पुन International School
Shree Swaminarayan Gurukul, Zundal

Class -VII

Mathmatics

Specimen Copy

Year- 2020-21

CHAPTER – 1 INTEGERS

- **Summary**
- **Introduction**
- **Properties of integers**
- **Represent numbers on number line**
- **Addition and subtraction of integers**
- **Activity**

Introduction:

Natural number:

Which number starts from 1,2-- called natural number or numbers are called natural   number. Natural numbers denoted by "N".

Example: 1,2,3,4-------

WHOLE NUMBER:

Included with zero in natural numbers are called whole number. or Which number starts from zero is called whole number. Whole number represents by "W".
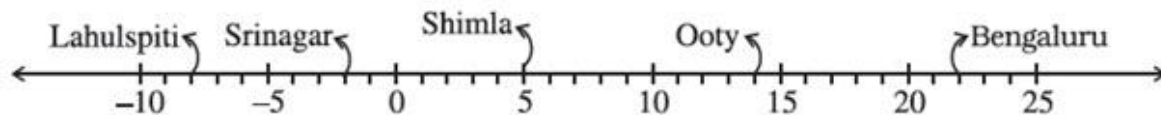
Example : 0,1,2,3---------

INTEGERS:

A collection of negative and positive numbers are called integers. Integers represents by "Z".

Example: { -3,-2,-1,0,1,2,3 }

Exercise 1.1

Question1. Following number line shows the temperature in degree celsius (°C) at different places on a particular day.

(a) Observe this number line and write the temperature of the places marked on it.

Solution (a):

Place	Temperature
Bangalore	22°C
Ooty	14°C
Shimla	5°C
Srinagar	–2°C
Lahulspiti	–8°C

(b) What is the temperature difference between the hottest and the coldest places among the above?

Solution (b):

The hottest place is Bangalore with temperature 22°C

The coldest place is Lahulspiti with temperature – 8°C

Temperature difference = (22°C) – (– 8°C) = 30°C.

(c) What is the temperature difference between Lahulspiti and Srinagar?

Solution (c):

Lahulspiti's temperature = – 8°C

Srinagar's temperature = –2°C

Temperature difference = (–2°C) – (– 8°C) = 6°C.

(d) Can we say temperature of Srinagar and Shimla taken together is less than the temperature at Shimla? Is it also less than the temperature at Srinagar?

Solution (d):

Srinagar's temperature = – 2°C, Shimla's temperature = 5°C

Temperature of Shimla and Srinagar when taken together = (5°C) + (– 2°C) = 3°C

Since, Srinagar's temperature = –2°C

Clearly, Srinagar's temperature is greater.

Question2. In a quiz, positive marks are given for correct Solutions and negative marks are given for incorrect Solutions. If Jack's scores in five successive rounds were 25, − 5, − 10, 15 and 10, what was his total at the end?

Solution2:

Jack's total will be the sum of score of all the rounds i.e., (25) + (− 5) + (− 10) + (15) + 10 = 35.

Question3. At Srinagar temperature was − 5°C on Monday and then it dropped by 2°C on Tuesday. What was the temperature of Srinagar on Tuesday? On Wednesday, it rose by 4°C. What was the temperature on this day?

Solution3:

Monday's Temperature = − 5°C

Tuesday's Temperature dropped by 2°C = (− 5°C) − (2°C) = − 7°C

Wednesday's Temperature = Tuesday's Temperature + 4°C = − 7°C + 4°C = − 3°C

Question4. A plane is flying at the height of 5000 m above the sea level. At a particular point, it is exactly above a submarine floating 1200 m below the sea level. What is the vertical distance between them?

Solution4:

The height of the plane above sea level = 5000 m

Depth of the submarine below sea level = 1200 m

Distance between plane and submarine is the sum of height of the plane above sea level and depth of the submarine below sea level = 5000 m + 1200 m = 6200 m.

