

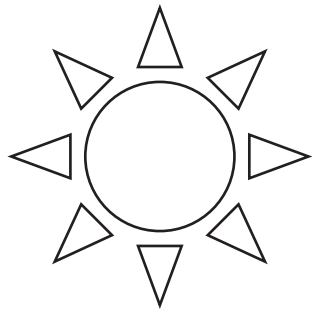
1 Insert **one pair** of brackets only to make the following statement correct.

$$6 + 5 \times 10 - 8 = 16$$

2 Calculate $\frac{8.24 + 2.56}{1.26 - 0.72}$.

Answer [1]

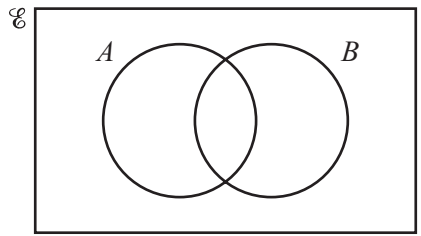
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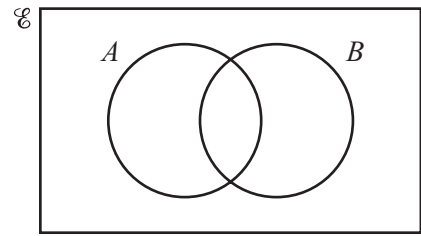
Write down the order of rotational symmetry of this shape.

Answer [1]

4 Shade the region required in each Venn diagram.



$(A \cup B)'$



$A' \cap B$

[2]

5 Make r the subject of this formula.

$$v = \sqrt[3]{p + r}$$

Answer $r = \dots\dots\dots$ [2]

6 The length, l metres, of a football pitch is 96m, correct to the nearest metre.

Complete the statement about the length of this football pitch.

Answer $\dots\dots\dots \leq l < \dots\dots\dots$ [2]

7 For her holiday, Alyssa changed 2800 Malaysian Ringgits (MYR) to US dollars (\$) when the exchange rate was 1 MYR = \$0.325 .

At the end of her holiday she had \$210 left.

(a) How many dollars did she spend?

Answer(a) \$..... [2]

(b) She changed the \$210 for 750 MYR.

What was the exchange rate in dollars for 1 MYR?

Answer(b) 1 MYR = \$..... [1]

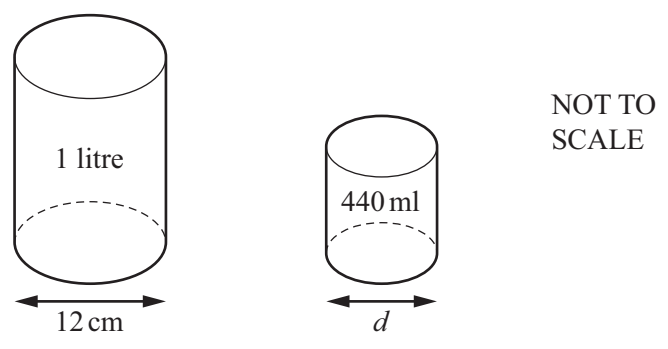
8 Without using a calculator, work out $1\frac{1}{6} \div \frac{7}{8}$.

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

Answer $\dots\dots\dots$ [3]

4

9



Two cylindrical cans are mathematically similar.
 The larger can has a capacity of 1 litre and the smaller can has a capacity of 440 ml.

Calculate the diameter, d , of the 440 ml can.

Answer $d = \dots\dots\dots$ cm [3]

10 The cost of a circular patio, \$ C , varies as the square of the radius, r metres.
 $C = 202.80$ when $r = 2.6$.

Calculate the cost of a circular patio with $r = 1.8$.

