



- 1 Ahmed and Babar share 240 g of sweets in the ratio 7 : 3.

Calculate the amount Ahmed receives.

Answer ..... g [2]

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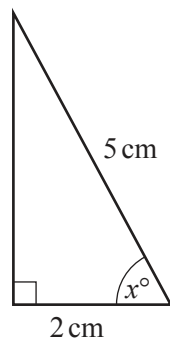
- 2 Factorise completely.

$$9x^2 - 6x$$

Answer ..... [2]

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- 3



NOT TO  
SCALE

Calculate the value of  $x$ .

Answer  $x =$  ..... [2]

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- 4 An equilateral triangle has sides of length 6.2 cm, correct to the nearest millimetre.

Complete the statement about the perimeter,  $P$  cm, of the triangle.

Answer .....  $\leq P <$  ..... [2]

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5 Factorise  $2x^2 - 5x - 3$ .

*Answer* ..... [2]

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6 Find the  $2 \times 2$  matrix that represents a rotation through  $90^\circ$  clockwise about  $(0, 0)$ .

*Answer*  $\left( \begin{array}{cc} & \\ & \end{array} \right)$  [2]

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7 James buys a drink for 2 euros (€).

Work out the cost of the drink in pounds (£) when  $\text{£}1 = \text{€}1.252$ .  
Give your answer correct to 2 decimal places.

*Answer* £ ..... [3]

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- 8 Without using a calculator, work out  $1\frac{7}{8} \div \frac{5}{9}$ .

Show all your working and give your answer as a fraction in its lowest terms.

Answer ..... [3]

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- 9 Solve the equation.

$$3(x + 4) = 2(4x - 1)$$

Answer  $x =$  ..... [3]

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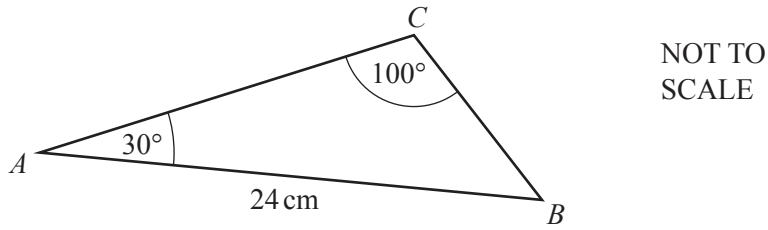
- 10 In a sale, the cost of a coat is reduced from \$85 to \$67.50 .

Calculate the percentage reduction in the cost of the coat.

Answer ..... % [3]

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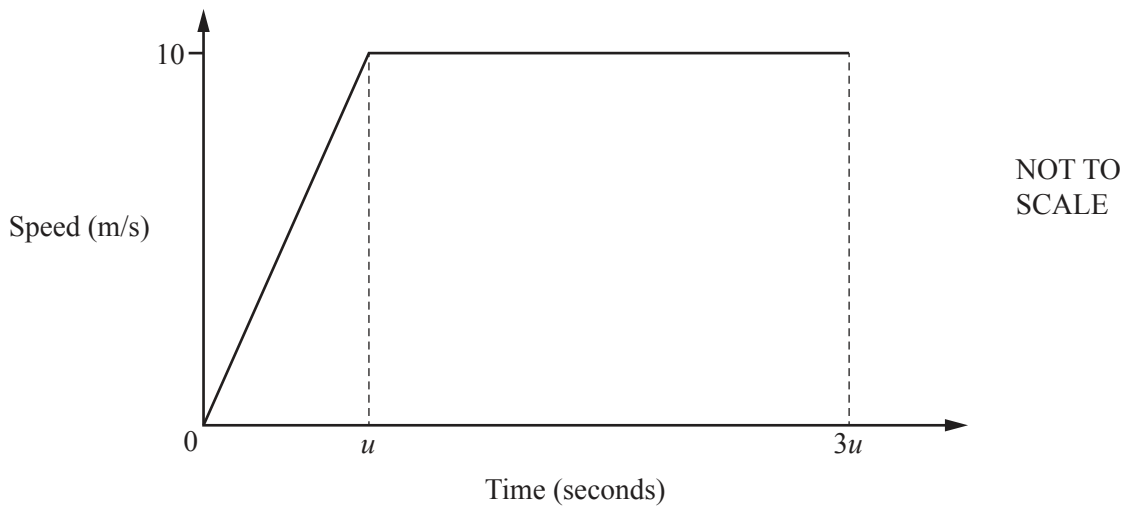
11



Use the sine rule to calculate  $BC$ .