Question5. Mohan deposits Rs. 2,000 in his bank account and withdraws Rs. 1,642 from it, the next day. If withdrawal of amount from the account is represented by a negative integer, then how will you represent the amount deposited? Find the balance in Mohan's account after the withdrawal.
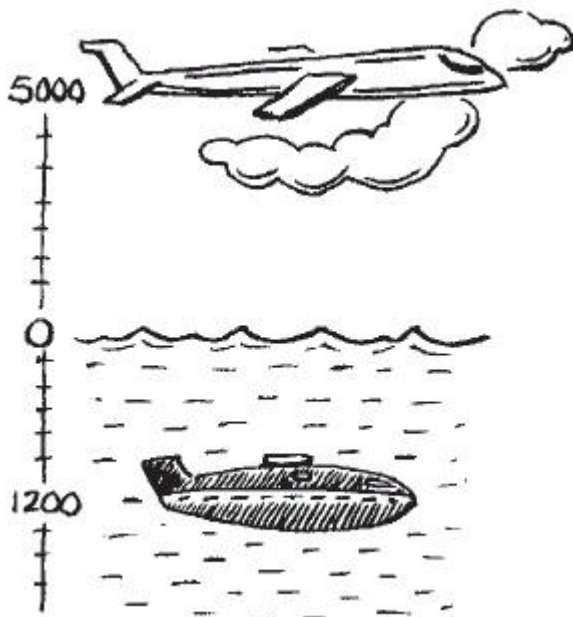
Solution5:

Here, withdrawal of amount from the account is represented by a negative integer and dempostied by positive integer.

Amount deposited = Rs 2000

Amount withdrawn = − Rs 1642

Total balance in Mohan's account = Money deposited + Money withdrawn= (Rs 2000) − (− Rs 1642) = Rs. 358.

Question6. Rita goes 20 km towards east from a point A to the point B. From B, she moves 30 km towards west along the same road. If the distance towards east is represented by a positive integer then, how will you represent the distance travelled towards west? By which integer will you represent her final position from A?

Solution4:

The height of the plane above sea level = 5000 m

Depth of the submarine below sea level = 1200 m

Distance between plane and submarine is the sum of height of the plane above sea level and depth of the submarine below sea level = 5000 m + 1200 m = 6200 m.

Question5. Mohan deposits Rs. 2,000 in his bank account and withdraws Rs. 1,642 from it, the next day. If withdrawal of amount from the account is represented by a negative integer, then how will you represent the amount deposited? Find the balance in Mohan's account after the withdrawal.

Solution5:

Here, withdrawal of amount from the account is represented by a negative integer and dempostied by positive integer.

Amount deposited = Rs 2000

Amount withdrawn = − Rs 1642

Total balance in Mohan's account = Money deposited + Money withdrawn= (Rs 2000) – (− Rs 1642) = Rs. 358.

Question6. Rita goes 20 km towards east from a point A to the point B. From B, she moves 30 km towards west along the same road. If the distance towards east is represented by a positive integer then, how will you represent the distance travelled towards west? By which integer will you represent her final position from A?

Solution6:

Here, point A is the origin and distance travelled in the east direction is taken and positive whereas distance travelled in the west direction is taken as negative.

Distance travelled in the east direction = 20 km

Distance travelled in the west direction = −30 km

Distance travelled from A = 20 + (−30) = −10 km

Distance travelled by Rita from point A will be - 10 km. The position of Rita is in the west direction or towards the left of A.

Question7. In a magic square each row, column and diagonal have the same sum. Check which of the following is a magic square.

(i)

5	- 1	- 4
- 5	- 2	7
0	3	- 3

(ii)

1	-10	0
- 4	- 3	- 2
- 6	4	- 7

Solution7:

With simple calculations, we can observe that in the square (i), every row and column add up to give 0, but the sum of one of its diagonal is not zero. So, (i) is not a magic square.

Whereas, in the case of square (ii), each row, column, and diagonal add up to give −9. Therefore, (ii) is a magic square.

