

- 1 In March 2011, the average temperature in Kiev was 3°C.
In March 2012, the average temperature in Kiev was 19°C lower than in March 2011.

Write down the average temperature in Kiev in March 2012.

Answer °C [1]

- 2 Michelle sells ice cream.
The table shows how many of the different flavours she sells in one hour.

Flavour	Vanilla	Strawberry	Chocolate	Mango
Number sold	6	8	9	7

Michelle wants to show this information in a pie chart.

Calculate the sector angle for mango.

Answer [2]

- 3 Chris changes \$1350 into euros (€) when €1 = \$1.313 .

Calculate how much he receives.

Answer €..... [2]

- 4 Factorise completely.
 $15a^3 - 5ab$

Answer [2]

- 5 (a) Use your calculator to find the value of $7.5^{-0.4} \div \sqrt{57}$.
Write down your full calculator display.

Answer(a) [1]

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

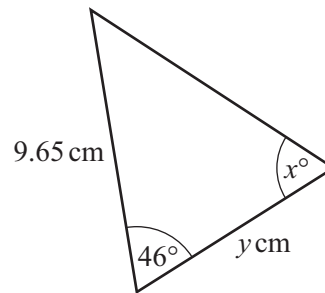
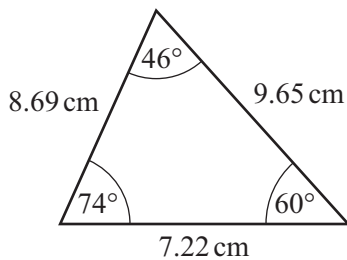
Answer(b) [1]

- 6 Simplify.

$$3x^2y^3 \times x^4y$$

Answer [2]

7



NOT TO SCALE

These two triangles are congruent.
Write down the value of

- (a) x ,

Answer(a) $x =$ [1]

- (b) y .

Answer(b) $y =$ [1]

8 Hans draws a plan of a field using a scale of 1 centimetre to represent 15 metres.
The actual area of the field is 10 800 m².

Calculate the area of the field on the plan.

Answer cm² [2]

9 Solve the inequality.

$$5t + 23 < 17 - 2t$$

Answer [2]

10 Without using a calculator, work out $1\frac{1}{4} - \frac{7}{9}$.

Write down all the steps in your working.

Answer [3]

11 y varies as the cube root of $(x + 3)$.
When $x = 5, y = 1$.

Find the value of y when $x = 340$.

Answer $y = \dots\dots\dots$ [3]

12 (a) Factorise $3x^2 + 2x - 8$.

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

(b) Solve the equation $3x^2 + 2x - 8 = 0$.

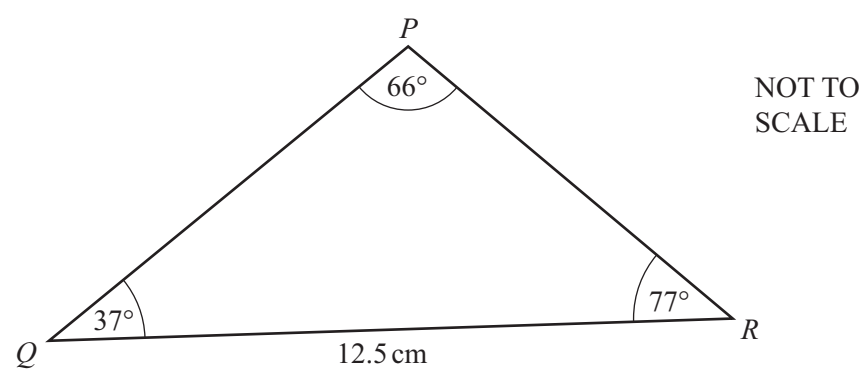
Answer(b) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [1]

13 Find the equation of the line passing through the points with co-ordinates $(5, 9)$ and $(-3, 13)$.

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

6

14



Calculate PR .

