



- 1 In March 2011, the average temperature in Kiev was  $3^{\circ}\text{C}$ .  
In March 2012, the average temperature in Kiev was  $19^{\circ}\text{C}$  lower than in March 2011.

Write down the average temperature in Kiev in March 2012.

Answer .....  $^{\circ}\text{C}$  [1]

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- 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]

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

Calculate how much he receives.

Answer  $\text{€}$ ..... [2]

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- 4 Factorise completely.

$$15a^3 - 5ab$$

Answer ..... [2]

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- 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.

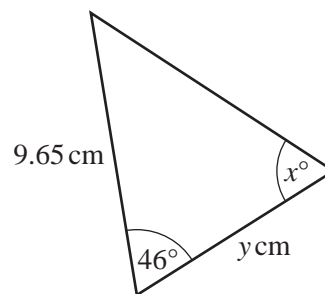
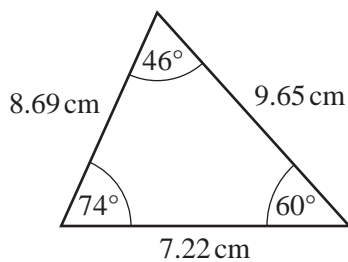
Answer(b) ..... [1]

- 6 Simplify.

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

Answer ..... [2]

7



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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  $10\,800\text{m}^2$ .

Calculate the area of the field on the plan.

Answer .....  $\text{cm}^2$  [2]

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- 9 Solve the inequality.

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

Answer ..... [2]

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

Write down all the steps in your working.

Answer ..... [3]

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- 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]

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- 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]

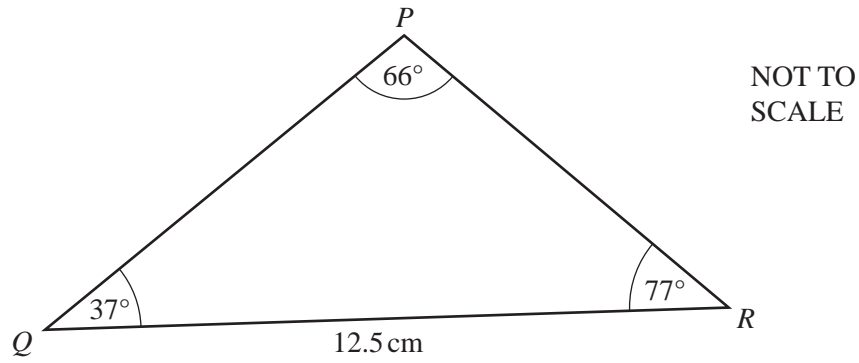
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- 13** Find the equation of the line passing through the points with co-ordinates  $(5, 9)$  and  $(-3, 13)$ .

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

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14



Calculate  $PR$ .

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

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15 A rectangle has length  $127.3 \text{ cm}$  and width  $86.5 \text{ cm}$ , both correct to 1 decimal place.

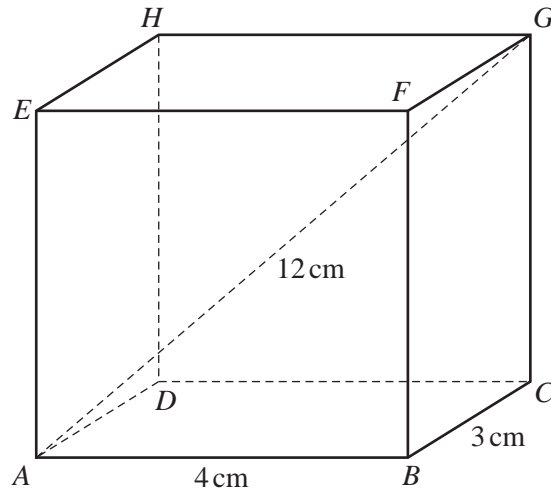
Calculate the upper bound and the lower bound for the perimeter of the rectangle.

*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]

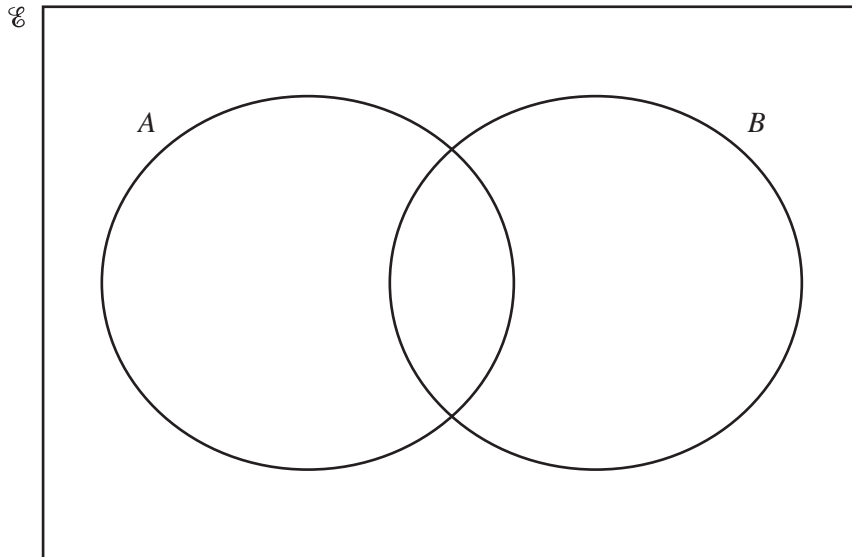
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17  $\mathcal{E} = \{x : 1 \leq x \leq 10, \text{ where } x \text{ is an integer}\}$

