CHAPTER 5

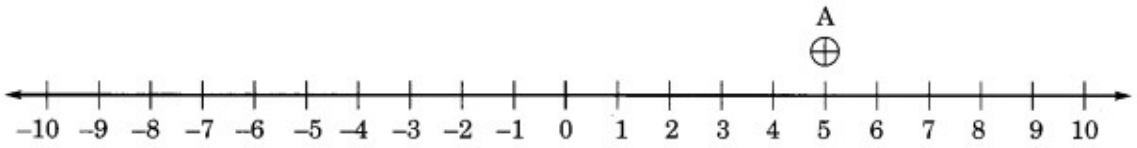
INTEGERS

Question 1.
Write opposites of the following:
(a) Increase in weight
(b) 30 km North
(c) 326 BC
(d) Loss of ₹700
(e) 100 m above sea level.
Solution:
(a) Decrease in weight
(b) 30 km South
(c) 326 AD
(d) Profit of ₹700
(e)100 m below sea level.

Question 2.
Represent the following numbers as integers with appropriate signs.
(a) An aeroplane is flying at a height two thousand metre above the ground.
(b) A submarine is moving at a depth, eight hundred metre below the sea level.
(c) A deposit of rupees two hundred.
(d) Withdrawal of rupees seven hundred.
Solution:
(a) +2000 m
(b) -800 m
(c) + ₹200
(d) – ₹700

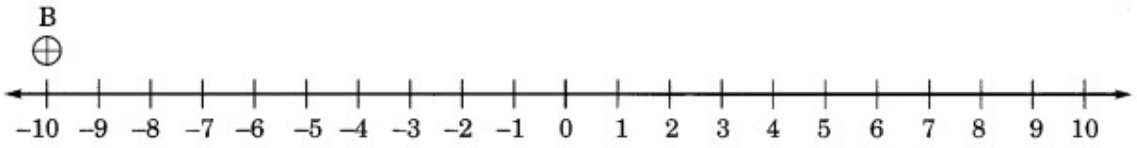
Question 3.
Represent the following numbers on a number line: ,
(a) +5
(b) -10
(c) ±8
(d) -1
(e) -6
Solution:

(a)



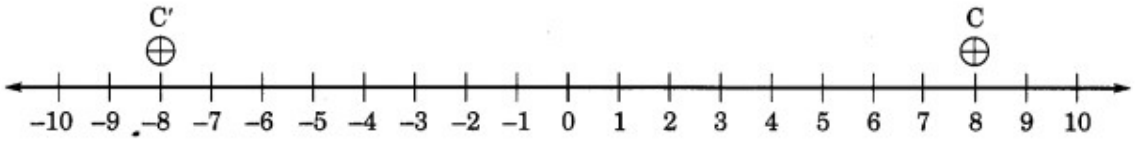
Here A represents + 5.

(b)



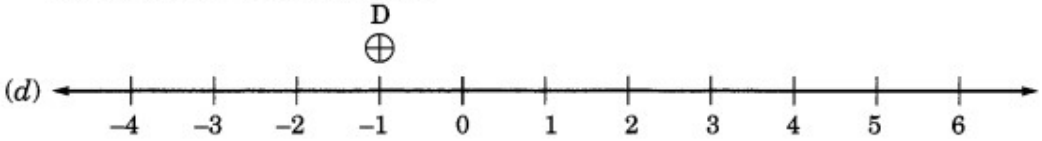
Here B represents – 10.

(c)



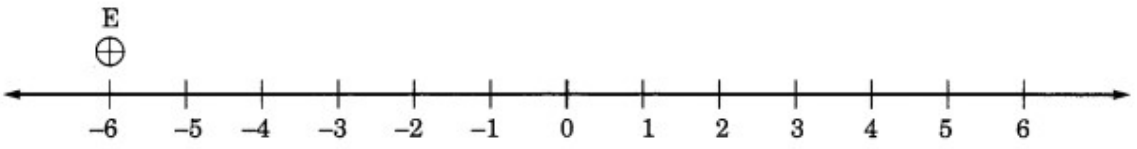
Here C and C′ represent ± 8.

