

- 1 Samantha invests \$600 at a rate of 2% per year simple interest.

Calculate the interest Samantha earns in 8 years.

Answer \$ [2]

- 2 Show that $\left(\frac{1}{10}\right)^2 + \left(\frac{2}{5}\right)^2 = 0.17$.

Write down all the steps in your working.

Answer

[2]

- 3 Jamie needs 300 g of flour to make 20 cakes.

How much flour does he need to make 12 cakes?

Answer g [2]

- 4 Expand the brackets.

$$y(3 - y^3)$$

Answer [2]

- 5 Maria pays \$84 rent.
The rent is increased by 5%.
- Calculate Maria's new rent.

Answer \$ [2]

6

$\times R$

$T \times$

Using a straight edge and compasses only, construct the locus of points which are equidistant from R and from T . [2]

- 7 Find the value of $\frac{7.2}{11.8 - 10.95}$.

Give your answer correct to 4 significant figures.

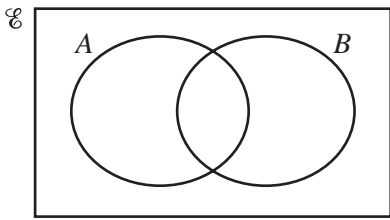
Answer [2]

- 8 A carton contains 250 ml of juice, correct to the nearest millilitre.
- Complete the statement about the amount of juice, j ml, in the carton.

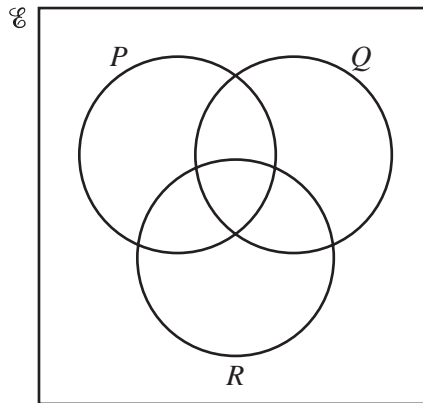
Answer $\leq j <$ [2]

For
Examiner's
Use

9 Shade the required region in each of the Venn diagrams.



A'



$(P \cap R) \cup Q$

[2]

10 Without using a calculator, show that $\left(\frac{49}{16}\right)^{-\frac{3}{2}} = \frac{64}{343}$.

Write down all the steps in your working.

Answer

[2]

11 Simplify $(256w^{256})^{\frac{1}{4}}$.

Answer

[2]

*For
Examiner's
Use*

12

Mass of parcel (m kilograms)	$0 < m \leq 0.5$	$0.5 < m \leq 1.5$	$1.5 < m \leq 3$
Frequency	20	18	9

For
Examiner's
Use

The table above shows information about parcels in a delivery van.

John wants to draw a histogram using this information.

Complete the table below.

Mass of parcel (m kilograms)	$0 < m \leq 0.5$	$0.5 < m \leq 1.5$	$1.5 < m \leq 3$
Frequency density		18	

[2]

13 Write the following as a single fraction in its simplest form.

$$\frac{x+2}{3} - \frac{2x-1}{4} + 1$$

Answer [3]

- 14 y varies inversely as the square root of x .
When $x = 9, y = 6$.

Find y when $x = 36$.

Answer $y =$ [3]

- 15 A model of a ship is made to a scale of 1 : 200.
The surface area of the model is 7500 cm^2 .

Calculate the surface area of the ship, giving your answer in square metres.