Answer \$..... [3]

11 $A = \begin{pmatrix} 3 & -2 \\ 1 & 4 \end{pmatrix}$ $B = \begin{pmatrix} 2 & 0 \\ -5 & 7 \end{pmatrix}$

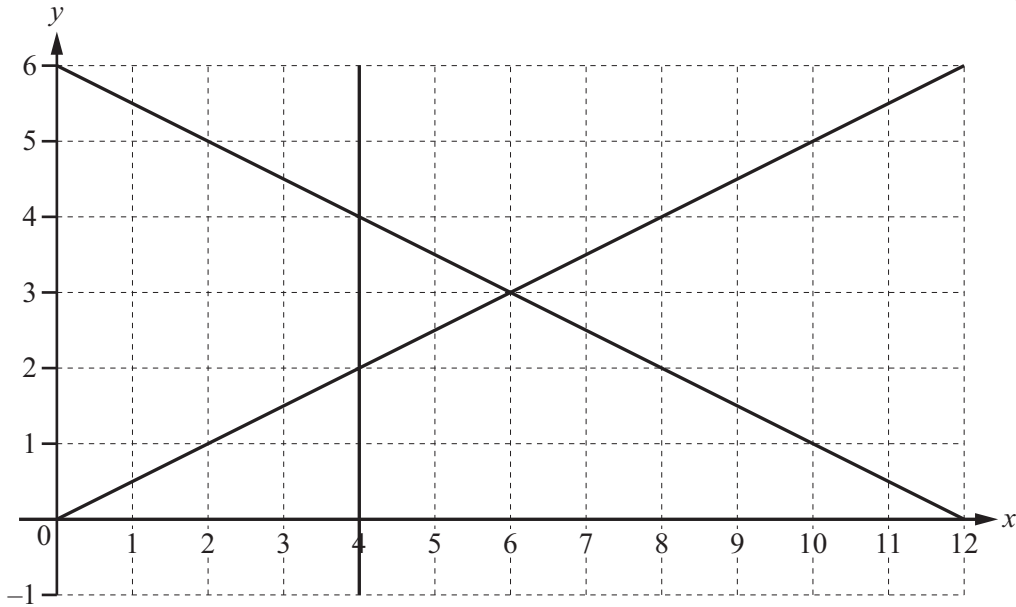
(a) Calculate BA .

Answer(a) $BA = \dots\dots\dots$ [2]

(b) Find the determinant of A .

Answer(b) [1]

12



By shading the **unwanted** regions of the grid, find and label the region R which satisfies the following four inequalities.

$$y \geq 0$$

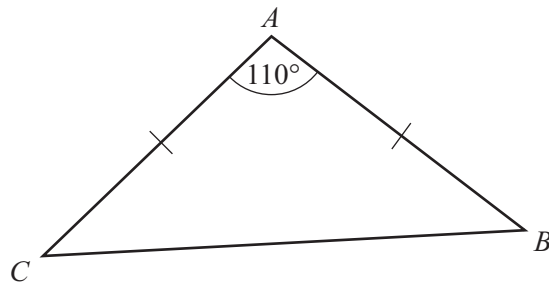
$$x \geq 4$$

$$2y \leq x$$

$$2y + x \leq 12$$

[3]

13



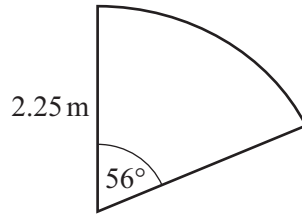
NOT TO SCALE

Triangle ABC is isosceles with $AB = AC$.
 Angle $BAC = 110^\circ$ and the area of the triangle is 85 cm^2 .

Calculate AC .

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

14



NOT TO SCALE

The diagram shows a sand pit in a child's play area.
The shape of the sand pit is a sector of a circle of radius 2.25 m and sector angle 56° .

(a) Calculate the area of the sand pit.

Answer(a) m^2 [2]

(b) The sand pit is filled with sand to a depth of 0.3 m.

Calculate the volume of sand in the sand pit.

Answer(b) m^3 [1]

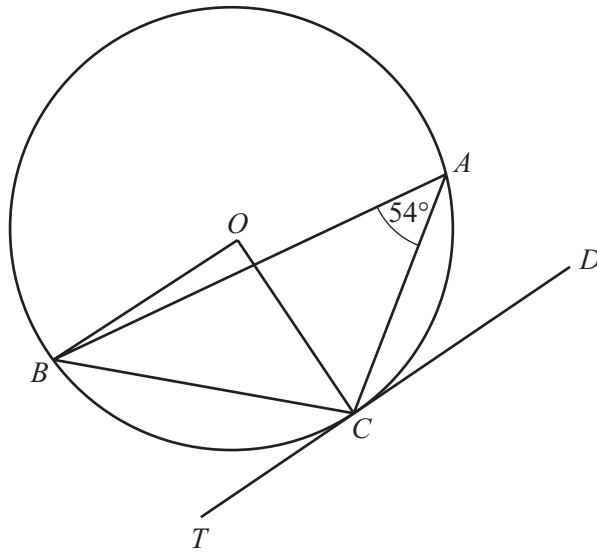
15 (a) Write 90 as a product of prime factors.