(d)



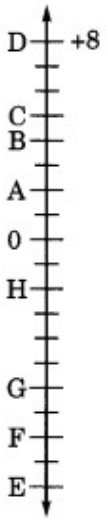
Here, D represents – 1.

(e)



Here, E represents – 6.

Question 4.
Adjacent figure is a vertical number line, representing integers. Observe it and locate the following points:

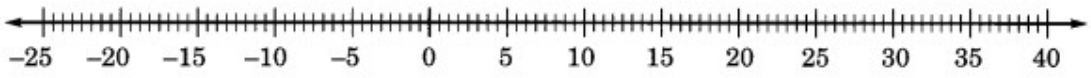


(a) If point D is +8, then which point is -8?
(b) Is point G a negative integer or a positive integer?
(c) Write integers for points B and E.
(d) Which point marked on this number line has the least value?
(e) Arrange all the points in decreasing order of value.
Solution:
(a) F represents -8
(b) G is a negative integer.
(c) B represents +4 and E represents – 10
(d) E has the least value of -10.
(e) Decreasing order of all the points are: D, C, B, A, 0, H, G, F and E.

Question 5.
Following is the list of temperatures of five places in India on a particular day of the year.

Place	**Temperature**	
Siachin	10°C below 0°C	.....
Shimla	2°C below 0°C	.....
Ahmedabad	30°C above 0°C	.....
Delhi	20°C above 0°C	.....
Srinagar	5°C below 0°C	.....

(a) Write the temperatures of these places in the form of integers in the blank column.
(b) Following is the number line representing the temperature in degree Celsius.

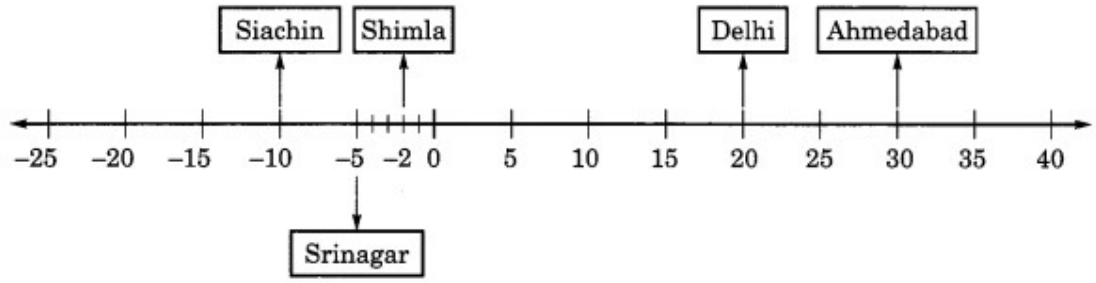


Plot the name of the city against its temperature.
(c) Which is the coolest place?
(d) Write the names of the places where temperatures are above 10°C.
Solution:

(a)

Place	Temperature	In the form of integers
Siachin	10°C below 0°C	– 10°
Shimla	2°C below 0°C	– 2°C
Ahmedabad	30°C above 0°C	+ 30°C
Delhi	20°C above 0°C	+ 20°C
Srinagar	5°C below 0°C	– 5°C

(b)



(c) Siachin is the coolest place with -10°C temperature.
(d) (i) Delhi → 20°C
(ii) Ahemedabad → 30°C

Question 6.
In each of the following pairs, which number is to the right of the other on the number line?
(a) 2, 9
(b) -3, -8
(c) 0, -1
(d) -11, 10
(e) -6, 6
(f) 1, -100
Solution:
(a) 9 is to the right of 2
(b) -3 is to the right of -8
(c) 0 is to the right of – 1
(d) 10 is to the right of -11
(e) 6 is to the right of -6
(f) 1 is to the right of -100.

Question 7.
Write all the integers between the given pairs (write them in the increasing order):
(a) 0 and -7
(b) -4 and 4
(c) -8 and -15
(d) -30 and -23
Solution:
(a) Integers between 0 and -7 are:
– 6, – 5, – 4, -3,-2,- 1.

