

UNIQUE STUDY POINT

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Class: VI	Subject: Mathematics	Session: 2025-26
Chapter: 10 - The Other Side of Zero (Integers)	Time: 1½ Hours	Max. Marks: 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

Q.1 The sum of -18 and its additive inverse is:

- (a) -36
- (b) $+36$
- (c) 0
- (d) -18

Q.2 Which of the following is true about integers?

- (a) All integers are whole numbers
- (b) All whole numbers are integers
- (c) Zero is not an integer
- (d) Negative numbers are not integers

Q.3 What is $(-20) + (+13)$?

- (a) $+7$
- (b) -7
- (c) $+33$
- (d) -33

Q.4 The distance between -6 and $+4$ on a number line is:

- (a) 2 units
- (b) 10 units
- (c) -10 units
- (d) -2 units

Q.5 If $a < b$, then which is correct?

- (a) a is to the right of b on number line
- (b) a is to the left of b on number line
- (c) a and b are at the same position
- (d) Cannot be determined

Q.6 The value of $(+9) - (-6)$ is:

- (a) +3
- (b) -3
- (c) +15
- (d) -15

Q.7 How many integers are there between -10 and -5?

- (a) 3
- (b) 4
- (c) 5
- (d) 6

Q.8 A lift is on Floor +3. It goes up 2 floors and then down 7 floors. On which floor is it now?

- (a) +2
- (b) -2
- (c) +12
- (d) -12

Q.9 Which of the following pairs represents the same integer?

- (a) +5 and 5
- (b) -0 and +0
- (c) Both (a) and (b)
- (d) Neither (a) nor (b)

Q.10 What is $(-8) + (+3) + (-5)$?

- (a) +10
- (b) -10
- (c) 0
- (d) -16

SECTION B - Short Answer Questions (2 marks each)

Q.11 Compare the following integers using $>$ or $<$ symbol:

- (a) -15 _____ -20
- (b) 0 _____ -100

Q.12 What integer should be added to -9 to get +6?

Q.13 On a number line, if you start at +7 and move 12 units to the left, where will you reach?

Q.14 Write the next three integers in the pattern:

+5, +2, -1, -4, _____, _____, _____

SECTION C - Short Answer Questions (3 marks each)

Q.15 A building has floors numbered from -4 to +10. How many floors does the building have in total? List all the floor numbers.

Q.16 The table shows profit (+) and loss (-) for 4 months:

January: +5000, February: -2000, March: +3000, April: -1500

(a) In which months did the business make a profit?

(b) What is the total profit or loss for these 4 months?

Q.17 Simplify the following and verify your answer using a number line:

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

SECTION D - Long Answer Question (5 marks)

Q.18 Application of Integers in Real Life:

(a) The temperature in Shimla at 6 AM was -5°C . By noon it rose by 8°C , and by 6 PM it dropped by 3°C .

What was the temperature at 6 PM?

(b) A diver starts at sea level (0 m), descends 60 m, then rises 25 m, then descends another 15 m. At what depth is the diver now?

(c) A businessman had ₹8000 in his account. He withdrew ₹3000, then deposited ₹5000, then withdrew ₹2000. What is his current balance?

(d) In a quiz competition, correct answers give +5 points and wrong answers give -2 points. Ravi answered 8 questions correctly and 3 questions incorrectly. What is his total score?

(e) Show all calculations using integers.

SECTION E - Case Study Based Questions (4 marks each)

Q.19 Case Study 1: Parking Garage Levels

A multi-level parking garage has 5 levels above ground (numbered +1 to +5) and 3 levels below ground (numbered -1 to -3). The ground level is 0.

Rohan parks his car and takes the lift. The lift makes the following movements:

- Starts from Level -2
- Goes up 4 levels
- Goes down 3 levels
- Goes up 5 levels
- Goes down 6 levels

(i) On which level is the lift after the first movement? (1 mark)

(ii) On which level does the lift end up after all movements? (1 mark)

(iii) What is the total distance traveled by the lift (in levels)? (1 mark)

(iv) From the final position, how many levels should the lift go to reach Level +5? Should it go up or down? (1 mark)

Q.20 Case Study 2: Weekly Temperature Record

A weather station recorded the daily temperature at 6 AM for one week in a hill station:

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Temp ($^{\circ}\text{C}$)	-6	-4	-8	0	+2	-3	-1

(i) On which day was it coldest and on which day was it warmest? (1 mark)

(ii) What is the difference in temperature between the warmest and coldest days? (1 mark)

(iii) Arrange all the temperatures in ascending order. (1 mark)

(iv) On how many days was the temperature below freezing point (0°C)? (1 mark)

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DETAILED ANSWER KEY - PAPER 04

SECTION A - Answers to MCQs

1. (c) 0

Additive inverse of -18 is +18. Sum: $(-18) + (+18) = 0$

2. (b) All whole numbers are integers

Integers include positive numbers, negative numbers, and zero. All whole numbers (0, 1, 2, 3,...) are integers, but not all integers are whole numbers (negative integers are not whole numbers).

3. (b) -7

$(-20) + (+13) = -7$ (Subtract 13 from 20 and keep the negative sign)

4. (b) 10 units

Distance = $(+4) - (-6) = +4 + 6 = 10$ units (Distance is always positive)

5. (b) a is to the left of b on number line

If $a < b$, then a is smaller and appears to the left of b on the number line.

