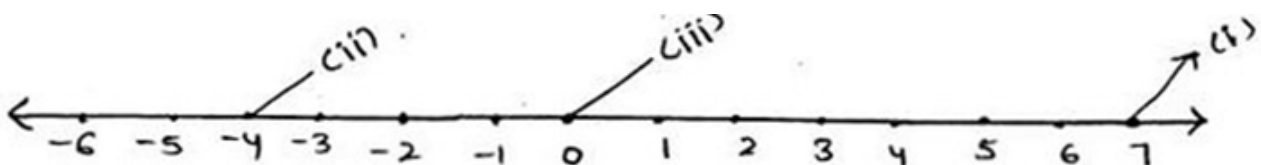
Negative Numbers and Integers – Exercise – 5.1 – Q.2

Ans.

- (i) 25° above zero is $\rightarrow + 25^\circ$.
- (ii) 5° below zero $\rightarrow - 5^\circ$.
- (iii) A profit of 800 $\rightarrow + 800$.
- (iv) A deposit of 2500 $\rightarrow + 2500$.
- (v) 3 km above sea level $\rightarrow + 3$.
- (vi) 2 km below sea level $\rightarrow - 2$.

Negative Numbers and Integers – Exercise – 5.1 – Q.3

Ans.



Integers are as shown in the number line.

Negative Numbers and Integers – Exercise – 5.1 – Q.4

Ans.

(i) since '0' is greater than all negative integers.

Therefore $-4 < 0$.

- 4 is smaller.

(ii) we know that > 3 on the number line -3 is to left of $12 \cdot 50 - < 12$.

- 3 is smaller.

(iii) 8, 13.

WKT on the number line 8 is to left of 13. so $8 < 13$.

(iv) - 15, - 27.

W.K.T on the number line -27 is to left of -27

So $-27 < -15$.

Negative Numbers and Integers – Exercise – 5.1 – Q.5

Ans.

(i) 3, -4.

Sr. WKT on the number line 3 is to right of - 4.

So $3 > -4$.

3 is larger.

(ii) -12, - 8.

WKT on the number line -12 is to left of - 8

so $-12 < -8$

- 8 is larger

(iii) 0,7.

Since '0' is less than all positive integers.

Therefore $7 > 0$

7 is Larger

(iv) 12, -18.

WKT on the number line -18 is to left of 12.

So $12 > -18$

12 is Larger.

Negative Numbers and Integers – Exercise – 5.1 – Q.6

Ans.

(i) integers between -7 and 3 are -6, -5, -4, -3, -2, -1, 0, 1, 2.

(ii) integers between -2 and 2 are. -1, 0, 1

(iii) integers between -4 and 0 are. -3, -2, -1.

(iv) integers between 0 and 3 are 1, 2.

Negative Numbers and Integers – Exercise – 5.1 – Q.7

Ans.

(i) integers between -4 and 3 are -3, -2, -1, 0, 1, 2.

∴ No of integers between -4 and 3 are 6.

(ii) integers between 5 and 12 are 6, 7, 8, 9, 10, 11.

∴ No of integers between 5 and 12 are 6.

(iii) integers between -9 and -2 are -8, -7, -6, -5, -4, -3.

∴ No of integers between -9 and -2 are 6.

(iv) Integers between 0 and 5 are 1, 2, 3, 4.

∴ No of integers between 0 and 5.

Negative Numbers and Integers – Exercise – 5.1 – Q.8

Ans.

(i) $2 < 5$

(ii) $0 < 3$

(iii) $0 > -7$

(iv) $-18 < 15$

$$(v) - 235 > - 532$$

$$(vi) - 20 < 20$$

Negative Numbers and Integers – Exercise – 5.1 – Q.9

Ans.

$$(i) - 12, - 9, - 8, 0, 1, 5, 15.$$

$$(ii) - 320, - 106, - 7, 107, 186.$$

Negative Numbers and Integers – Exercise – 5.1 – Q.10

Ans.

