

# Practice Paper H Answers

## Paper 1

1. Evaluate  $4\frac{1}{3} - 1\frac{1}{2}$ . 2

$$2\frac{5}{6}$$

2. Expand and simplify  $(3x - 2)(2x^2 + x + 5)$ . 3

$$6x^3 - x^2 + 13x - 10$$

3. Change the subject of the formula to  $t$ :

$$p = \frac{3t}{r}$$

2

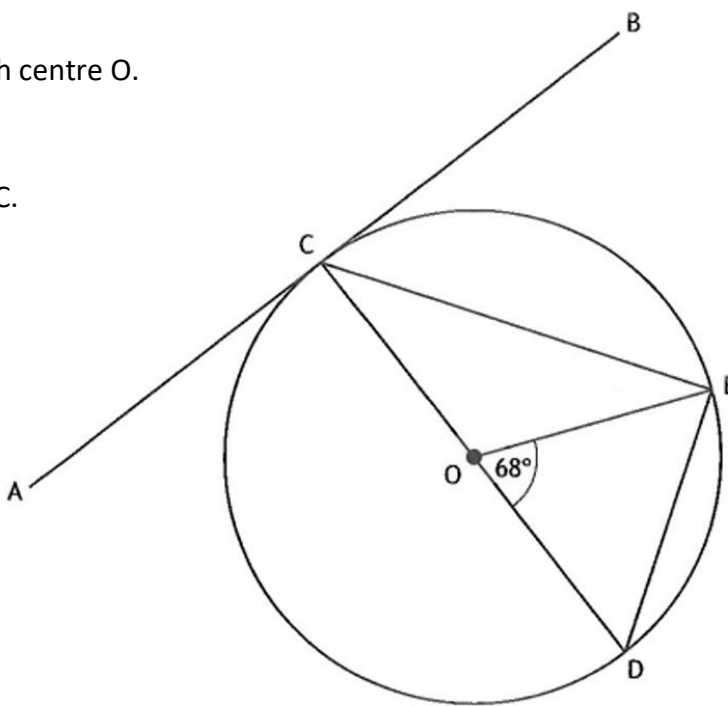
$$t = \frac{pr}{3}$$

4. The diagram shows a circle with centre O.

AB is a tangent to the circle at C.

CD is a diameter of the circle.

Angle EOD is  $68^\circ$ .



Calculate the size of angle ACE.

3

$$124^\circ$$

5. Express  $\frac{x^2 + x - 20}{3x^2 - 12x}$  in its simplest form. 3

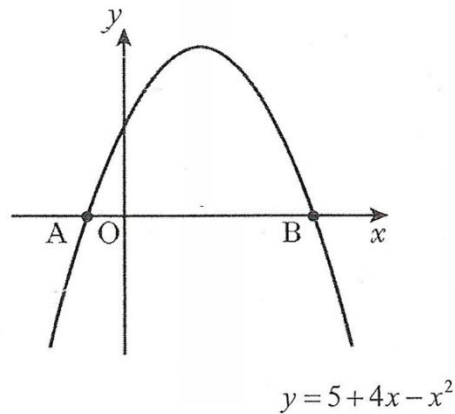
$$\frac{x+5}{3x}$$

6. Evaluate  $9^{\frac{3}{2}}$

2

27

7. The diagram shows part of the graph of  $y = 5 + 4x - x^2$ .



A is the point  $(-1, 0)$ .

B is the point  $(5, 0)$ .

a) State the equation of the axis of symmetry of the graph.

2

$x = 2$

b) Hence, find the coordinates of the maximum turning point of  $y = 5 + 4x - x^2$ .

2

$(2, 9)$

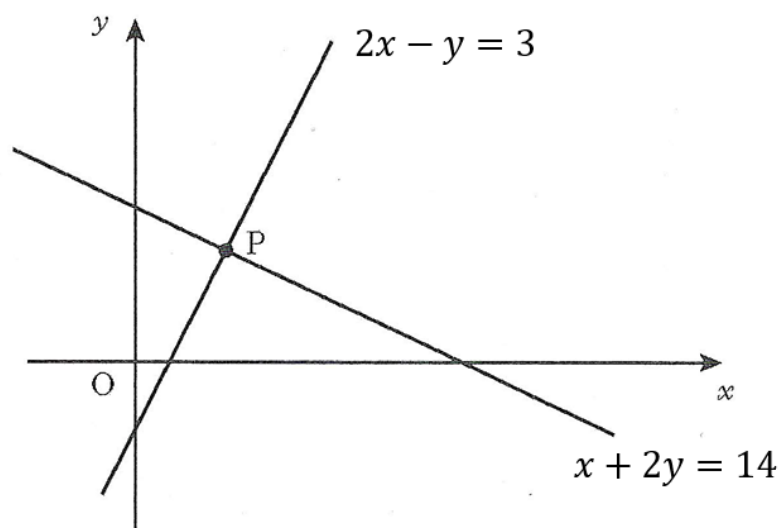
c) Find the coordinates at which the graph intersects the y-axis.

