1.

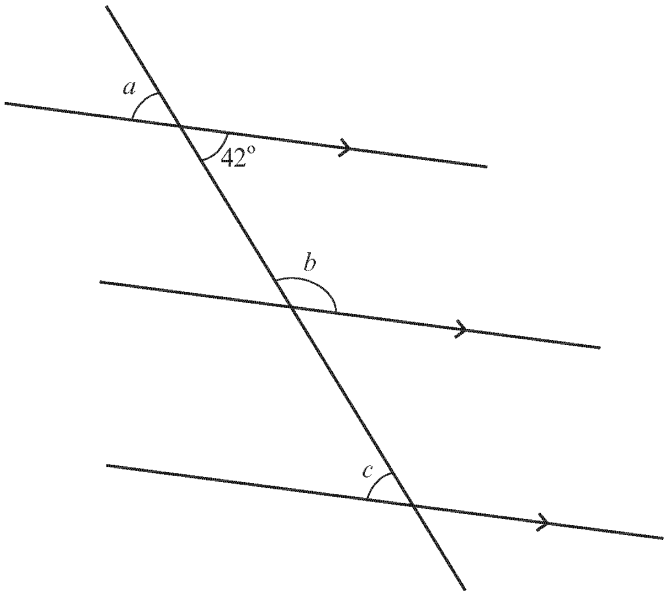

Diagram not drawn to scale

Find the size of each of the angles a, b and c.

.....

.....

.....

$a =$ ..... ° $b =$ ..... ° $c =$ ..... °

[3]

2.

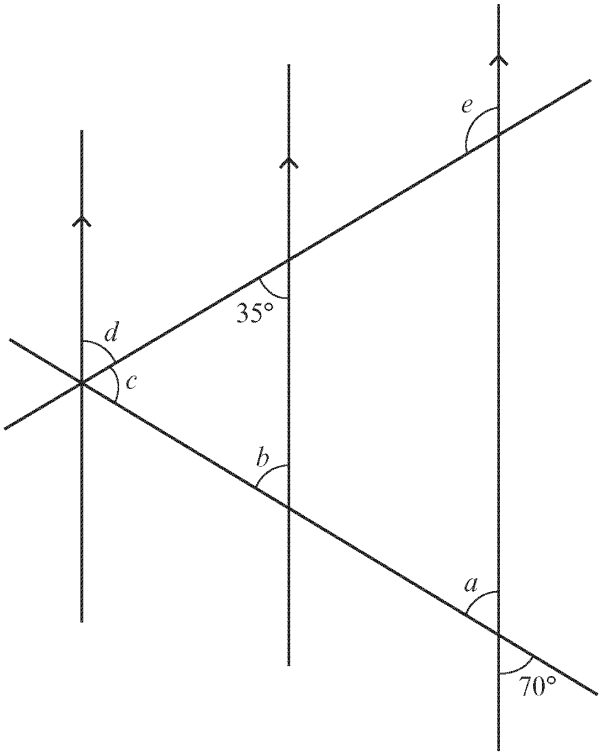

Diagram not drawn to scale

Find the size of the angles marked *a*, *b*, *c*, *d* and *e*.

.....

.....

.....

a = ... °

b = ... °

c = ... °

d = ... °

e = ... °

[5]

3. Find the size of the angles q, r, s and t.

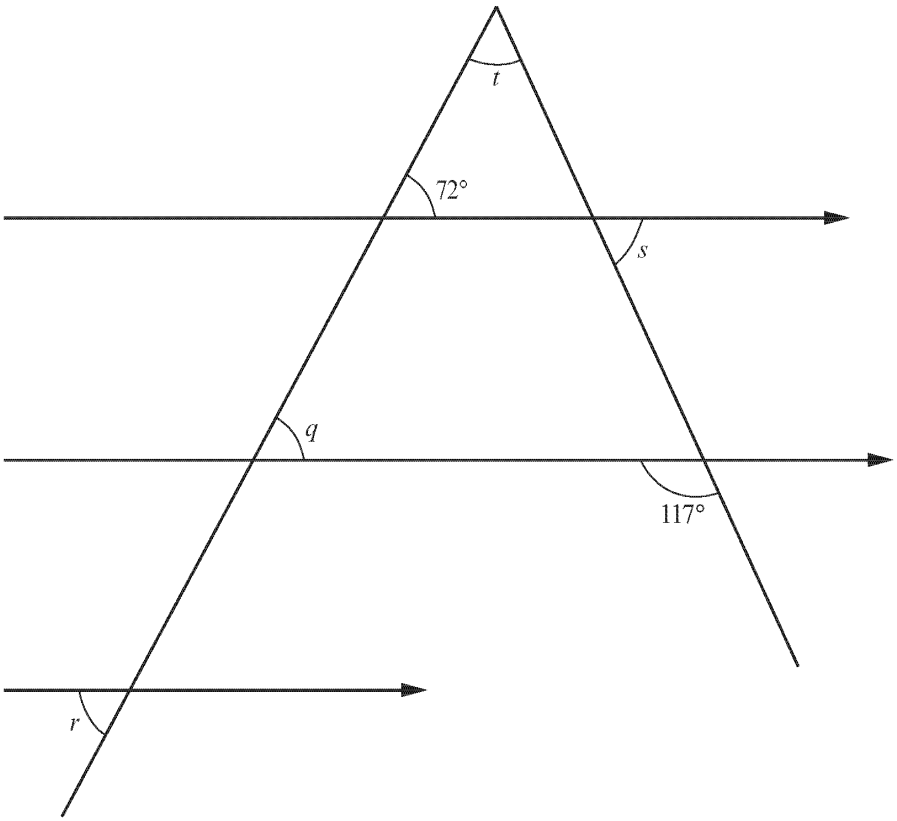

Diagram not drawn to scale

.....

.....

.....

q = ... ° r = ... ° s = ... ° t = ... °

[4]

4.

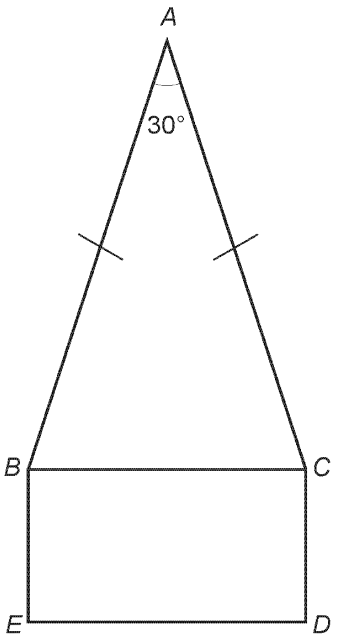

Diagram not drawn to scale

The diagram shows:

- an isosceles triangle *ABC*
- a rectangle *BCDE*.

Find the size of $A\hat{B}E$. [4]

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5.

(a) Find the size of angle x.

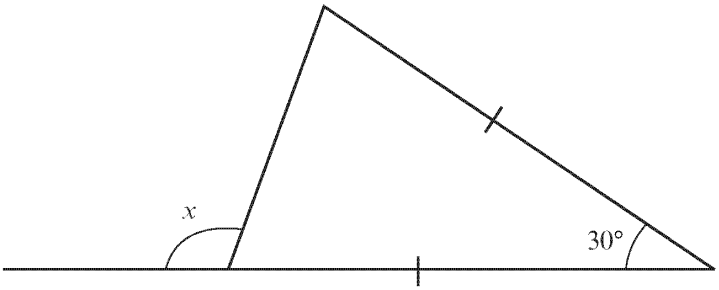

Diagram not drawn to scale

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[3]

(b) The diagram below shows a regular pentagon.
Find the size of angle t.

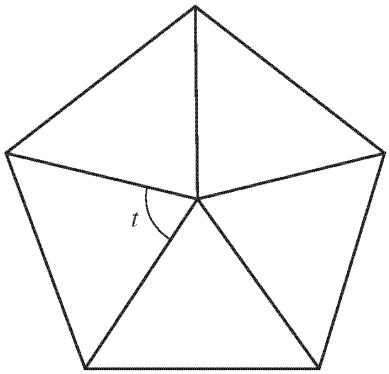

Diagram not drawn to scale

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.....

.....

[2]

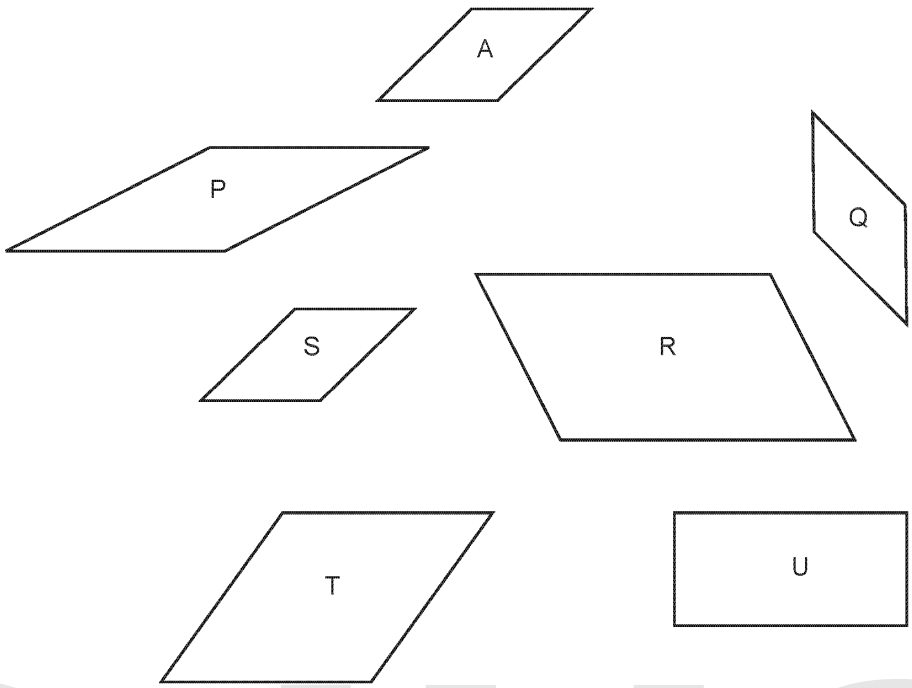
6.

The rectangle *ABCD* represents a snooker table.
Show the position of a red ball at *P* on the snooker table where

- $P\hat{B}C = 38°$
- $BP = 8{\cdot}5\,\text{cm}$.

On the diagram, mark the position of *P* with a cross. [2]

7.

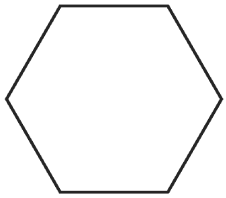


Which of these shapes are congruent to shape A? [2]

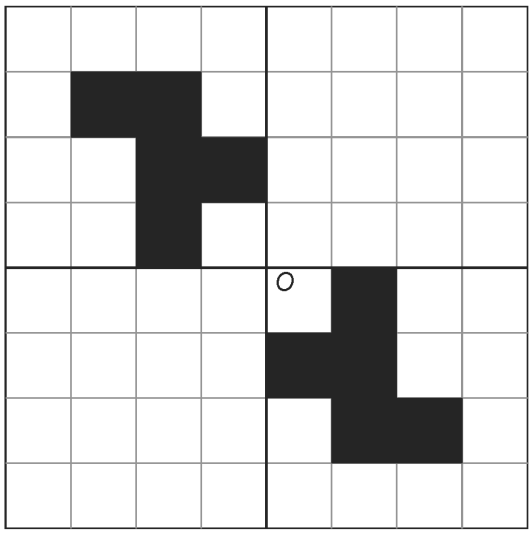
.....

8.

(a) Draw all the lines of symmetry on the following diagram. [2]

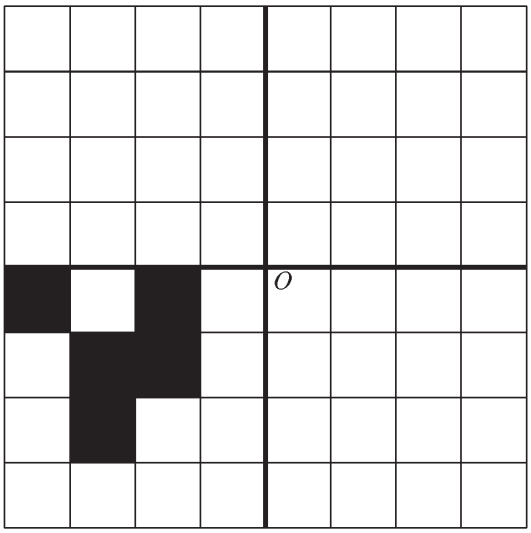


(b) Draw two more shapes so that the completed pattern has rotational symmetry of order 4 about *O*. [2]



9.

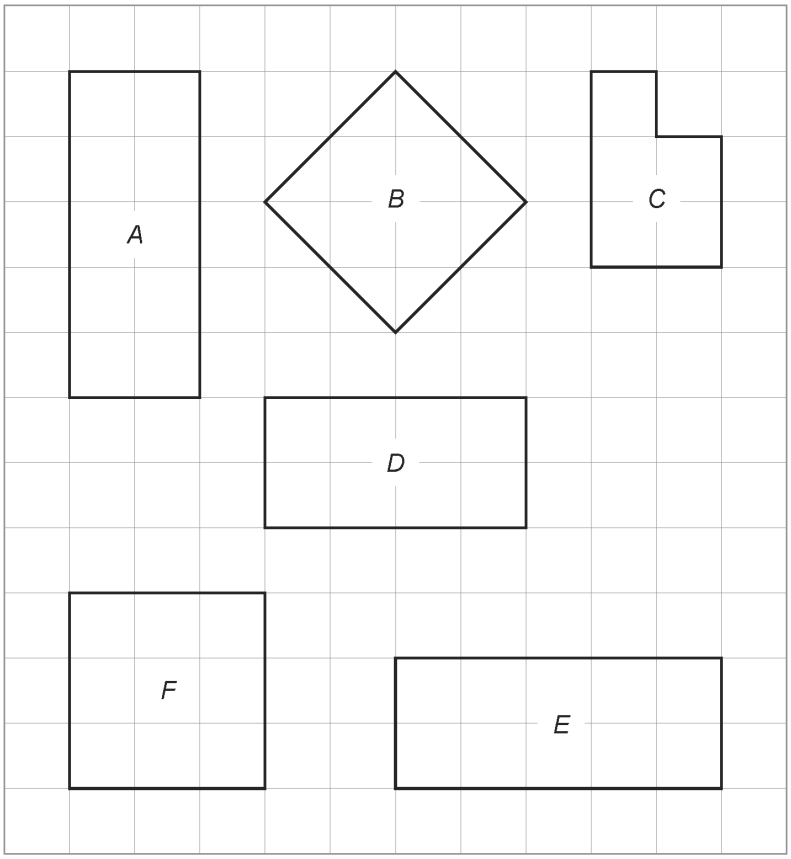
Draw patterns like the given one in each of the other 3 sections so that the completed pattern has rotational symmetry of order 4 about O.