(b) Integers between -4 and 4 are:
– 3, – 2, -1, .0, 1, 2, 3.
(c) Integers between -8 and -15 are:
-14,-13, -12,-11,-10,-9.
(d) Integers between -30 and -23 are:
– 29, – 28, – 27, – 26, – 25, – 24.

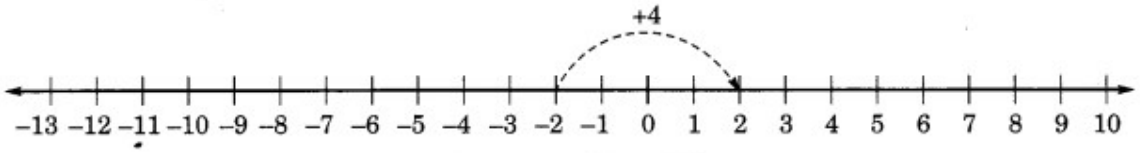
Question 8.
(a) Write four negative integers greater than -20.
(b) Write four negative integers less than – 10.
Solution:
(a) Four negative integers greater than – 20 are: – 19, – 18, – 17, – 16.
(b) Four negative integers less than – 10 are: – 11, – 12, – 13, – 14.

Question 9.
For the following statements, write True (T) or False (F).
If the statement is false, correct the statement.
(a) – 8 is to the right of – 10 on a number line.
(b) – 100 is to the right of- 50 on a number line.
(c) Smallest negative integer is – 1
(d) – 26 is greater than – 25.
Solution:
(a) True (T)
(b) False (F); Correction: -100 is to the left of -50 on a number line.
(c) False (F); Correction: There is no smallest negative integer.
(d) False (F); Correction: -26 is smaller than -25.

Question 10.
Draw a number line and answer the following:
(a) Which number will we reach if we move 4 numbers to the right of -2.
(b) Which number will we reach if we move 5 numbers to the left of 1.
(c) If we are at -8 on the number line, in which direction should we move to reach -13?
(d) If we are at -6 on the number line, in which direction should we move to reach -1?

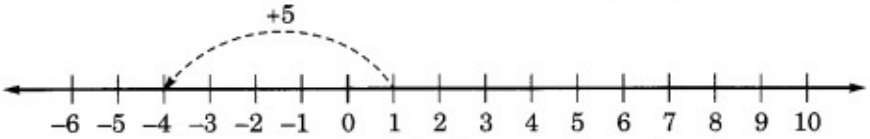
Solution:

(a)



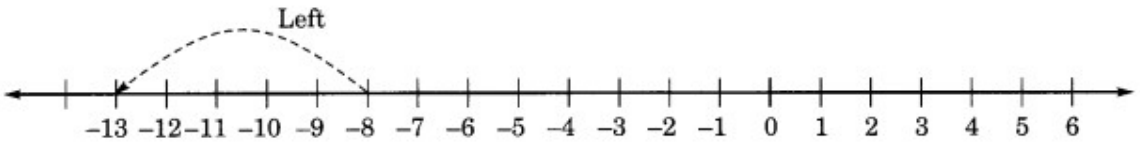
If we move 4 numbers to the right of –2, we will reach 2.

(b)



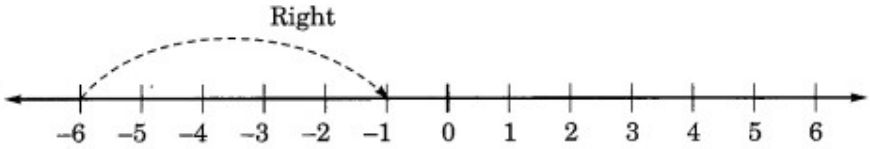
If we move 5 numbers to the left of 1, we will reach – 4.

(c)



We will move to the left of –8 to reach –13.

(d)



We should move right to –6 to reach –1.

Question 11.