$$(i) 8, 7, 6, 0, 2, - 5, - 9, - 15.$$

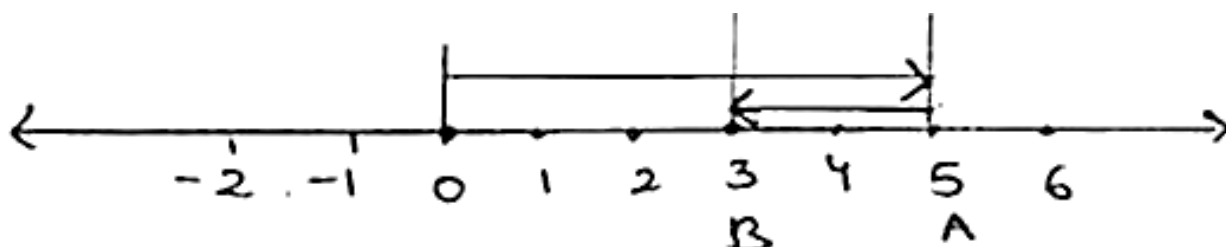
$$(ii) 124, - 74, - 89, - 154, - 205.$$

Exercise 5.2

Negative Numbers and Integers – Exercise – 5.2 – Q.1

Ans.

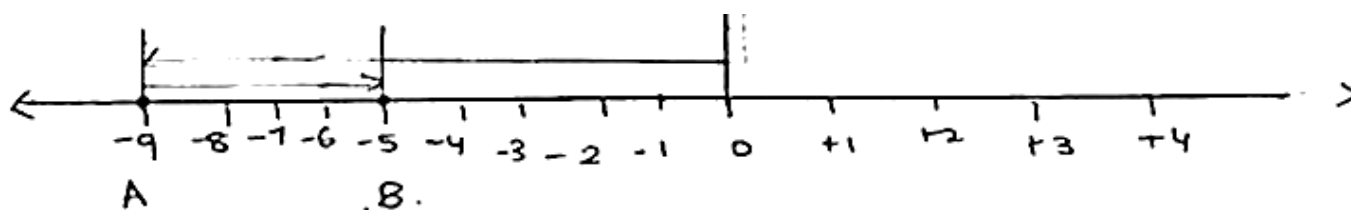
(i) $5 + (-2)$



We begin at 0 and first move five units to the right of zero to reach a point which represents +5. The second number 2 is negative. So, we move 2 units to the left of A to reach at B which represents 3.

Thus, we have $= 5 + (-2) = 3$.

(ii) $(-9) + 4$.

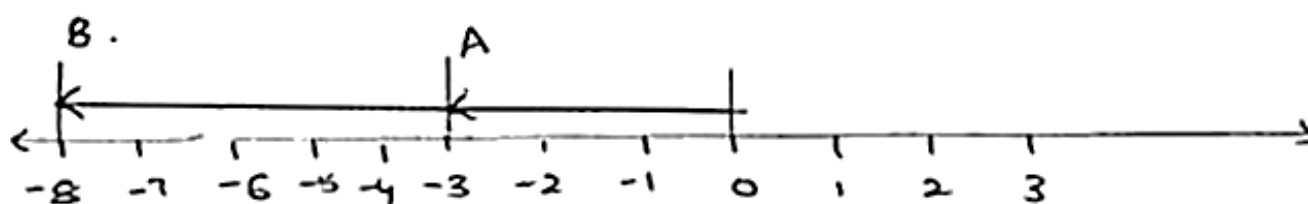


We begin at 0 and first move nine units to the left of zero to reach at A. Which represents -9. The second number 4 is positive. So we move 4 units to the right of A to reach at B. Which represents -5.

Thus, we have.

$$-9 + 4 = -5.$$

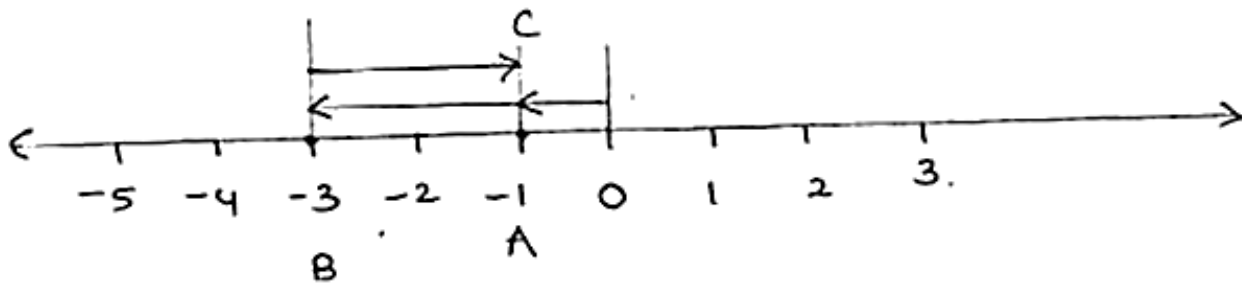
(iii) $(-3) + (-5)$.