$A = \{\text{square numbers}\}$

$B = \{1, 2, 3, 4, 5, 6\}$

(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

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

(a) Calculate  $\mathbf{A}^2$ .*Answer(a)*

[2]

(b) Calculate  $\mathbf{A}^{-1}$ , the inverse of  $\mathbf{A}$ .*Answer(b)*

[2]

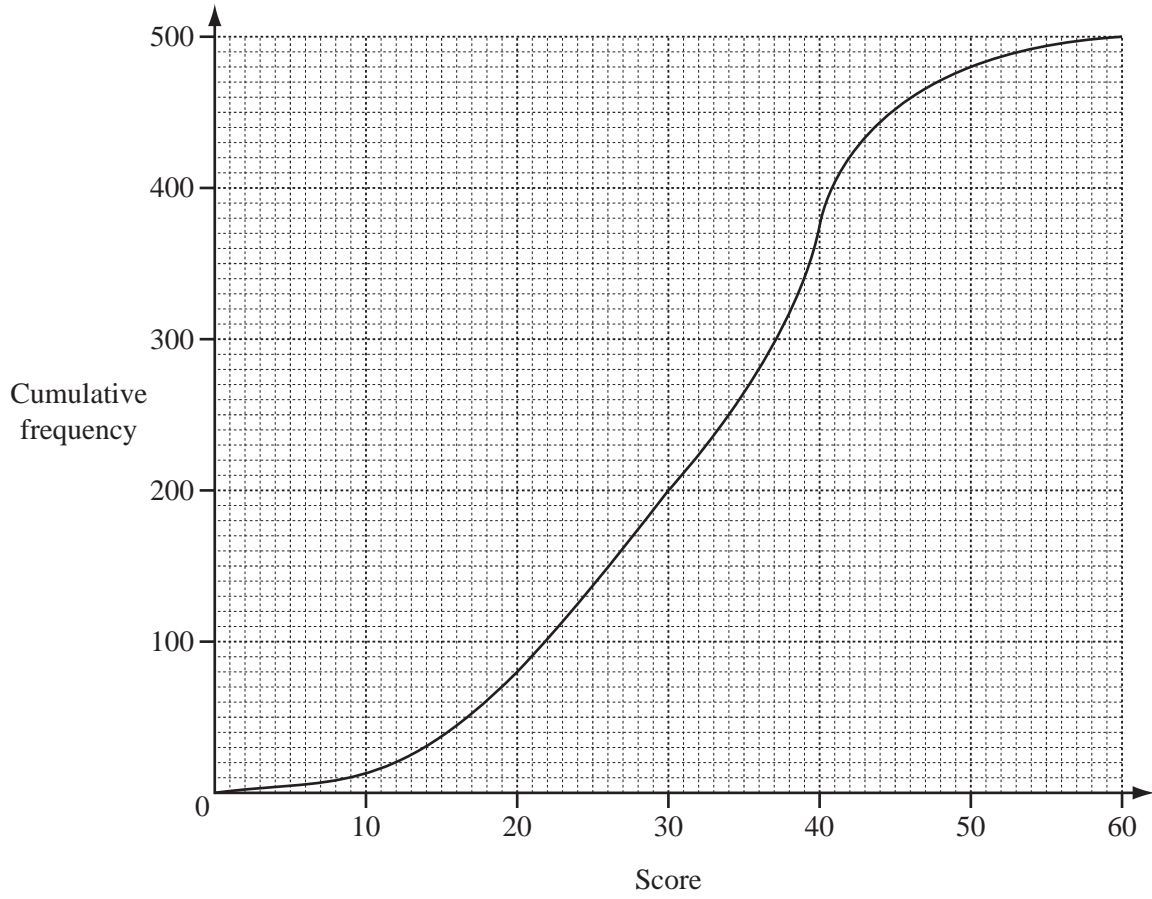
- 19 Robbie pays \$10.80 when he buys 3 notebooks and 4 pencils.  
Paniz pays \$14.50 when she buys 5 notebooks and 2 pencils.