[3]

10.

Some shapes are drawn on 1 cm squared paper.



(a) Which shape is congruent to shape *A*? [1]

.....

(b) Which **two** shapes are similar but not congruent? [1]

.....

(c) Which shape has half the area of shape *E*? [1]

.....

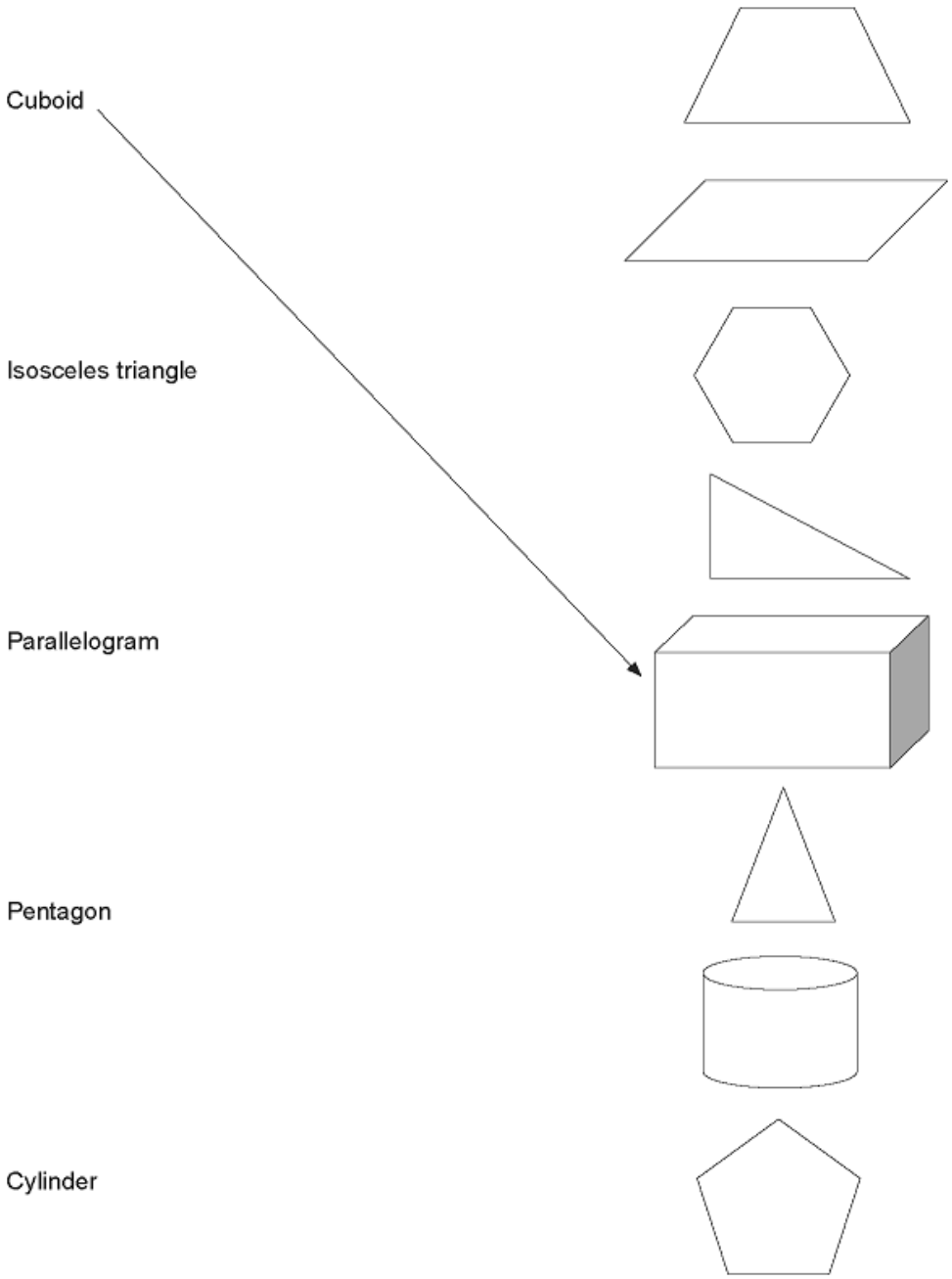
(d) (i) Find the perimeter of shape *F*. [1]

Perimeter = ... cm

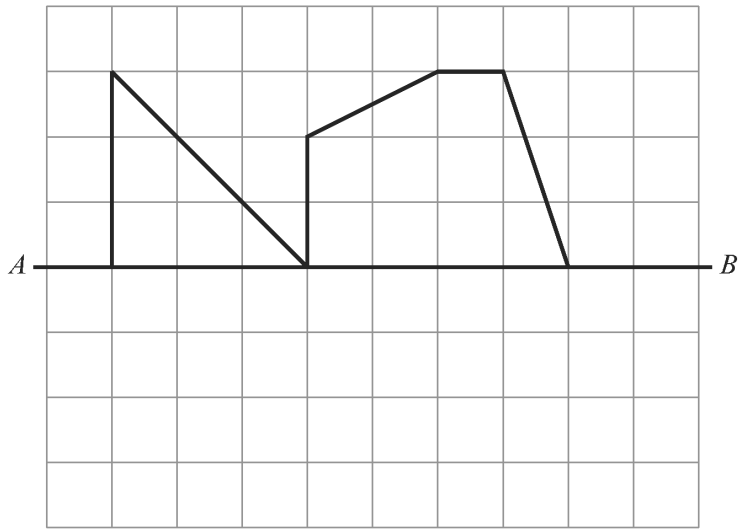
(ii) Which shape has the same perimeter as shape *F*? [1]

.....

11. Draw a line connecting each of the following words to the correct shape.
The first one has been done for you. [4]

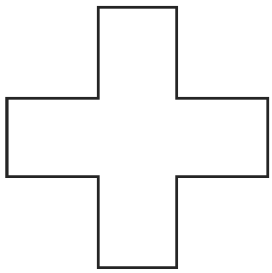


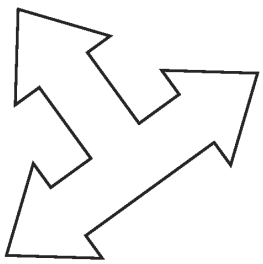
12. *(a)* Complete the following diagram so that AB is a line of symmetry.



[2]

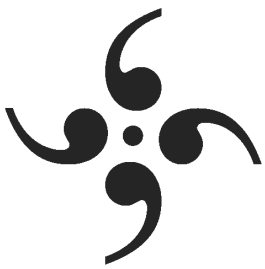
(b) Draw the lines of symmetry on each of the shapes below.

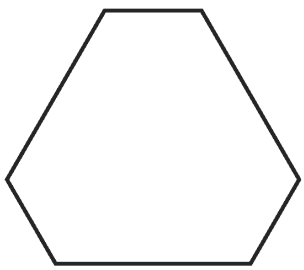


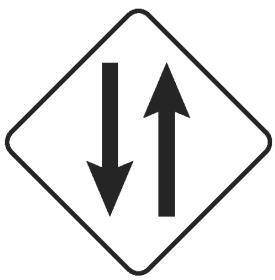


[3]

(c) Write down the order of rotational symmetry of each of the following shapes.







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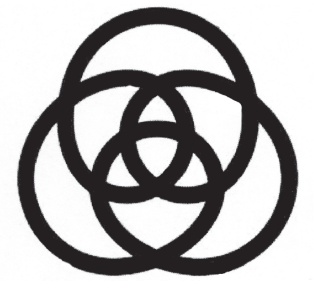
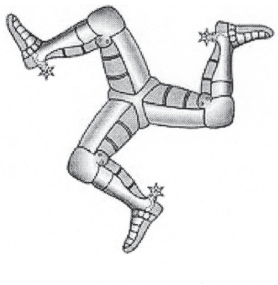
[3]

13. A plate manufacturer wishes to design a pattern to be printed on a new circular dinner plate. They consider three possible designs as shown below.



Rings

Petals



Legs

The new design must satisfy the following criteria.

Given that

n = the number of lines of symmetry

r = the order of rotational symmetry

then $n > 2$ and $r - n = 0$

Complete the following table.

Design	n	r	Satisfies the criteria? Yes or No
Rings			
Petals			
Legs			

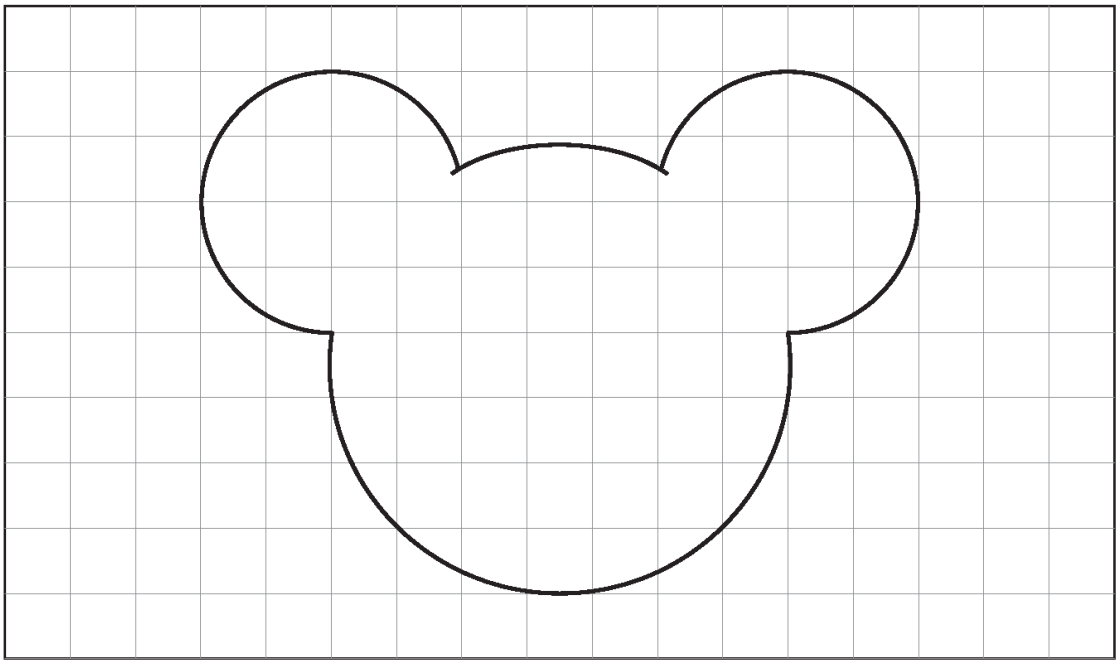
.....

.....

.....

[3]

14. The shape below is to be used to make a design for a child's toy.
The shape has been drawn on a grid.
Each square on the grid represents an area of $4\,cm^2$.



Find the approximate area of the shape. [3]

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15.

The above shape, drawn on a square grid, represents a playground.
Estimate the area of the playground if each square represents an area of $5\,m^2$.

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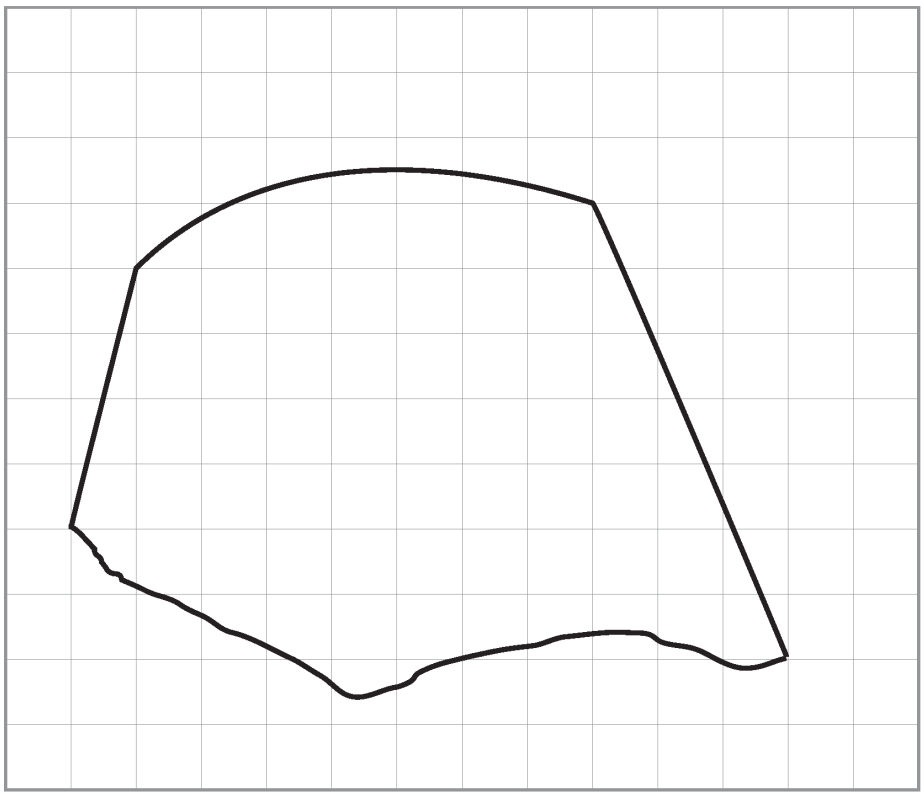
Area of the playground = ... m^2

[3]

16.