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

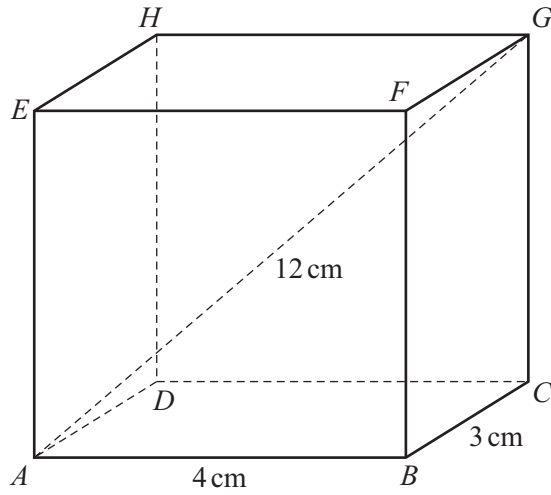
15 A rectangle has length 127.3 cm and width 86.5 cm , both correct to 1 decimal place.

Calculate the upper bound and the lower bound for the perimeter of the rectangle.

Answer Upper bound = $\dots\dots\dots \text{ cm}$

Lower bound = $\dots\dots\dots \text{ cm}$ [3]

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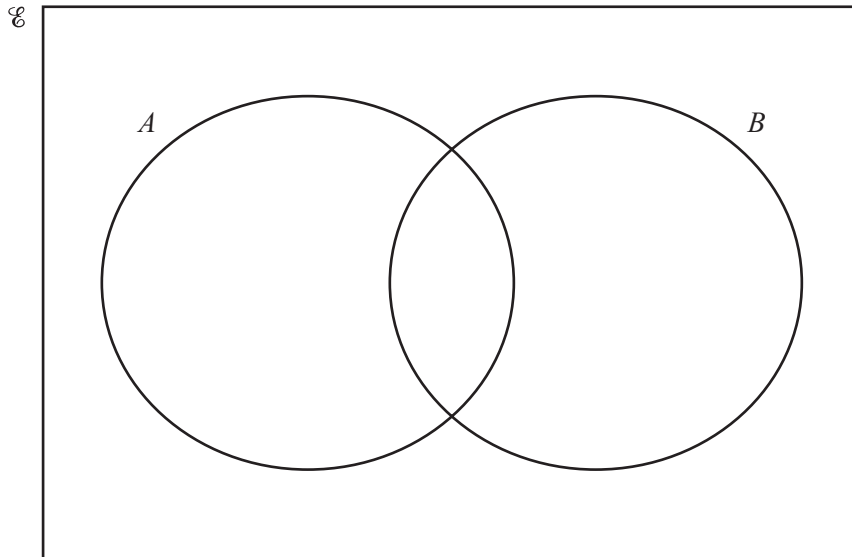
$ABCDEFGH$ is a cuboid.
 $AB = 4$ cm, $BC = 3$ cm and $AG = 12$ cm.

Calculate the angle that AG makes with the base $ABCD$.

Answer [4]

- 17 $\mathcal{E} = \{x : 1 \leq x \leq 10, \text{ where } x \text{ is an integer}\}$
 $A = \{\text{square numbers}\}$
 $B = \{1, 2, 3, 4, 5, 6\}$

(a) Write all the elements of \mathcal{E} in their correct place in the Venn diagram.



[2]

(b) List the elements of $(A \cup B)'$.

Answer(b) [1]

(c) Find $n(A \cap B')$.

Answer(c) [1]

18

$$A = \begin{pmatrix} 5 & 2 \\ 4 & 3 \end{pmatrix}$$

(a) Calculate A^2 .

Answer(a)

[2]

(b) Calculate A^{-1} , the inverse of A.

Answer(b)

[2]