Answer(a) [2]

(b) Find the lowest common multiple of 90 and 105.

Answer(b) [2]

- 16 A, B and C are points on a circle, centre O .
 TCD is a tangent to the circle.
 Angle $BAC = 54^\circ$.



NOT TO SCALE

- (a) Find angle BOC , giving a reason for your answer.

Answer(a) Angle $BOC = \dots\dots\dots$ because $\dots\dots\dots$
 $\dots\dots\dots$ [2]

- (b) When O is the origin, the position vector of point C is $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$.

- (i) Work out the gradient of the radius OC .

Answer(b)(i) $\dots\dots\dots$ [1]

- (ii) D is the point $(7, k)$.

Find the value of k .

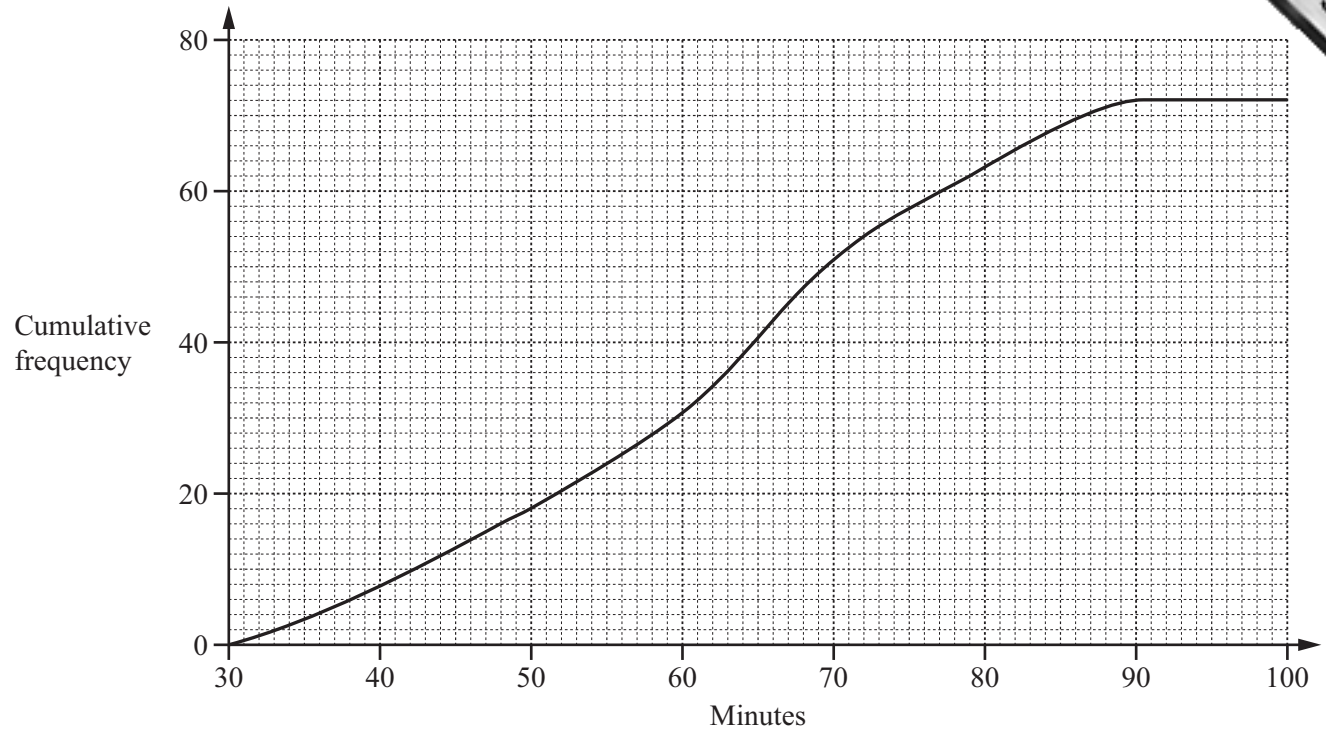
Answer(b)(ii) $k = \dots\dots\dots$ [1]

- 17 Alex invests \$200 for 2 years at a rate of 2% per year simple interest.
Chris invests \$200 for 2 years at a rate of 2% per year compound interest.