(a)



The above shape is the outline of a flowerbed in a park.
It is drawn on a square grid where each square represents an area of $8\,m^2$.
Estimate the area of the flowerbed. [3]

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Area of the flowerbed = ... m^2

(b) Complete the following figure so that it is symmetrical about the line *PQ*. [2]

17. *(a)* Calculate the area of the following rectangle. [2]

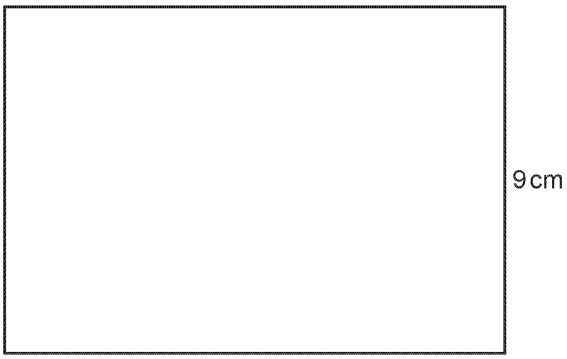

Diagram not drawn to scale

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(b) The perimeter of another rectangle is 36 cm.
The length of the rectangle is twice as long as its width.
Calculate the length and width of the rectangle. [3]

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Length = ... cm Width = ... cm

18. The area of a rectangle is $30\,cm^2$.
Its length and width are **whole numbers**.
Find the smallest possible perimeter of this rectangle.

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Perimeter = ... cm

[4]

19. The diagram represents a rectangular garden with dimensions of 8 m by 5 m.

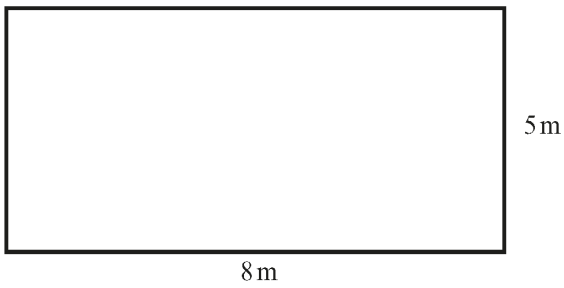

Diagram not drawn to scale

(a) Calculate the perimeter of the garden, giving the units of your answer.

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.....

.....

[2]

(b) Calculate the area of the garden.

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[2]

20. An 8 cm by 3 cm rectangle is placed on top of two 6 cm by 3 cm rectangles to make the shape shown in the diagram.

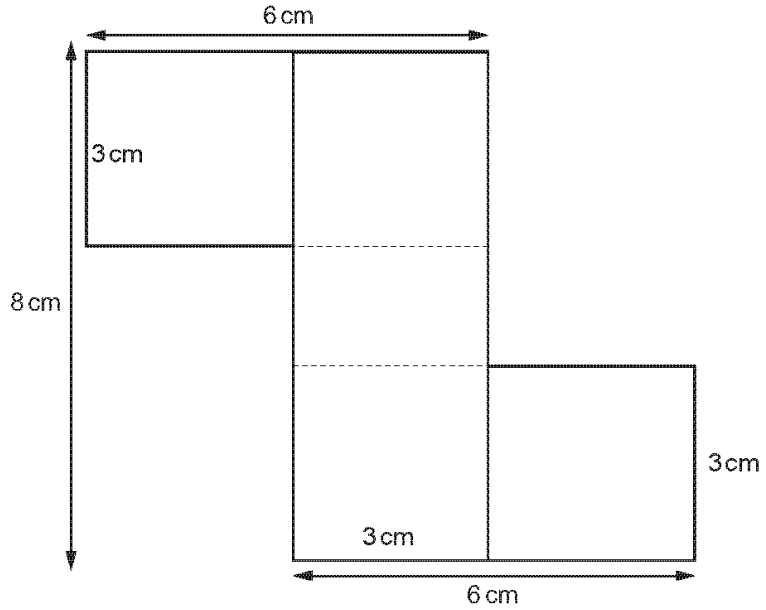

Diagram not drawn to scale

(a) Calculate the perimeter of the shape. [3]

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(b) Calculate the area of the shape.
Write down the units of your answer. [3]

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21.

Two rectangles, each 9 cm by 3 cm, and an overlapping rectangle, 8 cm by 3 cm, are placed so that they make the H shape shown in the diagram.

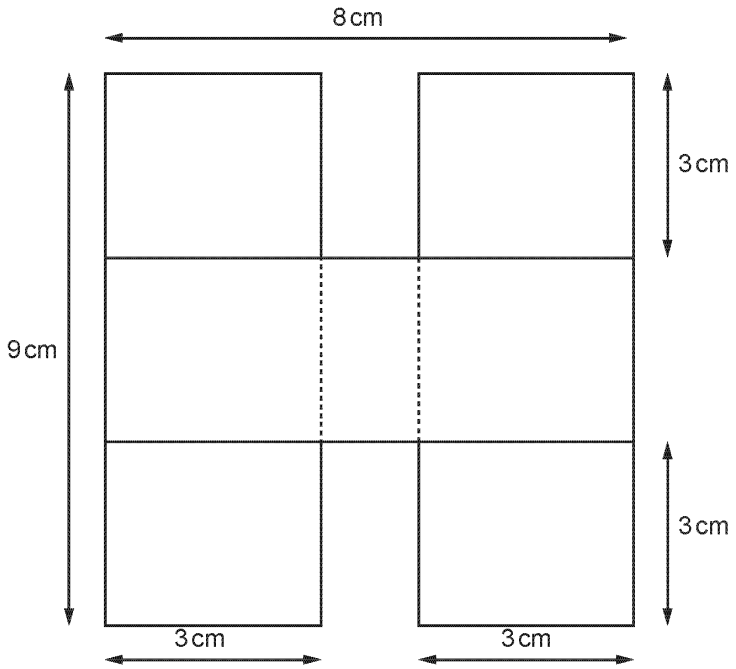

Diagram not drawn to scale

(a) Calculate the perimeter of the shape. [3]

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22.

You will be assessed on the quality of your written communication in this question.

A gas company wants to concrete a rectangular piece of land and then put a fence around it.
The diagram below shows the lengths of the sides of this land.

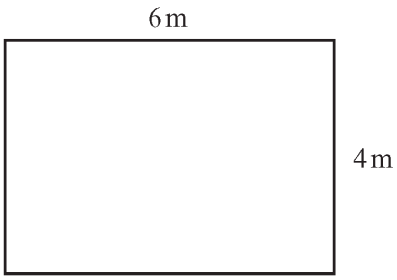

Diagram not drawn to scale

The fence costs £7 per metre.
The concrete costs £9 per square metre.

Calculate the total cost for the fence and the concrete.

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[8]

23.

A concrete base is to be laid for a garage.
The base must measure 5·5 metres long, 3·8 metres wide and have a depth of 12 centimetres.

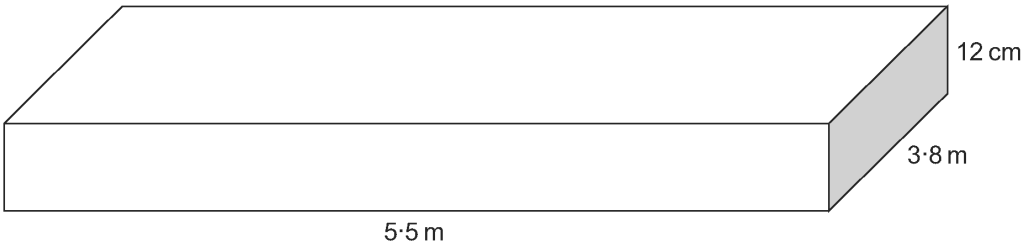

Diagram not drawn to scale

What will be the volume of this concrete base in **cubic metres** (m^3)? [3]

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24.

Water is poured into an empty rectangular tank of length 15 cm, width 10 cm and height 12 cm until the tank is full.
Calculate the volume, in litres, of the water in the tank. [3]

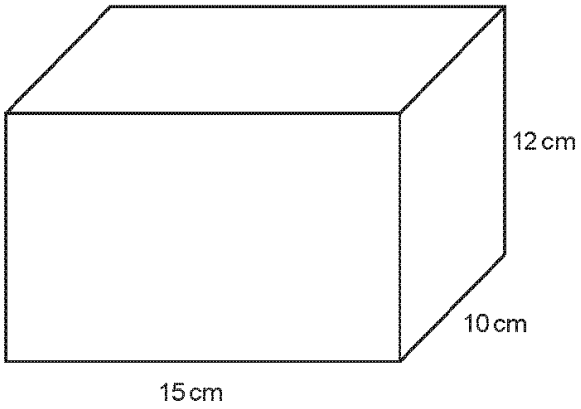

Diagram not drawn to scale

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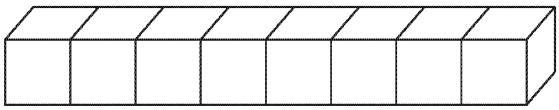
Volume of water = ... litres

25.

A shape consists of a row of cubes each measuring 1 cm by 1 cm by 1 cm as shown below.



(a) (i) Write down the volume of this shape.
You must show the units of your answer. [2]

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(ii) Can you use all the cubes above to make a larger cube?
Explain your answer. [1]

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(b) Calculate the volume of the cuboid shown below. [2]

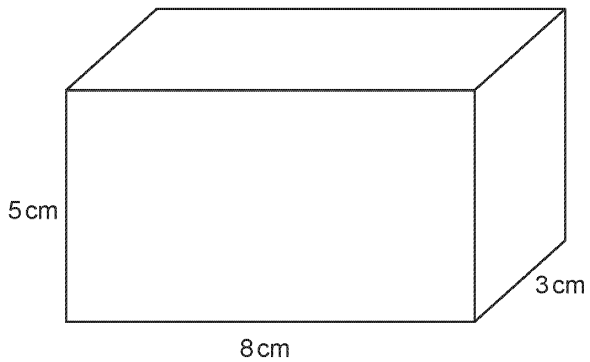

Diagram not drawn to scale

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26.

Circle the quantity that is most appropriate to estimate each of the following. [4]

Weight of an orange	200 litres	200 grams	200 metres	200 seconds
Height of the Eiffel Tower	324 mm	324 cm	324 m	324 km
Floor area of a school hall	600 m^2	6 m^2	0·6 m^2	600 cm^2
Volume of a swimming pool	2000 ml	2000 m	2000 m^2	2000 m^3

27.

Circle the quantity that is an appropriate estimate for each of the following. [4]

Width of a football pitch	50 km	50 m	50 mm	50 cm
Weight of a man	70 kg	70 g	70 mg	7 kg
Volume of tea in a cup	1 litre	25 cm^3	250 ml	1 ml
Area of a page in a book	3 m^2	300 cm^2	30 mm^2	300 cm^3

28.

Write down the metric unit which is best used to measure [4]

the length of a pencil, ...

the distance from London to New York, ...

the weight of a mouse, ...

the volume of a swimming pool. .....

29.

(a) *A* and *B* are two rescue centres shown on a map with scale 1 cm = 5 km.

Measure and find the straight line distance, in km, from *A* to *B*. [3]

.....

.....

.....

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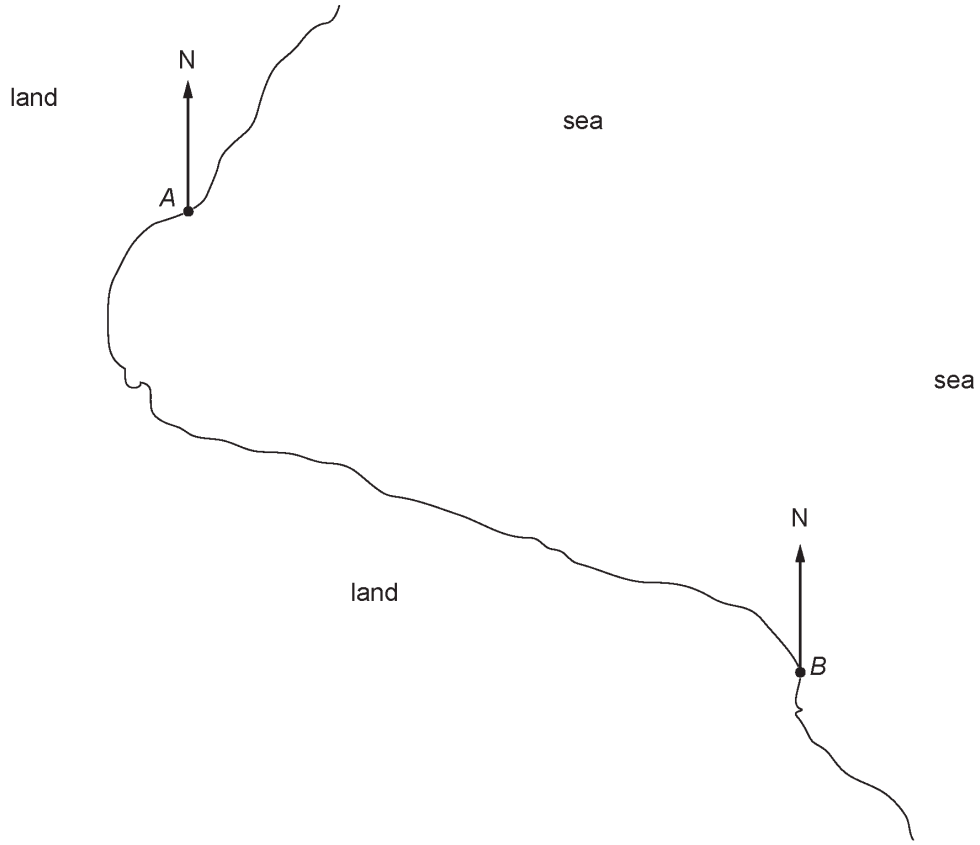
(b) A monument is on a bearing of 136° from *A* and on a bearing of 219° from *B*.
Plot the position of the monument and mark it *M*. [3]

30.