Question8. Verify $a − (− b) = a + b$ for the following values of a and b.
(i) $a = 21$, $b = 18$
(ii) $a = 118$, $b = 125$
(iii) $a = 75$, $b = 84$
(iv) $a = 28$, $b = 11$
Solution8:
(*i*) $a = 21$, $b = 18$
Now, $a − (−b) = 21 − (−18) = 21 + 18 = 39$
Also, $a + b = 21 + 18 = 39$
So, $a − (−b) = a + b = 39$
(*ii*) $a = 118$, $b = 125$

Now, $a - (-b) = 118 - (-125) = 118 + 125 = 243$

Also, $a + b = 118 + 125 = 243$

So, $a - (-b) = a + b = 243$

(iii) $a = 75$, $b = 84$

Now, $a - (-b) = 75 - (-84) = 75 + 84 = 159$

Also, $a + b = 75 + 84 = 159$

So, $a - (-b) = a + b = 159$

(iv) $a = 28$, $b = 11$

Now, $a - (-b) = 28 - (-11) = 28 + 11 = 39$

Also, $a + b = 28 + 11 = 39$

So, $a - (-b) = a + b = 39$.

Question9. Use the sign of >, < or = in the box to make the statements true.

(a) (− 8) + (− 4) _ _ _ _ (−8) − (− 4)

(b) (− 3) + 7 − (19) _ _ _ _ 15 − 8 + (− 9)

(c) 23 − 41 + 11 _ _ _ _ 23 − 41 − 11

(d) 39 + (− 24) − (15) _ _ _ _ 36 + (− 52) − (− 36)

(e) − 231 + 79 + 51 _ _ _ _ − 399 + 159 + 81

Solution9:

(a) (− 8) + (− 4) _ _ _ _ (−8) − (− 4)

⇒ − 8 − 4 _ _ _ _ − 8 + 4

⇒ − 12 _ _ < _ _ − 4

(b) (− 3) + 7 − (19) _ _ _ _ 15 − 8 + (− 9)

⇒ − 3 + 7 − 19 _ _ _ _ 15 − 8 − 9

⇒ − 15 _ _ < _ _ − 2

(c) 23 − 41 + 11 _ _ _ _ 23 − 41 − 11

⇒ − 7 _ _ > _ _ − 29

(d) 39 + (− 24) − (15) _ _ _ _ 36 + (− 52) − (− 36)

⇒ 39 − 24 − 15 _ _ _ _ 36 − 52 + 36

⇒ 0 _ _ < _ _ 20

(e) – 231 + 79 + 51 _ _ _ _ – 399 + 159 + 81

⇒ – 101 _ _ > _ _ – 159

Question10. A water tank has steps inside it. A monkey is sitting on the topmost step (i.e., the first step). The water level is at the ninth step.

(i) He jumps 3 steps down and then jumps back 2 steps up. In how many jumps will he reach the water level?

(ii) After drinking water, he wants to go back. For this, he jumps 4 steps up and then jumps back 2 steps down in every move. In how many jumps will he reach back the top step?

(iii) If the number of steps moved down is represented by negative integers and the number of steps moved up by positive integers, represent his moves in part (i) and (ii) by completing the following;

(*a*) – 3 + 2 – ... = – 8

(*b*) 4 – 2 + ... = 8. In (a) the sum (– 8) represents going down by eight steps. So, what will the sum 8 in (b) represent?

Solution:

Suppose the step moved down by the monkey is represented by positive integers and the step moved in the upward direction is represented by negative integers

(i) In the starting, the monkey was at step = 1, after

- 1st jump, the position of the monkey will be at step = 1 + 3 = 4

- 2nd jump, the position of the monkey will be at step = 4 + (−2) = 2

- 3rd jump, the position of the monkey will be at step = 2 + 3 = 5

- 4th jump, the position of the monkey will be at step = 5 + (−2) = 3

- 5th jump, the position of the monkey will be at step = 3 + 3 = 6

- 6th jump, the position of the monkey will be at step = 6 + (−2) = 4

- 7th jump, the position of the monkey will be at step = 4 + 3 = 7

- 8th jump, the position of the monkey will be at step = 7 + (−2) = 5

- 9th jump, the position of the monkey will be at step = 5 + 3 = 8

- 10th jump, the position of the monkey will be at step = 8 + (−2) = 6

- 11th jump, the position of the monkey will be at step = 6 + 3 = 9

Clearly, the monkey will be at water level (i.e., 9th step) after 11 jumps.

