MARKING GUIDELINE

MARKS	DURATION	QUESTIONS
38	1 hour	4

Name: _____ Class: _____

Date: _____

MARK ____ / 38

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 area of a rectangle 8 cm by 5 cm is ... (1)

A) 80 cm^2 **B) 40 cm^2 ✓**

C) 26 cm^2 **D)** 13 cm^2

> **Answer: B** — A = $l \times b$.
> - **A** — doubled the area
> - **C** — that is the PERIMETER
> - **D** — added the two sides

1.2 The perimeter of that same rectangle is ... (1)

A) 40 cm **B) 26 cm ✓**

C) 80 cm **D)** 13 cm

> **Answer: B** — P = $2(8 + 5)$.
> - **A** — that is the AREA
> - **C** — doubled the area
> - **D** — added the two sides only once

1.3 The area of a triangle with base 10 cm and PERPENDICULAR height 6 cm is ... (1)

A) 32 cm^2 **B)** 16 cm^2

C) 30 cm^2 ✓ **D)** 60 cm^2

> **Answer: C** — A = $\frac{1}{2} \times b \times h$.
> - **A** — that is the perimeter of a 10 cm by 6 cm rectangle
> - **B** — added base and height
> - **D** — forgot to halve

1.4 The height used in the area of a triangle must be ... (1)

A) the longest side
B) the shortest side
C) PERPENDICULAR to the base ✓
D) any side

> **Answer: C** — A slanted side is longer and would give too big an area.
> - **A** — the longest side is usually slanted
> - **B** — not necessarily
> - **D** — only the perpendicular height works

1.5 The CIRCUMFERENCE of a circle of radius 7 cm, with $\pi \approx 3{,}14$, is ... (1)

A) 43,96 cm ✓
B) 21,98 cm
C) 22 cm
D) 153,86 cm

> **Answer: A** — $C = 2\pi r = 2 \times 3{,}14 \times 7$.
> - **B** — used πr instead of $2\pi r$
> - **C** — used πr with $\pi = \frac{22}{7}$
> - **D** — that is the AREA formula, πr^2

1.6 The AREA of that same circle is ... (1)

A) 153,86 cm² ✓
B) 307,72 cm²
C) 43,96 cm²
D) 21,98 cm²

> **Answer: A** — $A = \pi r^2 = 3{,}14 \times 49$.
> - **B** — used $2\pi r^2$
> - **C** — that is the CIRCUMFERENCE
> - **D** — used πr

1.7 A circle has a diameter of 10 cm. Its area, with $\pi \approx 3{,}14$, is ... (1)

A) 157 cm²
B) 78,5 cm² ✓
C) 31,4 cm²
D) 314 cm²

> **Answer: B** — The radius is 5, so $A = 3{,}14 \times 25$.
> - **A** — used $2\pi r^2$
> - **C** — that is the circumference
> - **D** — used the DIAMETER as the radius

1.8 The area of a square is 49 cm². Its perimeter is ... (1)

A) 196 cm
B) 7 cm
C) 14 cm
D) 28 cm ✓

> **Answer: D** — Side = 7 cm, so $P = 4 \times 7$.
> - **A** — multiplied the area by 4
> - **B** — that is the SIDE
> - **C** — used two sides only

1.9 A rectangle has an area of $48\ \text{cm}^2$ and a length of 8 cm. Its breadth is ... (1)

A) 24 cm **B)** 40 cm

C) 56 cm **D) 6 cm ✓**

> **Answer: D** — $48 \div 8 = 6$ cm.
>
> - **A** — halved the area
> - **B** — subtracted instead of dividing
> - **C** — added instead of dividing

1.10 If the sides of a square are DOUBLED, its area is multiplied by ... (1)

A) 4 ✓ **B)** 16

C) 2 **D)** 8

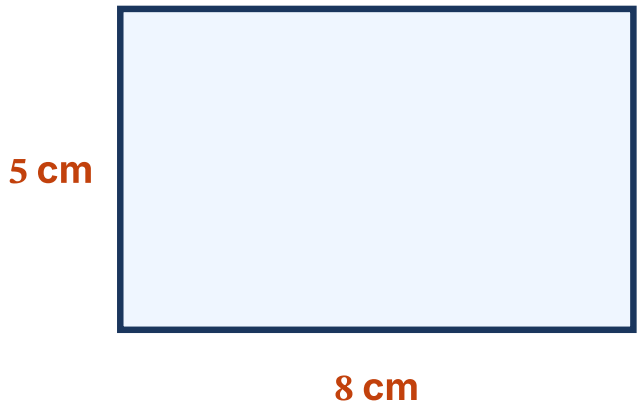
> **Answer: A** — Area scales by the square of the length factor.
>
> - **B** — that would be a factor of 4 on the sides
> - **C** — that is the LENGTH factor
> - **D** — that is the volume factor

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 [12 MARKS]

The diagram below shows a rectangle. Use $\pi \approx 3{,}14$ where needed.



