

1 The price of a ticket for a football match is \$124.

(a) Calculate the amount received when 76 500 tickets are sold.

Answer(a) \$ [1]

(b) Write your answer to **part (a)** in standard form.

Answer(b) \$ [1]

2 Gregor changes \$700 into euros (€) when the rate is €1 = \$1.4131.

Calculate the amount he receives.

Answer € [2]

3 Factorise completely.

$$15p^2 + 24pt$$

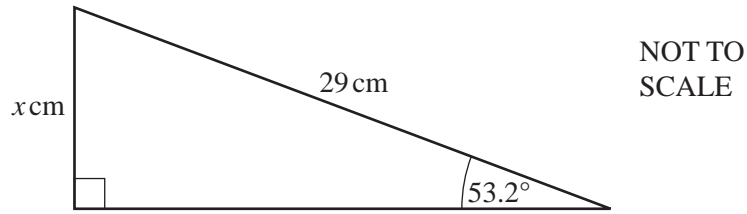
Answer [2]

4 Write the following in order of size, **smallest** first.

$$0.47 \quad \frac{8}{17} \quad \sqrt{0.22} \quad \tan 25^\circ$$

Answer < < < [2]

5



Calculate the value of x .

Answer $x =$ [2]

6 Leon scores the following marks in 5 tests.

8 4 8 y 9

His mean mark is 7.2.

Calculate the value of y .

Answer $y =$ [2]

7 The sides of a rectangle are 6.3 cm and 4.8 cm, each correct to 1 decimal place.

Calculate the upper bound for the area of the rectangle.

Answer cm^2 [2]

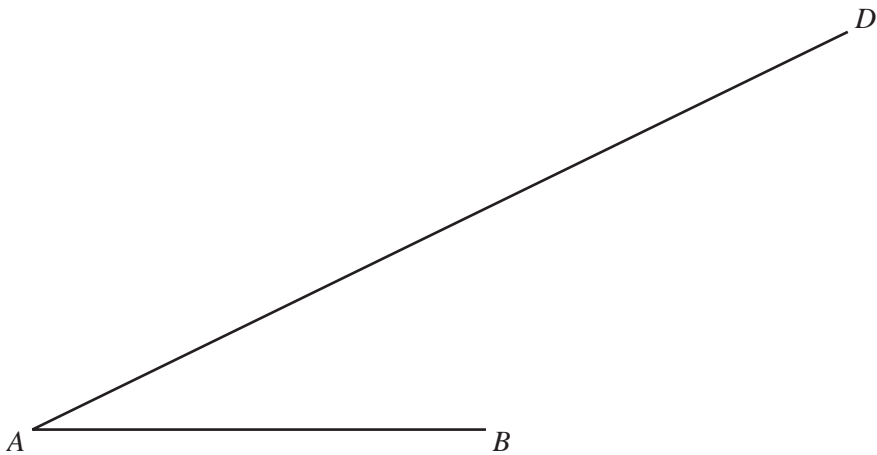
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8 Find r when $(5)^{\frac{r}{3}} = 125$.

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Answer $r =$ [2]

9



(a) The point C lies on AD and angle $ABC = 67^\circ$.

Draw accurately the line BC .

[1]

(b) Using a straight edge and compasses only, construct the perpendicular bisector of AB . Show clearly all your construction arcs.

[2]

- 10 Shania invests \$750 at a rate of $2\frac{1}{2}\%$ per year simple interest.
Calculate the **total** amount Shania has after 5 years.

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Answer \$ [3]

- 11 Solve the simultaneous equations.

$$3x + 5y = 24$$

$$x + 7y = 56$$

Answer $x =$

$y =$ [3]

- 12 Without using your calculator, work out $1\frac{5}{6} + \frac{9}{10}$.

You must show your working and give your answer as a mixed number in its simplest form.