(ii) Initially, the position of the monkey was at step = 9

- 1st jump, the position of the monkey will be at step = 9 + (−4) = 5

- 2nd jump, the position of the monkey will be at step = 5 + 2 = 7

- 3rd jump, the position of the monkey will be at step = 7 + (− 4) = 3

- 4th jump, the position of the monkey will be at step = 3 + 2 = 5

- 5th jump, the position of the monkey will be at step = 5 + (− 4) = 1

So, the monkey will reach back at the top step after 5 jumps.

(iii)

(a) If steps moved down are represented by negative integers and steps moved up are represented by positive integers, then here are the details of his move

The monkey's moves in part (i), $-3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3$
$= -8$

(b) The monkey's moves in part (ii), $4 - 2 + 4 - 2 + 4 - 2 + 4 - 2 = 8$

So, the monkey moves in part (ii) represent going up 8 steps.

Exercise 1.2

1. Write down a pair of integers whose:

(*a*) sum is –7

(*b*) difference is –10

(*c*) sum is 0

Solution:

(*a*) $(+1) + (-8) = -7$

(*b*) $(-8) - (-2) = -10$

(*c*) $5 + (-5) = 0$

2. (*a*) Write a pair of negative integers whose difference gives 8.

(*b*) Write a negative integer and a positive integer whose sum is –5.

(*c*) Write a negative integer and a positive integer whose difference is –3.

Solution:

(*a*) $-16 - (-8)$.

(*b*) $-10 + 5 = -5$.

(*c*) $-5 - (2) = -3$.

3. In a quiz, team A scored – 40, 10, 0 and team B scored 10, 0, – 40 in three successive rounds. Which team scored more? Can we say that we can add integers in any order?

Solution:

Total score of team A = $-40 + 10 + 0 = -30$.

Total score of team B = $10 + 0 + (-40) = -30$.

So, both the teams have equal score.

Yes, we can add integers in any order.

4. Fill in the blanks to make the following statements true:

(i) (−5) + (− 8) = (− 8) + (…………)

(ii) −53 + ………… = −53

(iii) 17 + ………… = 0

(iv) [13 + (− 12)] + (…………) = 13 + [(−12) + (−7)]

(v) (− 4) + [15 + (−3)] = [− 4 + 15] + …………

Solution:

(i) (−5) + (− 8) = (− 8) + (…−5…)

(ii) (−53) + ..0.. = −53

(iii) 17 + .. −17.. = 0

(iv) [13 + (− 12)] + (…..−7…..) = 13 + [(−12) + (−7)]

(v) (− 4) + [15 + (−3)] = [− 4 + 15] + …. −3……..

Exercise 1.3

1. Find each of the following products:

(a) 3 × (−1)

(b) (−1) × 225

(c) (−21) × (−30)

(d) (−316) × (−1)

(e) (−15) × 0 × (−18)

(f) (−12) × (−11) × (10)

(g) 9 × (−3) × (− 6)

(h) (−18) × (−5) × (− 4)

(i) (−1) × (−2) × (−3) × 4

(j) (−3) × (−6) × (−2) × (−1)

Solution:

(a) 3 × (−1) = −3

(b) (−1) × 225 = −225

(c) (−21) × (−30) = 630

(d) (−316) × (−1) = 316

(e) (−15) × 0 × (−18) = 0

(f) (−12) × (−11) × 10 = 1320

(g) $9 \times (-3) \times (-6) = 162$

(h) $(-18) \times (-5) \times (-4) = -360$

(i) $(-1) \times (-2) \times (-3) \times 4 = -24$

(j) $(-3) \times (-6) \times (-2) \times (-1) = 36$

2. Verify the following:
(a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$
(b) $(-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$
Solution:
(a) L.H.S. $= 18 \times [7 + (-3)] = 72$

R.H.S. $= [18 \times 7] + [18 \times (-3)] = 72$.

So, L.H.S. = R.H.S.

(b) L.H.S. $= (-21) \times [(-4) + (-6)] = 210$

R.H.S. $= [(-21) \times (-4)] + [(-21) \times (-6)] = 210$

So, L.H.S. = R.H.S.