1

$(0, 5)$

8. The graph below shows two straight lines.

- $2x - y = 3$
- $x + 2y = 14$



The lines intersect at the point P.

Find, **algebraically**, the coordinates of P.

3

$(4, 5)$

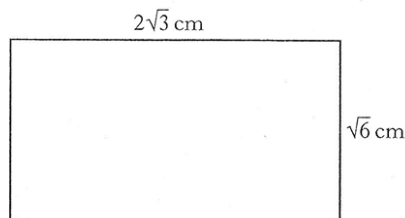
9. Express  $\frac{9}{\sqrt{6}}$  with a rational denominator. 2

$$\frac{3\sqrt{6}}{2}$$

10. Simplify  $\frac{(m^3)^{-2}}{m^{-4}}$ . Write your answer with a **positive power**. 3

$$\frac{1}{m^2}$$

11. The rectangle below has length  $2\sqrt{3}$  centimetres and breath  $\sqrt{6}$  centimetres.



- Calculate the area of the rectangle, giving your answer in as a **simplified surd**. 3

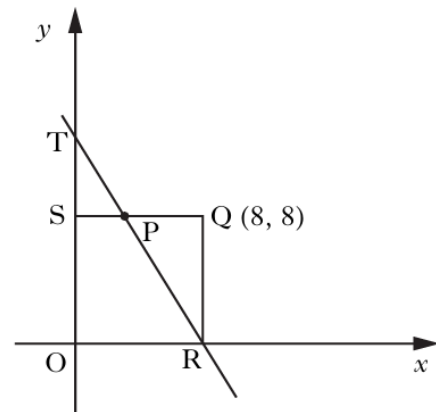
$$6\sqrt{2} \text{ square centimetres}$$

12. Solve the inequation  $4(3 - x) + 1 > 2x + 7$ . 3

$$1 > x$$

13. A square, OSQR, is shown below.

Q is the point (8,8).



- a) Write down the coordinates of the point R. 1

$$(8,0)$$

The straight line TR intersects the y-axis at T(0,12), and the x-axis at R.

- b) Find the equation of the line TR. 3

$$y = -\frac{3}{2}x + 12 \text{ or } 2y = -3x + 24$$

The line also crosses the line SQ at the point P.

- c) Find the coordinates of P. 2

$$\left(\frac{8}{3}, 8\right)$$

## Practice Paper H Answers

### Paper 2

**Coming soon!**

1. Alastair buys an antique chair for £600.

It is expected to increase in value at the rate of 4.5% each year.

How much is it expected to be worth in 3 years?

**3**

2. A rugby team scored the following points in a series of matches.

13    7    0    9    7    8    5

(a) For this sample calculate the mean and standard deviation.

**4**

The following season the team appoints a new coach.

A similar series of matches produces a mean of 27 and a standard deviation of 3.25.

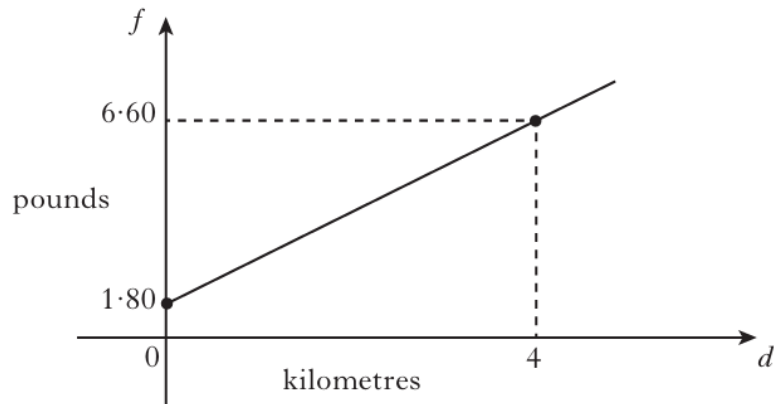
(b) Make two comments about the performance of the team under the new coach.

**2**

3. A taxi fare consists of a call out charge of £1.80 plus a fixed cost per kilometre.

A journey of 4 kilometres costs £6.60.

The straight line graph below shows the fare,  $f$  pounds, for a journey of  $k$  kilometres.



- a) Find the equation of the straight line.