We begin at 0 and first move three units to the left of zero to reach at A which represents -3. The second number +5 is negative. So we move 5 units to the left of A to reach at B which represents -8.

Thus we have $= (-3) + (-5) = -3 - 5 = -8$.

(iv) $(-1) + (-2) + 2$.

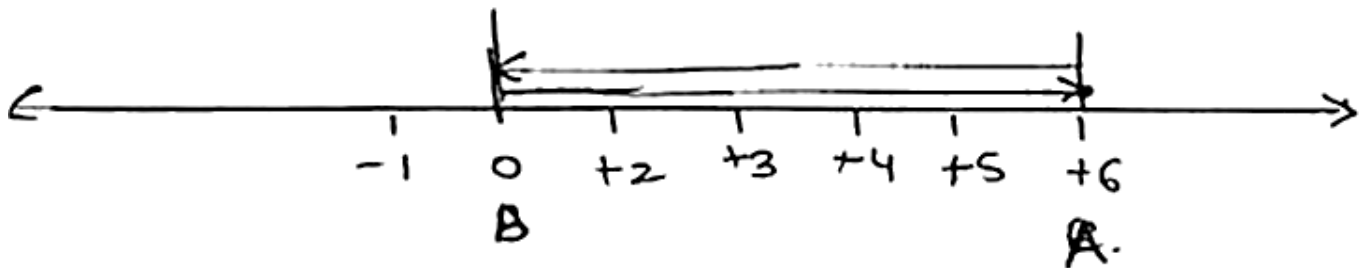


We begin at zero and first move one unit to the left of zero to reach at point A which represents -1. The second number 2 is negative.

So we move 2 units to the left of A to reach at B which represents -3. The Third number is 2 positive. So we move 2 units to the right of B, which is -1.

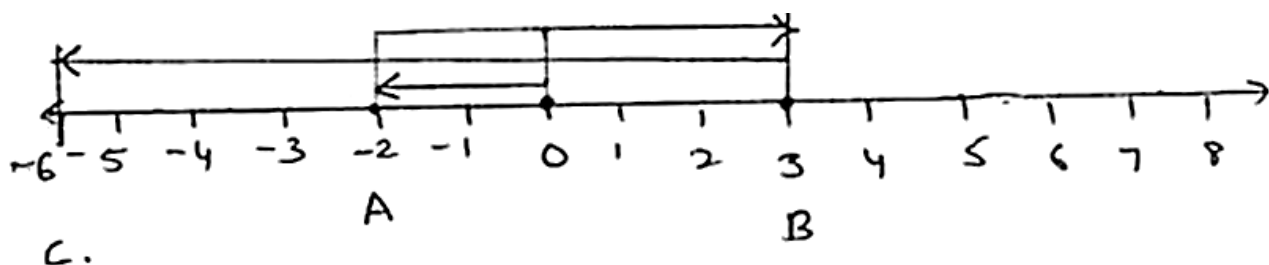
$(-1) + (-2) + 2 = (-1) + 2 - 2 = -1$.

(v) $6 + (-6)$



Thus we have $6 + (-6) = 0$

(vi) $(-2) + 5 + (-9)$.



Thus we have $= -2 + 5 + (-9)$

$= 5 - 2 + (-9)$

$= 3 - 9$

$$= -6.$$

Negative Numbers and Integers – Exercise – 5.2 – Q.2

Ans.

$$(i) - 557 \text{ and } 488$$

The integers are to be added are of the unlike signs. Therefore to add them we find the difference of their absolute values and assign the sign of the addend having greater absolute value

$$(- 557) \text{ and } 488 = |- 557| - |488|$$

$$= 557 - 488$$

$$= - 69.$$

$$(ii) - 522 + (-160) = - 522 - 160$$

$$= - 682$$

$$(iii) 2567 \text{ and } -325$$

$$2567 + (-325) = (2567) - (-325)$$

$$= 2567 \text{ and } -325$$

$$2567 + (-325) = (2567) - (-325)$$

$$= 2567 - 325$$

$$= 2242$$

$$(iv) - 10025 \text{ and } 139$$

$$-10025 + 139 = [-10025] + [139]$$

$$= -10025 + 139$$

$$= -9886.$$

$$(v) 2567 + (-2578) = 2547 - 2548$$

$$= -1.$$

$$(vi) 2884 + (-2884) = 2884 - 2884 = 0.$$

Exercise 5.3

Negative Numbers and Integers – Exercise – 5.3 – Q.1

Ans.

