

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
TOTAL	

In the style of



General Certificate of Secondary Education  
Foundation Tier

# Mathematics

**43601F**

Past Paper Questions by Topic

## Shapes

**F**

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>mathematical instruments.</li> </ul> <p>You must <b>not</b> use a calculator.</p>	
--	--

### Time allowed

- 1 hour 15 minutes

### Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

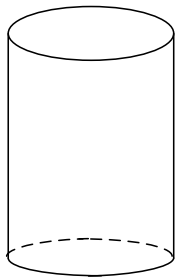
### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is.
- The quality of your written communication is specifically assessed in questions indicated with an asterisk (\*)
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer booklet.

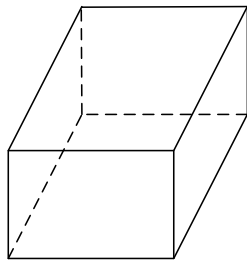
### Advice

- In all calculations, show clearly how you work out your answer.

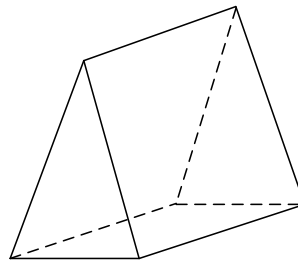
1 (a) Here are four 3D shapes.



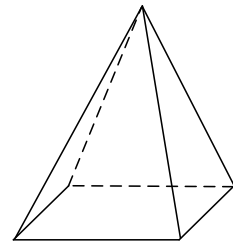
**W**



**X**

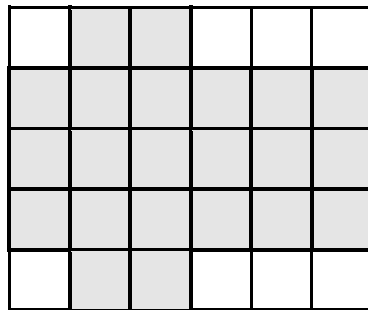


**Y**



**Z**

The shaded area is a net for one of them.



Which shape is it?

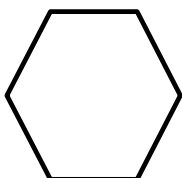
Answer ..... (1 mark)



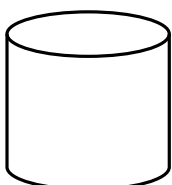
1 (b) Write down the mathematical name of each of the following.



.....



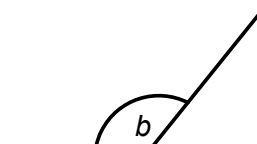
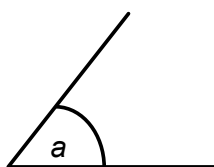
.....



.....

(3 marks)

2 Here are two angles,  $a$  and  $b$ .



What type of angles are they?

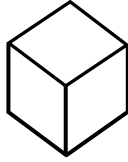
Answer  $a$  is.....

$b$  is ..... (2 marks)