(a) *A* and *B* are two ports shown on a map with scale 1 cm = 10 km.
Measure and find the straight line distance, in km, from *A* to *B*. [3]



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(b) A ship is on a bearing of 097° from *A* and on a bearing of 342° from *B*.
Plot the position of the ship and mark it *X*. [3]

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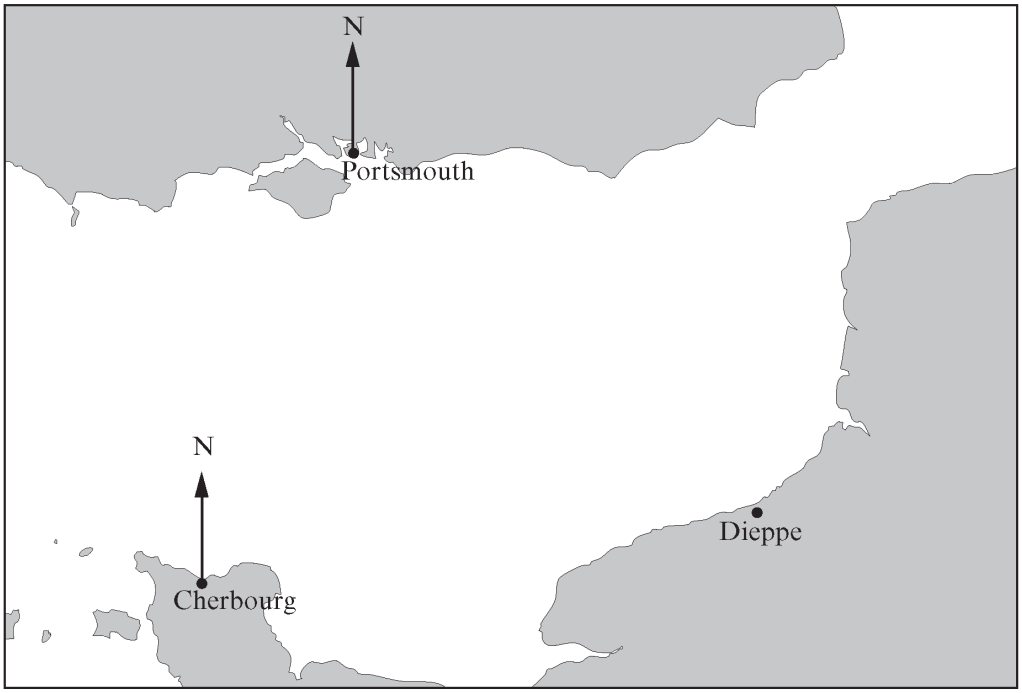
31. The map shows a scale diagram of part of the English Channel.

Scale : 1 cm represents 20 km



(a) A ship is on a bearing of 058° from Cherbourg and on a bearing of 135° from Portsmouth. By drawing suitable lines on the diagram above, find and mark the position of the ship. [3]

(b) How far, in km, is the ship from Dieppe at this point?

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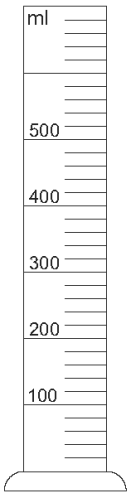
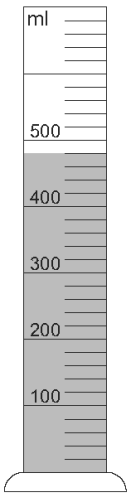
[2]

32.

(a) The diagram shows an empty measuring cylinder with markings in millilitres.
Three hundred and twenty millilitres of water are poured into the cylinder.
Draw a line on the cylinder to show the water level. [1]



(b) A very small jug is filled with water.
The water is then poured into an **empty** measuring cylinder.
This process is carried out a total of six times.
The final water level is shown in the diagram.
How much water does the jug hold? [3]



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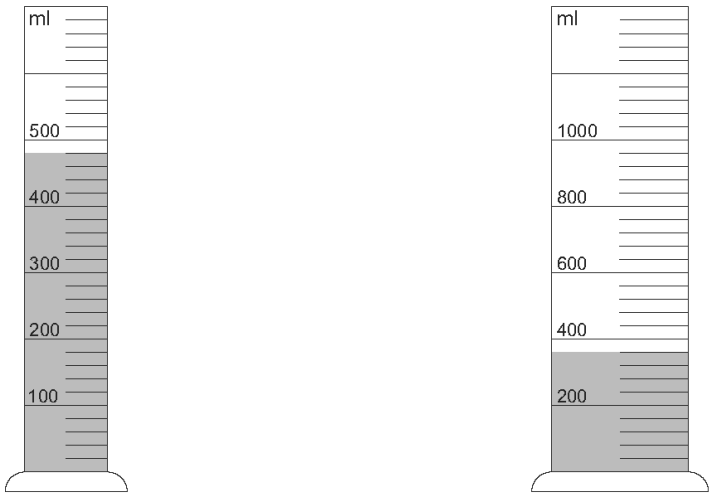
(c) The water in the cylinder on the left is to be poured into the cylinder on the right, which already has some water in it.
Draw a line on the right-hand cylinder to show the new water level. [2]



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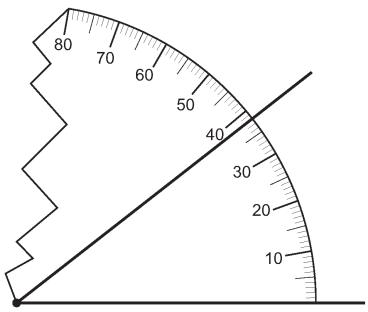
33.

(a) The diagram below shows an angle measurer that has been placed to measure the size of an angle.
What is the size of the angle that is being measured?

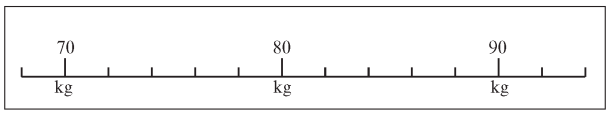


Size of angle = ... °

[1]

(b) A person weighs 84 kg.

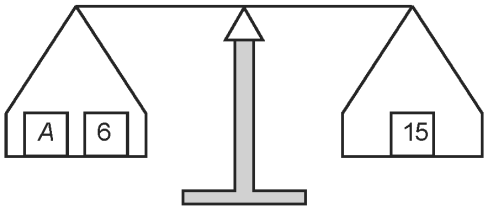
Draw a pointer (↓) on the scale shown below to indicate this weight.

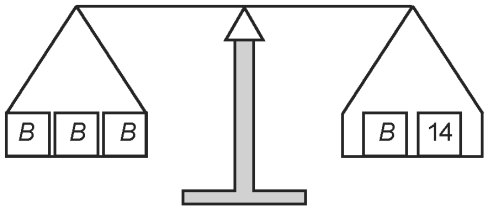


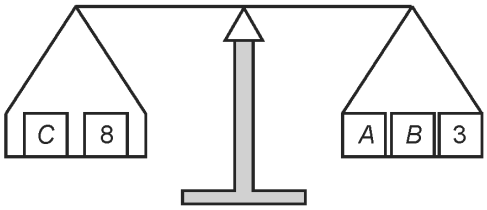
[1]

34.

Each diagram represents a balance with the total weight on each side being equal.
Find the values of *A*, *B* and *C*. [5]







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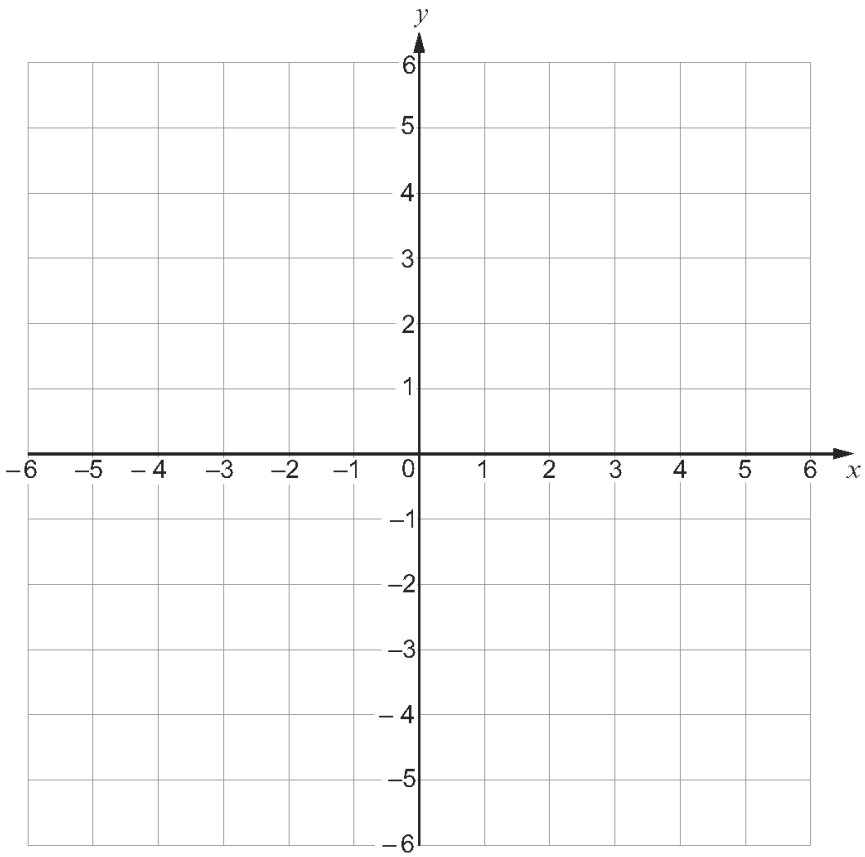
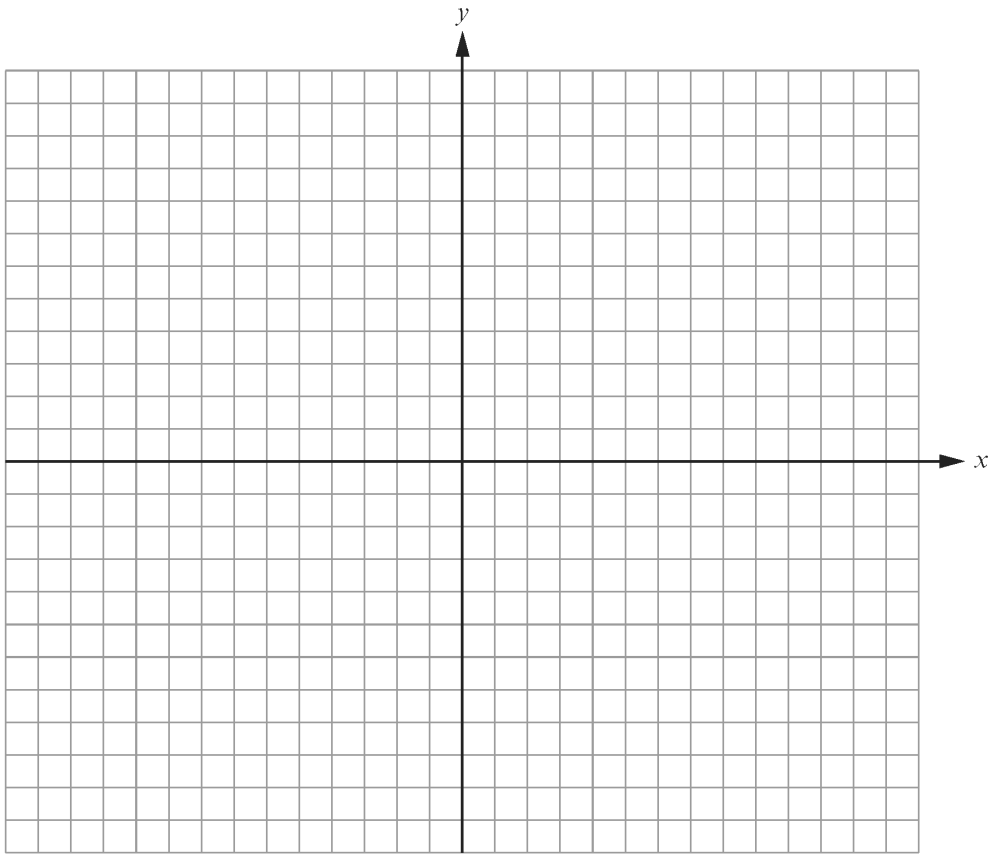
A = ... *B* = ... *C* = ...

35. On the squared paper below, plot the points A(2, 1), B(–3, –5) and C(4, –3). [3]



36.

The coordinates of three vertices of a parallelogram are (5, –2), (–3, –2) and (–2, –6).



(a) Find the coordinates of a fourth vertex of the parallelogram.

.....

.....

(..... , ...)

[2]

(b) Find the coordinates of the mid point of a diagonal of your parallelogram.

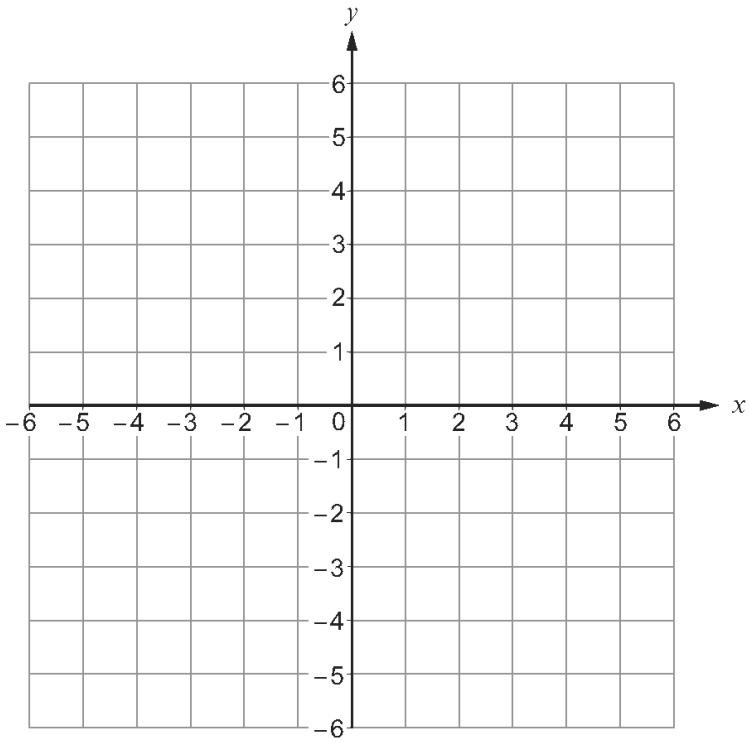
.....