(i) Additive inverse of 52 is -52.

(ii) 176

(iii) 0

(iv) -1

Negative Numbers and Integers – Exercise – 5.3 – Q.2

Ans.

(i) Successor or -42 is $= -42 + (-1)$

$$= -43$$

$$= -43$$

(ii) $-1 + 1 = 0$

(iii) $0 + 1 = 1$

(iv) $-200 + 1 = -199$

(v) $-99 + 1 = -98$.

Negative Numbers and Integers – Exercise – 5.3 – Q.3

Ans.

(i) predecessor of 0 is $\Rightarrow 0 - 1 = -1$

(ii) $1 - 1 = 0$

(iii) $-1 - 1 = -2$

(iv) $-125 - 1 = -126$

(v) $1000 - 1 = 999$

Negative Numbers and Integers – Exercise – 5.3 – Q.4

Ans.

(i) True

- (ii) False
- (iii) False
- (iv) False
- (v) False

Negative Numbers and Integers – Exercise – 5.3 – Q.5

Ans.

Integers whose absolute values less than 5 are

- 4, - 3, - 2, - 1, 0, 1, 2, 3, 4.

Negative Numbers and Integers – Exercise – 5.3 – Q.6

Ans.

- (i) True
- (ii) False
- (iii) True
- (iv) True

Negative Numbers and Integers – Exercise – 5.3 – Q.7

Ans.

+	- 6	- 4	- 2	0	2	4	6
6	0	2	4	6	8	10	12
4	- 2	0	2	4	6	8	10
2	- 4	- 2	0	2	4	6	8
0	- 6	-4	- 2	4	2	4	6
- 2	- 8	-6	- 4	- 2	0	2	4
- 4	- 10	-8	- 6	- 4	- 2	0	2
- 6	- 12	-10	- 8	- 6	- 4	- 2	0

- (i) (+6, -6), (4, -4), (3, -3), (2, -2), (1, -1), (0, 0)
- (ii) yes by commutativity of Addition

$$(-4) + (-2) = (-2) + (-4)$$

(iii) By existence of additive identity

$$0 + (-6) = -6 [\because 0 + a = a]$$

Negative Numbers and Integers – Exercise – 5.3 – Q.8

Ans.

$$(i) x + 1 = 0$$

$$\Rightarrow x + 1 - 1 = 0 - 1 \text{ [subtract } \because \text{ on both sides]}$$

$$\Rightarrow x = -1$$

$$(ii) x + 5 = 0$$

$$x + 5 - 5 = 0 - 5$$

$$x + 0 = -5$$

$$\Rightarrow x = -5$$

$$(iii) -3 + x = 0$$

$$3 - 3 + x = 0 + 3$$

$$x = 3$$

$$(iv) x + (-8) = 0$$

$$x - 8 = 0$$

$$x - 8 + 8 = 0 + 8$$

$$x = 8$$

$$(v) 7 + x = 0$$

$$\Rightarrow 7 + x - 7 = 0 - 7$$

$$\Rightarrow x = -7$$

$$(vi) x + 0 = 0$$

$$x = 0.$$

Exercise 5.4

Negative Numbers and Integers – Exercise – 5.4 – Q.1

Ans.

(i) Using the rule for subtraction, we have $-5 - 12 = -17$.

(ii) In order to subtract -12 from 8, $8 - (-12) = 8 + 12 = 20$.

(iii) $-135 - (-225) = 225 - 135 = 90$

(iv) $101 - 1001 = -900$

(v) $3126 - (-812) = 3126 + 812 = 3938$.