Using the number line write the integer which is:

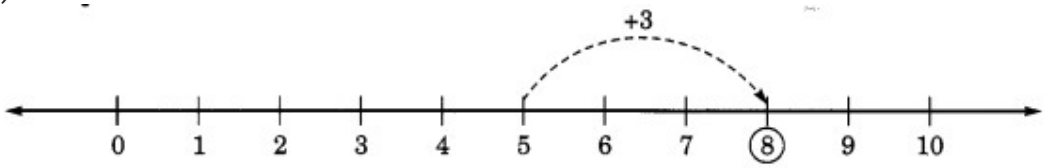
(a) 3 more than 5

(b) 5 more than -5

(c) 6 less than 2

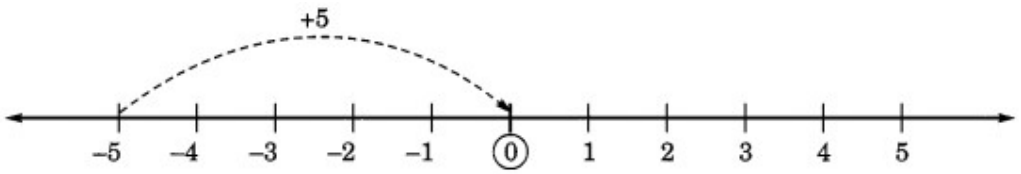
Solution:

(a) 3 more than 5



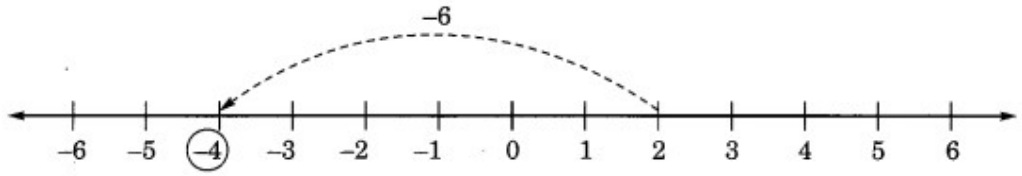
Moving right 3 steps from 5, we reach at 8. Hence, 3 more than 5 = 8.

(b) 5 more than -5



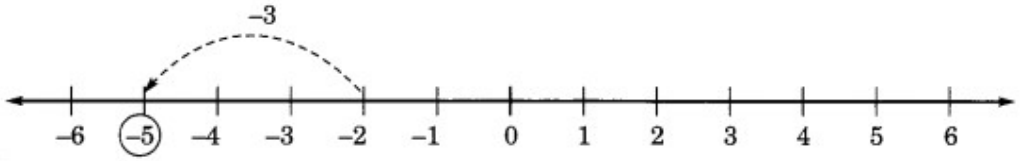
Moving right 5 steps from -5 we reach at 0. Hence, 5 more than -5 = 0

(c) 6 less than 2



Moving left 6 steps from 2, we reach at -4. Hence, 6 less than 2 = -4

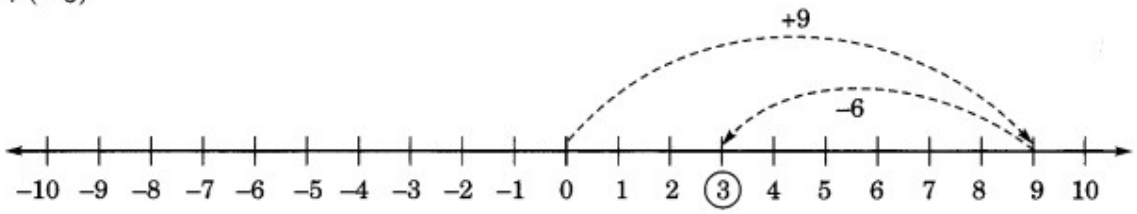
(d) 3 less than -2



Moving left 3 steps from -2, we reach at -5.

