Year 11 Mathematics

Practice Test

Time Allowed: 1 Hour

Total Marks: 52

20 February 2026

Calculator Allowed

Full Name of Student: ……

1.

Steve goes on a cycle ride.
He cycles a distance of 40 km in 2 hours 15 minutes.

(a) Work out his average speed in kilometres per hour.
Give your answer correct to the nearest whole number.

.....km/h
(3)

Steve's salary is $28 500
He gets a salary increase of 2.4%

(b) Work out Steve's salary after the increase.

$.....
(3)

Nalini gets a salary increase of 3%
Her salary increase is $702

(c) Work out Nalini's salary before the increase.

$.....
(3)

[Total for Question 1 = 9 marks]

2.

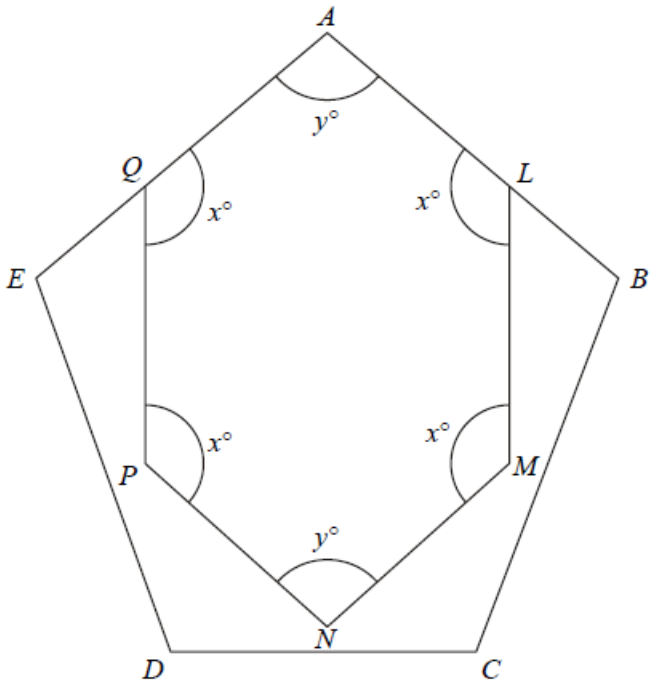

Diagram **NOT** accurately drawn

ABCDE is a regular pentagon.
AQE and *ALB* are straight lines.
ALMNPQ is a hexagon with two angles of size $y°$ and four angles of size $x°$

Work out the value of x.

$x =$ .....

[Total for Question 2 = 4 marks]

3.

Solve $4x^2 + 6x - 1 = 0$
Show your working clearly.
Give your solutions correct to 3 significant figures.

.....

[Total for Question 3 = 3 marks]

4.

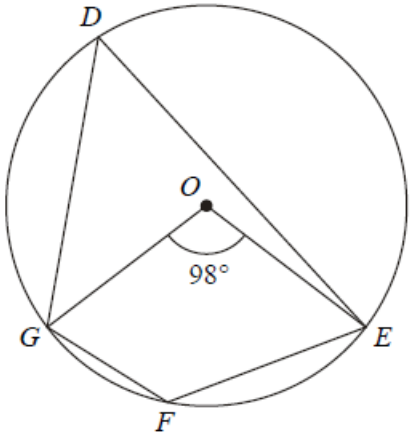

Diagram **NOT** accurately drawn

D, *E*, *F* and *G* are points on a circle, centre *O*.
Angle *GOE* = 98°

Work out the size of angle *GFE*.
Give a reason for each stage of your working.

.....°

[Total for Question 4 = 4 marks]

5.