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Answer [3]

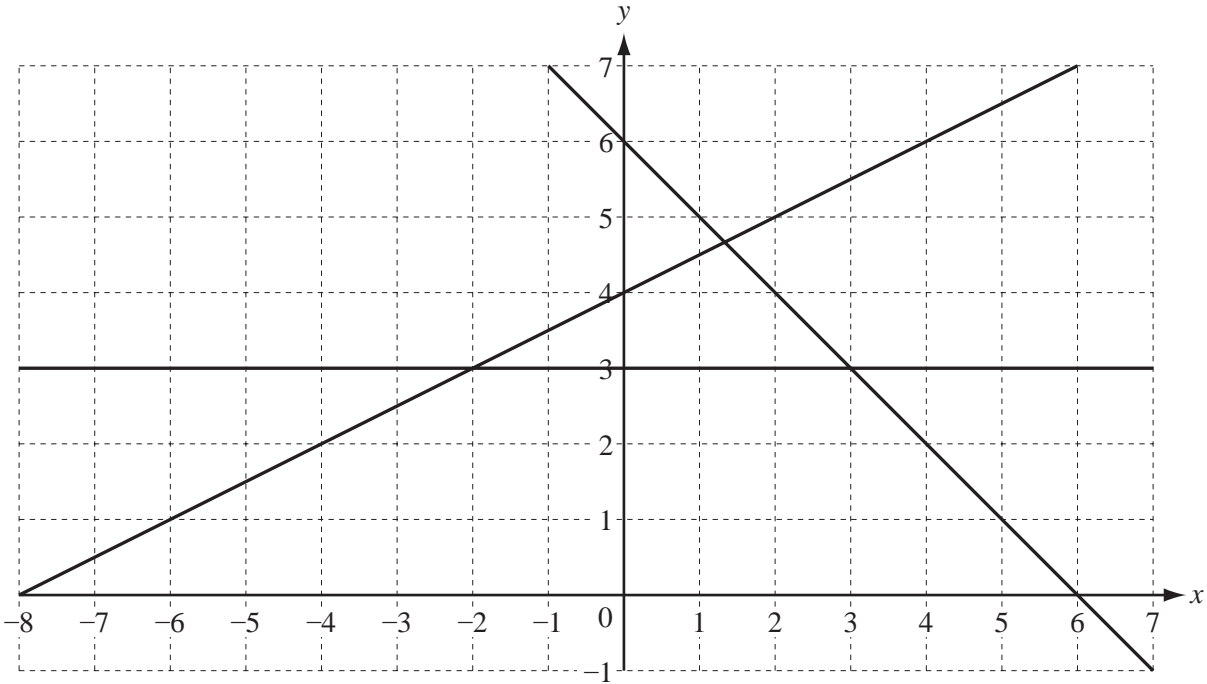
- 13 y is **inversely** proportional to x^2 .
When $x = 4$, $y = 3$.

Find y when $x = 5$.

Answer $y =$ [3]

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The region **R** contains points which satisfy the inequalities

$$y \leq \frac{1}{2}x + 4, \quad y \geq 3 \quad \text{and} \quad x + y \geq 6.$$

On the grid, label with the letter **R** the region which satisfies these inequalities.

You must shade the **unwanted** regions.

[3]

15 The scale of a map is 1 : 500 000.

- (a) The actual distance between two towns is 172 km.
Calculate the distance, in centimetres, between the towns on the map.

Answer(a) cm [2]

- (b) The area of a lake on the map is 12 cm².
Calculate the actual area of the lake in km².

Answer(b) km² [2]

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$$\mathbf{M} = \begin{pmatrix} 5 & 2 \\ -3 & 4 \end{pmatrix} \quad \mathbf{N} = \begin{pmatrix} -1 & -2 \\ 2 & 6 \end{pmatrix}$$

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Calculate

(a) \mathbf{MN} ,

Answer(a) $\mathbf{MN} =$ [2]

