GCSE Mathematics

Mock Test

Time Allowed: 1 Hour and 30 Minutes

Total Marks: 80

(Calculator Allowed)

07 March 2026

Full Name of Student: ……

1.

(a) Expand and simplify $(p + 9)(p - 4)$

.....

(2)

(b) Solve $\frac{5w - 8}{3} = 4w + 2$

$w =$ .....

(2)

(c) Factorise $x^2 - 49$

.....

(1)

(d) Simplify $(9x^8y^3)^{\frac{1}{2}}$

.....

(2)

[Total for Question 1 is 7 marks]

2.

Mr Weaver's garden is in the shape of a rectangle.

In the garden

there is a patio in the shape of a rectangle
and two ponds in the shape of circles with diameter 3.8 m.

The rest of the garden is grass.

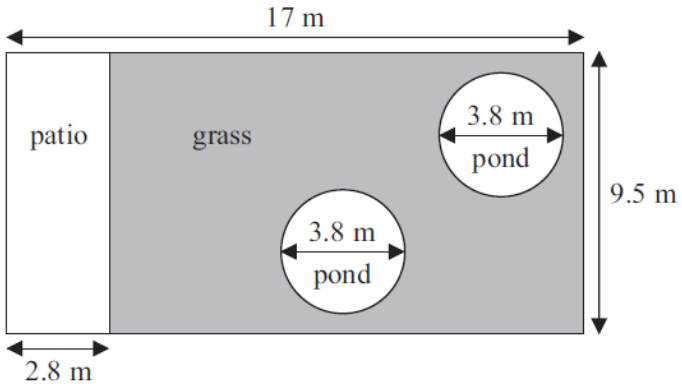


Diagram **NOT** accurately drawn

Mr Weaver is going to spread fertiliser over all the grass.
One box of fertiliser will cover 25 m^2 of grass.

How many boxes of fertiliser does Mr Weaver need?
You must show your working.

……..

[Total for Question 2 is 4 marks]

3.

m is an integer such that $-2 < m \leqslant 3$

(a) Write down all the possible values of m.

.....

(2)

(b) Solve $7x - 9 < 3x + 4$

.....

(2)

[Total for Question 3 is 4 marks]

4.

$\mathscr{E}$ = {even numbers}
A = {2, 4, 6, 8, 10}

(a) B is a set such that $A \cap B$ = {4, 8}
The set B has 3 members.

List the members of one possible set B.

.....

(2)

(b) C is a set such that $A \cap C = \varnothing$
The set C has 3 members.

List the members of one possible set C.

.....

(1)

[Total for Question 4 is 3 marks]

5.

The functions f and g are such that $f(x) = x + 3$ and $g(x) = \dfrac{1}{x - 2}$

(a) Find $fg(x)$

Give your answer as a single algebraic fraction expressed as simply as possible.

.....

(3)

(b) Express the inverse function g^{-1} in the form $g^{-1}(x) = \ldots$

$g^{-1}(x) =$ .....

(3)

[Total for Question 5 is 6 marks]

6.

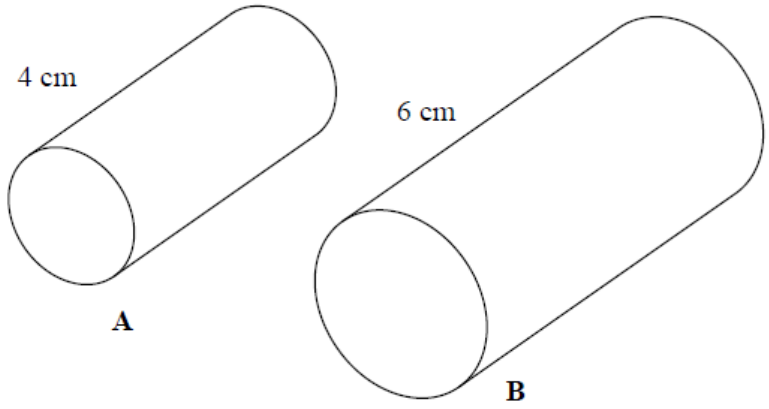


Diagram **NOT** accurately drawn

Cylinder **A** and cylinder **B** are mathematically similar.
The length of cylinder **A** is 4 cm and the length of cylinder **B** is 6 cm.
The volume of cylinder **A** is 80 cm^3.