3

- b) Calculate the fare for a journey of 7 kilometres.

2

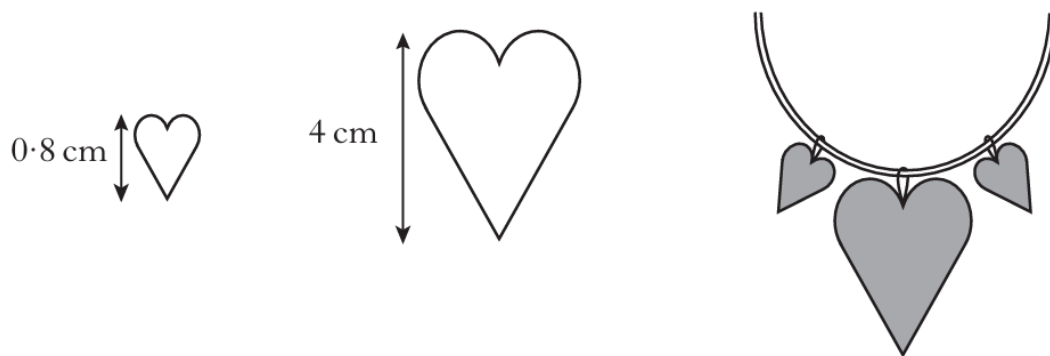
4. Simplify  $\frac{5x^2 \times 6x^{-4}}{20x^{-3}}$

3

5. Solve  $h^2 - 2h - 24 = 0$

2

6. A necklace is made of beads which are mathematically similar.



The height of the smaller bead is 0.8 centimetres and its area is 0.6 square centimetres.

The height of the larger bead is 4 centimetres.

Calculate the area of the larger bead.

3

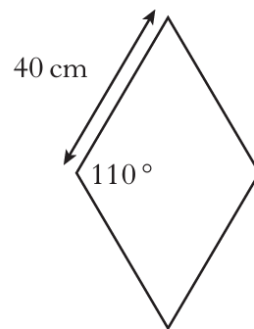
7. The price for Paul's summer holiday is £894.40.

This includes a 4% booking fee.

Calculate the price of the holiday without the booking fee.

3

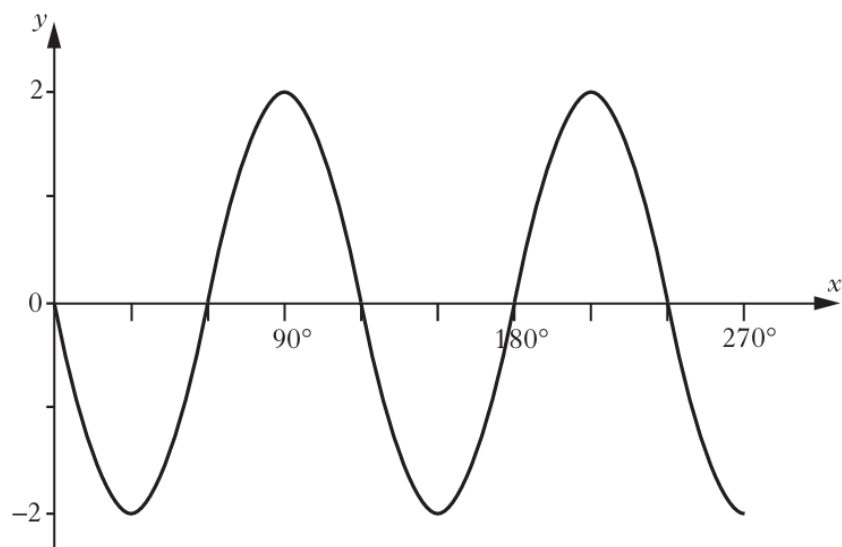
8. Paving stones are in the shape of a rhombus.



Find the area of one paving stone.

4

9. Part of the graph of a trigonometric function is shown below.



State the period of the function, in degrees.

1

10. A mug in the shape of a cylinder has a volume of 400 cubic centimetres.



Its diameter is 7.6 centimetres.

Calculate the height of the mug.

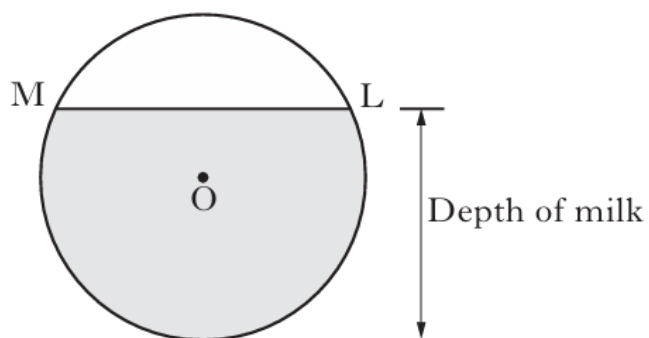
Give your answer correct to two significant figures.

