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 The value of $(1{,}2)^2$ is ... (1)

A) $1{,}4$ **B)** $1{,}44$ ✓

C) $2{,}4$ **D)** $14{,}4$

> **Answer: B** — $12 \times 12 = 144$, and two decimal places altogether give $1{,}44$.
> - **A** — squared the digits separately
> - **C** — DOUBLED instead of squaring
> - **D** — counted one decimal place

1.2 $\sqrt{0{,}64} = \ldots$ (1)

A) $0{,}8$ ✓ **B)** $0{,}08$

C) 8 **D)** $0{,}32$

> **Answer: A** — $0{,}8 \times 0{,}8 = 0{,}64$, so the root is $0{,}8$.
> - **B** — that squares to $0{,}0064$
> - **C** — ignored the comma
> - **D** — HALVED $0{,}64$ instead of rooting it

1.3 Thabo says $(0{,}5)^2 = 2{,}5$. His mistake is that he ... (1)

A) MULTIPLIED by 5 instead of by $0{,}5$ ✓ **B)** forgot the comma

C) should have added $0{,}5$ twice **D)** should have divided

> **Answer: A** — $(0{,}5)^2 = 0{,}5 \times 0{,}5 = 0{,}25$, not $0{,}5 \times 5$.
> - **B** — the comma is not the problem — the second factor is
> - **C** — that would give 1, which is also wrong but not his slip
> - **D** — squaring is repeated multiplication, not division

1.4 $\sqrt{0{,}04} = \ldots$ (1)

A) 2 **B)** $0{,}02$

C) 0,2 ✓ **D)** $0{,}16$

> **Answer: C** — $0{,}2 \times 0{,}2 = 0{,}04$.
> - **A** — ignored the comma
> - **B** — that squares to $0{,}0004$ — halving the digits is not rooting
> - **D** — that is $0{,}4$ SQUARED

1.5 $\sqrt[3]{0{,}008} = \ldots$ (1)

A) $0{,}02$ **B) 0,2 ✓**

C) 2 **D)** $0{,}004$

> **Answer: B** — $0{,}2 \times 0{,}2 \times 0{,}2 = 0{,}008$.
> - **A** — that cubes to $0{,}000008$
> - **C** — ignored the comma
> - **D** — divided by 2 instead of taking a cube root

1.6 A square tile has an area of $1{,}44$ m^2. Its PERIMETER is ... (1)

A) $2{,}4$ m **B)** $1{,}2$ m

C) $5{,}76$ m **D) 4,8 m ✓**

> **Answer: D** — Side $= \sqrt{1{,}44} = 1{,}2$ m, and the perimeter is $4 \times 1{,}2 = 4{,}8$ m.
> - **A** — doubled the side instead of multiplying by 4
> - **B** — that is the SIDE, not the perimeter
> - **C** — multiplied the AREA by 4

1.7 Which one of the following is TRUE? (1)

A) $(0{,}3)^2$ is bigger than $0{,}3$ **B) $(0{,}3)^2$ is smaller than $0{,}3$ ✓**

C) $(0{,}3)^2 = 0{,}3$ **D)** $(0{,}3)^2 = 0{,}6$

> **Answer: B** — $0{,}09$ is less than $0{,}3$: squaring a number BETWEEN 0 and 1 makes it smaller.
> - **A** — for a positive number, squaring enlarges it only when it is bigger than 1
> - **C** — only 0 and 1 are their own squares
> - **D** — that is doubling

1.8 $\sqrt{0{,}25} + (0{,}1)^2 = \ldots$ (1)

A) $0{,}15$ **B)** $0{,}6$

C) 0,51 ✓ **D)** $0{,}26$

> **Answer: C** — $\sqrt{0{,}25} = 0{,}5$ and $(0{,}1)^2 = 0{,}01$, so the sum is $0{,}51$.
> - **A** — reversed the digits of the answer
> - **B** — added $0{,}5$ and $0{,}1$ without squaring the $0{,}1$
> - **D** — forgot to take the square root, adding $0{,}25 + 0{,}01$

1.9 A cube has a volume of $0{,}027\ m^3$. The length of its side is ... (1)

A) $0{,}9$ m **B)** $0{,}03$ m

C) $0{,}3$ m ✓ **D)** $0{,}009$ m

> **Answer: C** — $\sqrt[3]{0{,}027} = 0{,}3$, because $0{,}3 \times 0{,}3 \times 0{,}3 = 0{,}027$.
> - **A** — that cubes to $0{,}729$
> - **B** — that cubes to $0{,}000027$
> - **D** — divided the volume by 3

1.10 Which one of the following is NOT a perfect square? (1)

A) $0{,}01$ **B)** $0{,}04$

C) $0{,}09$ **D) $0{,}05$ ✓**

> **Answer: D** — $0{,}01 = (0{,}1)^2$, $0{,}04 = (0{,}2)^2$ and $0{,}09 = (0{,}3)^2$, but nothing simple squares to $0{,}05$.
> - **A** — $(0{,}1)^2$
> - **B** — $(0{,}2)^2$
> - **C** — $(0{,}3)^2$

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.

2.1 $0{,}5^2 + 0{,}3^3$ (4)

> $0{,}5^2 = 0{,}25$ *(1)*
> $0{,}3^3 = 0{,}027$ *(2)*
> $0{,}25 + 0{,}027 = \mathbf{0{,}277}$ *(1)*

2.2 $\sqrt{1{,}44} + \sqrt[3]{0{,}008}$ (4)

> $\sqrt{1{,}44} = 1{,}2$ *(1)*
> $\sqrt[3]{0{,}008} = 0{,}2$ *(2)*
> $1{,}2 + 0{,}2 = \mathbf{1{,}4}$ *(1)*

2.3 $\sqrt{0{,}64}$ (2)

> $8^2 = 64$, and half of 2 decimal places is 1 *(1)*
> $= \mathbf{0{,}8}$ *(1)*

QUESTION 3 [12 MARKS]

Answer the questions below.

3.1 A square tile has sides of $1{,}2$ m. Calculate its area. (3)

> $A = 1{,}2 \times 1{,}2$ *(2)* $=$ **1,44 m²** *(1)*

3.2 A different square tile has an area of $0{,}64$ m². Calculate the length of its side and its perimeter. (4)

> Side $= \sqrt{0{,}64} = 0{,}8$ m *(2)*
> Perimeter $= 4 \times 0{,}8$ *(1)* $=$ **3,2 m** *(1)*

3.3 Thabo says $0{,}5^2 = 2{,}5$. Explain his mistake. (2)

> He multiplied by 5 instead of by $0{,}5$ *(1)*; $0{,}5^2$ means $0{,}5 \times 0{,}5 = 0{,}25$, which is SMALLER than $0{,}5$ *(1)*

3.4 Explain why $\sqrt{0{,}04} = 0{,}2$ and not $0{,}02$. (3)

> $0{,}2 \times 0{,}2 = 0{,}04$ ✓ *(1)*
> $0{,}02 \times 0{,}02 = 0{,}0004$ ✗ *(1)*
> The root has HALF as many decimal places as the number *(1)*

TOTAL: 32 marks

This question paper consists of 3 questions.

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