3. (i) For any integer a, what is $(-1) \times a$ equal to?
(ii) Determine the integer whose product with (-1) is
(a) -22 (b) 37 (c) 0
Solution:
'a' can be positive, zero or negative.
$(-1) \times a = -a$ (if a is positive)
$(-1) \times a = a$ (if a is negative)
$(-1) \times 0 = 0$ (a is zero)
4. Starting from $(-1) \times 5$, write various products showing some pattern to show $(-1) \times (-1) = 1$.
Solution:
$-1 \times 5 = -5$

$-1 \times 4 = -4$

$-1 \times 3 = -3$

$-1 \times 2 = -2$

$-1 \times 1 = -1$

$-1 \times 0 = 0$

$-1 \times (-1) = 1$

The pattern shows that we are moving towards left of the number line with a difference on 1. Clearly, $-1 \times (-1) = 1$.

5. Find the product, using suitable properties:
(a) 26 × (− 48) + (− 48) × (−36)
(b) 8 × 53 × (−125)
(c) 15 × (−25) × (− 4) × (−10)
(d) (− 41) × 102
(e) 625 × (−35) + (− 625) × 65
(f) 7 × (50 − 2)
(g) (−17) × (−29)
(h) (−57) × (−19) + 57
Solution:
(a) $26 \times (-48) + (-48) \times (-36)$

$= (-48) \times 26 + (-48) \times (-36)$

$= (-48) [26 - 36]$

$= (-48) \times (-10) = 480$

(b) $8 \times 53 \times (-125) = 8 \times [53 \times (-125)]$

$= 8 \times [(-125) \times 53]$

$= [8 \times (-125)] \times 53$

$= [-1000] \times 53 = -53000$

(c) $15 \times (-25) \times (-4) \times (-10)$

$= 15 \times [(-25) \times (-4)] \times (-10)$

$= 15 \times [100] \times (-10)$

$= 15 \times (-1000) = -15000$

(d) $(-41) \times 102$

$= (-41) \times (100 + 2)$

$= (-41) \times 100 + (-41) \times 2$

$= -4100 - 82 = -4182$

(e) $625 \times (-35) + (-625) \times 65$

$= 625 \times [(-35) + (-65)]$

$= 625 \times [-100] = -62500$

(f) $7 \times (50 - 2)$

$= (7 \times 50) - (7 \times 2)$

$= 350 - 14$

$= 336$

(g) $(-17) \times (-29)$

$= (-17) \times [-30 + 1]$

$= [(-17) \times (-30)] + [(-17) \times 1]$

$= [510] + [-17] = 493$

(h) $(-57) \times (-19) + 57$

= 57 × 19 + 57 × 1 [here we have are taking 57 x 1 for the sake of convenience]

= 57 [19 + 1]

= 57 × 20 = 1140.

6. A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process begins?
Solution:
Let a decrease in temperature is denoted by a negative integer.

Temperature is decreasing at the rate of 5°C per hour, so decrease in temperature after 10 hours will be − 50°C.

The room temperature after 10 hours will be 40°C + (− 50°C) = − 10° C.

7. In a class test containing 10 questions, 5 marks are awarded for every correct Solution and (−2) marks are awarded for every incorrect Solution and 0 for questions not attempted.
(*i*) Mohan gets four correct and six incorrect Solutions. What is his score?
(*ii*) Reshma gets five correct Solutions and five incorrect Solutions, what is her score?
(*iii*) Heena gets two correct and five incorrect Solutions out of seven questions she attempts. What is her score?
Solution:
(i) Mohan's total marks = [{(4) × (5)} + {(6) × (−2)}] = 20 − 12 = 8.

(ii) Reshma's total marks = [{(5) × (5)} + {(5) × (−2)} = 15.

(iii) Heena's marks = [{(2) × (5)} + {(5) × (-2)} = 0.

8. A cement company earns a profit of Rs. 8 per bag of white cement sold and a loss of Rs. 5 per bag of grey cement sold.
(a) The company sells 3,000 bags of white cement and 5,000 bags of grey cement in a month. What is its profit or loss?

(b) What is the number of white cement bags it must sell to have neither profit nor loss, if the number of grey bags sold is 6,400 bags.

Solution:

We will denote profit by a positive integer and loss by a negative integer.