Calculate the volume of cylinder **B**.

Volume = …… cm^3

[Total for Question 6 is 3 marks]

7.

The pressure P, of water leaving a cylindrical pipe, is inversely proportional to the square of the radius, r, of the pipe.

$P = 22.5$ when $r = 2$

(a) Find a formula for P in terms of r.

.....

(3)

(b) Calculate the value of P when $r = 1.5$

$P =$ .....

(1)

(c) Calculate the value of r when $P = 10$

$r =$ .....

(2)

[Total for Question 7 is 6 marks]

8.

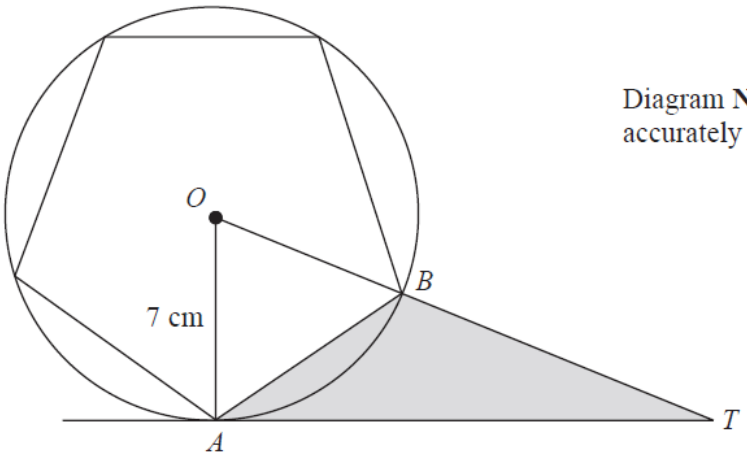


Diagram **NOT** accurately drawn

The diagram shows a regular pentagon inside a circle, centre O.
The points A and B lie on the circle such that AB is a side of the pentagon.
$OA = 7$ cm.
TA is a tangent to the circle and OBT is a straight line.

Calculate the area of triangle ABT.
Give your answer correct to 3 significant figures.

..... cm^2

[Total for Question 8 is 4 marks]

9.

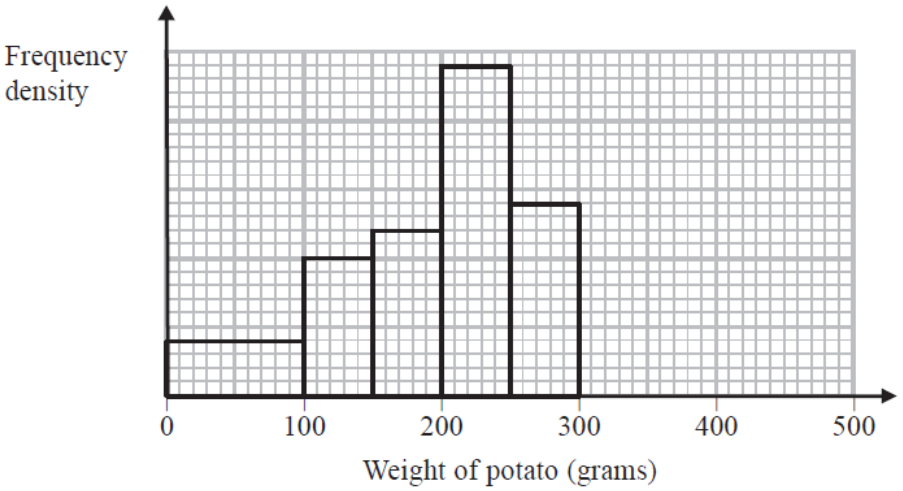
Loma grows tomatoes in her garden.
The table shows information about the weights, in grams, of some of her tomatoes.

Weight of tomato (w grams)	Number of tomatoes
$0 < w \leqslant 10$	2
$10 < w \leqslant 20$	8
$20 < w \leqslant 30$	16
$30 < w \leqslant 40$	10
$40 < w \leqslant 50$	4

(a) Work out an estimate for the total weight of these tomatoes.

..... grams
(3)

Loma also grows potatoes.
The incomplete histogram shows information about the weights, in grams, of some of her potatoes.



There were 10 potatoes with weights between 100 grams and 150 grams.

