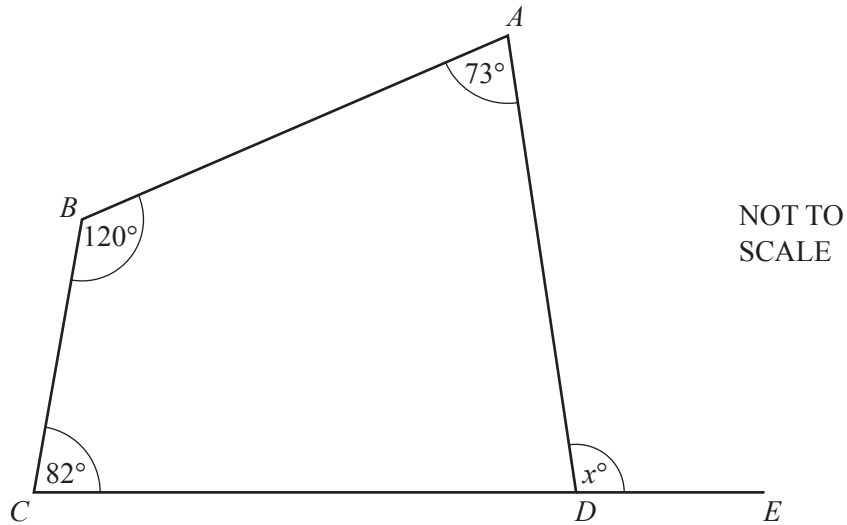


1



For
Examiner's
Use

The diagram shows a quadrilateral $ABCD$.
 CDE is a straight line.

Calculate the value of x .

Answer $x =$ [2]

2 Hans invests \$750 for 8 years at a rate of 2% per year simple interest.

Calculate the interest Hans receives.

Answer \$ [2]

3 (a) Calculate $\sqrt[3]{7^{1.5} + 22^{0.9}}$ and write down your full calculator display.

Answer(a) [1]

(b) Write your answer to **part (a)** correct to 4 significant figures.

Answer(b) [1]

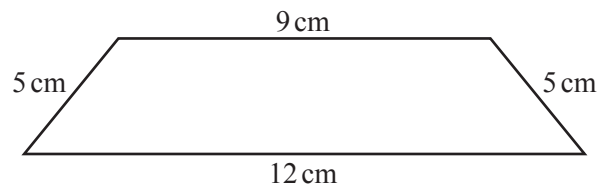
4 Solve the inequality.

$$3y + 7 \leq 2 - y$$

For
Examiner's
Use

Answer [2]

5



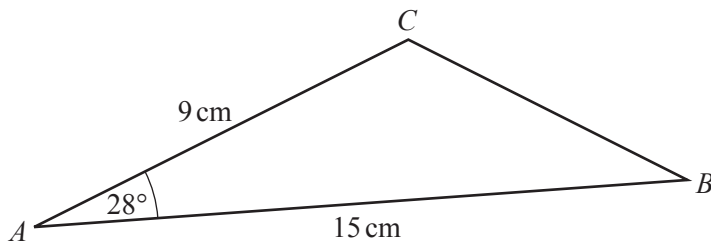
NOT TO
SCALE

The diagram shows a quadrilateral.
The lengths of the sides are given to the nearest centimetre.

Calculate the upper bound of the perimeter of the quadrilateral.

Answer cm [2]

6



NOT TO
SCALE

Calculate the area of triangle ABC .

Answer cm^2 [2]

7

Height (h cm)	$0 < h \leq 10$	$10 < h \leq 15$	$15 < h \leq 30$
Frequency	25	u	9
Frequency density	2.5	4.8	v

For
Examiner's
Use

The table shows information about the heights of some flowers.

Calculate the values of u and v .

Answer $u =$

$v =$ [2]

- 8 During her holiday, Hannah rents a bike.
She pays a fixed cost of \$8 and then a cost of \$4.50 per day.
Hannah pays with a \$50 note and receives \$10.50 change.

Calculate for how many days Hannah rents the bike.

Answer days [3]

- 9 Make w the subject of the formula.

$$t = 2 - \frac{3w}{a}$$

Answer $w =$ [3]

- 10 The periodic time, T , of a pendulum varies directly as the square root of its length, l .
 $T = 6$ when $l = 9$.

Find T when $l = 25$.

*For
Examiner's
Use*

Answer $T =$ [3]

- 11 Boris invests \$280 for 2 years at a rate of 3% per year compound interest.