3



11. The diagram below shows the circular cross-section of a milk tank.

[Turn over



The radius of the circle, centre O, is 1.2 metres.

The width of the surface of the milk in the tank, represented by line ML, is 1.8 metres.

Calculate the depth of the milk in the tank.

4

12. A straight line has equation  $2x + 3y = 12$ .

a) Find the gradient of the line.

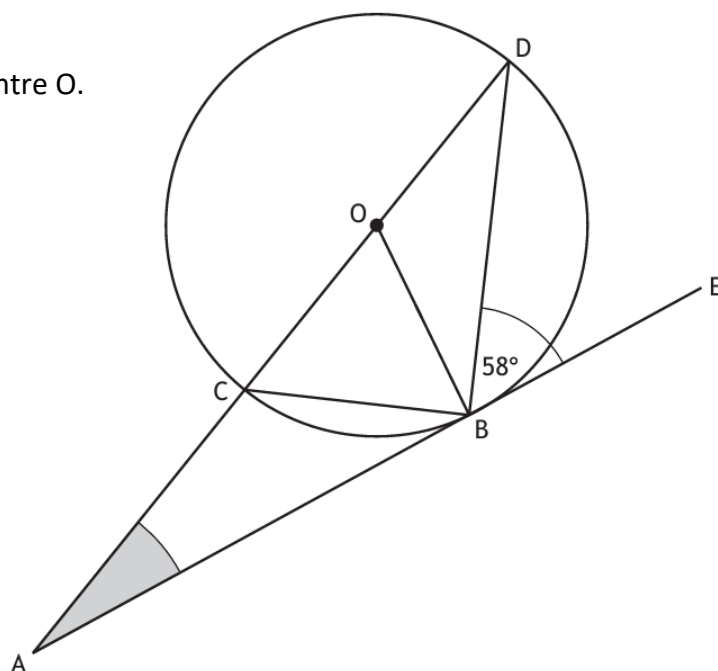
2

b) The line crosses the  $y$ -axis at the point  $(0, c)$ . Find the value of  $c$ .

1

13. In the diagram show below:

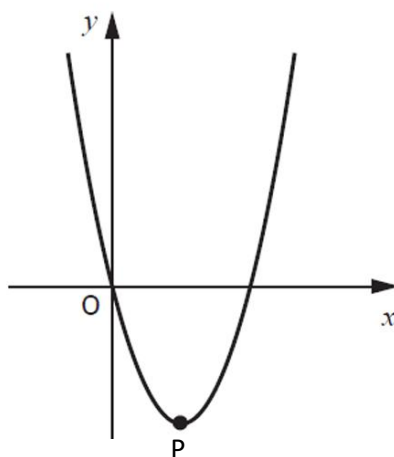
- ABE is a tangent to the circle centre O.
- Angle DBE is  $58^\circ$



Calculate the size of angle CAB.

3

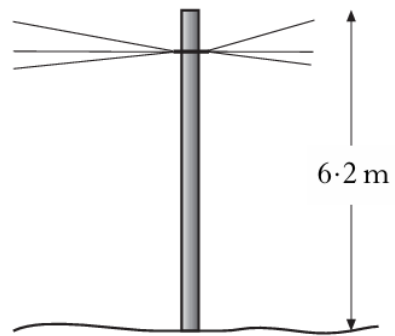
14. Part of the graph of  $y = x(x - 6)$  is shown below.



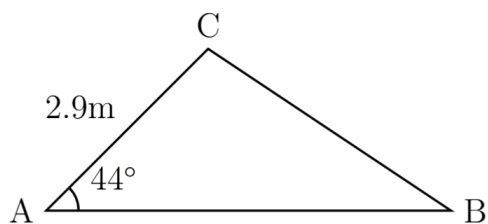
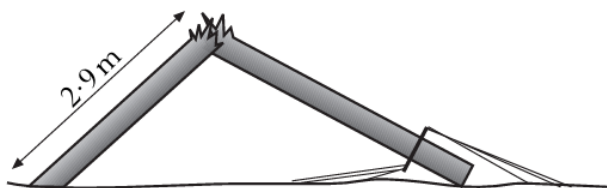
Find the coordinates of the minimum turning point of the graph, shown as point P.

2

15. A telegraph pole is 6.2 metres high.



The wind blows the pole over into the position shown below.



- AC is 2.9 metres
- Angle CAB is  $44^\circ$

Calculate the size of angle ABC.