.....

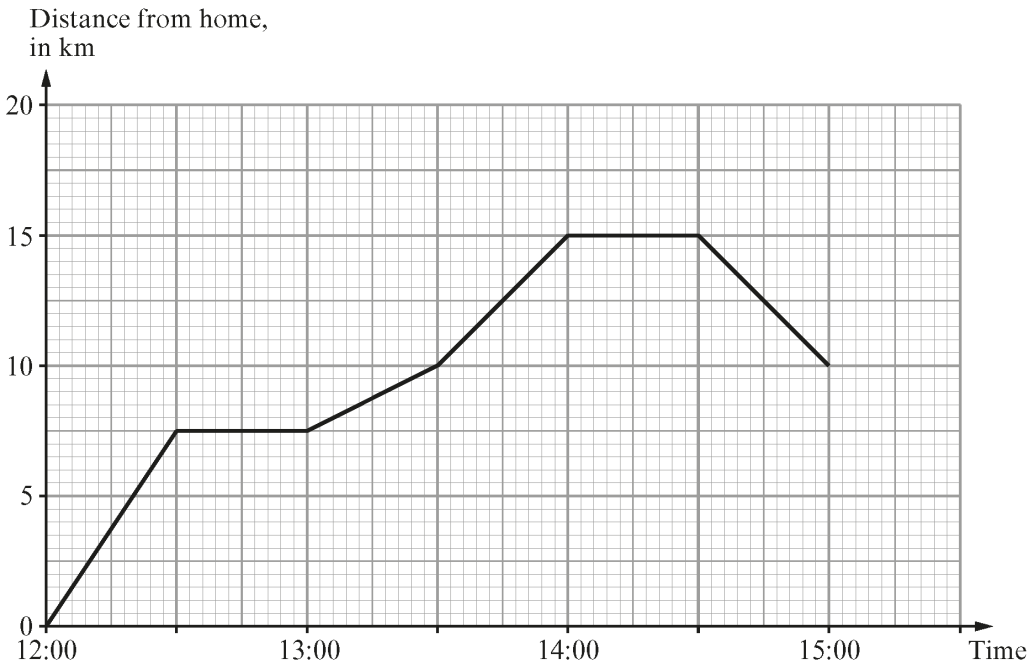
(..... , ...)

[2]

37. On the squared paper below, plot the points $A(5, 2)$, $B(-1, -5)$ and $C(-4, 3)$. [3]



38. The travel graph below represents Scot's bike ride starting from home.



(a) Between which two times was Scot furthest away from home?

Between ..... and .....

[1]

(b) Scot started his bike ride at 12:00.
He has a cycle computer that shows the distance he rides.
He had two half-hour rests, but otherwise kept on cycling.
He set his cycle computer to zero when he left home.
What distance did his cycle computer show at 15:00?

.....

.....

[1]

(c) What was Scot's average speed between 13:00 and 13:30?
You must give the units of your answer.

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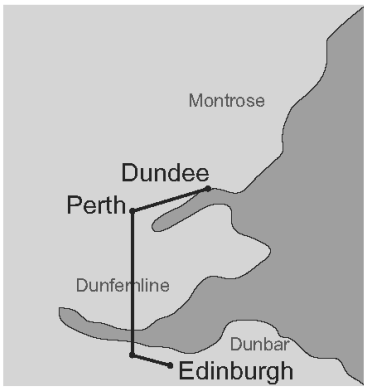
.....

.....

[3]

39. The map below shows a route from Edinburgh to Dundee.



The route from Edinburgh to Dundee is approximately 4 cm on the map.
The actual journey is approximately 100 kilometres.

(a) Calculate the scale of the map, giving your answer in the form **1** : ..... [2]

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(b) The journey from Edinburgh to Dundee takes 2 hours 30 minutes by car.
Calculate the average speed of this journey.
Give your answer in kilometres per hour. [3]

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40.

Kevin drove from Newcastle to Swindon, a distance of 273 miles.
He started his journey at 9:15 a.m. and arrived in Swindon at 4:15 p.m.

(a) Calculate his average speed for the journey.

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.....

.....

[3]

On average, his car uses one gallon of diesel per 40 miles travelled.
A gallon of diesel costs approximately £6.30.

(b) Find an estimate, to the nearest £, of how much it cost him for the diesel used on the journey.

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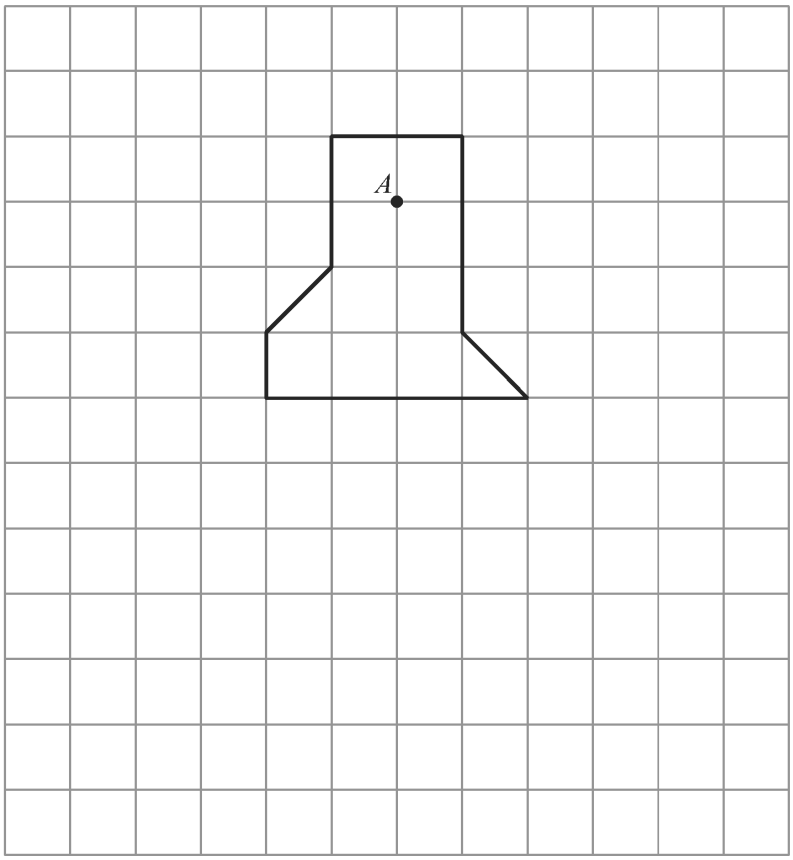
.....

.....

[2]

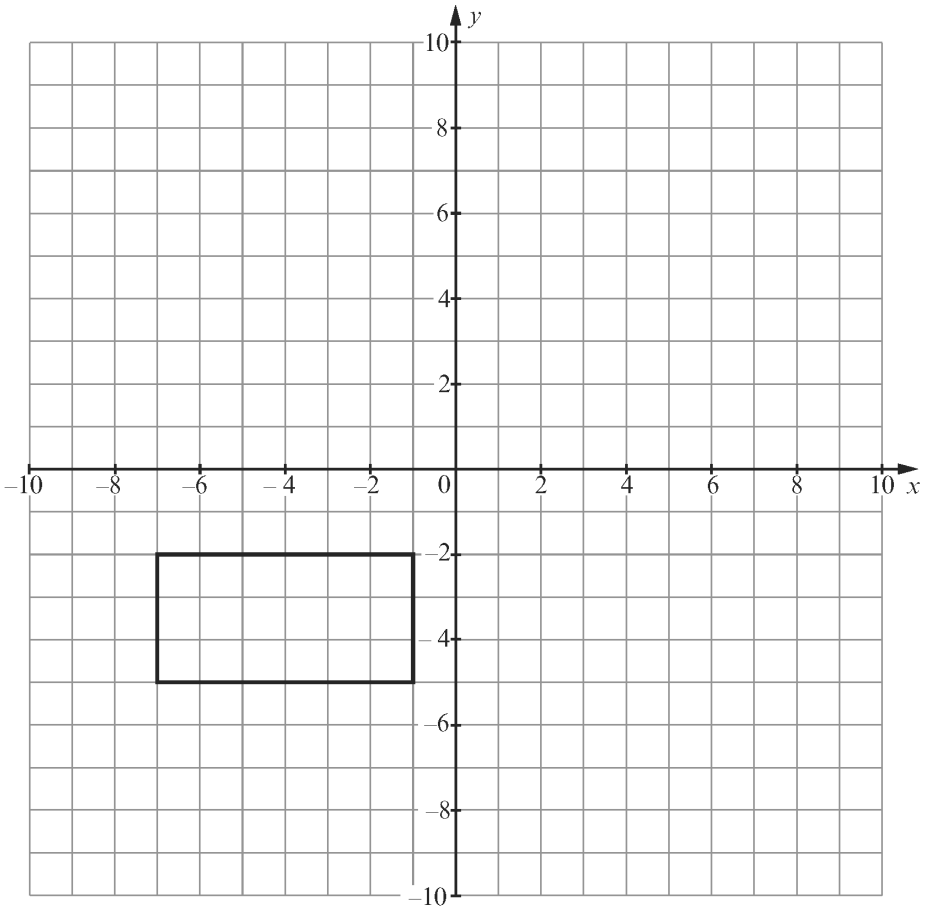
41.

(a) Enlarge the shape shown on the grid by a scale factor of 2 using A as the centre for the enlargement.



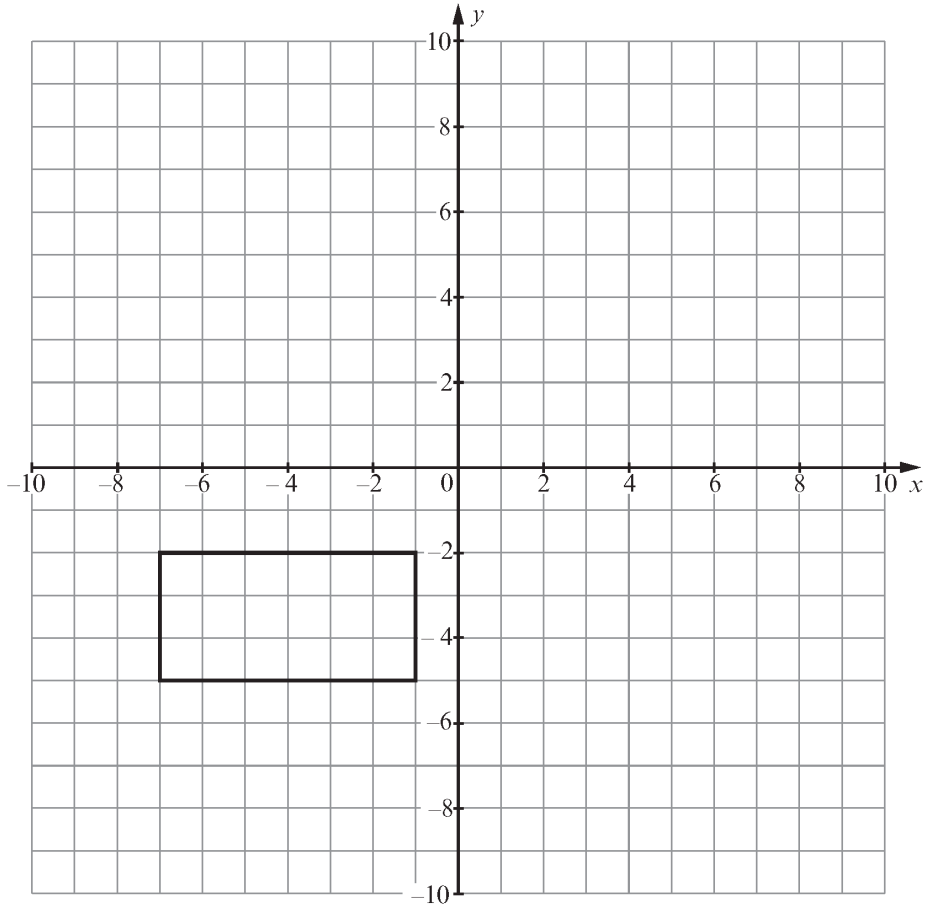
[3]

(b) Reflect the rectangle in the line $y = 2$.



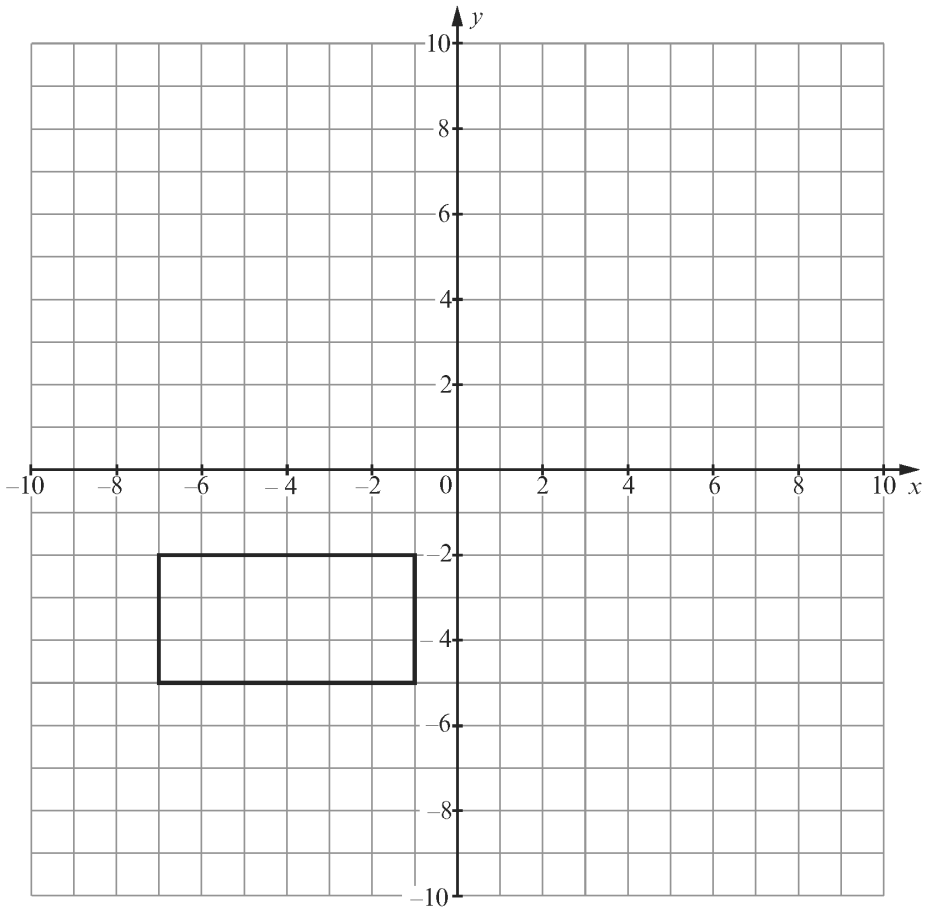
[2]

(c) Translate the rectangle shown below by $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$.



