



2025 TESTIFI EXAMINATION

Magnitude of Integers

Solutions and Marking Guidelines

Section I

2 marks

Questions 1–2

Question 1 (1 mark)

1

C

Starting at -45 m, descending 12 m gives $-45 - 12 = -57$ m. Then ascending 8 m gives $-57 + 8 = -49$ m.

Question 2 (1 mark)

1

B

Net change = $-8 + 15 - 12 = -5^\circ\text{C}$. Final temperature = $22 + (-5) = 17^\circ\text{C}$. The temperature decreased overall by 5°C .

Section II

10 marks

Questions 3–9

Question 3 (1 marks) **1**

Starting at 0 metres (sea level), descending 45 metres gives -45 metres. Ascending 18 metres: $-45 + 18 = -27$ metres. The submarine is 27 metres below sea level.

Question 4 (1 marks) **1**

Starting temperature: -12°C . Increase of 8°C : $-12 + 8 = -4^{\circ}\text{C}$. The temperature at noon was -4°C .

Question 5 (1 marks) **1**

January: $-35,000$, February: $+52,000$, March: $-28,000$. Net result: $-35,000 + 52,000 - 28,000 = -11,000$. The company had a net loss of $\$11,000$.

Question 6 (1 marks) **1**

Starting at level 0: up 8 floors gives level 8. Down 12 floors: $8 - 12 = -4$. Up 3 floors: $-4 + 3 = -1$. The elevator is at level -1 (basement level 1).

Question 7 (1 marks) **1**

Starting altitude: 2,400 metres. After descending 750 metres: $2,400 - 750 = 1,650$ metres. After climbing 480 metres: $1,650 + 480 = 2,130$ metres. The final altitude is 2,130 metres.

Question 8 (2 marks) **2**

Starting temperature: 2°C . Daily progression: Monday: $2 + (-7) = -5^{\circ}\text{C}$, Tuesday: $-5 + 4 = -1^{\circ}\text{C}$, Wednesday: $-1 + (-2) = -3^{\circ}\text{C}$, Thursday: $-3 + 9 = 6^{\circ}\text{C}$, Friday: $6 + (-3) = 3^{\circ}\text{C}$. Final temperature: 3°C . Greatest magnitude change: Thursday with $|+9| = 9^{\circ}\text{C}$.

Question 9 (3 marks) **3**

Site A final elevation: $0 + (-15) + 8 + (-12) + 6 = -13\text{m}$. Site B final elevation: $0 + (-18) + 11 + (-9) + 4 = -12\text{m}$. Site C final elevation: $0 + (-20) + 14 + (-7) + 9 = -4\text{m}$. Greatest net change magnitude: Site C

with $|-4| = 4\text{m}$ (smallest magnitude, so Site A with $|-13| = 13\text{m}$). Most variable daily changes: Site C, with changes ranging from -20m to $+14\text{m}$ (total range of 34m vs Site A's 27m and Site B's 29m).