Calculate how much more interest Chris has than Alex.

Answer \$..... [4]

18 72 students are given homework one evening.
They are told to spend no more than 100 minutes completing their homework.
The cumulative frequency diagram shows the number of minutes they spend.



(a) How many students spent more than 48 minutes completing their homework?

Answer(a) [2]

(b) Find

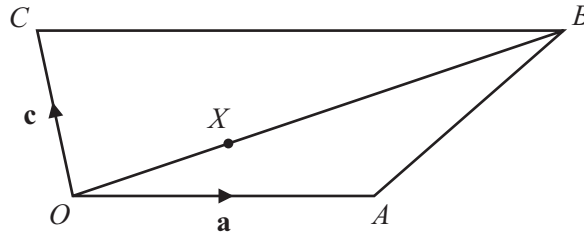
(i) the median,

Answer(b)(i) [1]

(ii) the inter-quartile range.

Answer(b)(ii) [2]

19



NOT TO SCALE

The diagram shows a quadrilateral $OABC$.

$\vec{OA} = \mathbf{a}$, $\vec{OC} = \mathbf{c}$ and $\vec{CB} = 2\mathbf{a}$.

X is a point on OB such that $OX:XB = 1:2$.

(a) Find, in terms of \mathbf{a} and \mathbf{c} , in its simplest form

(i) \vec{AC} ,

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

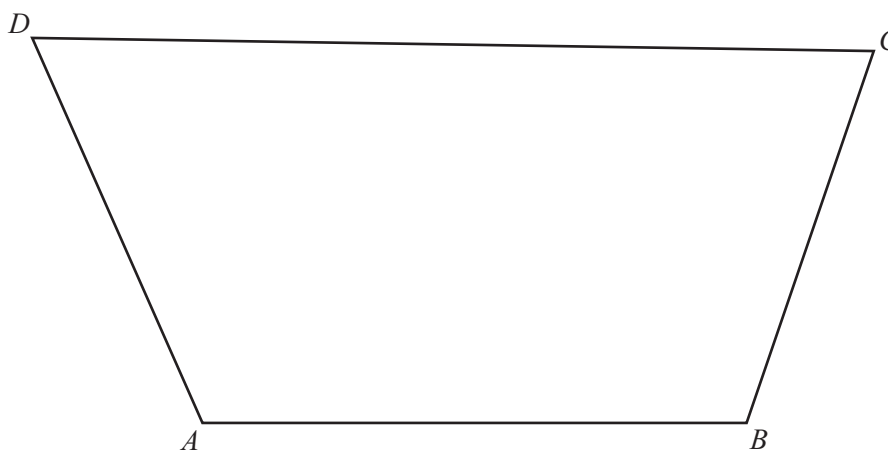
(ii) \vec{AX} .

Answer(a)(ii) $\vec{AX} = \dots\dots\dots$ [3]

(b) Explain why the vectors \vec{AC} and \vec{AX} show that C, X and A lie on a straight line.

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

- 20 The diagram shows the plan, $ABCD$, of a park.
The scale is 1 centimetre represents 20 metres.



Scale: 1 cm to 20 m

- (a) Find the actual distance BC .

Answer(a) m [2]

- (b) A fountain, F , is to be placed

- 160 m from C
- and
- equidistant from AB and AD .

On the diagram, **using a ruler and compasses only**, construct and mark the position of F .
Leave in all your construction lines.

[5]

Question 21 is printed on the next page.

21 (a) Write as a single fraction in its simplest form.

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

Answer(a) [3]

(b) Simplify.

$$\frac{4x^2 - 16x}{2x^2 + 6x - 56}$$

Answer(b) [4]

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