[1]

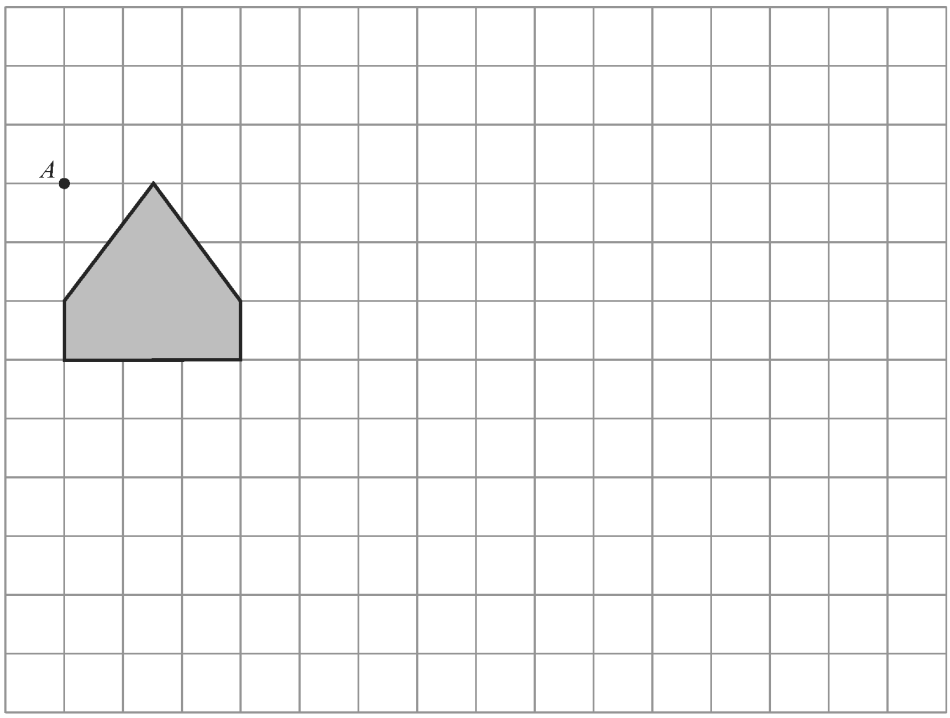
(d) Rotate the rectangle shown on the grid below through 90° clockwise about the origin.



[2]

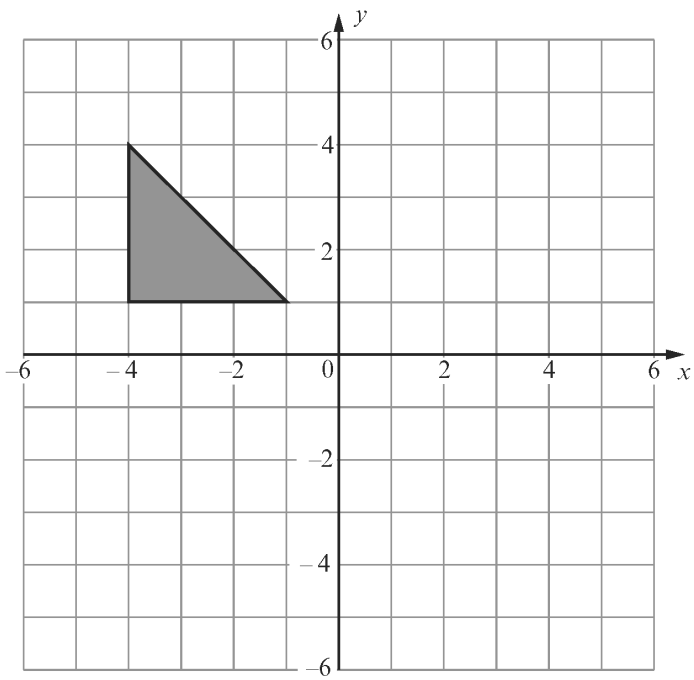
42.

(a) Enlarge the shape shown on the grid by a scale factor of 2 using A as the centre of the enlargement.



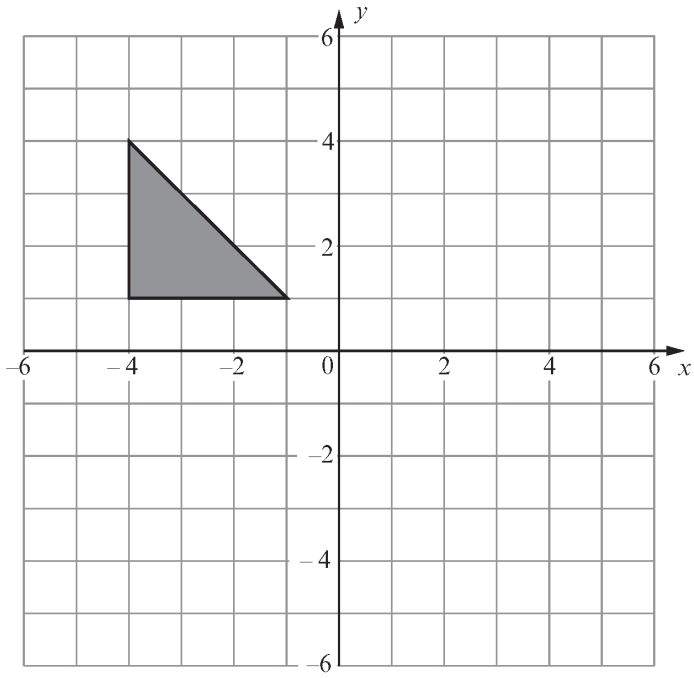
[3]

(b) Reflect the triangle in the line $y = x$.



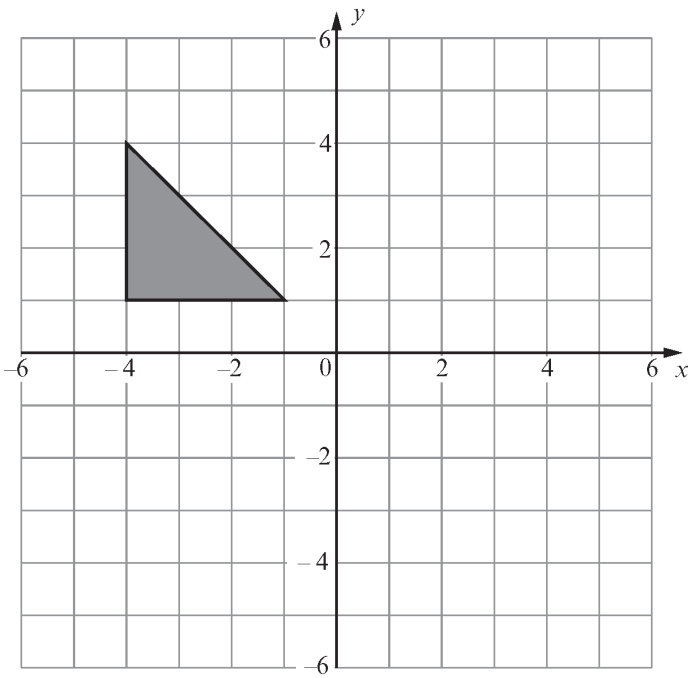
[2]

(c) Translate the triangle shown below by $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$.



[1]

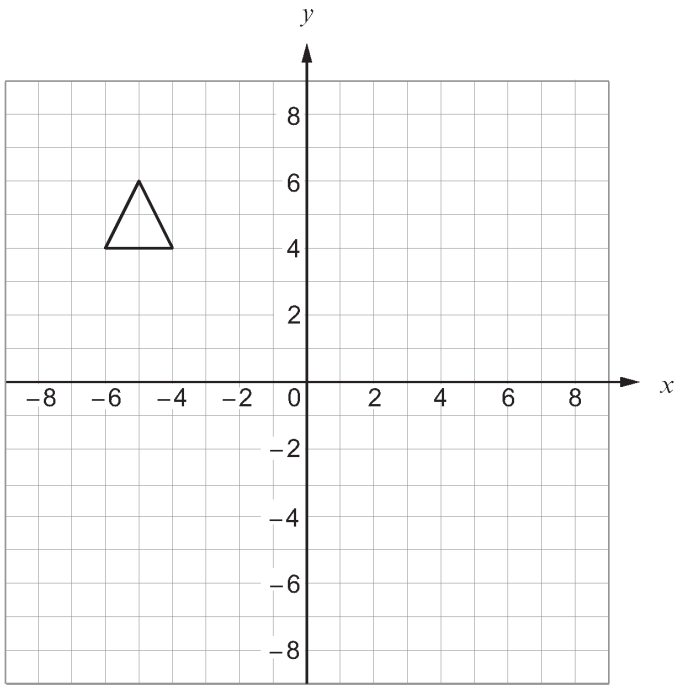
(d) Rotate the triangle shown on the grid below through 90° anticlockwise about (2, 1).



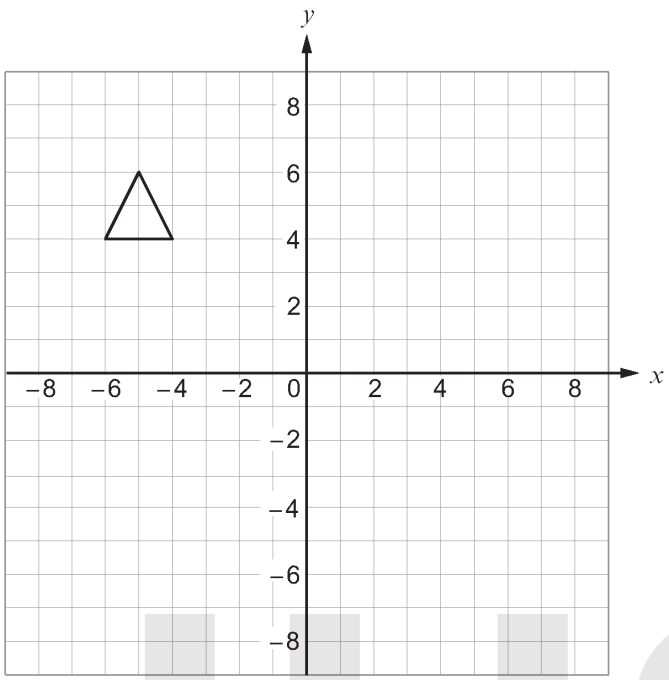
[2]

43.

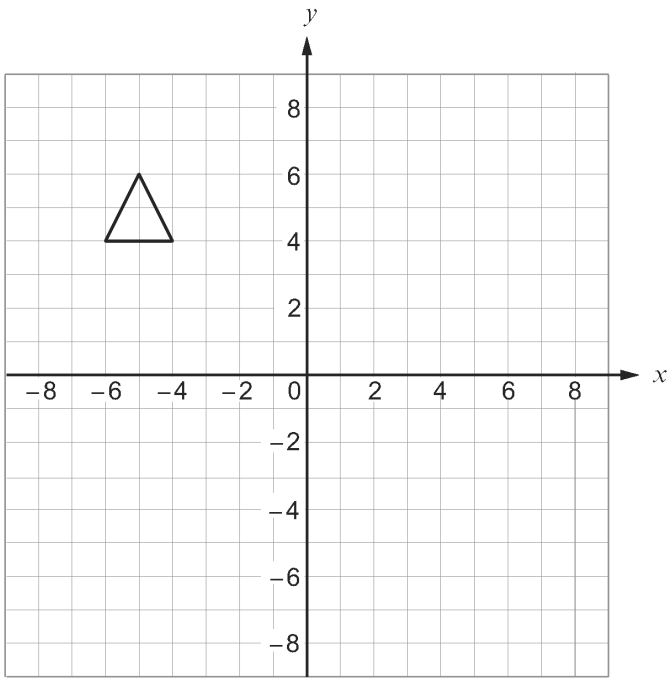
(a) Translate the triangle shown below by $\begin{pmatrix} 8 \\ -2 \end{pmatrix}$. [1]



(b) Rotate the triangle through 90° anticlockwise using the point (–2, –1) as the centre of the rotation. [2]



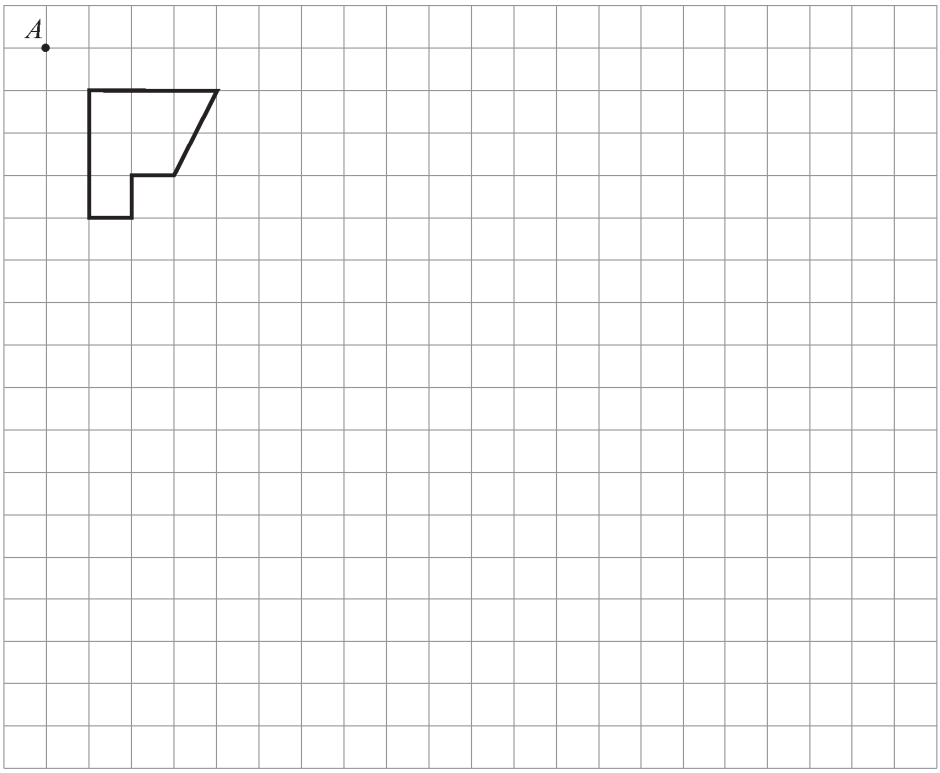
(c) Reflect the triangle shown in the line $y = x$. [2]



44.