2.1 Calculate the perimeter of the rectangle. **(3)**

> $P = 2(l + b) = 2(8 + 5)$ *(2)*
> $= \mathbf{26\ cm}$ *(1)*

2.2 Calculate the area of the rectangle, and hence the area of a rectangle whose length and breadth are BOTH doubled. **(3)**

> $A = l \times b = 8 \times 5 = \mathbf{40\ cm^2}$ *(2)*
> Doubling both dimensions multiplies the area by $2 \times 2 = 4$, so it becomes $\mathbf{160\ cm^2}$ *(1)*

2.3 A square has a side of 6 cm. Calculate its perimeter and its area. **(3)**

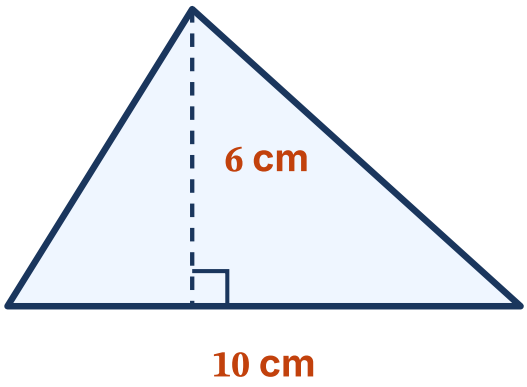
> $P = 4 \times 6 = \mathbf{24\ cm}$ *(1)*
> $A = 6 \times 6$ *(1)* $= \mathbf{36\ cm^2}$ *(1)*

2.4 A different rectangle has an area of $48\ cm^2$ and a length of 8 cm. Calculate its breadth. **(3)**

> $A = l \times b$, so $b = A \div l$ *(1)*
> $= 48 \div 8$ *(1)* $= \mathbf{6\ cm}$ *(1)*

QUESTION 3 **[8 MARKS]**

The diagram below shows a triangle with its perpendicular height marked.



3.1 Write down the formula for the area of a triangle, and explain where the ½ in it comes from. **(3)**

> $A = \frac{1}{2} \times b \times h$ *(1)*
> A triangle is exactly HALF of a rectangle with the same base and the same height *(1)*
> so its area is half of $b \times h$ *(1)*

3.2 Calculate the area of the triangle. **(3)**

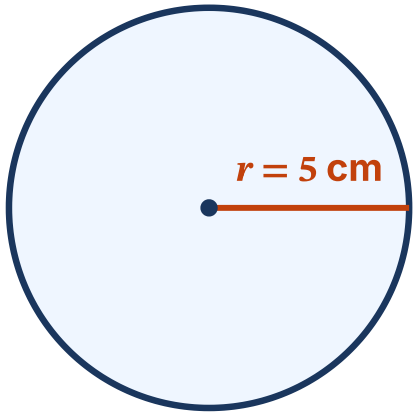
> $A = \frac{1}{2} \times 10 \times 6$ *(2)*
> $= \mathbf{30\ cm^2}$ *(1)*

3.3 Explain why the height used must be PERPENDICULAR to the base. **(2)**

> The height must be the shortest distance from the base to the opposite vertex *(1)*; a slanted side is longer and would give too big an area *(1)*

QUESTION 4 [8 MARKS]

The diagram below shows a circle. Use $\pi \approx 3{,}14$.



4.1 Calculate the circumference of the circle. (3)

> $C = 2\pi r = 2 \times 3{,}14 \times 5$ *(2)*
> $= \mathbf{31{,}4\ cm}$ *(1)*

4.2 A different circle has a radius of 10 cm. Calculate its area. (3)

> $A = \pi r^2 = 3{,}14 \times 10^2$ *(2)*
> $= \mathbf{314\ cm^2}$ *(1)*

4.3 State the difference between the circumference and the area of a circle, and give the unit of each. (2)

> The circumference is the distance round the circle, measured in cm *(1)*; the area is the space inside it, measured in cm^2 *(1)*

TOTAL: 38 marks

This question paper consists of 4 questions.

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