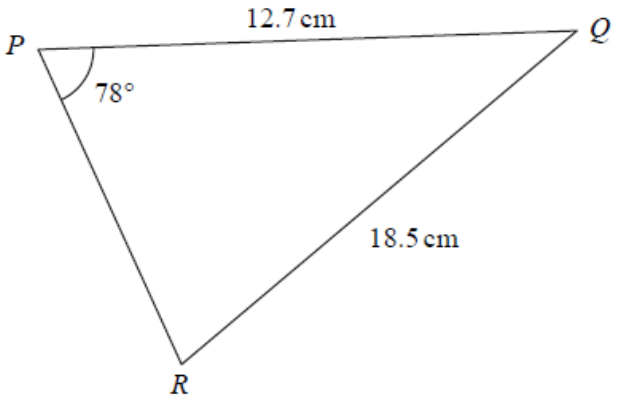

Diagram **NOT** accurately drawn

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

..... cm^2

[Total for Question 5 = 4 marks]

6.

The diagram shows a container made from a cylinder and a cone.
The container has a vertical axis of symmetry.

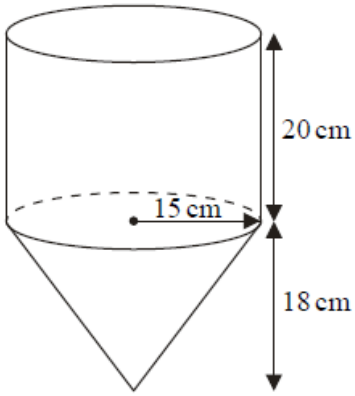

Diagram **NOT** accurately drawn

The cylinder has height 20 cm and radius 15 cm.
The cone has height 18 cm and a base radius of 15 cm.

There are 9 litres of water in the container.

Work out the height of the surface of the water in the container above the vertex of the cone.
Give your answer correct to 3 significant figures.

..... cm

[Total for Question 6 = 5 marks]

7.

There are 9 counters in a bag.
There is a number on each counter.

Lev takes at random 3 counters from the bag.
He adds together the numbers on his 3 counters to get his total.

Calculate the probability that his total is an odd number.

.....

[Total for Question 7 = 4 marks]

8.

f is the function such that $f(x) = 3 - 2x$

(a) Find $f(-4)$

.....

(1)

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

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

(2)

g is the function such that $g(x) = x^2 - 5$

(c) Solve the equation $gf(x) = ff(x)$
Show clear algebraic working.

.....

(5)

[Total for Question 8 = 8 marks]

9.

Given that $\dfrac{12 \times \left(\sqrt{8}\right)^{2y+2}}{6 \times 4^{2y+1}}$ can be written in the form 2^p,

find an expression for p in terms of y.

$p =$ .....

[Total for Question 9 = 3 marks]

10.

The velocity, v metres per second, of a particle is proportional to the square root of its kinetic energy, E joules.

$v = 30$ when $E = 64$

Find the value of v when $E = 400$

.....

[Total for Question 10 = 4 marks]

11.

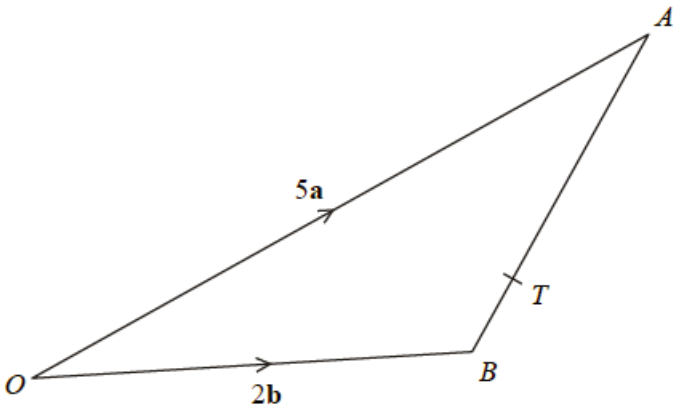

Diagram **NOT** accurately drawn

OAB is a triangle.

$\overrightarrow{OA} = \mathbf{5a}$

$\overrightarrow{OB} = \mathbf{2b}$

T is the point on *AB* such that *AT* : *TB* = 5 : 1

Show that *OT* is parallel to the vector $\mathbf{a} + \mathbf{2b}$

[Total for Question 11 = 4 marks]

- End of Test -