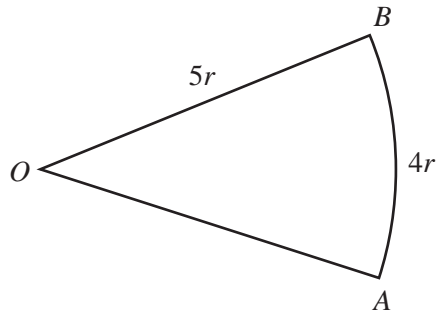
Answer m^2 [3]

- 16 Make y the subject of the formula.

$$A = \pi x^2 - \pi y^2$$

Answer $y =$ [3]

17

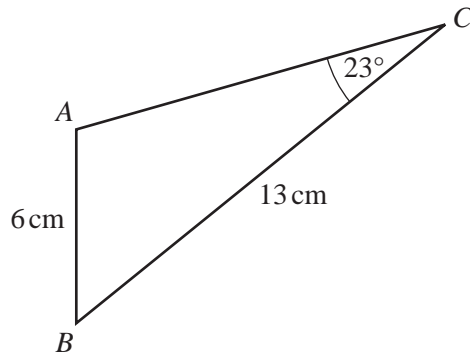
NOT TO
SCALE

The diagram shows a sector of a circle, centre O , radius $5r$.
The length of the arc AB is $4r$.

Find the area of the sector in terms of r , giving your answer in its simplest form.

Answer [3]

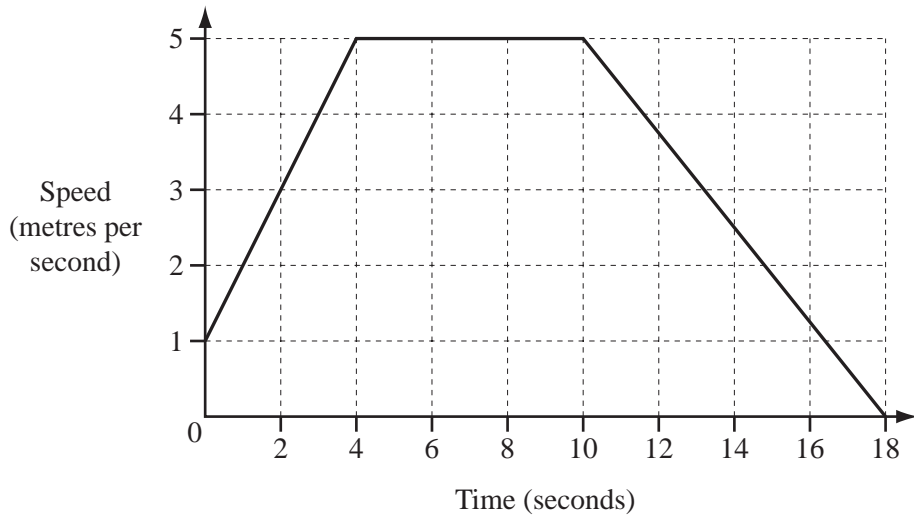
18

NOT TO
SCALE

In triangle ABC , $AB = 6$ cm, $BC = 13$ cm and angle $ACB = 23^\circ$.
Calculate angle BAC , which is obtuse.

Answer Angle $BAC =$ [4]

19



For
Examiner's
Use

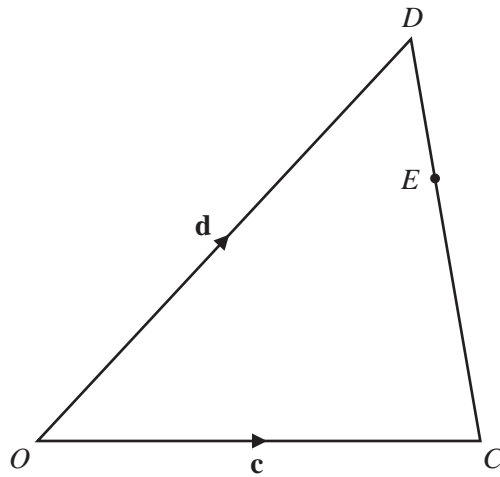
The diagram shows the speed-time graph for the last 18 seconds of Roman's cycle journey.

(a) Calculate the deceleration.

Answer(a) m/s² [1]

(b) Calculate the total distance Roman travels during the 18 seconds.

Answer(b) m [3]

NOT TO
SCALE

In the diagram, O is the origin.

$\vec{OC} = \mathbf{c}$ and $\vec{OD} = \mathbf{d}$.

E is on CD so that $CE = 2ED$.