(b) How many potatoes had weights less than 100 grams?

.....

(2)

There were 12 potatoes with weights between 300 grams and 450 grams.

(c) Show this information on the histogram.

(2)

[Total for Question 9 is 7 marks]

10.

The diagram shows a trapezium.

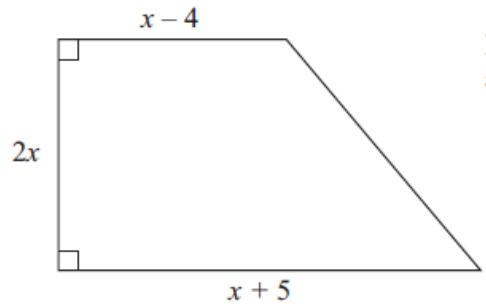


Diagram **NOT** accurately drawn

All the measurements are in centimetres.

The area of the trapezium is 351 cm^2.

(a) Show that $2x^2 + x - 351 = 0$

(2)

(b) Work out the value of x.

.....

(3)

[Total for Question 10 is 5 marks]

11.

Solve $\dfrac{3}{(x+1)} + \dfrac{2}{(2x-3)} = 1$

Show clear algebraic working.

.....

[Total for Question 11 is 4 marks]

12.

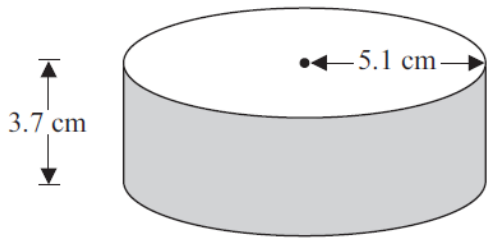


Diagram **NOT** accurately drawn

A solid cylinder has a radius of 5.1 cm and a height of 3.7 cm.

Work out the **total** surface area of the cylinder.
Give your answer correct to 3 significant figures.

..... cm^2

[Total for Question 12 is 4 marks]

13.

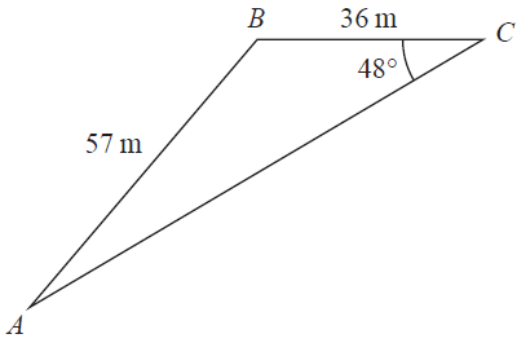


Diagram **NOT** accurately drawn

Work out the area of triangle ABC.
Give your answer correct to 3 significant figures.

..... m^2

[Total for Question 13 is 4 marks]

14.

(a) Express $x^2 - 8x + 10$ in the form of $(x - a)^2 - b$ where a and b are integers.

(3)

(b) Solve the inequality,

$$x^2 - 7x + 10 < 0$$

……

(3)

[Total for Question 14 is 6 marks]

15.

Gemma has 9 counters.
Each counter has a number on it.

Gemma puts the 9 counters into a bag.
She takes at random a counter from the bag and does not replace the counter.
She then takes at random a second counter from the bag.

(a) Work out the probability that the number on each counter is an even number.

.....

(2)

(b) Work out the probability that the number on the first counter added to the number on the second counter gives an odd number.

.....

(3)

[Total for Question 15 is 5 marks]

16.

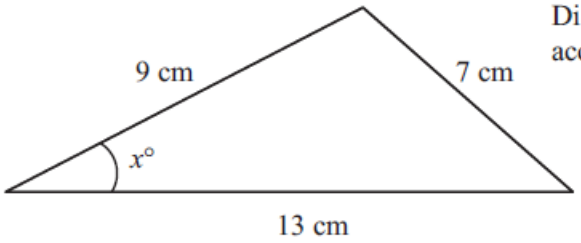


Diagram **NOT** accurately drawn

Calculate the value of x.
Give your answer correct to 1 decimal place.

$x =$ .....

[Total for Question 16 is 3 marks]

17.

Solve the simultaneous equations

$$x^2 + y^2 = 26$$

$$y = 3 - 2x$$

Show clear algebraic working.

[Total for Question 17 is 5 marks]

- End of Test -