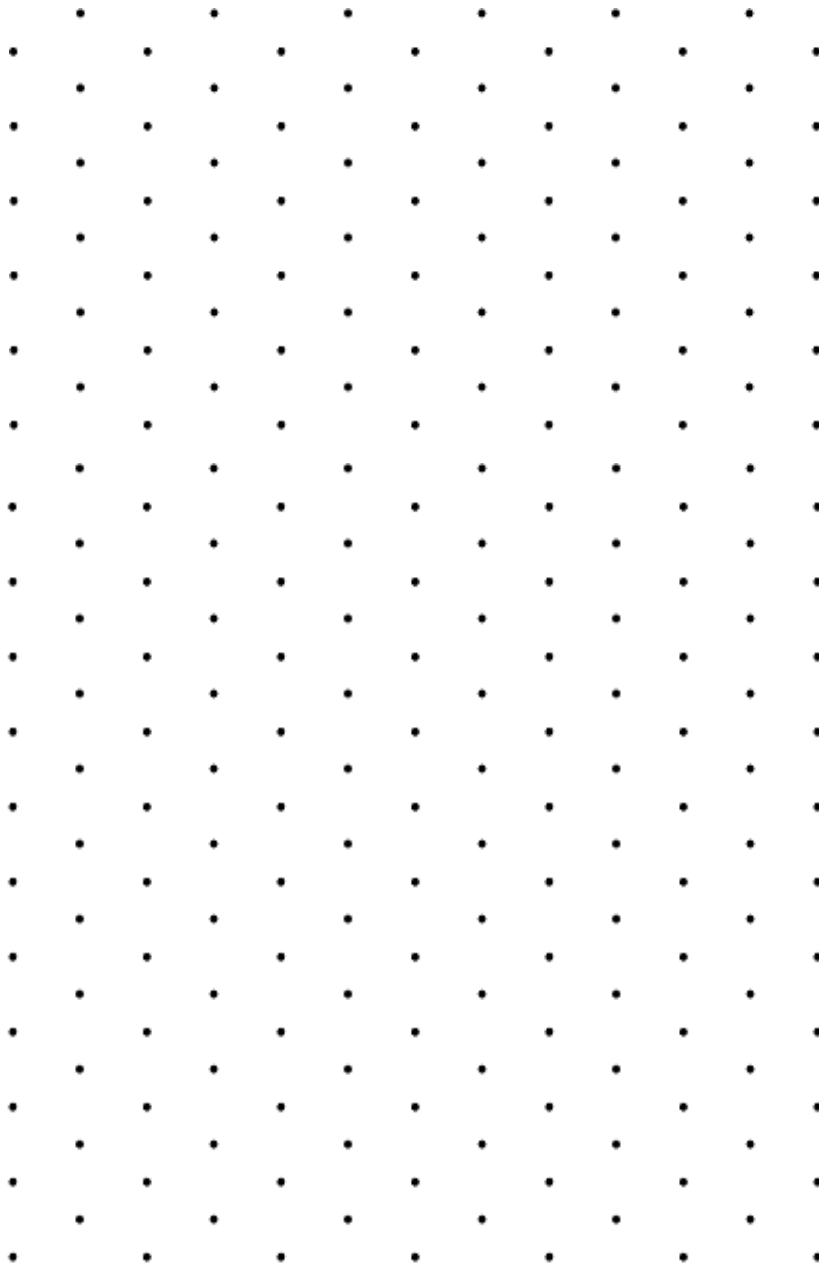
3

Here is a centimetre cube.



30 of these cubes are used to make a cuboid.

Draw a possible cuboid on the grid below.



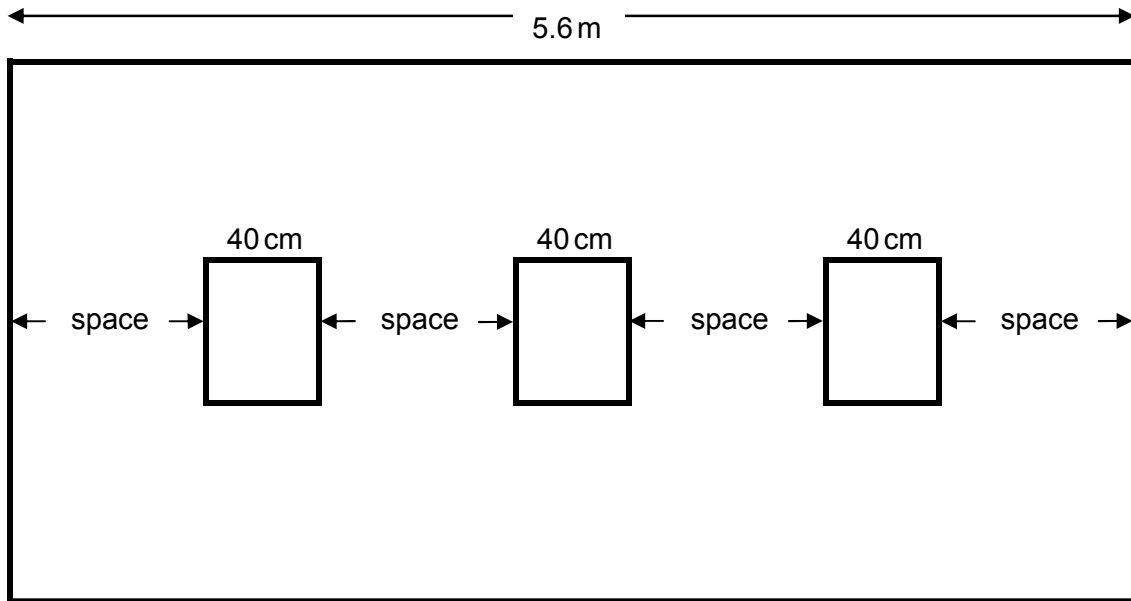
(3 marks)



4

Rebecca wants to put three equal-sized pictures on a wall as shown.

Not drawn accurately



Each space is the same width.  
How wide is each space?  
State the units of your answer.

.....  
.....  
.....  
.....  
.....  
.....