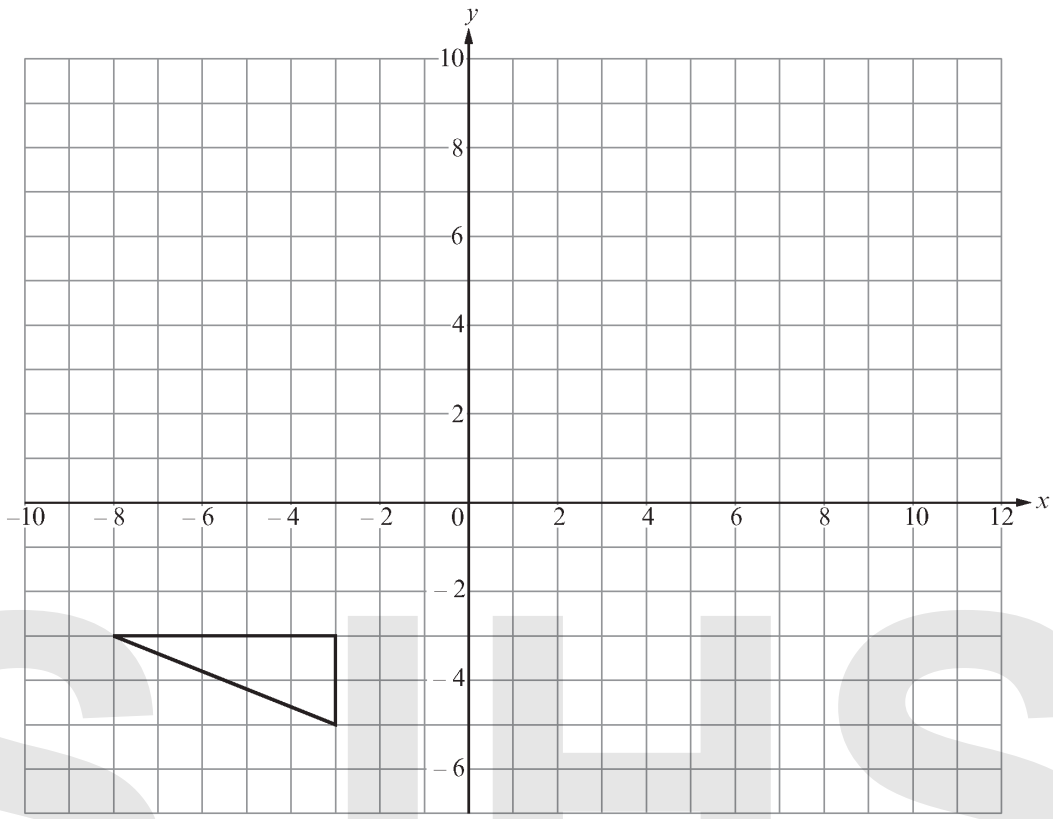
(a) On the grid below, draw the enlargement of the given shape, using a scale factor of 3 and centre A.

[3]

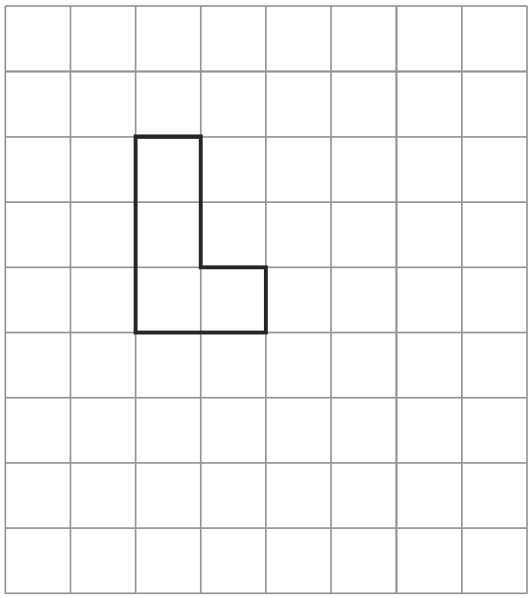


(b) Draw the reflection of the triangle in the line $y = 2$.

[2]



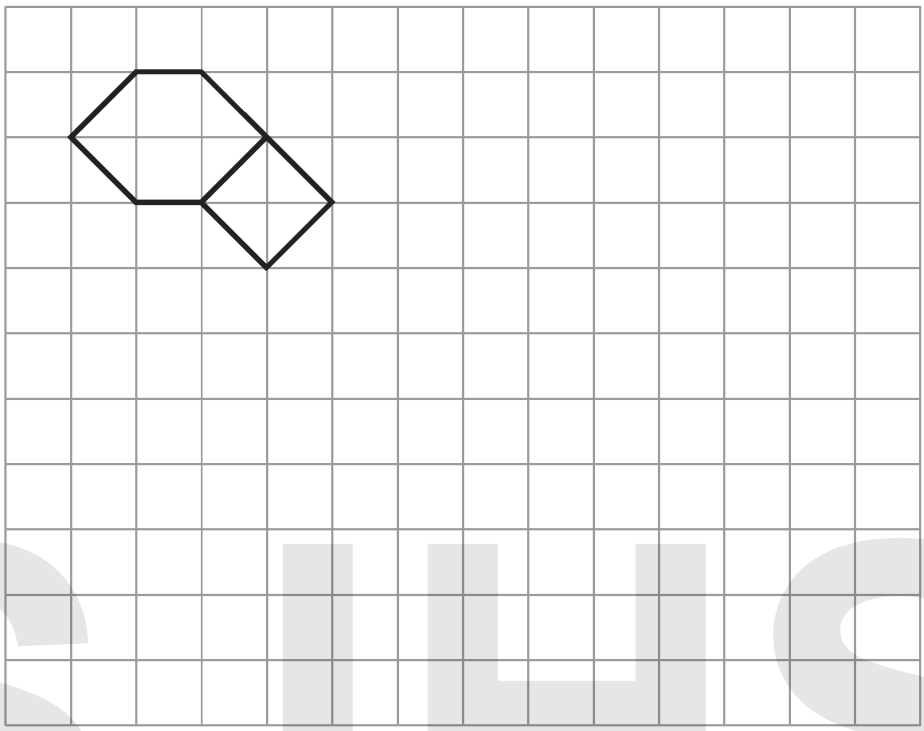
45. Show that the given shape tessellates by drawing more of the shapes on the grid below.



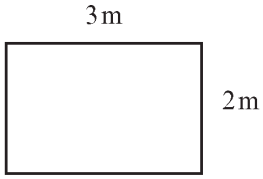
[2]

46. Ben needs to tile his kitchen floor and decides to use the two types of tiles shown in the diagram.
By drawing more tiles in the diagram, show that the tiles will tessellate.

[2]

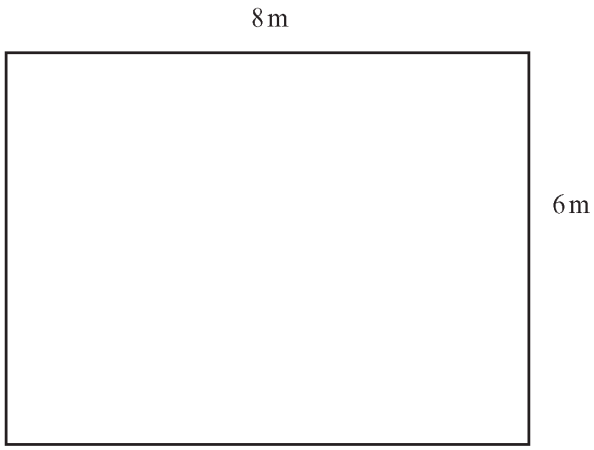


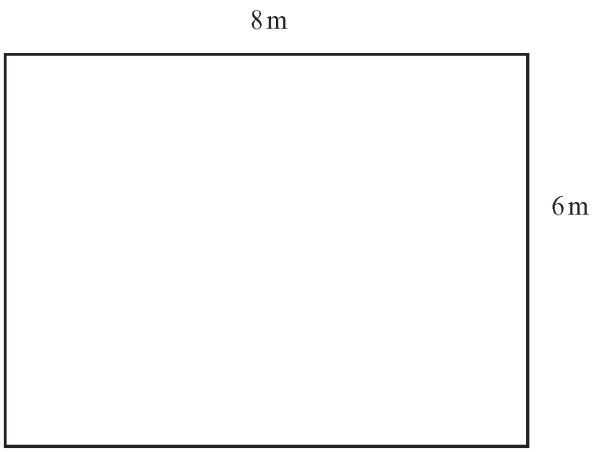
47. Rectangular tiles each measure 3 metres by 2 metres.



Eight of these tiles are used to completely cover a rectangular floor measuring 8 metres by 6 metres.
No tiles are cut.

By sketching, demonstrate two **different ways** that this can be done on the diagrams below.





[5]

Marking Scheme

1.

1. 42, 138, 42	B3 3	B1 for each correct answer. FT c = a or c = 180 - b

2.

13. a = 70 b = 70 c = 75 d = 35 e = 145	B1 B1 B1 B1 B1 5	 FT 145 – b FT 110 - c

3.

12. (q=) 72 (r =) 72 (s=) 63 (t=) 45	B1 B1 B1 B1 4	 FT their q FT '108 – their s', i.e. check s + t = 108°

4.

9. For any angle in the rectangle = 90(°) (180- 30)/2 (<ABC) or (<ACB) = 75(°) (<ABE) = 165(°)	 B1 M1 A1 A1 4	Angles may be seen on the diagram. FT 'their 75°+90° provided M1 awarded

5.

8. (a) (180 – 30) ÷ 2 =75(°) 105(°) (b) 360 ÷ 5 72(°)	M1 A1 A1 M1 A1 5	Check diagram throughout this question FT 180 - their 75 evaluated correctly, provided M1 awarded

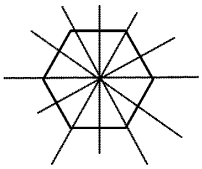
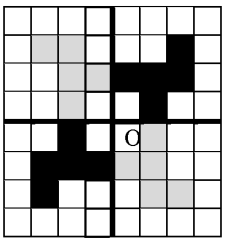
6.

2015 November Unit 2 (non calculator) Foundation Tier	Marks	FINAL MARK SCHEME Comments
4. Angle of 38° drawn in correct place *BP* drawn 8·5 cm long OR a point *P* marked 8·5 cm from *B*	 B1 B1 2	Use overlay ± 2° ± 2 mm

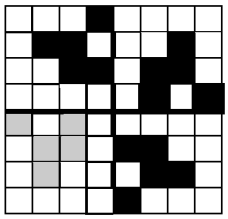
7.

7. S and Q	B2 2	B1 for at least one correct answer and no more than one incorrect answer.

8.

11. (a) 	B2	B1 for 3 or more correct lines drawn AND no incorrect lines.
11. (b) 	B2	B1 for each of 1st and 3rd quadrants

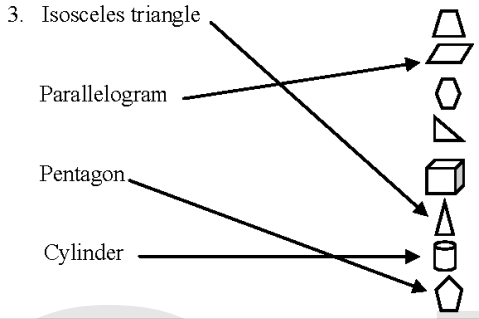
9.

Overlay (viewed with diagram) 6. All 3 quadrants correct 	B3	B1 for each correct quadrant.

10.

4. (a) E (is congruent to A)		B1	
4. (b) B and F (similar but not congruent)		B1	
4. (c) C (has half the area of shape E)		B1	
Ribbon marking for 4(d)(i) and 4(d)(ii) 4. (d) (i) 12 (cm) (ii)D (has the same perimeter as shape F)		B1 B1 5	

11.

2015 November Paper 2 (Calculator allowed) Foundation Tier	Marks	FINAL MARK SCHEME Comments
3. Isosceles triangle 	B1 B1 B1 B1 4	

12.

1. (a) Correct diagram	B2	-1 for each incorrect vertex
(b) 4 lines of symmetry drawn correctly	B2	Award B1 for 2 or 3 lines of symmetry correctly drawn
Only 1 line of symmetry drawn correctly	B1	CAO
(c) 4, 3, 2	B3	Award B1 for each correct one
	8	

13.

11.

Design	*n*	*r*	Satisfies the criteria? Yes or No
Rings	3	3	Yes
Petals	4	4	Yes
Legs	0	3	No

B2 For correct first 2 columns
OR B1 for any 4 correct entries in the first 2 columns
B1 For correct final column, FT appropriate decision for their lines and rotational responses written in the table
3

14.

2015 November UNIT 3 Foundation TierMark Scheme	Mark	FINAL MARK SCHEME Comments
3. Evidence of counting squares 52–60(squares) inclusive 208(cm^2) – 240(cm^2)	M1 A1 B1 3	Follow through 4 × 'their' number of squares.

15.