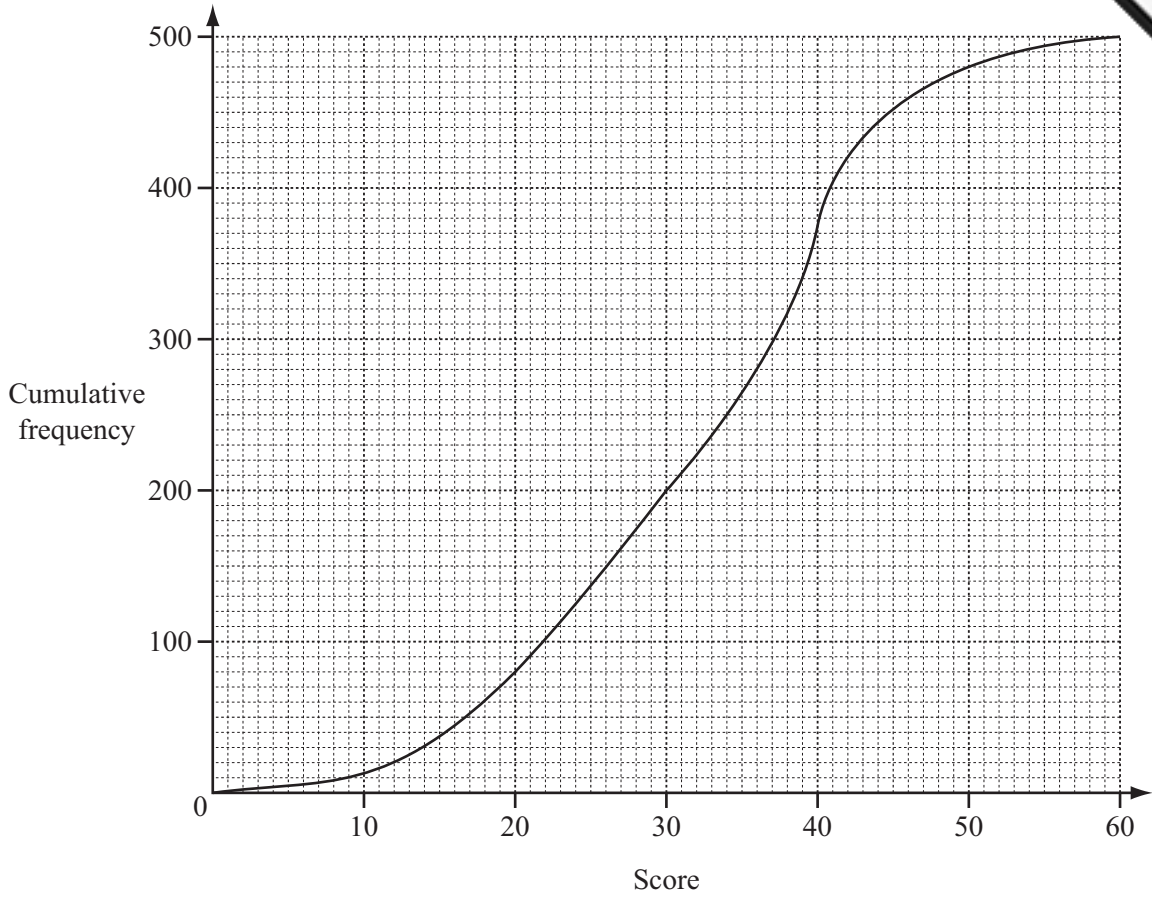
19 Robbie pays \$10.80 when he buys 3 notebooks and 4 pencils.
Paniz pays \$14.50 when she buys 5 notebooks and 2 pencils.

Write down simultaneous equations and use them to find the cost of a notebook and the cost of a pencil.

Answer Cost of a notebook = \$.....

Cost of a pencil = \$..... [5]

20 Jenna draws a cumulative frequency diagram to show information about the scores of 500 people



Use the diagram to find

(a) the median score,

Answer(a) [1]

(b) the inter-quartile range,

Answer(b) [2]

(c) the 40th percentile,

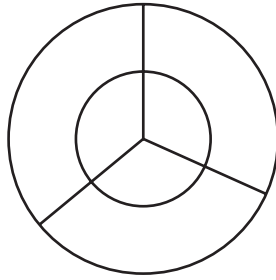
Answer(c) [1]

(d) the number of people who scored 30 or less but more than 20.

Answer(d) [1]

11

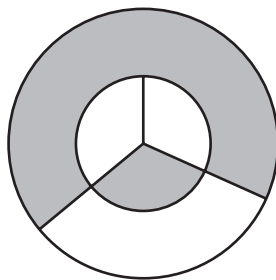
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The diagram shows two concentric circles and three radii.
The diagram has rotational symmetry of order 3.

A club uses the diagram for its badge with some sections shaded.
The radius of the large circle is 6 cm and the radius of the small circle is 4 cm.