Answer  $BC = \dots\dots\dots\text{ cm}$  [3]

12



A car starts from rest and accelerates for  $u$  seconds until it reaches a speed of  $10\text{ m/s}$ .  
 The car then travels at  $10\text{ m/s}$  for  $2u$  seconds.  
 The diagram shows the speed-time graph for this journey.

The distance travelled by the car in the first  $3u$  seconds is  $125\text{ m}$ .

(a) Find the value of  $u$ .

Answer(a)  $u = \dots\dots\dots$  [3]

(b) Find the acceleration in the first  $u$  seconds.

Answer(b)  $\dots\dots\dots\text{ m/s}^2$  [1]

13 Simplify.

(a)  $12x^{12} \div 3x^3$

*Answer(a)* ..... [2]

(b)  $(256y^{256})^{\frac{1}{8}}$

*Answer(b)* ..... [2]

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14 Solve the equation.

$$2x^2 + x - 2 = 0$$

Show your working and give your answers correct to 2 decimal places.

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

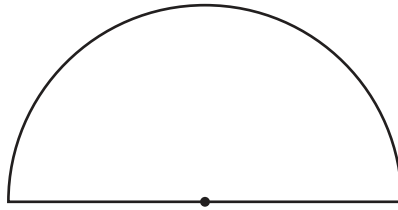
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15 The circumference of a circle is 30 cm.

(a) Calculate the radius of the circle.

*Answer(a)* ..... cm [2]

(b)



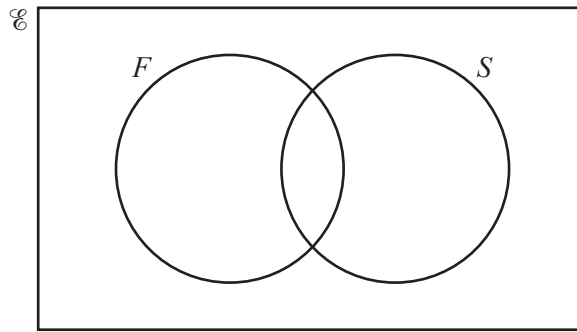
The length of the arc of the semi-circle is 15 cm.

Calculate the area of the semi-circle.

*Answer(b)* ..... cm<sup>2</sup> [2]

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- 16 (a) In this part, you may use this Venn diagram to help you answer the questions.



In a class of 30 students, 25 study French ( $F$ ), 18 study Spanish ( $S$ ).  
One student does not study French or Spanish.

- (i) Find the number of students who study French and Spanish.

Answer(a)(i) ..... [2]

- (ii) One of the 30 students is chosen at random.

Find the probability that this student studies French but not Spanish.

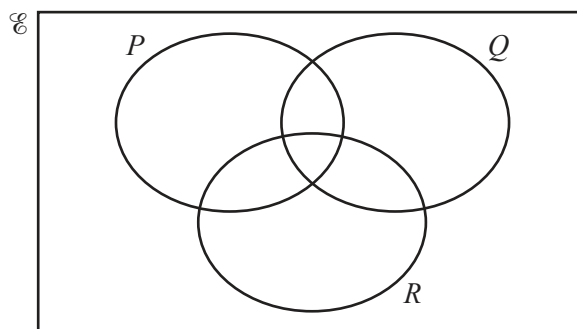
Answer(a)(ii) ..... [1]

- (iii) A student who does not study Spanish is chosen at random.

Find the probability that this student studies French.

