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.

Q.2

Ans.

(i) 25° above zero is → + 25°.

(ii) 5° below zero → – 5°.

(iii) A profit of 800 → + 800.

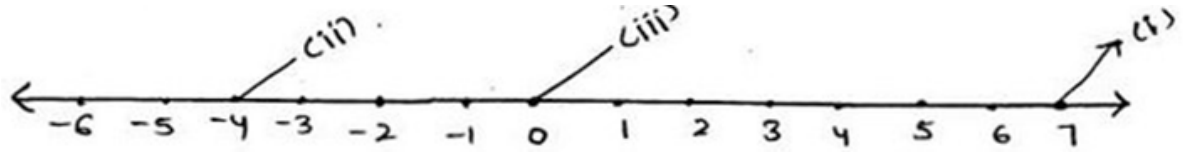
(iv) A deposit of 2500 → + 2500.

(v) 3 km above sea level → + 3.

(vi) 2 km below sea level → – 2.

Q.3

Ans.



Integers are as shown in the number line.

Q.4

Ans.

(i) since 'o' 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 · 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.

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.

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.

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.

Q.8

Ans.

(i) $2 < 5$

(ii) $0 < 3$

(iii) $0 > -7$

(iv) $-18 < 15$

(v) $-235 > -532$

(vi) $-20 < 20$

Q.9

Ans.

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

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

Q.10

Ans.

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

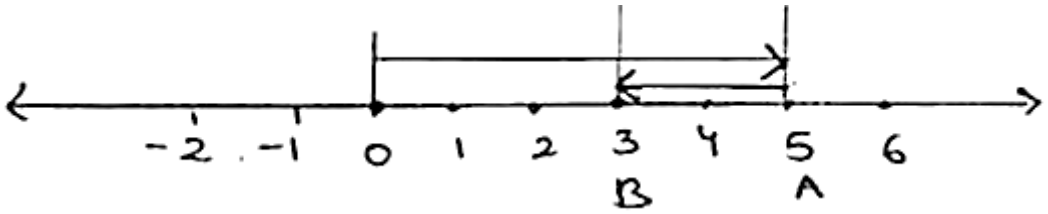
(ii) $124, -74, -89, -154, -205$.

Exercise 5.2

Q.1

Ans.

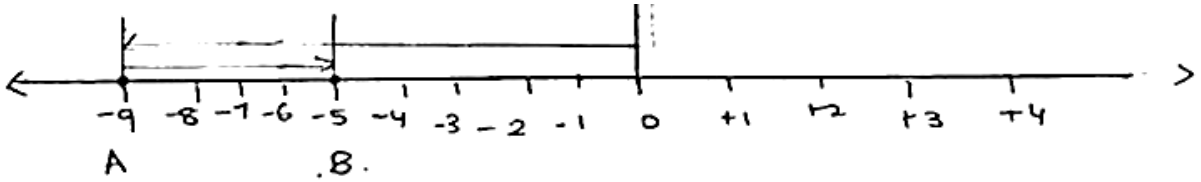
(i) 5 + (-2)



We begin at 0 and first more five units to the right of zero to reach ar a 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.

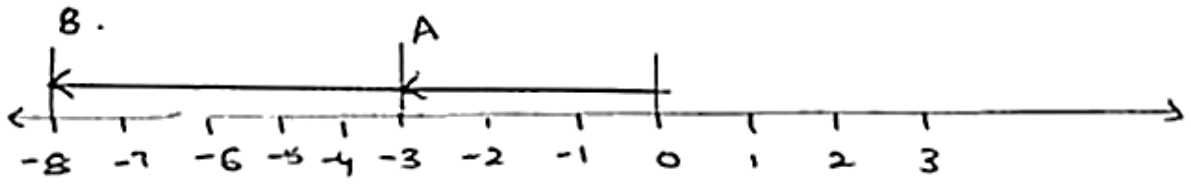


We begin at 0 and first move nine units to the left of zero to reach at A. Which represents – 9. The second number 4 is positive. So we over 4 units to the right of A to reach at B. Which represents -5.

Thus, we have.

-9 + 4 = -5.

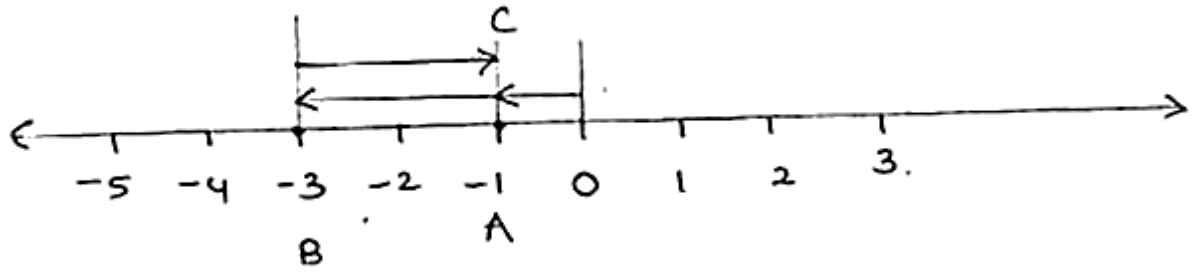
(iii) (-3) + (-5).



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.

