

Summer Assessment

Year 9

Mathematics

Higher: No calculator allowed

Time allowed: 45 minutes

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
Teacher						

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For more information, please visit www.whiterosemaths.com



1

The volume of a pyramid is given by the formula

$$V = \frac{1}{3} \times \text{base area} \times \text{height}$$

The diagram shows a square-based pyramid.

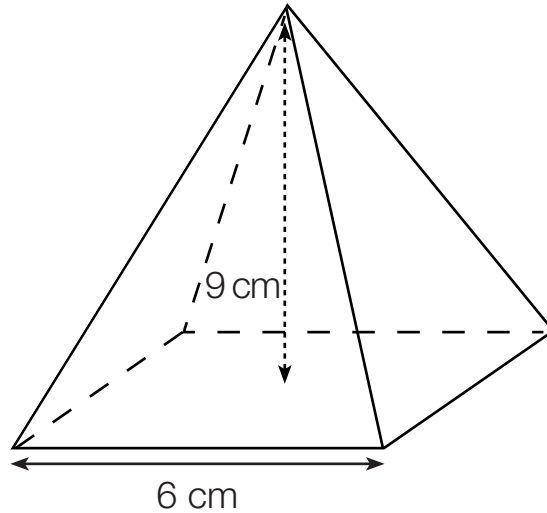


Diagram not drawn accurately

The length of each side of the base is 6 cm and the perpendicular height is 9 cm.

Calculate the volume of the pyramid.

cm³

2 marks

2

A straight line has equation $4x + 3y = 8$

Work out the gradient of the straight line.

_____ 2 marks

3

Jo invests £20 000

In the first year her investment grows by 20%.

In the second year her investment loses 10% of its value.

Work out the value of the investment after two years.

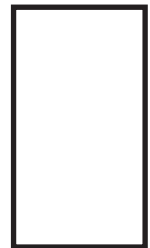
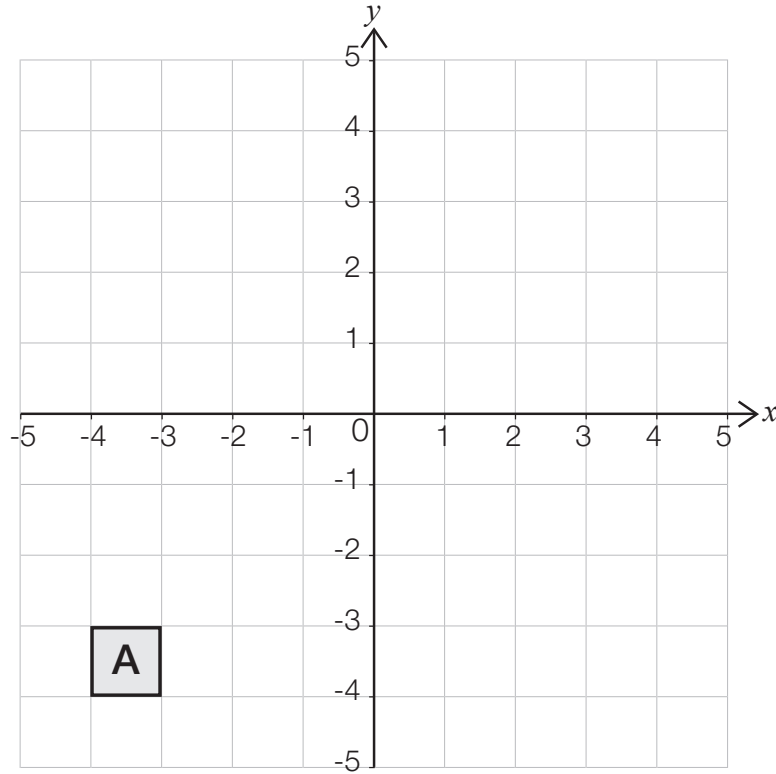
£

_____ 2 marks

4

Shape A is translated by the vector $\begin{pmatrix} 4 \\ 5 \end{pmatrix}$ to give shape B.
Shape B is translated by the vector $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$ to give shape C.

Find the vector that translates shape C to shape A.



2 marks

5

Work out

$$6\sqrt{5} \times 4\sqrt{5}$$

2 marks

6

Rearrange the formula $A = 4\pi r^2$ to make r the subject.

2 marks

7

The interior angles of a regular polygon are 160°
The length of each side of the polygon is 12 cm.

Show that the perimeter of the polygon is greater than 2 m.

3 marks

8

Prove that the sum of three consecutive numbers is always a multiple of 3

2 marks

9

The diagram shows two right-angled triangles that share a common side.