Answer(a)(iii) ..... [1]

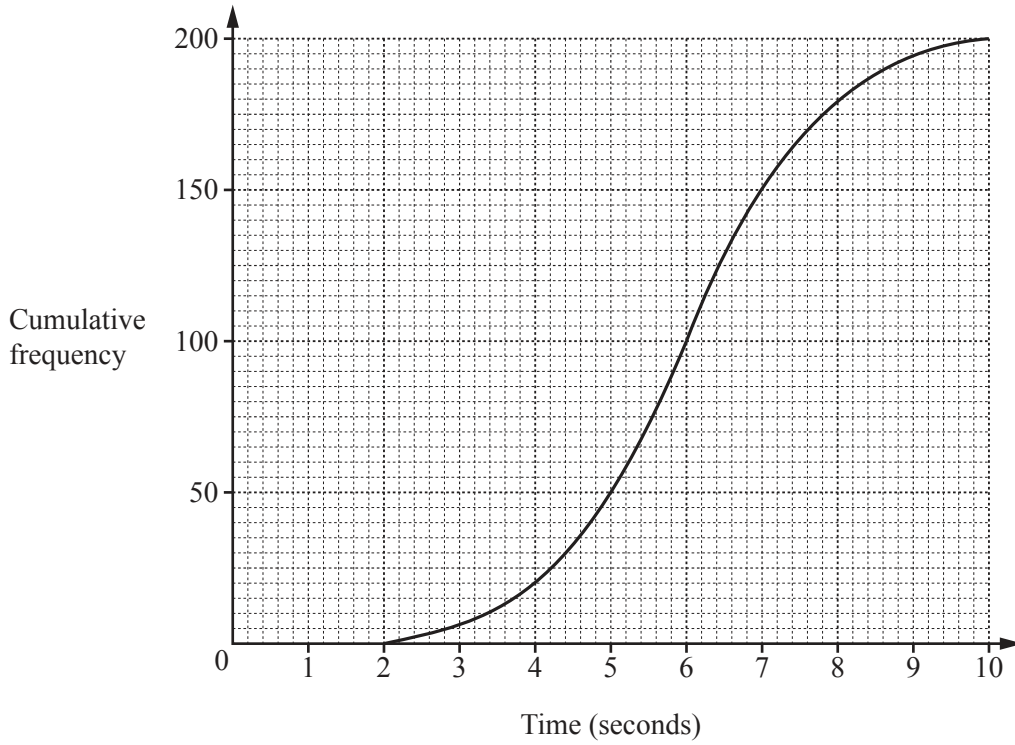
- (b)



On this Venn diagram, shade the region  $R \cap (P \cup Q)'$ .

[1]





200 students take a reaction time test.  
 The cumulative frequency diagram shows the results.

Find

(a) the median,

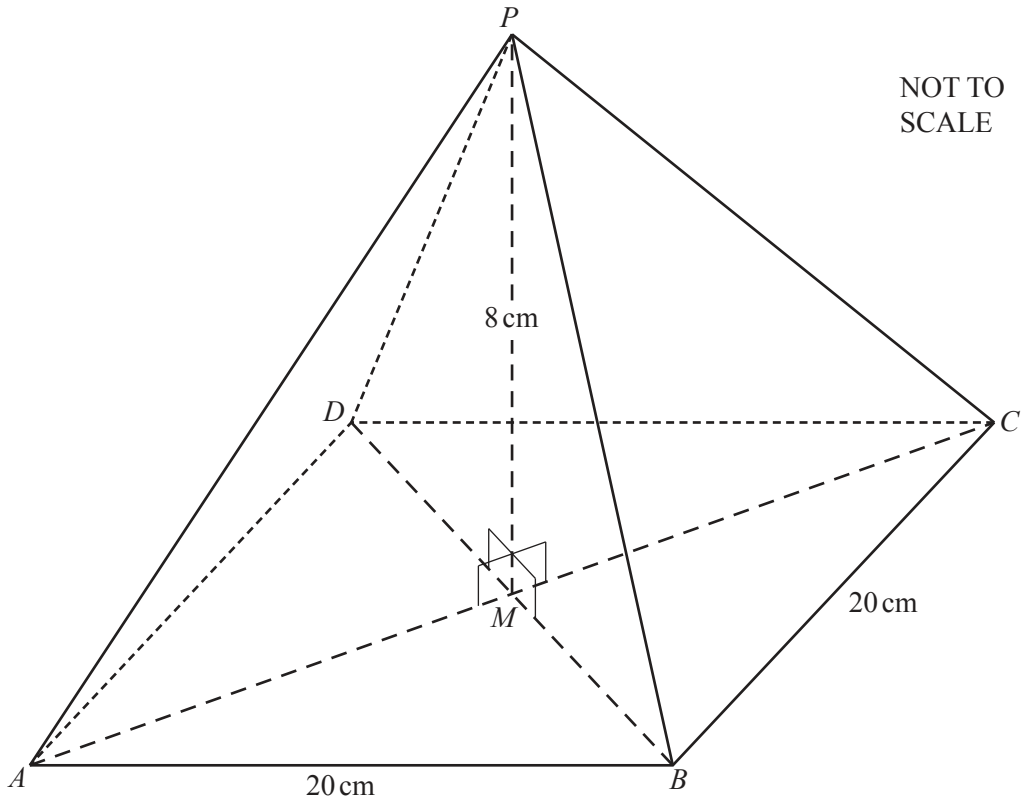
*Answer(a)* ..... s [1]