Calculate the interest Boris receives at the end of the 2 years.
Give your answer correct to 2 decimal places.

Answer \$ [4]

12 Without using your calculator, work out the following.

Show all the steps of your working and give each answer as a fraction in its simplest form.

For
Examiner's
Use

(a) $\frac{11}{12} - \frac{1}{3}$

Answer(a) [2]

(b) $\frac{1}{4} \div \frac{11}{13}$

Answer(b) [2]

13 (a) Find the value of $7p - 3q$ when $p = 8$ and $q = -5$.

Answer(a) [2]

(b) Factorise completely.

$$3uv + 9vw$$

Answer(b) [2]

14 Simplify the following.

(a) $(4pq^2)^3$

Answer(a) [2]

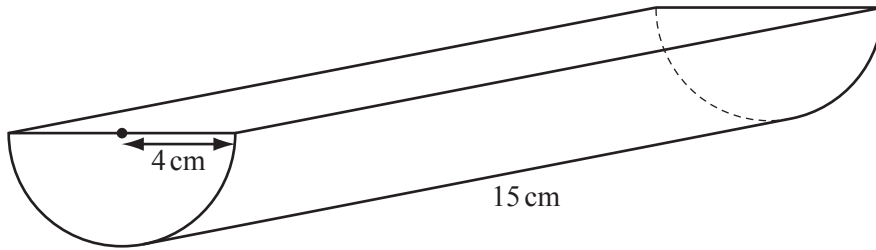
(b) $(16x^8)^{-\frac{1}{4}}$

Answer(b) [2]

15 Solve the equation $2x^2 + 6x - 3 = 0$.
Show your working and give your answers correct to 2 decimal places.

Answer $x =$ or $x =$ [4]

16

NOT TO
SCALEFor
Examiner's
Use

The diagram shows a **solid** prism of length 15 cm.
The cross-section of the prism is a semi-circle of radius 4 cm.

Calculate the total surface area of the prism.

Answer cm² [4]

17 $\mathbf{A} = \begin{pmatrix} 2 & 4 \\ 1 & 3 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} 1 & 2 \end{pmatrix}$

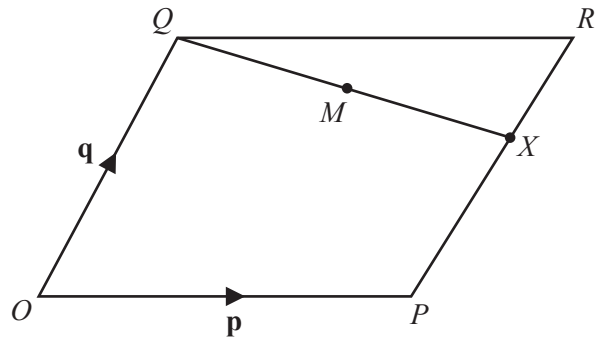
(a) Calculate \mathbf{BA} .

Answer(a) [2]

(b) Find \mathbf{A}^{-1} , the inverse of \mathbf{A} .

Answer(b) [2]

18

NOT TO
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Examiner's
Use

O is the origin and $OPRQ$ is a parallelogram.
The position vectors of P and Q are \mathbf{p} and \mathbf{q} .
 X is on PR so that $PX = 2XR$.