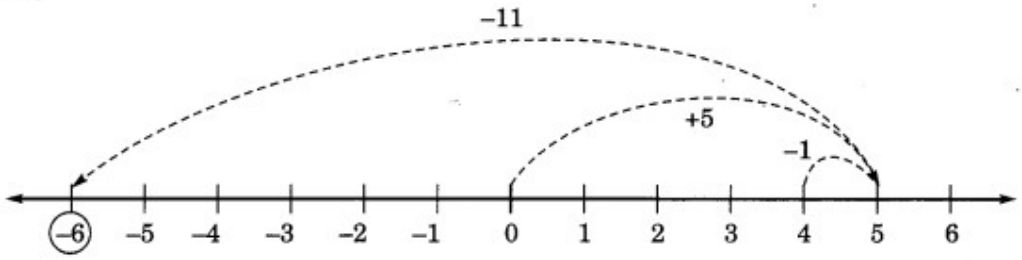
Question 12.
Use number line and add the following integers:
(a) 9 + (-6)
(b) 5 + (-11)
(c) (-1) + (-7)
(d) (- 5) + 10
(e) (-1) + (-2) + (-3)
Solution:
(a) 9 + (- 6)

(a) 9 + (– 6)



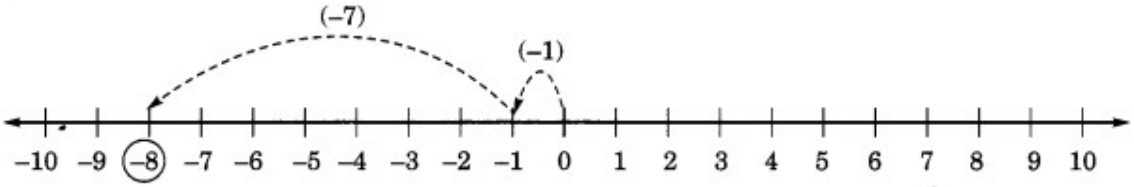
Hence, 9 + (– 6) = 3.

(b) 5 + (– 11)



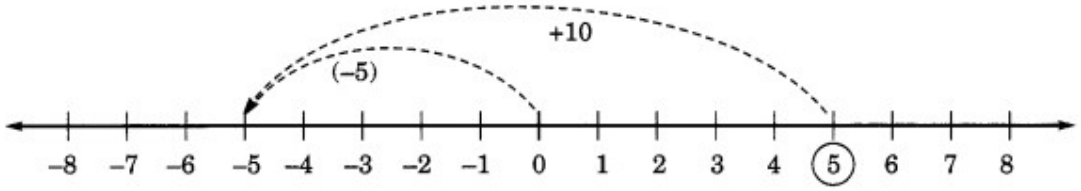
Hence, 5 + (– 11) = –6.

(c) (– 1) + (– 7)



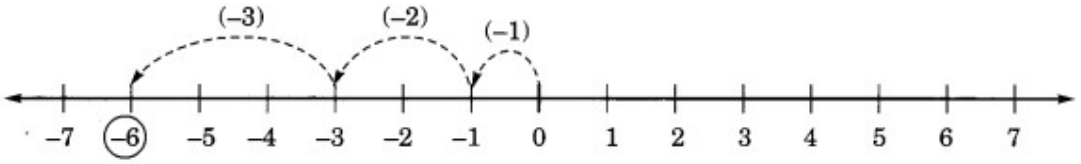
Hence, (– 1) + (– 7) = (– 8).

(d) (– 5) + 10



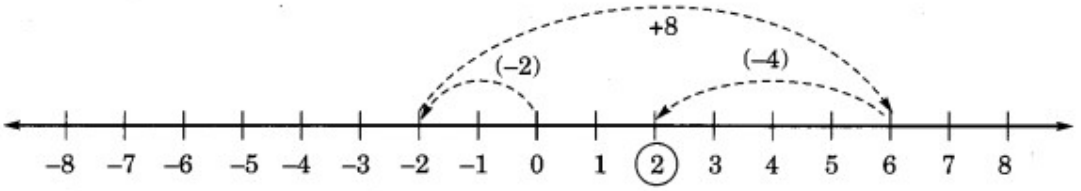
Hence, (– 5) + 10 = 5.

(e) (– 1) + (– 2) + (– 3)



Hence, (– 1) + (– 2) + (– 3) = (– 6).

(f) (– 2) + 8 + (– 4)



Hence, (– 2) + 8 + (– 4) = 2.

Question 13.
Add without using number line:
(a) 11 + (-7)
(b) (-13) + (+18)
(c) (-10) + (+19)
(d) (-250) + (+150)
(e) (-380) + (-270)
(f) (-217) + (-100).
Solution:
(a) 11 + (-7) = 4 + (+7) + (-7)
[∵ (+7) + (-7) = 0]
= 4 + 0 = 4
Hence, 11 + (-7) = 4.

