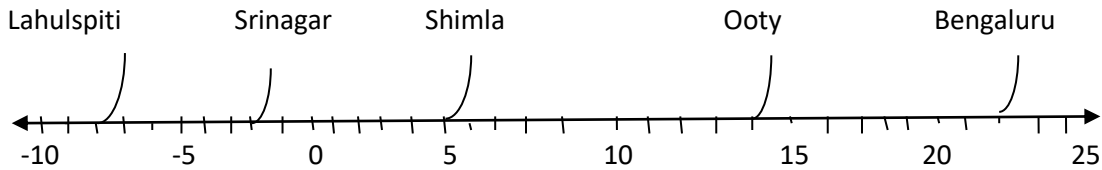


CLASS 7 MATHEMATICS | CHAPTER 1 INTEGERS

Exercise 1.1

1. Following number line shows the temperature in degree Celsius at different places on a particular day.



- Observe this number line and write the temperature of the places marked on it.
- What is the temperature difference between the hottest and the coldest places among the above?
- What is the temperature difference between Lahulspiti and Srinagar?
- 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?

Ans:

a. Lahulspiti: -8°C

Srinagar: -2°C

Shimla: 5°C

Ooty: 14°C

Bangaluru: 22°C

b. Hottest place is Bangaluru: 22°C

Coldest place is Lahulspiti: -8°C

Temperature difference = $22 - (-8) = 30^{\circ}\text{C}$

c. $-2 - (-8) = -2 + 8 = 6^{\circ}\text{C}$

d. Temperature of Srinagar and Shimla taken together = $-2 + 5 = 3^{\circ}\text{C}$

Temperature at Shimla = 5°C

Yes, the temperature of Srinagar and Shimla taken together is less than the temperature at Shimla.

Temperature at Srinagar = -2°C

No, it is not less than the temperature at Srinagar.

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

Ans:

$$\text{Total Score} = 25 + (-5) + (-10) + 15 + 10 = 35$$

3. 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?

Ans:

$$\text{Temperature on Monday} = -5^{\circ}\text{C}$$

Dropped by 2°C means -2°C on Tuesday.

$$\text{Temperature of Srinagar on Tuesday} = -5 + -2 = -7^{\circ}\text{C}$$

It rose by 4°C means $+4^{\circ}\text{C}$

$$\text{Temperature on Wednesday} = -7 + 4 = -3^{\circ}\text{C}$$

4. A plane is flying at the height of 5000m 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?

Ans: Height of plane = 5000m

Depth of submarine = - 1200 m

$$\text{Vertical distance between plane and submarine} = 5000 - (-1200) = 5000 + 1200 = 6200 \text{ m.}$$

5. Mohan deposits Rs 2000 in his bank account and withdraws Rs 1642 from it, the next day. If withdrawal of amount from the account is represented by a negative integer, and then how will you represent the amount deposited? Find the balance in Mohan's account after the withdrawal.

Ans.

Since the withdrawal of amount from the account is represented by a negative number, the amount deposited will be represented by a positive number.

Amount deposited = Rs 2000

Amount withdrawn = Rs -1642

$$\text{The balance in Mohan's account after the withdrawal} = 2000 + (-1642) = 2000 - 1642 = \text{Rs } 358.$$

6. 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?

Ans.

Distance travelled towards east = 20 km

Distance travelled towards west = - 30 km

Her final position from A = $20 + (-30) = -10$ km

Therefore, we can represent the distance travelled by Rita from point A by a negative integer.

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

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

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

Ans. In the first table, row sum = $5 + (-1) + (-4) = 5 + (-5) = 0$

$$(-5) + (-2) + 7 = (-7) + 7 = 0$$

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

$$\text{Column sum} = 5 + (-5) + 0 = 0$$

$$(-1) + (-2) + 3 = (-3) + 3 = 0$$

$$(-4) + 7 + (-3) = 3 + (-3) = 0$$

$$\text{Diagonal sum} = 5 + (-2) + (-3) = 5 + (-5) = 0$$

$$(-4) + (-2) + 0 = -6 \neq 0$$

Therefore, it is not a magic square.

$$\text{In the second table, row sum} = 1 + (-10) + 0 = -9$$

$$(-4) + (-3) + (-2) = -9$$

$$(-6) + 4 + (-7) = (-2) + (-7) = -9$$

$$\text{Column sum} = 1 + (-4) + (-6) = 1 + (-10) = -9$$

$$(-10) + (-3) + 4 = (-13) + 4 = -9$$

$$0 + (-2) + (-7) = -9$$

$$\text{Diagonal sum} = 1 + (-3) + (-7) = 1 + (-10) = -9$$

$$0 + (-3) + (-6) = -9$$

Here row, column and diagonal have the same sum.

Therefore, second table is a magic square.

8. 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) $a = 28, b = 11$

Ans. i) $a = 21, b = 18$

$$a - (-b) = 21 - (-18) = 21 + 18 = 39$$

$$a + b = 21 + 18 = 39.$$

$$\text{So } a - (-b) = a + b.$$

ii) $a = 118, b = 125$

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

$$a + b = 118 + 125 = 243.$$

iii) $a = 75, b = 84$

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

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

iv) $a = 28, b = 11$

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

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

9. 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) $-231 + 79 + 51$ $-399 + 159 + 81$

Ans. a) $(-8) + (-4) = -12$

$$-8 - (-4) = -8 + 4 = -4$$

$$(-8) + (-4) < -8 - (-4)$$

b) $(-3) + 7 - 19 = 4 - 19 = -15$

$$15 - 8 + (-9) = 15 - 17 = -2$$

$$(-3) + 7 - 19 < 15 - 8 + (-9)$$

c) $23 - 41 + 11 = -18 + 11 = -7$

$$23 - 41 - 11 = 23 - 52 = -29$$

$$23 - 41 + 11 > 23 - 41 - 11$$

d) $39 + (-24) - 15 = 39 - 39 = 0$

$$36 + (-52) - (-36) = -16 + 36 = 20.$$

$$39 + (-24) - 15 < 36 + (-52) - (-36)$$

e) $-231 + 79 + 51 = -231 + 130 = -101$

$$-399 + 159 + 81 = -399 + 240 = -159$$

$$-231 + 79 + 51 > -399 + 159 + 81$$

10. 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) $-3 + 2 - \dots = -8$

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

Ans.

i) First jump = $1 + 3 = 4$ steps

Second jump = $4 - 2 = 2$ steps

Third jump = $2 + 3 = 5$ steps

Fourth jump = $5 - 2 = 3$ steps

Fifth jump = $3 + 3 = 6$ steps

Sixth jump = $6 - 2 = 4$ steps

Seventh jump = $4 + 3 = 7$ steps

Eighth jump = $7 - 2 = 5$ steps

Ninth jump = $5 + 3 = 8$ steps

Tenth jump = $8 - 2 = 6$ steps

Eleventh jump = $6 + 3 = 9$ steps

So he will reach ninth steps in 11 jumps.

ii) After first jump monkey will be at $9 + (-4) = 5$ th step

After second jump monkey will be at $5 + 2 = 7$ th step

After third jump monkey will be at $7 + (-4) = 3$ rd step

After 4 th jump monkey will be at $3 + 2 = 5$ th step

After 5 th jump monkey will be at $5 + (-4) = 1$ st step

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

iii) a) $-3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 = -8$

b) $4 - 2 + 4 - 2 + 4 = 8$, which represents going up 8 steps.

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