3. Evidence of square counting 48 – 52 240 – 260	M1 A1 B1	**Numbers in this range get the M1, A1** F.T. 5 × 'their area' **Numbers in this range get the 3 marks**

16.

To be viewed with diagram 4. (a) Evidence of square counting 57 – 63 inclusive 456 – 504 inclusive (m^2)	M1 A1 B1	Inside the shape. Condone answers like 60^2 here. F.T. 'their number of squares' × 8 Unsupported answers in the range 456 – 504 inclusive get all 3 marks, **Mark final answer**	57 456 58 464 59 472 60 480 61 488 62 496 63 504	
To be viewed with diagram 4. (b) Lines Arc	B1 B1	F.T. correct curvature up to the start of 'their line' **Maximum of B1 if extra parts drawn**		

17.

5. (a) 13 × 9 117 (cm^2)	M1 A1	
(b) Attempting to add two pairs of numbers to make 36 or any two numbers that add to 18	M1	Numbers must be less than 18
Attempting to add two numbers (or two pairs of numbers) with one being double the other	M1	Numbers must be less than 18
Length = 12, Width = 6	A1	CAO (Allow Length = 6, Width = 12)
	5	

18.

7. For a trial that gives an area of 30 cm^2	B1	Accept non-whole number trial eg 4 × 7.5 *Maybe seen on a diagram*
For a trial that gives an area of 30 cm^2 and the value of the perimeter stated.	B1	Accept non-whole numbers with the correct perimeter
(Length) 6(cm) and (width) 5(cm)	B1	Accept (width) 6(cm) and (length) 5(cm)
(Perimeter =) 22 (cm)	B1	1 by 30 62cm 2 by 15 34cm 3 by 10 26cm 5 by 6 22cm
	4	

19.

All parts (a) – (b) marked at the same time		
4. (a) 26	B1	
m	U1	Independent of other marks
(b) 8 × 5	M1	
= 40	A1	
	4	

20.

2015 Summer Linear Paper 1 (Non calculator) Foundation Tier	Marks	Comments
To be viewed with diagram 6. (a) Missing inside segments = 2 or 5 (and 3) Perimeter = 6+3+2+3+3+6+3+2+3+3	S1 M1	One 2 or 5 in correct place gets S1 Attempt to add all sides of the shape FT 'their 2' for possible M1 If the 2 is not shown on diagram but is in the sum of sides for the perimeter then award S1 here.
= 34 (cm)	A1	C.A.O
To be viewed with diagram 6. (b) Area = 6×3+2×3+6×3 OR 3×3 + 3×8 + 3×3 OR 4×3×3 + 3×2 = 42 cm^2	M1 A1 U1	**You must check the diagram and their value for '2' or '5' in their part (a)** Attempt to add all areas of the shape F.T. if missing sides (even incorrect) are clearly indicated Independent of all other marks.

21.

	✓	
All parts (a) – (b) marked at the same time		
To be viewed with diagram		**You must also check the diagram for any working.**
6. (a) Missing inside segment = 2	S1	**Must be seen in part (a).**
Perimeter = 9+9+8×3+2×2	M1	Attempt to **add all sides** of the shape. **Use 42+2x for M1 where x stands for 'their 2'** **S1, M1 for methods that imply the '2', e.g. 9×2+8×2+4×3**
= 46 (cm)	A1	C.A.O.
To be viewed with diagram		
(b) Area = 8×3+4×3×3 OR 8×9 – 2×3×2	M1	Attempt to add all areas of the shape OR difference of areas
(= 24 + 36) (= 72 – 12)		
= 60	A1	C.A.O.
cm^2	U1	Independent of all other marks.

22.

5. (Perimeter or fence =) 20(m) (Cost of fence =) (£)140 (Area or concrete =) 6 × 4 = 24(m^2) (Cost of concrete =) (£)216 (Total cost =) (£)356 Look for • spelling • clarity of text explanations, • the use of notation (watch for the use of '=', '£', m and m^2 being appropriate) QWC2: Candidates will be expected to • present work clearly, with words explaining process or steps AND • make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps OR • make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	B1 B1 M1 A1 A1 B1 QWC 2	F.T. 7 × their 'perimeter'. F.T. 9 × their 'area'. F.T their stated costs for the fence and the concrete. QWC2. Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. QWC1. Presents relevant material in a coherent and logical manner, but with some errors in use of mathematical form, spelling, punctuation or grammar. OR Evident weakness in organisation of material but using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.

23.

9. Use of 'Volume = length × width × height' (Volume =) 5·5 × 3·8 × 0·12 = 2·5(08 m^3)		M1 m1 A1	Allow m1 for 550 × 380 × 12 C.A.O. If 0 marks awarded, SC1 for sight of 0·12

24.

2015 Summer Linear Paper 1 (Non calculator) Foundation Tier	Marks	Comments
9. 12 × 15 × 10 = 1800 (cm^3) = 1.8 (litres)	M1 A1 B1	 FT 'their 1800'÷1000

25.

5. (a)(i) 8 cm^3 ii) (Yes and Volume =) 2×2×2 implied or drawn (b) 5 × 8 × 3 =120 (cm^3)	B1 U1 B1 M1 A1 5	Independent of all other marks.

26.

2. 200 grams 324m 600m^2 2000m^3	B1 B1 B1 B1 4	Accept any unambiguous indication in each case.

27.

2015 Summer Linear Paper 2 (Calculator allowed) Foundation Tier	Marks	Comments
	✓	
2. Width of pitch 50km (50m) 50mm 50cm	B1	
Weight (man) (70kg) 70g 70mg 7kg	B1	
Volume (cup) 1 litre 25 cm^3 (250 ml) 1 ml	B1	
Area of page 3m^2 (300cm^2) 30mm^2 300cm^3	B1	

28.

2. cm	centimetres	B1	
km	kilometres	B1	
g	grams	B1	
m^3 or l	cubic metres or litres	B1	Accept kl
		4	

29.

2015 November Paper 1 (Non calculator) Foundation Tier	Marks	FINAL MARK SCHEME Comments
10. (a) 13·6 (cm)	B1	Allow 13·4 – 13·8 inclusive (ignore km here)
13·6 × 5	M1	FT 'their 13·6'×5 but M1,A0 for whole number × 5
= 68 (km)	A1	km not required but A0 for incorrect units.
		Unsupported answers within 67–69 inclusive get B1,M1,A1.
		Unsupported answers outside 67–69 inclusive get 0.
(b) **Use Overlay**		
Bearing 136° from A	M1	Allow ±2°
Bearing 219° from B	M1	Allow ±2°
Point (M)	A1	F.T. if at least M1 awarded.
		Unambiguous dots within the boundaries of the overlay can get the M1s. One unambiguous dot within the 'box' gets all 3 marks. Watch out for line segments.
	6	An unambiguous point of intersection does not require M.

30.

11. **Parts (a) & (b) marked at the same time**		
(a) 11·8 (cm)	B1	Allow 11·6 – 12·0 inclusive (Ignore km here)
11·8 × 10	M1	FT 'their 11·8'×10
= 118 (km)	A1	km not required but A0 for incorrect units
		Unsupported answers within 116–120 inc get B1,M1,A1.
To be viewed with diagram		Unsupported answers outside 116–120 inclusive get 0.
(b) **Use Overlay**		
Bearing 097° from A	M1	Allow ±2°
Bearing 342° from B	M1	Allow ±2°
Point (X)	A1	F.T. if at least M1 awarded.
		Unambiguous dots within the boundaries of the overlay can get the M1s. One unambiguous dot within the 'box' gets all 3 marks. Watch out for line segments.
		An unambiguous point of intersection does not require X.

31.

32.

2015 Summer Linear Paper 2 (Calculator allowed) Foundation Tier	Marks	Comments
3. (b) Water level = 480 Water in a jug = 480/6 = 80 (ml) I.S.W.	B1 M1 A1	FT 'their 480'
3. (c) 480 + 360 = 840 Water marked at 840	B1 B1	For 'their 480 from part (b)' + 360 Water level shown at ONE GRADUATION ABOVE 800. F.T. 'their 840', if not a multiple of 200. Closer to 840 than 800 OR 880

33.

2(a). 38		B1	
2(b). Indicates '2nd notch to the right of 80'.		B1	Allow unambiguous intent.

34.

10. Finding A: $A = 9$	✓	B1	
Finding B: $2B=14$	✓	B1	Seen or implied. Correct answer need not be on written on answer line.
$B=7$	✓	B1	
Finding C: $C+8= 9+7+3$ or equivalent	✓	B1	
$C=11$	✓	B1 5	Seen or implied. F.T their A and B

35.

2015 November Paper 1 (Non calculator) Foundation Tier	Marks	FINAL MARK SCHEME Comments
6. A(2, 1), B (−3, −5) and C(4, −3).	B3 3	B1 for each. Reversed coordinates get B0 every time. Letters A,B,C not needed as long as the point is identified.

36.

12.(a) (6, -6) or (-10,-6) or (4,2)	B2	B1 for either coordinate correct OR B1 for a correct point plotted (with assumed scale from other points or default 1-1 scale)
(b) Method to find midpoint – on diagram or calculation shown	M1	FT their parallelogram. Accept point plotted by the candidate as a method, hence M1 *If calculation method shown, then one correct coordinate implies M1.*
(1.5,-4) or (-2.5, -4) or (1,-2)	A1 4	*No method shown, one correct coordinate M0, A0*

37.

2015 Summer Linear Paper 1 (Non calculator) Foundation Tier	Marks	Comments
7. A(5, 2), B (−1, −5) and C(−4, 3) plotted.	✓ B3	B1 for each. Reversed coordinates get B0 every time. Letters A,B,C not needed as long as the point is identified.

38.

10. (a) (Between) 14(:)00 and 14(:)30 or equivalent	B1	If am/pm used it must be correct, i.e. pm. Do not accept ½ hour or 30 minutes
10. (b) 20 (km)	B1	Ignore sight of incorrect units
10. (c) 2 ½ (km) / 30(minutes) OR 2 ½ / 0.5 OR equivalent 5 km/h	M1 A1 U1	Accept statement '2 ½ (km) in half hour' or similar (OR 5000) Independent of other marks (OR ……. m/h) Accept k(m)ph

39.

2015 Summer Linear Paper 1 (Non calculator) Foundation Tier	Marks	Comments
15. (a) 1 cm represents either 25 km or 25 000 m or 2 500 000cm 1 : 2 500 000	M1 A1	Do not accept 4 cm represents 100 km (given in question) **An answer of** 1 : 25 is M0 (and A0) however allow 1 : 25 km for M1 1 : 2.5 million Allow 1: 2 500 000cm (must be within a ratio)
15.(b) 100 / 2hr 30 min or 200 km in 5 hours 100 / 2.5 or 200/5 40 (km/h)	M1 m1 A1	Accept time written incorrectly, for the idea distance /time, e.g. 100/2.3, 100/150 Alternatively M1, m1 for 20km in 30 minutes Sight of 40 irrespective of units given

40.

9 . (a) (Time taken =) 7(hours) OR 420(min) Use of 'Distance' ÷ 'Time' = 39 (mph) OR 62·4(kph) OR equivalent.	B1 M1 A1	 F.T. 'their time'. Any other unit of speed must be stated.
(b) $\frac{273}{40} \times$ (£)6.3(0) (£)43	M1 A1	*Also allow 280/40 × 6·3 OR 273/40 taken as 7gallons for M1 leading to (£)44 for A1.* (£)42.99(..) is A0. SC1 for evidence of 273/40 (=6·825) taken as 6 ×£6.30 = £38 to nearest '£'
	5	

41.

13.(a) Enlargement scale factor 2 Correct position (b) Correct reflection in $y = 2$ (c) Correct translation (d) Correct rotation	B2 B1 B2 B1 B2	B1 for any 3 lines correct, or consistent incorrect scale B1 for a reflection in $x=2$ or either axis, OR for sight of the line $y = 2$ B1 near miss, OR anticlockwise rotation
	8	

42.

11. (a) Enlargement scale factor 2 Correct position (b) Correct reflection in $y = x$ (c) Correct translation (d) Correct rotation	B2 B1 B2 B1 B2	B1 for any 3 lines correct, or consistent incorrect scale At least 2 points are needed to indicate the correct position B1 for a reflection in $y = -x$, OR for sight of the line $y = x$ B1 near miss, OR 90°clockwise rotation about (2, 1), OR 90° anticlockwise rotation about (1, 2)
	8	

43.

12(a) Correct translation (b) Correct rotation (c) Correct reflection in $y = x$	B1 B2 B2	 B1 near miss of grid lines, or for clockwise 90° about (-2, -1), or for anticlockwise 90° about (-1, -2) B1 for a reflection in $y = -x$, OR for sight of the line $y = x$
	5	

44.

8.(a) Enlargement scale factor 3 Correct position	B2 B1	B1 for at least 3 lines correct
8.(b) Correct reflection	B2	B1 Reflect in any horizontal line or in x=2, OR the line y=2 seen

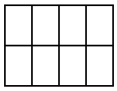
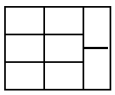
45.

9. At least 6 additional given shapes tessellating correctly For B2 the tessellation must be in more than one direction. (ie a cluster)	B2 2	Award B1 for at least 3 additional given shapes tessellating correctly with at least one that meets the given shape

46.

9. At least 3 additional given shapes tessellating correctly with at least one that meets given shapes At least 6 additional given shapes tessellating correctly	M1 A1 2	The additional shapes must consist of at least 1 square **and** 1 hexagon. Award A0 for any error in their tessellation.

47.

7.  	✓ ✓ ✓ ✓ ✓	B2 B3	*If both of the two <u>different</u> ways shown are of the sort which could gain a B3 then allow B3in the first instance and B2 for the second one.* B1 for strategy of 2+2+2+2 = 8 OR 3+3 = 6. BUT B0 if more than 8 tiles shown. B0 if any inconsistent matching of tile sides (e.g. implying 2m = 3m). Or equivalent. B1 for strategy 2+2+2 = 6. B1 for strategy 3+3+2 = 8. BUT B0 if more than 8 tiles shown. B0 if any inconsistent matching of tile sides (e.g. implying 2m = 3m).