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

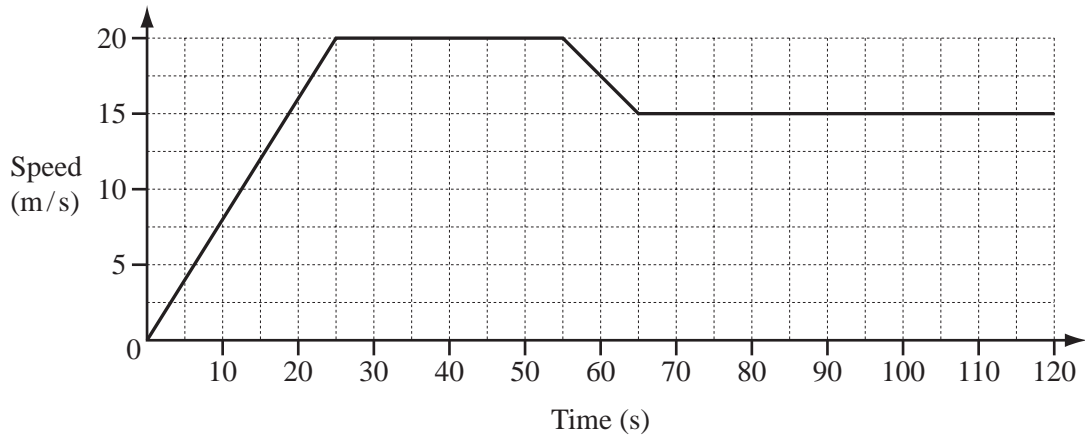
Answer(b) $\mathbf{M}^{-1} =$ [2]

17 Make w the subject of the formula.

$$c = \frac{4 + w}{w + 3}$$

Answer $w =$ [4]

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The diagram shows the speed-time graph for the first 120 seconds of a car journey.

(a) Calculate the acceleration of the car during the first 25 seconds.

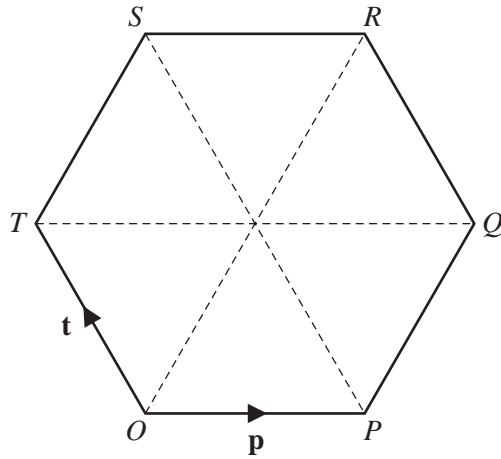
Answer(a) m/s^2 [1]

(b) Calculate the distance travelled by the car in the first 120 seconds.

Answer(b) m [4]

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O is the origin and $OPQRST$ is a regular hexagon.

$\vec{OP} = \mathbf{p}$ and $\vec{OT} = \mathbf{t}$.

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

(a) \vec{PT} ,

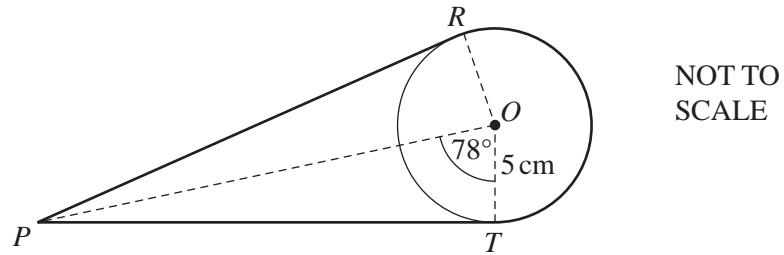
Answer(a) $\vec{PT} = \dots\dots\dots$ [1]

(b) \vec{PR} ,

Answer(b) $\vec{PR} = \dots\dots\dots$ [2]

(c) the position vector of R .

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



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R and T are points on a circle, centre O , with radius 5 cm.
 PR and PT are tangents to the circle and angle $POT = 78^\circ$.

A thin rope goes from P to R , around the major arc RT and then from T to P .

Calculate the length of the rope.

Answer cm [6]

Question 21 is printed on the next page.

21 In this question, give all your answers as fractions.

A box contains 3 red pencils, 2 blue pencils and 4 green pencils.
Raj chooses 2 pencils at random, without replacement.

Calculate the probability that

(a) they are both red,

Answer(a) [2]

(b) they are both the same colour,

Answer(b) [3]

(c) exactly one of the two pencils is green.

Answer(c) [3]

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