Find, in terms of \mathbf{c} and \mathbf{d} , in their simplest forms,

(a) \vec{DE} ,

Answer(a) $\vec{DE} = \dots\dots\dots$ [2]

(b) the position vector of E .

Answer(b) $\dots\dots\dots$ [2]

21 Simplify the following.

$$\frac{h^2 - h - 20}{h^2 - 25}$$

For
Examiner's
Use

Answer [4]

22 (a) $\mathbf{M} = \begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

Find \mathbf{M}^{-1} , the inverse of \mathbf{M} .

Answer(a) $\begin{pmatrix} & \\ & \end{pmatrix}$ [2]

(b) \mathbf{D} , \mathbf{E} and \mathbf{X} are 2×2 matrices.
 \mathbf{I} is the identity 2×2 matrix.

(i) Simplify \mathbf{DI} .

Answer(b)(i) [1]

(ii) $\mathbf{DX} = \mathbf{E}$
Write \mathbf{X} in terms of \mathbf{D} and \mathbf{E} .

Answer(b)(ii) $\mathbf{X} =$ [1]

23 $f(x) = 3x + 5$ $g(x) = 4x - 1$

(a) Find the value of $gg(3)$.

Answer(a) [2]

(b) Find $fg(x)$, giving your answer in its simplest form.

Answer(b) $fg(x) =$ [2]

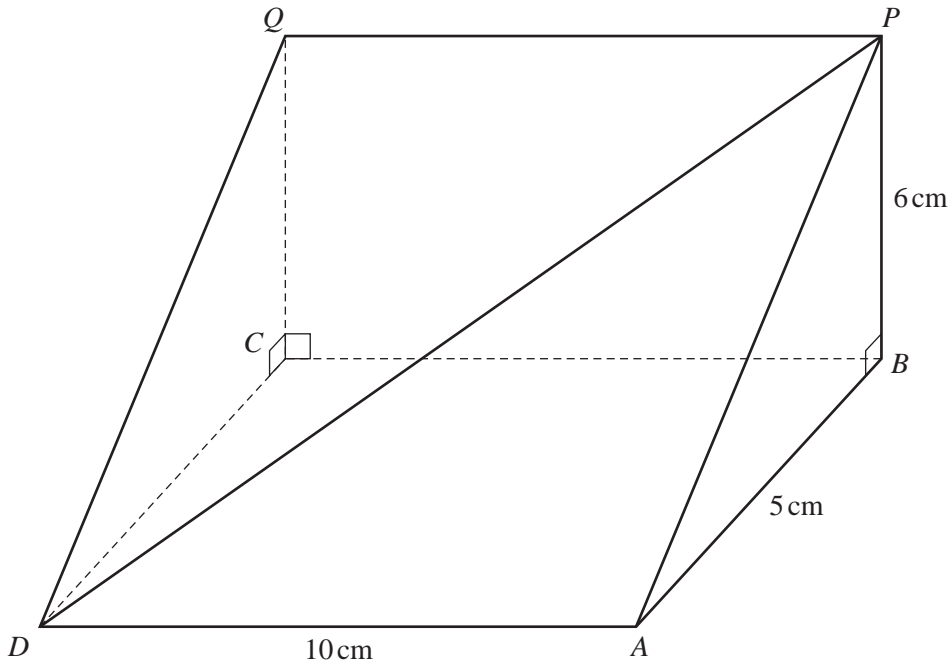
(c) Solve the equation.

$$f^{-1}(x) = 11$$

Answer(c) $x =$ [1]

Question 24 is printed on the next page.

For
Examiner's
Use



NOT TO
SCALE

The diagram shows a triangular prism.
 $ABCD$ is a horizontal rectangle with $DA = 10$ cm and $AB = 5$ cm.
 $BCQP$ is a vertical rectangle and $BP = 6$ cm.

Calculate

(a) the length of DP ,

Answer(a) $DP =$ cm [3]

(b) the angle between DP and the horizontal rectangle $ABCD$.

Answer(b) [3]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.