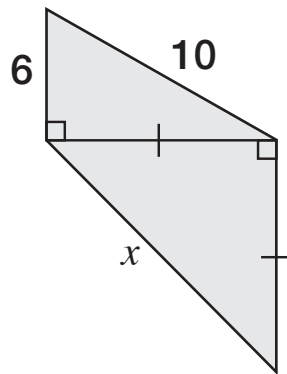


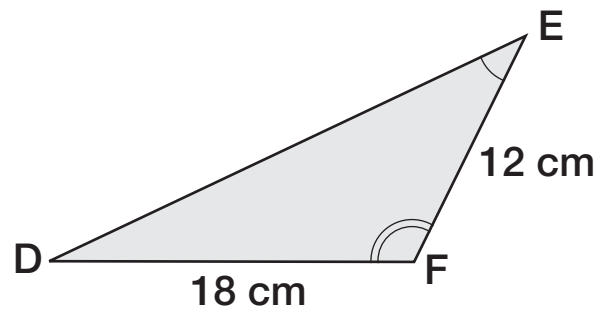
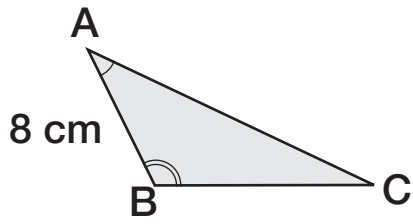
Diagram not drawn accurately

Show that x is between 11 and 12

3 marks

10

Here are two similar triangles.



Work out the length of BC.

cm

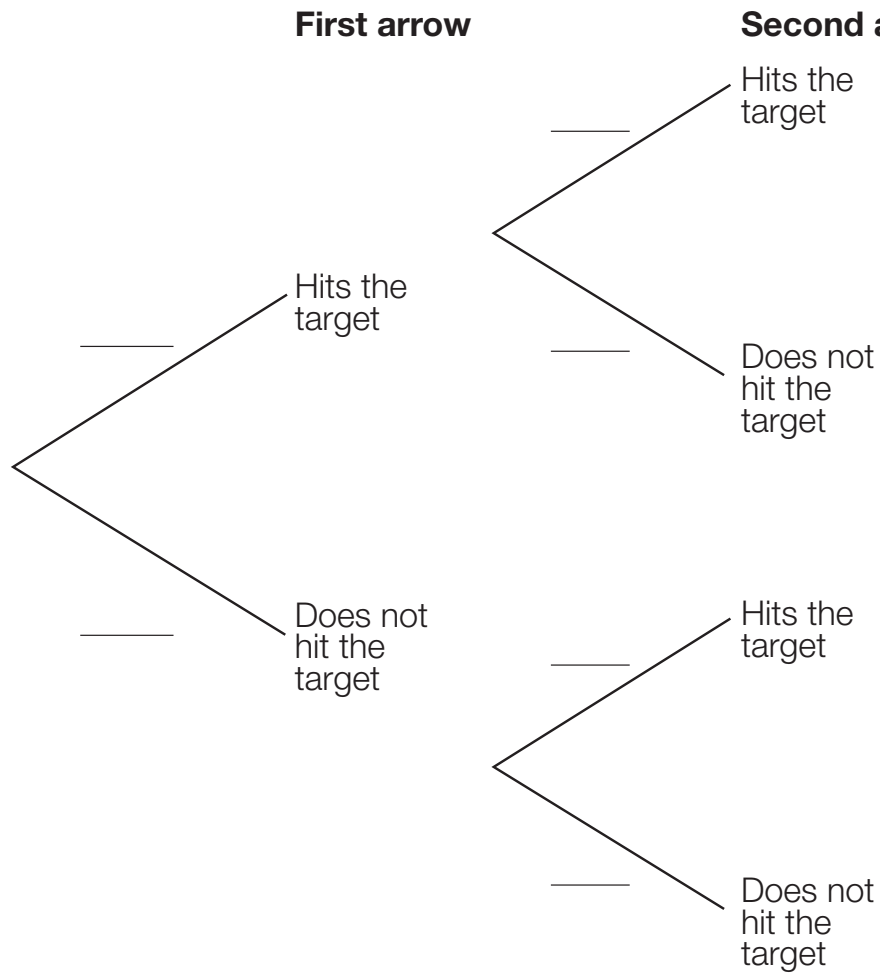
2 marks

11

Each time Huda shoots an arrow at a target, the probability that it hits the target is 0.8

Huda shoots two arrows at the target.

Complete the probability tree diagram.



2 marks

Work out the probability that neither arrow hits the target.

2 marks

12

Are the statements always true, sometimes true or never true?

Circle your answers.

If you enlarge a shape by a fractional scale factor,
the image is smaller than the object.

**Always
True**

**Sometimes
True**

**Never
True**

1 mark

If you enlarge a shape by a negative scale factor,
the image is smaller than the object.

**Always
True**

**Sometimes
True**

**Never
True**

1 mark

13

$x : y = 2 : 3$

Which expression has the greater value?

$$\frac{x}{y} \qquad \frac{y}{x}$$

Circle your answer.