(a) Net profit on earned while selling 1 bag of white cement = Rs. 8

Profit earned on selling 3000 bags of white cement = Rs. 8 × 3000 = Rs. 24000

Net loss on selling 1 bag of grey cement = − Rs 5

Loss on selling 5000 bags of grey cement = −5 × 5000 **=** −25000.

Therefore, total loss is Rs. 1000.

(b)

Loss on selling 1 bag of grey cement = − Rs 5

Loss on selling 6400 bags of grey cement = Rs. (−5) × 6400 = Rs. −32000

Suppose the number of bags of white cement to be sold be x.

Now, profit earned while selling 1 bag of white cement = Rs 8

So, profit earned while selling x bags of white cement = $x × 8 = 8x$

For no profit and no loss,

Profit Earned = Loss incurred

⇒ 8x = −32000

⇒ 8x = 32000

⇒ x = 4000

So, for neither profit and nor loss, 4000 white cement bags need to be sold.

9. Replace the blank with an integer to make it a true statement.

(a) (−3) × _____ = 27

(b) 5 × _____ = −35

(c) _____ × (− 8) = −56

(d) _____ × (−12) = 132

Solution:

(a) (−3) × __(−9)___ = 27

(b) 5 × __(−7)___ = −35

(c) __(7)___ × (− 8) = −56

(d) __(−11)___ × (−12) = 132

Exercise 1.4

1. Evaluate each of the following:

(a) (−30) ÷ 10

(b) 50 ÷ (−5)

(c) (−36) ÷ (−9)

(d) (− 49) ÷ (49)

(e) 13 ÷ [(−2) + 1]

(f) 0 ÷ (−12)

(g) (−31) ÷ [(−30) + (−1)]

(h) [(−36) ÷ 12] ÷ 3

(i) [(− 6) + 5)] ÷ [(−2) + 1]

Solution:

(a) (−30) ÷ 10 = − 3

(b) 50 ÷ (−5) = −10

(c) (−36) ÷ (−9) =4

(d) (− 49) ÷ (49) = −1

(e) 13 ÷ [(−2) + 1] =13 ÷ [−1] = − 13

(f) 0 ÷ (−12) = 0

(g) (−31) ÷ [(−30) + (−1)] = [−31] ÷ [−31] = 1

(h) [(−36) ÷ 12] ÷ 3 = [−3] ÷ 3 = −1

(i) $[(-6 + 5)] \div [(-2) + 1] = 1$

2. Verify that $a \div (b + c) \ne (a \div b) + (a \div c)$ for each of the following values of a, b and c.

(*a*) *a* = 12, *b* = − 4, *c* = 2

(*b*) *a* = (−10), *b* = 1, *c* = 1

Solution:

(a)

L.H.S. = $a \div (b + c) = 12 \div (-4 + 2) = -6$

R.H.S. = $(a \div b) + (a \div c) = [12 \div (-4)] + [12 \div 2] = -3 + 6 = 3$.

So, $a \div (b + c) \ne (a \div b) + (a \div c)$

(b)

L.H.S. = $a \div (b + c) = (-10) \div (1 + 1) = (-10) \div 2 = -5$

R.H.S. = $[(-10) \div 1] + [(-10) \div 1] = -10 - 10 = -20$

So, $a \div (b + c) \ne (a \div b) + (a \div c)$

3. Fill in the blanks:

(a) 369 ÷ _____ = 369

(b) (−75) ÷ _____ = −1

(c) (−206) ÷ _____ = 1

(d) − 87 ÷ _____ = 87

(e) _____ ÷ 1 = − 87

(f) _____ ÷ 48 = −1

(g) 20 ÷ _____ = −2

(h) _____ ÷ (4) = −3

Solution:

(a) 369 ÷ __(1)___ = 369

(b) (−75) ÷ __(75)___ = −1

(c) (−206) ÷ __(- 206)___ = 1

(d) − 87 ÷ _(- 1)_ = 87

(e) __(- 87)___ ÷ 1 = − 87

(f) __(- 48)___ ÷ 48 = −1

(g) 20 ÷ __(- 10)___ = −2

(h) ___(-12)__ ÷ (4) = −3

4. Write five pairs of integers (a, b) such that a ÷ b = −3. One such pair is (6, −2) because 6 ÷ (−2) = (−3).
Solution:
5 other pairs are:
(− 24, 8), (−18, 6), (−3, 1), (12, −4), (−9, 3)