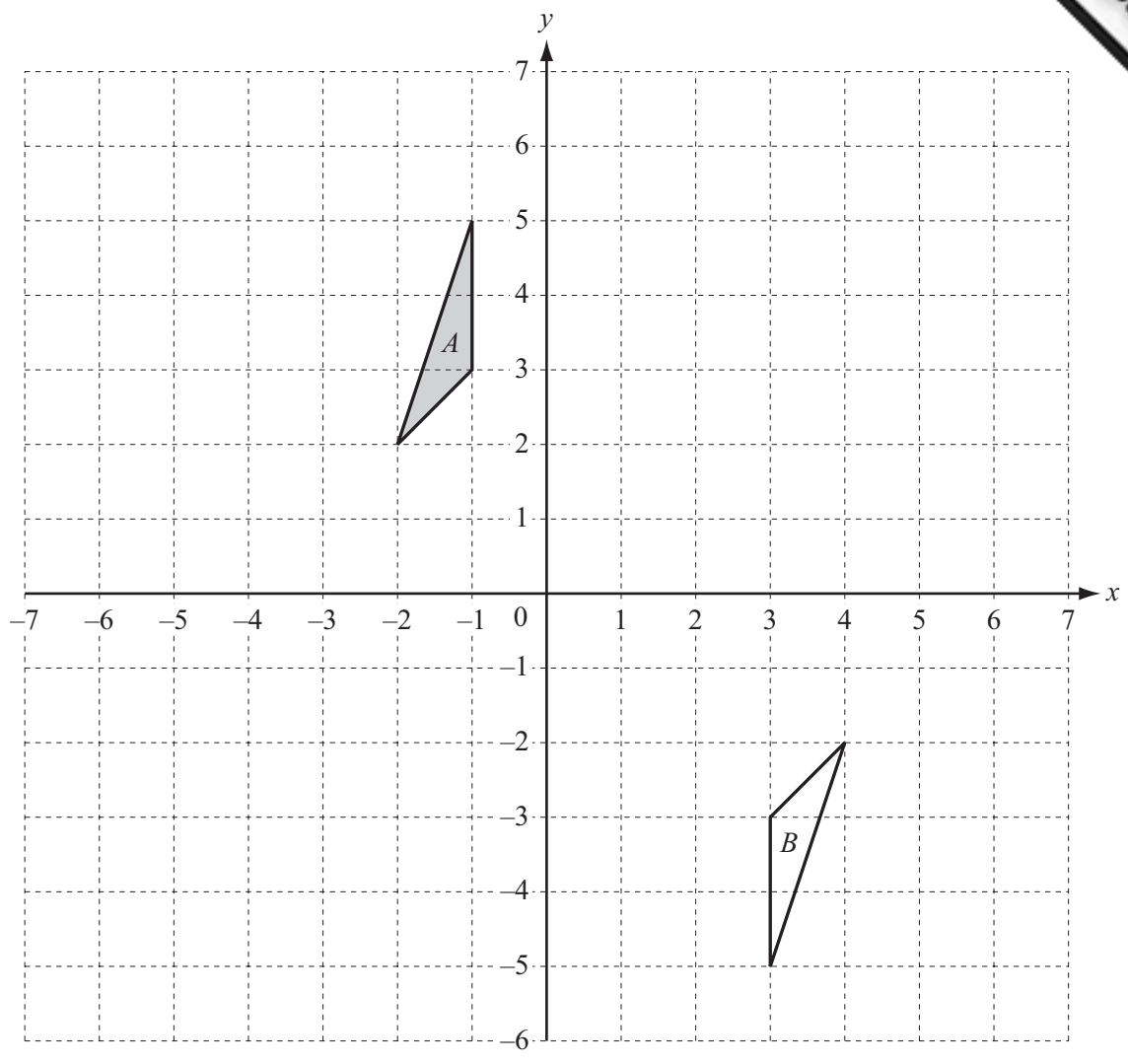


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Calculate the total perimeter of the shaded area.

Answer cm [5]

Question 22 is printed on the next page.



- (a) Draw the image of triangle *A* after a translation by the vector $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$. [2]
- (b) Describe fully the **single** transformation which maps triangle *A* onto triangle *B*.

Answer(b)

..... [3]

- (c) Draw the image of triangle *A* after the transformation represented by the matrix $\begin{pmatrix} -2 & 0 \\ 0 & 1 \end{pmatrix}$. [3]

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