Find, in terms of \mathbf{p} and \mathbf{q} , in their simplest forms

(a) \vec{OX} ,

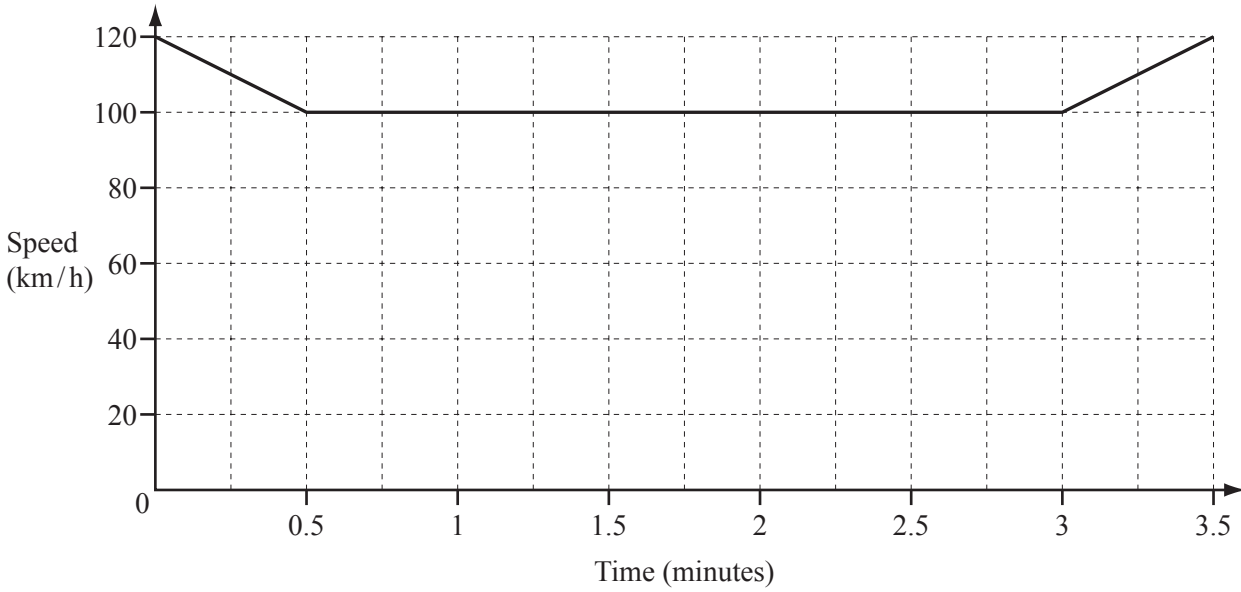
Answer(a) $\vec{OX} = \dots\dots\dots$ [2]

(b) the position vector of M , the midpoint of QX .

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

19

For
Examiner's
Use



The diagram shows the speed-time graph for part of a car journey.
The speed of the car is shown in kilometres/**hour**.

Calculate the distance travelled by the car during the 3.5 **minutes** shown in the diagram.
Give your answer in kilometres.

Answer km [4]

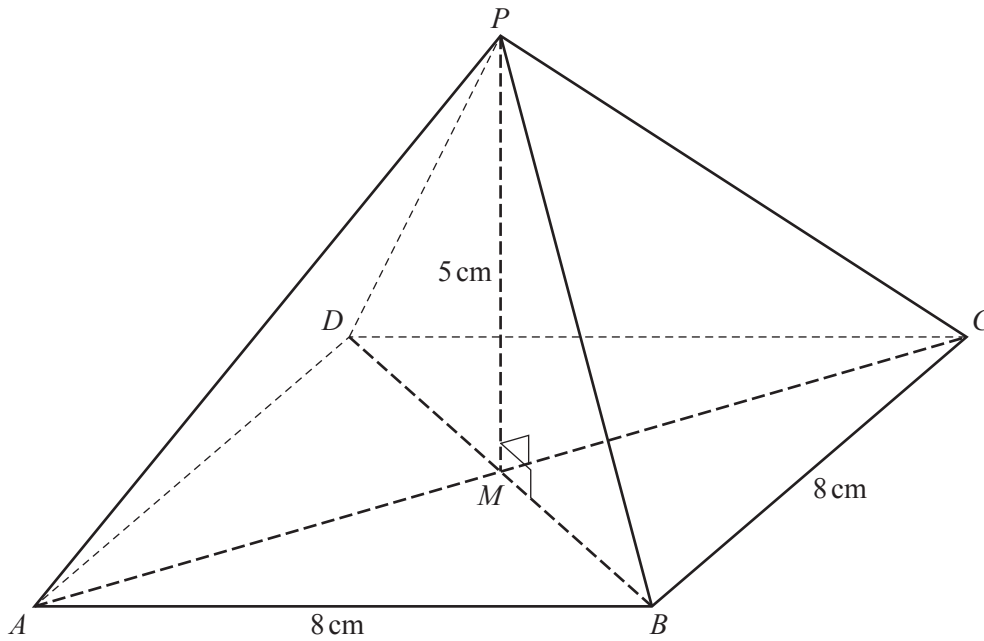
20 Simplify fully.

$$\frac{x^2 - x - 20}{x^3 - 10x^2 + 25x}$$

*For
Examiner's
Use*

Answer [5]

Question 21 is printed on the next page.



NOT TO
SCALE

The diagram shows a pyramid on a square base $ABCD$.
The diagonals of the base, AC and BD , intersect at M .
The sides of the square are 8 cm and the vertical height of the pyramid, PM , is 5 cm.

Calculate

- (a) the length of the edge PB ,

Answer(a) $PB = \dots\dots\dots$ cm [3]

- (b) the angle between PB and the base $ABCD$.

Answer(b) $\dots\dots\dots$ [3]

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