(b) the inter-quartile range,

*Answer(b)* ..... s [2]

(c) the number of students with a reaction time of more than 4 seconds.

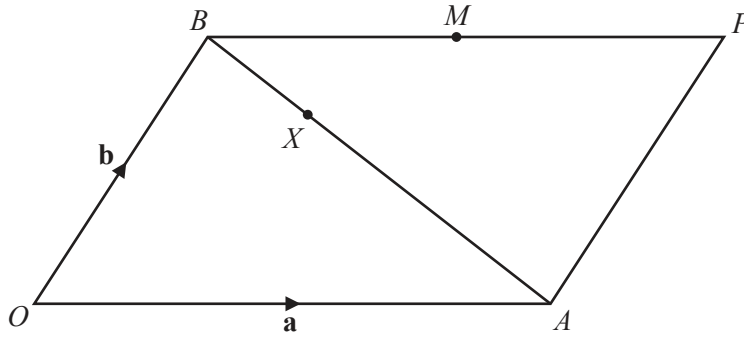
*Answer(c)* ..... [2]



The diagram shows a solid pyramid on a square horizontal base  $ABCD$ .  
 The diagonals  $AC$  and  $BD$  intersect at  $M$ .  
 $P$  is vertically above  $M$ .  
 $AB = 20$  cm and  $PM = 8$  cm.

Calculate the total surface area of the pyramid.

Answer ..... cm<sup>2</sup> [5]



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$OAPB$  is a parallelogram.  
 $O$  is the origin,  $\vec{OA} = \mathbf{a}$  and  $\vec{OB} = \mathbf{b}$ .  
 $M$  is the midpoint of  $BP$ .

(a) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ , giving your answer in its simplest form,

(i)  $\vec{BA}$ ,

Answer(a)(i)  $\vec{BA} = \dots\dots\dots$  [1]

(ii) the position vector of  $M$ .

Answer(a)(ii)  $\dots\dots\dots$  [1]

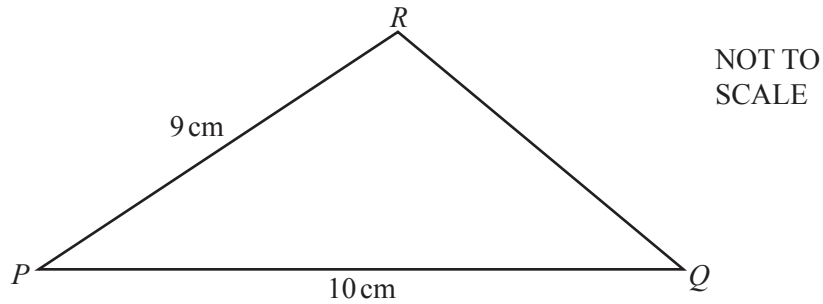
(b)  $X$  is on  $BA$  so that  $BX:XA = 1:2$ .

Show that  $X$  lies on  $OM$ .

Answer(b)

[4]

Question 20 is printed on the next page.



The area of triangle  $PQR$  is  $38.5\text{ cm}^2$ .

Calculate the length  $QR$ .

*Answer*  $QR = \dots\dots\dots\text{ cm}$  [6]

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