

## Case Study

Ravi is a Class 7 student who lives in a small hill town where temperature changes are very common throughout the day. During winter, Ravi and his friends observe the temperature every morning and evening as part of their mathematics activity. One Monday morning, the temperature was recorded as  $-6^{\circ}\text{C}$ . By afternoon, the temperature increased by  $9^{\circ}\text{C}$  due to sunlight. In the evening, cold winds started blowing, and the temperature dropped by  $7^{\circ}\text{C}$ .

Ravi also helps his father maintain a record of their small grocery shop. On the same day, the shop made a profit of **Rs.250** in the morning hours. However, due to spoilage of some goods in the evening, there was a loss of **Rs.180**. Ravi represented profit as a positive integer and loss as a negative integer in his notebook.

Later, Ravi calculated his daily score in a school math game. He gained 15 points in the first round, lost 8 points in the second round, and then gained another 12 points in the final round. Using integers, Ravi found it easy to add and subtract positive and negative numbers to know his final score.

Through these activities, Ravi understood how integers are used in real-life situations such as temperature changes, profit and loss, and scoring systems.

## Questions

1. What was the temperature in the afternoon after the increase?
  - (a) (A)  $-15^{\circ}\text{C}$
  - (b) (B)  $3^{\circ}\text{C}$
  - (c) (C)  $-3^{\circ}\text{C}$
  - (d) (D)  $15^{\circ}\text{C}$
2. What was the final temperature in the evening after the drop?
  - (a) (A)  $-4^{\circ}\text{C}$
  - (b) (B)  $10^{\circ}\text{C}$
  - (c) (C)  $-10^{\circ}\text{C}$
  - (d) (D)  $4^{\circ}\text{C}$
3. What integer represents the total profit or loss for the shop that day?
  - (a) (A)  $-430$
  - (b) (B)  $430$
  - (c) (C)  $70$
  - (d) (D)  $-70$
4. What was Ravi's final score in the math game?
  - (a) (A)  $35$
  - (b) (B)  $-5$
  - (c) (C)  $19$
  - (d) (D)  $-19$
5. Which of the following correctly represents the evening temperature change from afternoon?
  - (a) (A)  $+7$

- (b) (B)  $-7$
- (c) (C)  $+9$
- (d) (D)  $-9$

## Answer Key

- Q1: (B)
- Q2: (A)
- Q3: (C)
- Q4: (C)
- Q5: (B)

## Solutions

1. Morning temperature =  $-6^{\circ}\text{C}$ . Increase =  $+9^{\circ}\text{C}$ .

$$-6 + 9 = 3$$

Therefore, the afternoon temperature was  $3^{\circ}\text{C}$ .

2. Afternoon temperature =  $3^{\circ}\text{C}$ . Temperature drop in the evening =  $-7^{\circ}\text{C}$ .

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

Hence, the final temperature in the evening was  $-4^{\circ}\text{C}$ .

3. Profit =  $+250$ , Loss =  $-180$ .

$$250 + (-180) = 70$$

Since the result is positive, there was an overall profit of Rs.70.

4. Points gained =  $+15$ , points lost =  $-8$ , points gained again =  $+12$ .

$$15 + (-8) + 12 = 19$$

Ravi's final score was 19 points.

5. The temperature decreased by  $7^{\circ}\text{C}$  in the evening. A decrease is represented by a negative integer. Therefore, the correct representation is  $-7$ .