Answer ..... (6 marks)



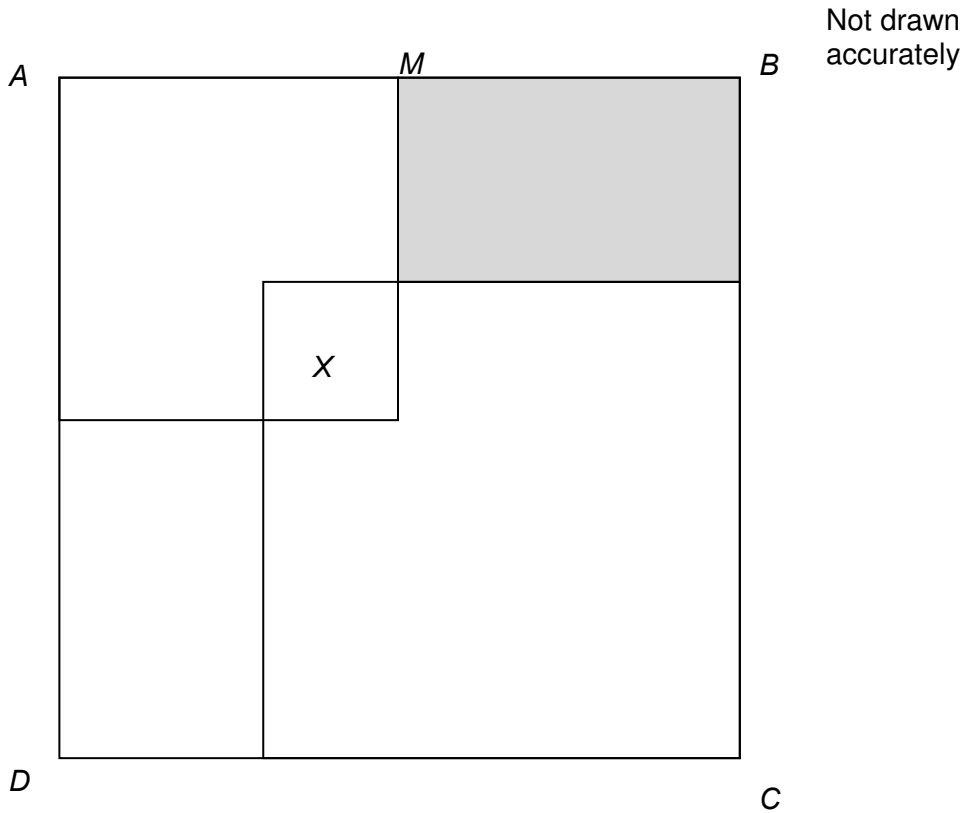
5

$ABCD$  is a square of side length 14 cm.

$M$  is the midpoint of  $AB$ .

Two squares are drawn inside  $ABCD$  that overlap to form square  $X$ .

The area of the shaded rectangle is  $\frac{1}{7}$  of the area of  $ABCD$



Work out the area of square  $X$ .

.....

.....

.....

.....

.....

.....

.....

.....

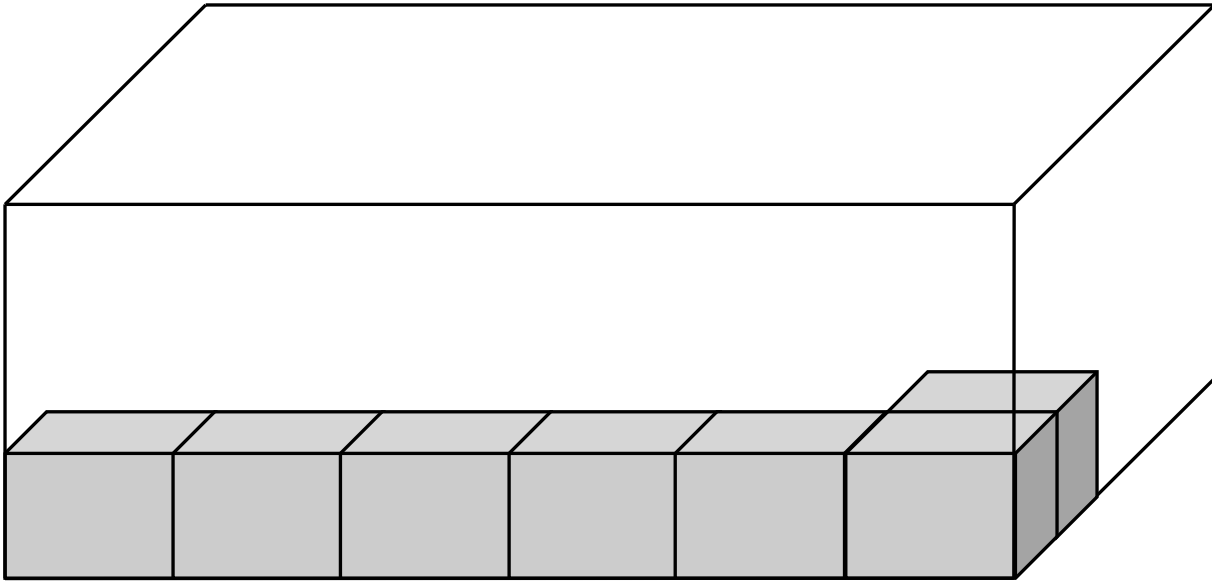
Answer .....  $\text{cm}^2$  (5 marks)