5. The temperature at 12 noon was 10°C above zero. If it decreases at the rate of 2°C per hour until midnight, at what time would the temperature be 8°C below zero? What would be the temperature at mid-night?
Solution:
Temperature i.e., at 12 noon = 10°C

Let decrease is represented by a negative temperature, so, change in temperature per hour = −2°C

• Temperature at 1:00 PM = (10°C) + (−2°C) = 8°C

• Temperature at 2:00 PM = (8°C) + (−2°C) = 6°C

• Temperature at 3:00 PM = (6°C) + (−2°C) = 4°C

• Temperature at 4:00 PM = (4°C) + (−2°C) = 2°C

• Temperature at 5:00 PM = (2°C) + (−2°C) = 0°C

• Temperature at 6:00 PM = (0°C) + (−2°C) = −2°C

• Temperature at 7:00 PM = (−2°C) + (−2°C) = −4°C

• Temperature at 8:00 PM = (−4°C) + (−2°C) = −6°C

• Temperature at 9:00 PM = (−6°C) + (−2°C) = −8°C

Therefore, the temperature at 9:00 PM will be 8°C below zero.

There are 12 hours from 12 noon to 12 night, so, change in temperature in 12 hours = −2°C × 12 = −24°C

At mid-night, the temperature will be = 10 + (−24) = −14°C or 14°C below 0.

6. In a class test (+ 3) marks are given for every correct Solution and (−2) marks are given for every incorrect Solution and no marks for not attempting any question.
(i) Radhika scored 20 marks. If she has got 12 correct Solutions, how many questions has she attempted incorrectly?
(ii) Mohini scores −5 marks in this test, though she has got 7 correct Solutions. How many questions has she attempted incorrectly?
Solution:
Marks given for 1 correct answer = +3

Marks given for 1 wrong answer = −2

(i) Marks scored by Radhika = 20

Marks for correct solutions = 12 × 3 = 36 marks

Now, marks obtained for incorrect answers = Total Marks − Marks obtained for correct answers = 20 − 36 = − 16

Marks obtained for 1 incorrect answer = −2

So, number of incorrect answers = (−16) ÷ (−2) = 8

Hence, she attempted 8 incorrect questions.

(ii)

Total Marks scored by Mohini = −5

Mohini's marks for 7 correct answers = 7 × 3 = 21

Now, marks obtained for incorrect answers = Total score − Marks obtained for correct answers = − 5 − 21 = −26

As, Marks obtained for 1 wrong answer = −2

So, number of incorrect answers = (−26) ÷ (−2) = 13

Hence, she attempted 13 incorrect questions.

(iii)

Total Marks scored by Rakesh = 18

Number of questions attempted by Rakesh = 16

According to the question,

(3) × (Number of correct answers) + (−2) × (Number of incorrect answers) = 18

⇒ (3) × (Number of correct answers+ (−2) × (16 − Number of correct answers) = 18

⇒ (3) × (Number of correct answers) + (−32) + 2(Number of correct answers) = 18

⇒ (3) × (Number of correct answers) + (−32) + 2(Number of correct answers) = 18

⇒ 5× (Number of correct answers) + (−32) = 18

⇒ 5 × (Number of correct answers) = 18 + 32 = 50

⇒ 5 × (Number of correct answers) = 18 + 32 = 50

⇒ Number of correct answers = 10

⇒Number of correct answers = 16 −10 = 6.

Now number of correct and incorrect answers scored by Rakesh is 10 and 6 respectively.

7. An elevator descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 m above the ground level, how long will it take to reach − 350 m.
Solution:
Let show assume descended by a negative integer.

Initial height from the ground level = +10 m

Final depth from the ground level = −350 m

Net distance to be descended by the elevator = (−350) − (+10) = −360 m

Time taken by the elevator to descend −6 m = 1 min

So, time taken by the elevator to descend −360 m = (−360) ÷ (−6) = 60 minutes = 1 hour.