(vi) $-8 - 7560 = -7568$

(vii) $-4109 - (-3978) = -4109 + 3978 = -131$

(viii) $-1005 - 0 = -1005$

Negative Numbers and Integers – Exercise – 5.4 – Q.2

Ans.

(i) $-27 - (-23) = -27 + 12$

$= 23 - 27$

$= -4$

(ii) $-17 - 18 - (-35) = -35 + 35$

$= 0$

(iii) $-12 - (-5) - (-125) + 270 = -12 + 5 + 125 + 270$

$= 400 - 12$

$= 388$.

(iv) $373 + (-245) + (-373) + 145 + 3000 = 373 - 245 - 373 + 3145$

$= 3145 + 373 - 373 - 245$

$= 3145 - 245$

$= 2900$.

(v) $1 - 475 - 475 - 475 + 1900 = 1 - 950 - 950 + 1900$

$$= 1900 + 1 - 1900 = 1.$$

$$(vi) (-1) + (-304) + 304 + 304 + (-304) + 1 = -1 + 1 - 304 + 304 - 304 + 304 = 0$$

Negative Numbers and Integers – Exercise – 5.4 – Q.3

Ans.

The sum of 5020 and 2320 is $-5020 + 2320$

$$= 2320 - 5020$$

$$= -2700.$$

$$\Rightarrow -(-2700) + (-709) = -709 - (-2700)$$

$$= -709 + 2700$$

$$= 1991$$

Negative Numbers and Integers – Exercise – 5.4 – Q.4

Ans.

sum of -1250 and 1138 = $-1250 + 1138$

$$= \mathbf{1138 - 1250}$$

$$= -112$$

Sum of 1136 and -1272 = $1136 - 1272$

$$= -136$$

$$\Rightarrow -136 - (-112) = -136 + 112$$

$$= -24$$

Negative Numbers and Integers – Exercise – 5.4 – Q.5

Ans.

Sum of 233 and -147 = $233 - 147$

$$= 86.$$

$$\Rightarrow 86 - (-284) = 86 + 284$$

$$= 370.$$

Negative Numbers and Integers – Exercise – 5.4 – Q.6

Ans.

Given that,

Sum of two integer's = 238.

one of the integer = -122

Required integer = $-(-122) + 238$

= $238 + 122$

360.

Negative Numbers and Integers – Exercise – 5.4 – Q.7

Ans.

Required integer = $-223 - 172$

= - 395.

Negative Numbers and Integers – Exercise – 5.4 – Q.8

Ans.

(i) $- 8 - 24 + 31 - 26 - 28 + 7 + 19 - 18 - 8 + 33$

= $- 8 - 24 - 26 - 28 - 18 - 8 + 31 + 7 + 19 + 33$

= $- 32 - 26 - 28 - 26 + 38 + 19 + 33$

= $38 - 32 - 26 - 28 + 33 - 26 + 19.$

= $6 - 26 - 28 + 7 + 19$

= $6 - 28 - 26 + 26$

= $6 - 28$

= -22.

(ii) $- 26 - 20 + 33 - (-33) + 21 + 24 - (-25) - 26 - 14 - 34$

= $- 46 + 33 + 33 + 21 + 24 + 25 - 26 - 14 - 34$

= $- 46 + 66 + 21 + 24 + 25 + -74$

= $- 46 + 66 + 70 - 74$

= $- 46 - 4 + 66$

$$= - 50 + 66$$

$$= 66 - 50$$

$$= 16.$$

Negative Numbers and Integers – Exercise – 5.4 – Q.9

Ans.

$$1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 + 9 - 10 + 11 - 12 + 13 - 14 + 15 - 16 = -1 -1 -1 \\ -1 -1 -1 -1 -1$$

$$= - 8$$

Negative Numbers and Integers – Exercise – 5.4 – Q.10

Ans.

(i) If the number of term is 10

$$5 + (-5) + 5 + (-5) + 5 + (-5) + 5 + (-5) + 5 + (-5)$$

$$= 5 - 5 + 5 - 5 + 5 - 5 + 5 - 5$$

$$= 0$$

(ii) If the number of terms is 11.

$$5 + (-5) + 5 + (-5) + 5 + (-5) + 5 + (-5) + 5 + (-5) + 5$$

$$= 5 - 5 + 5 - 5 + 5 - 5 + 5 - 5 + 5 - 5 + 5$$

$$= 5.$$