(b) (-13) + (+18) = (-13) + (+13) + (+5)
[∵ (-13) + (+13) = 0]
= 0 + (+ 5) = 5
Hence, (- 13) + (+ 18) = 5.

(c) (-10) + (+19) = (-10) + (+10) + (+9)
[∵ (-10) + (10) = 0] = 0 + (+9) = 9
Hence, (-10) + (19) = 9.

(d) (-250) + (+150) = (-100) + (-150) + (+150)
= (-100) + 0 = -100 [∵(-150) + (+150) = 0]
Hence, (-250) + (+150) = – 100.

(e) (-380) + (-270) = – [380 + 270] = (-650)
Hence, (-380) + (-270) = (-650).

(f) (-217) + (-100) = – [217 + 100] = -317

Question 14.
Find the sum of:
(a) 137 and -354
(b) -52 and 52 .
(d) -312, 39 and 192
(d) -50, -200 and 300
Solution:
(a) 137 and -354
(137) + (-354) = (137) + (-137) + (-217) [∵ (137) + (-137) = 0]
= 0 + (-217) = (-217)

(b) -52 and 52
(-52) + (+52) = 0 [∵ (-a) + (+ a) = 0]

(c) -312, 39 and 192
(-312) + (+ 39) + (+192)
= (-231) + (- 81) + (+39) + (+192)
= (-231) + (-81) + (+ 231)
= (-231) + (+ 231) + (-81)
[∵ (-a) + (a) = 0]
= 0 + (- 81) = – 81

(d) – 50, -200 and 300
(-50) + (-200) + (+ 300)
= (-50) + (-200) + (+200) + (+100)
= (-50) + 0 + (+100)[∵ (-a) + (+ a) = 0]
= (-50) + (+100)

= (-50) + (+50) + (+ 50)
= 0 + (+ 50) = 50 [∵ (-a) + (+ a) = 0]

Question 15.
Find the sum of:
(a) (- 7) + (-9) + 4 + 16
(b) (37) + (-2) + (-65) + (-18)
Solution:
(a) (- 7) + (-9) + 4 + 16
= (-7) + (-9) + 4 + (+ 7) + (+ 9)
= (-7) + (+7) + (-9) + (+9) + 4
= 0 + 0 + 4 = 4 [∵ (-a) + (a) = 0]

(b) (37) + (-2) + (-65) + (-8)
= (+37) + (-75)
= (+37) + (-37) + (-38)
= 0 + (-38) = (-38) [∵ (-a) + (+a) = 0]

Question 16.
Find:
(a) 35 – (20)
(b) 72 – (90)
(c) (-15) – (-18)
(d) (- 20) – (13)
(e) 23 – (-12)
(f) (-32) – (-40)
Solution:
(a) 35 – (20) = 15 + (20) – (20)
= 15 + 0 = 15 [(+a) + (-a) = 0]

(b) 72 – 90
72 – (72 + 18) = 72 – 72 – 18
= 0 – 18 = – 18 [a + (- a) = 0]

(c) (- 15) – (- 18)
= (- 15) + (additive inverse of – 18)
= (-15) + (18) = 3

(d) (- 20) – (13)
(- 20) – (13) = – [20 + 13] = – 33

(e) 23 – (- 12)
23 – (- 12) = 23 + (additive inverse of – 12)
= 23 + 12 = 35

(f) (- 32) – (- 40)
(- 32) + (additive inverse of – 40)
= (- 32) + 40 = 8

Question 17.
Fill in the blanks with >, < or = sign.
(a) (-3) + (-6) (-3) – (-6)
(b) (-21) – (-10) (- 31) + (-11)
(c) 45 – (-11) 57 + (-4)
(d) (-25) – (-42) (-42) – (-25)
Solution:
(a) (-3) + (-6) = – [3 + 6] = – 9 and (-3) – (-6) = (-3) + 6 = 3
Here, – 9 < 3
∴ (- 3) + (- 6) < (- 3) – (- 6)