6. (c) +15

$(+9) - (-6) = (+9) + (+6) = +15$

7. (b) 4

Integers between -10 and -5: -9, -8, -7, -6. Total: 4 integers

8. (b) -2

Starting: +3

Up 2 floors: $(+3) + (+2) = +5$

Down 7 floors: $(+5) + (-7) = -2$

9. (c) Both (a) and (b)

+5 and 5 are the same (5 means +5). Also, -0 and +0 both equal 0. Zero has no sign.

10. (b) -10

$(-8) + (+3) + (-5) = (-8 - 5) + (+3) = (-13) + (+3) = -10$

SECTION B - Answers to Short Answer Questions

11. Answer:

(a) $-15 > -20$ (because -15 is to the right of -20 on number line)

(b) $0 > -100$ (zero is greater than all negative numbers)

12. Answer: +15

Let the integer be x.

$$(-9) + x = +6$$

$$x = (+6) - (-9)$$

$$x = (+6) + (+9)$$

$$x = +15$$

Verification: $(-9) + (+15) = +6 \checkmark$

13. Answer: -5

Starting point: +7

Moving 12 units to the left means subtracting 12

$$(+7) + (-12) = -5$$

You will reach -5

14. Answer: -7, -10, -13

Pattern: Each term decreases by 3

+5, +2, -1, -4, -7, -10, -13

$(+5 - 3 = +2, +2 - 3 = -1, -1 - 3 = -4, -4 - 3 = -7, \text{ and so on})$

SECTION C - Answers to Short Answer Questions

15. Answer: 15 floors in total

Floor numbers: -4, -3, -2, -1, 0, +1, +2, +3, +4, +5, +6, +7, +8, +9, +10

Total floors:

Below ground: 4 floors (-4 to -1)

Ground: 1 floor (0)

Above ground: 10 floors (+1 to +10)

Total: $4 + 1 + 10 = 15$ floors

16. Answer:

(a) Months with profit: January and March (positive values)

(b) Total profit/loss:

$$(+5000) + (-2000) + (+3000) + (-1500)$$

$$= (+5000 + 3000) + (-2000 - 1500)$$

$$= (+8000) + (-3500)$$

$$= +4500$$

Total profit is ₹4500

17. Answer: -3

Simplification:

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

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

$$= (+9) + [(-4) + (-6) + (-2)]$$

$$= (+9) + (-12)$$

$$= -3$$

Verification using number line:

Start at -4

Add +9: move 9 right → reach +5

Subtract +6: move 6 left → reach -1

Add -2: move 2 left → reach -3 ✓

SECTION D - Answer to Long Answer Question

18. Application of Integers in Real Life:

(a) Temperature problem:

6 AM: -5°C

By noon: $(-5) + (+8) = +3^{\circ}\text{C}$

By 6 PM: $(+3) + (-3) = 0^{\circ}\text{C}$

Temperature at 6 PM was 0°C

(b) Diver's depth:

Start: 0 m

Descends 60 m: $(0) + (-60) = -60$ m

Rises 25 m: $(-60) + (+25) = -35$ m

Descends 15 m: $(-35) + (-15) = -50$ m

The diver is at -50 m (50 m below sea level)

(c) Bank account balance:

Initial: +8000

Withdraws 3000: $(+8000) + (-3000) = +5000$

Deposits 5000: $(+5000) + (+5000) = +10000$

Withdraws 2000: $(+10000) + (-2000) = +8000$

Current balance is ₹8000

(d) Quiz score:

Correct answers: $8 \times (+5) = +40$ points

Wrong answers: $3 \times (-2) = -6$ points

Total score: $(+40) + (-6) = +34$ points

Ravi's total score is 34 points

(e) All calculations shown above use integer operations: addition of positive and negative integers.

SECTION E - Answers to Case Study Based Questions

19. Case Study 1: Parking Garage Levels

(i) Level after first movement:

Starts: -2

Goes up 4: $(-2) + (+4) = +2$

Lift is at Level +2

(ii) Final level after all movements:

After 1st: +2

After 2nd (down 3): $(+2) + (-3) = -1$

After 3rd (up 5): $(-1) + (+5) = +4$

After 4th (down 6): $(+4) + (-6) = -2$

Lift ends at Level -2

(iii) Total distance traveled:

$4 + 3 + 5 + 6 = 18$ levels

(iv) Movement to reach Level +5:

Current: -2

Target: +5

Movement: $(+5) - (-2) = +7$

The lift should go UP 7 levels

20. Case Study 2: Weekly Temperature Record

(i) Coldest and warmest days:

Coldest: Wednesday (-8°C)

Warmest: Friday ($+2^{\circ}\text{C}$)

(ii) Difference between warmest and coldest:

$(+2) - (-8) = +2 + 8 = 10^{\circ}\text{C}$

(iii) Ascending order:

$-8, -6, -4, -3, -1, 0, +2$

(Wednesday, Monday, Tuesday, Saturday, Sunday, Thursday, Friday)

(iv) Days below 0°C :

Monday (-6), Tuesday (-4), Wednesday (-8), Saturday (-3), Sunday (-1)

Total: 5 days

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