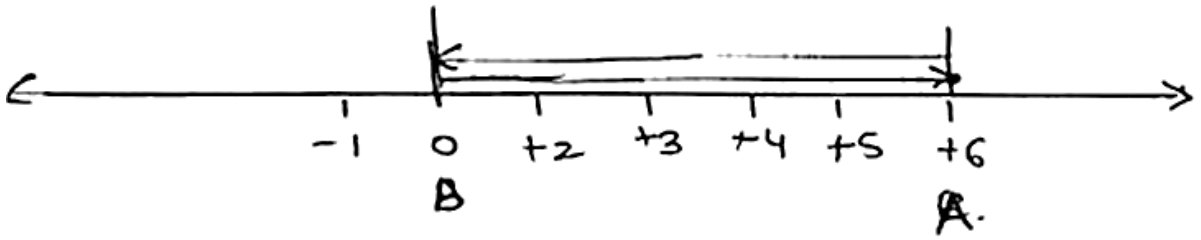


We begin at zero and first move one unit to the left of zero to reach at point A which represents -1. The second number 2 is negative.

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.

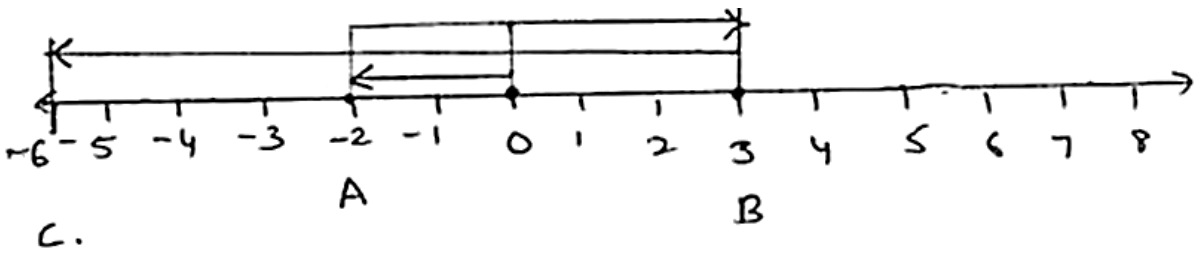
(-1) + (-2) + 2 = (-1) + 2 -2 = -1.

(v) 6 + (-6)



Thus we have 6 + (-6) = 0

(vi) (-2) + 5 + (-a).



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

= 5 - 2 + (-9)

= 3 - 9

= -6.

Q.2

Ans.

(i) – 557 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) and 488 = |- 557| - |488|

= 557 - 488

= - 69.

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

= - 682

(iii) 2567 and -325

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

= 2567 and -325

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

= 2567 - 325

= 2242

(iv) – 10025 and 139

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

= -10025 + 139

= -9886.

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

= -1.

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

Exercise 5.3

Q.1

Ans.

(i) Additive inverse of 52 is -52.

(ii) 176

(iii) 0

(iv) -1

Q.2

Ans.

(i) Success - or – 42 is = – 42 + (-1)

= 1- 42

= – 41

(ii) -1 + 1 = 0

(iii) 0 + 1 =1

(iv) – 200 + 1 = –199

(v) – 99 + 1 = –98.

Q.3

Ans.

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

(ii) 1 - 1 = 0

(iii) -1 -1 = -2

(iv) -125 -1 = -126

(v) 1000 -1 = 999

Q.4

Ans.

(i) True

(ii) False

(iii) False

(iv) False

(v) False

Q.5

Ans.

Integers whose absolute values less than 5 are

– 4, – 3, – 2, – 1, 0, 1, 2, 3, 4.

Q.6

Ans.

(i) True

(ii) False

(iii) True

(iv) True

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]

Q.8

Ans.

(i) x +1 = 0

$\Longrightarrow$ x + 1 - 1 = 0 - 1 [subtract $\because$ on both sides]

$\Longrightarrow$ x = -1

(ii) x + 5 = 0

x + 5 - 5 = 0 - 5

x + 0 = -5

$\Longrightarrow$ 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

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

$\Longrightarrow$ x = - 7

(vi) x + 0 = 0

x = 0.

Exercise 5.4

Q.1

Ans.

(i) Using the rule for sub traction, 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)6 = 3126 + 812 = 3938.

(vi) – 8-7560 = – 7568

(vii) – 4109 – (– 3978) = – 4109 + 3978 = – 131

(viii) –1005 – 0 = –1005

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

Q.3

Ans.

The sum of 5020 and 2320 is – 5020 + 2320

= 2320 – 5020

= – 2700.

$\Longrightarrow$ – (– 2700) + (– 709) = – 709 – (– 2700)

= – 709 + 2700

= 1991

Q.4

Ans.

sum of -1250 and 1138 = - 1250 + 1138

= 1138 - 1250

= -112

Sum of 1136 and -1272 = 1136 - 1272

= – 136

$\Longrightarrow$ – 136 - (-112) = -136 + 112

= – 24

Q.5

Ans.

Sum of 233 and -147 = 233 -147

= 86.

$\Longrightarrow$ 86 – (– 284) = 86 + 284

= 370.

Q.6

Ans.

Given that,

Sum of two integer's = 238.

one of the integer = -122

Required integer = -(-122) + 238

= 238 + 122

360.

Q.7

Ans.

Required integer = -223 - 172

= - 395.

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.

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

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.