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 in a quiz.



Use the diagram to find

(a) the median score,

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

(b) the inter-quartile range,

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

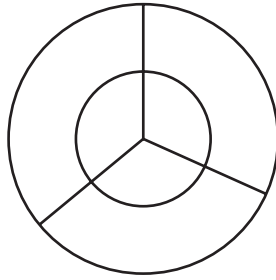
(c) the 40th percentile,

Answer(c) ..... [1]

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

Answer(d) ..... [1]

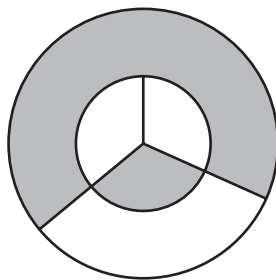
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The diagram shows two concentric circles and three radii.  
The diagram has rotational symmetry of order 3.

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.

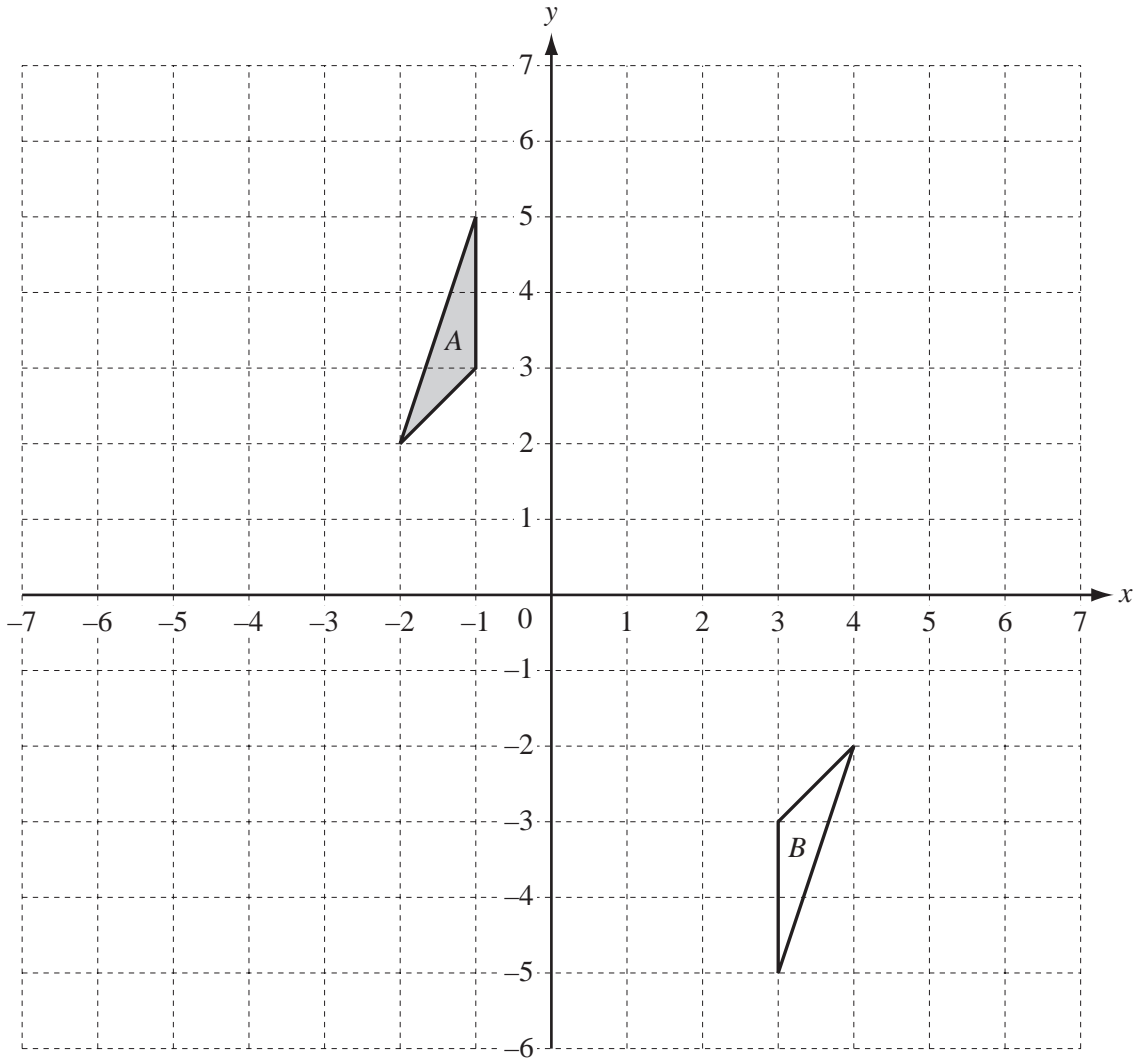


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Calculate the total perimeter of the shaded area.

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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