Explain how you know.

1 mark

$a : 18 = 8 : a$

Work out the value of a

$a =$

2 marks

14

When Ron cycles, his maximum speed is 20 km/h.

When Ron runs, his maximum speed is 7 m/s.

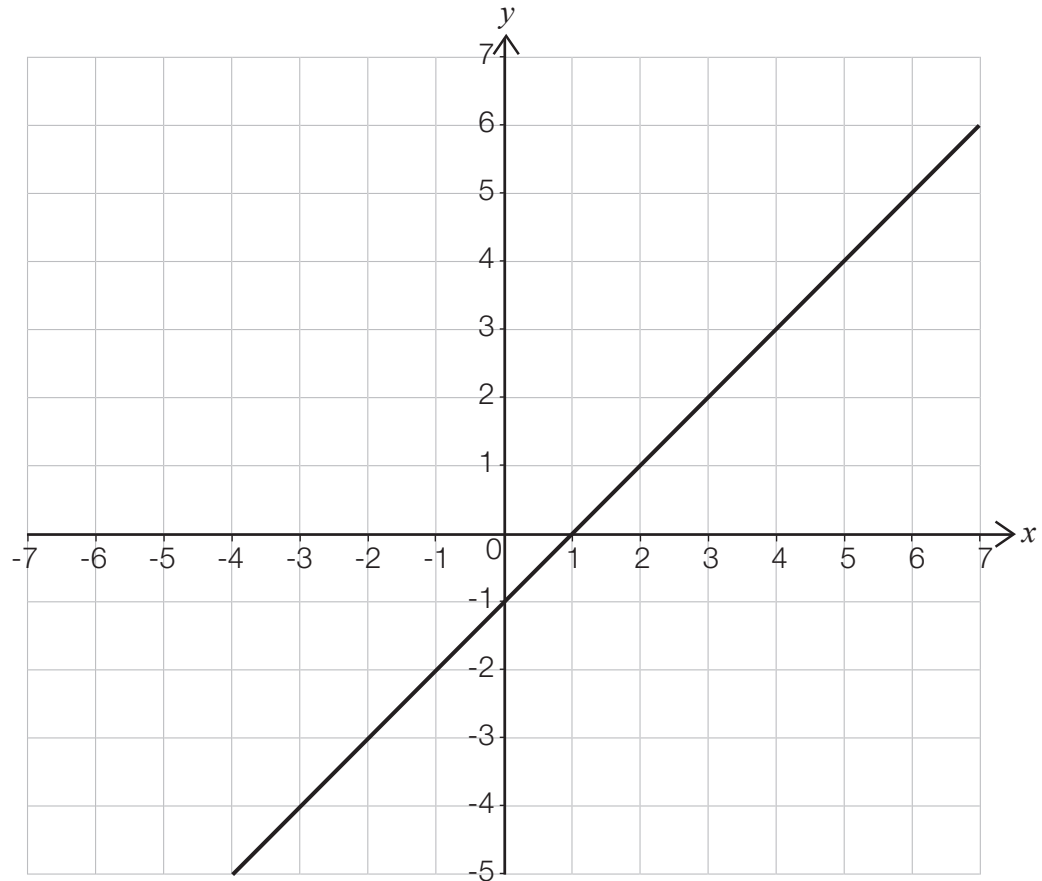
Which is greater, Ron's maximum speed when cycling or his maximum speed when running?

You must show your working.

3 marks

15

The graph of $y = x - 1$ has been drawn on the grid.



On the same grid, draw the graph of $2x + 3y = 12$

2 marks

Solve the simultaneous equations.

$$y = x - 1$$

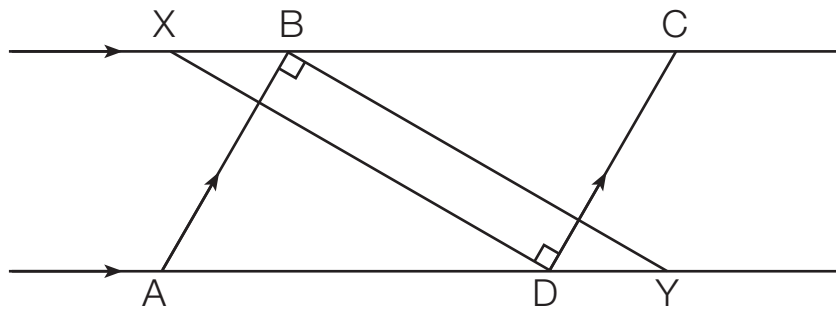
$$2x + 3y = 12$$

$x =$

$y =$

1 mark

16



ABCD is a parallelogram.

XBC and ADY are straight lines.

$$\angle ABY = \angle XDC = 90^\circ$$

Prove that triangles ABY and XCD are congruent.

3 marks

END OF TEST

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