MARKING GUIDELINE

MARKS	DURATION	QUESTIONS
32	50 minutes	3

Name: ..... Class: .....

Date: .....

MARK ____ / 32

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 Calculate: $-8 + 3$ (1)

A) 5
B) 11
C) -11
D) -5 ✓

Answer: D — Start at -8 and move 3 to the RIGHT on the number line.

- **A** — ignored the negative sign
- **B** — added the sizes and dropped the sign
- **C** — ADDED the sizes instead of moving right

1.2 Calculate: $5 - (-6)$ (1)

A) 11 ✓
B) -11
C) -1
D) 1

Answer: A — Subtracting a negative is the same as ADDING: $5 + 6$.

- **B** — added the sizes and kept a minus sign
- **C** — treated it as $5 - 6$
- **D** — took the difference of the sizes

1.3 The temperature rises from -6 °C to 5 °C. The change in temperature is ... (1)

A) -11 °C
B) 1 °C
C) 11 °C ✓
D) -1 °C

Answer: C — Change = final − initial = $5 - (-6) = 11$ °C.

- **A** — subtracted final from initial
- **B** — took the difference of the sizes
- **D** — subtracted the wrong way and kept the sign

1.4 The list $-4;\ 6;\ -9;\ 0;\ 2$ arranged in ASCENDING order is ... (1)

A) $6;\ 2;\ 0;\ -4;\ -9$ **B)** $-4;\ -9;\ 0;\ 2;\ 6$

C) $0;\ 2;\ -4;\ 6;\ -9$ **D)** $\mathbf{-9;\ -4;\ 0;\ 2;\ 6}$ ✓

> **Answer: D** — The further LEFT on the number line, the smaller: -9 is the smallest.
>
> - **A** — that is DESCENDING order
> - **B** — ordered the negatives by SIZE, so -4 came before -9
> - **C** — put 0 first because it looks smallest

1.5 Which one of the following is the additive inverse of -7? (1)

A) 0 **B)** -7

C) 7 ✓ **D)** $\frac{1}{7}$

> **Answer: C** — $-7 + 7 = 0$, and the additive inverse is what gives a sum of 0.
>
> - **A** — 0 is the identity, not the inverse
> - **B** — a number is its own inverse only for 0
> - **D** — that is the MULTIPLICATIVE inverse of 7

1.6 Calculate: $(-3) - 5 + (-2)$ (1)

A) $\mathbf{-10}$ ✓ **B)** 0

C) -6 **D)** 4

> **Answer: A** — $-3 - 5 = -8$, then $-8 + (-2) = -10$.
>
> - **B** — treated -5 as $+5$
> - **C** — treated $+(-2)$ as $+2$
> - **D** — treated both -5 and $+(-2)$ as positive

1.7 A diver is 18 m below sea level and rises 7 m. Her new position is ... (1)

A) 11 m **B)** $\mathbf{-11}$ **m** ✓

C) 25 m **D)** -25 m

> **Answer: B** — $-18 + 7 = -11$, so she is still 11 m below the surface.
>
> - **A** — dropped the sign — she is still below the surface
> - **C** — added and dropped the sign
> - **D** — added the two depths instead of rising

1.8 Which one of the following statements is TRUE? (1)

A) $-9 = 9$ **B)** $-9 > -4$

C) $\mathbf{-9 < -4}$ ✓ **D)** $-4 < -9$

> **Answer: C** — -9 lies further left on the number line, so it is the smaller number.
>
> - **A** — a number and its inverse are not equal
> - **B** — compared the SIZES and forgot the signs
> - **D** — compared the sizes

1.9 The temperature at 12:00 is 5 °C. By 18:00 it has FALLEN 9 °C. The temperature at 18:00 is ... (1)

A) −14 °C
B) **−4 °C ✓**
C) 4 °C
D) 14 °C

> **Answer: B** — $5 - 9 = -4$ °C.
> - **A** — added and made the answer negative
> - **C** — took the difference of the sizes and dropped the sign
> - **D** — ADDED the fall instead of subtracting

1.10 Calculate: $-12 + 12$ (1)

A) **0 ✓**
B) −1
C) −24
D) 24

> **Answer: A** — A number plus its additive inverse is always 0.
> - **B** — divided instead of adding
> - **C** — added the sizes and kept the minus
> - **D** — added the two sizes

ANSWER GRID — MARKING GUIDELINE

1.1	A	B	C	**D**
1.2	**A**	B	C	D
1.3	A	B	**C**	D
1.4	A	B	C	**D**
1.5	A	B	**C**	D
1.6	**A**	B	C	D
1.7	A	**B**	C	D
1.8	A	B	**C**	D
1.9	A	**B**	C	D
1.10	**A**	B	C	D

QUESTION 2 [10 MARKS]

Calculate the following WITHOUT using a calculator. Show ALL your steps.

2.1 $(-8) + (-5) - (-12)$ (3)

$= -13 + 12$ *(2)*
$= \mathbf{-1}$ *(1)*

2.2 $15 + (-20) - (-7) + (-3)$ (4)

$= 15 - 20 + 7 - 3$ *(2)*
$= -5 + 7 - 3$ *(1)*
$= \mathbf{-1}$ *(1)*

2.3 Arrange in ascending order: -4; 6; -9; 0; 2, and hence write down the difference between the largest and the smallest. (3)

$-9; -4; 0; 2; 6$ *(2)*
$6 - (-9) = \mathbf{15}$ *(1)*

QUESTION 3 [12 MARKS]

The table below shows the temperature in a town at four different times on one winter's day.

Time	06:00	12:00	18:00	22:00
Temperature (°C)	−6	5	−4	2

3.1 Calculate the change in temperature from 06:00 to 12:00, and then the change from 06:00 to 22:00. **(3)**

> $5 - (-6) =$ **a rise of 11 °C** *(2)*
> $2 - (-6) =$ **a rise of 8 °C** *(1)*

3.2 Calculate the change in temperature from 12:00 to 18:00. **(2)**

> $-4 - 5$ *(1)* = a fall of **9 °C** *(1)*

3.3 Calculate the difference between the highest and the lowest temperature of the day. **(3)**

> Highest 5 °C, lowest −6 °C *(1)*
> $5 - (-6)$ *(1)* = **11 °C** *(1)*

3.4 A fifth reading of −2 °C is taken at 02:00. Calculate the MEAN of the five temperatures. **(4)**

> $-6 + 5 + (-4) + 2 + (-2) = -5$ *(2)*
> $-5 \div 5$ *(1)* = **−1 °C** *(1)*

TOTAL: 32 marks

This question paper consists of 3 questions.

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