6

Tara is packing her centimetre cubes into the box.

Not drawn accurately



Each layer of cubes is 6 cubes long and 5 cubes wide.  
There are 3 layers in the box.

Tara fills the box.  
How many cubes does she have?

.....

.....

.....

.....

.....

.....

.....

.....

.....

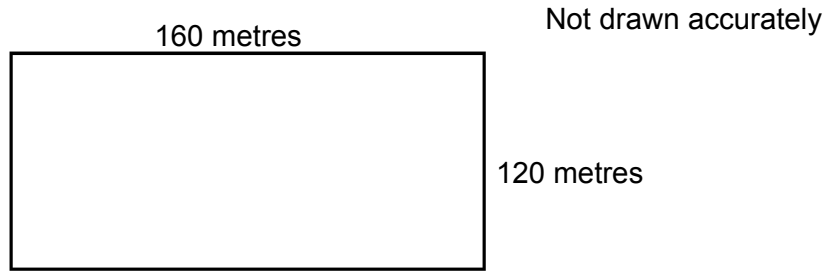
.....

.....

Answer ..... (5 marks)



7 The diagram shows a Ron's field.



The field is to be divided into three rectangular areas. One-quarter of the field is for Wheat.

7 (a) Work out the length and width of a rectangle he could use for wheat.

.....  
.....

Length.....metres

Width.....metres (2 marks)

7 (b) Two-fifths of the field is for potatoes.  
The rest is **not** used.

What fraction of the field is **not** used for wheat or potatoes?

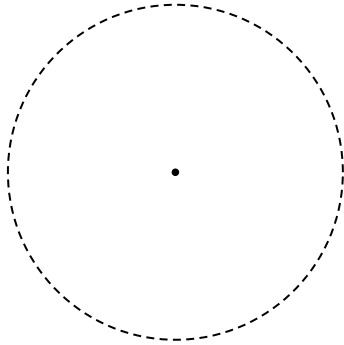
.....  
.....  
.....  
.....

Answer ..... (3 marks)

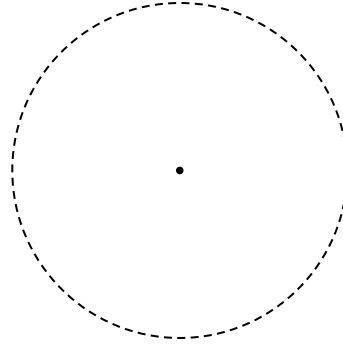


**8 (a)** On the circles, draw

a diameter

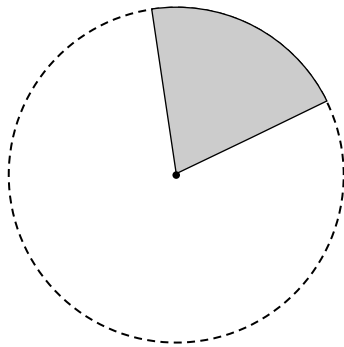


an arc

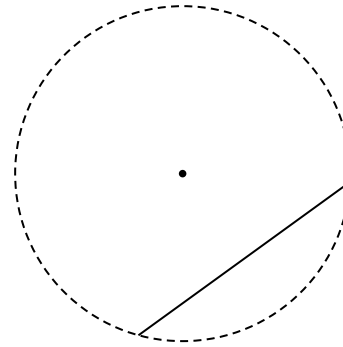


(2 marks)

**8 (b)** Complete the sentences.



The shaded area is a .....

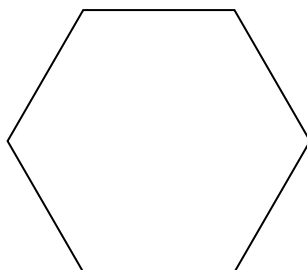


The straight line is a .....

(2 marks)



9 (a) The diagram shows a regular hexagon.



9 (a) (i) By measuring the length of one side, work out the perimeter.

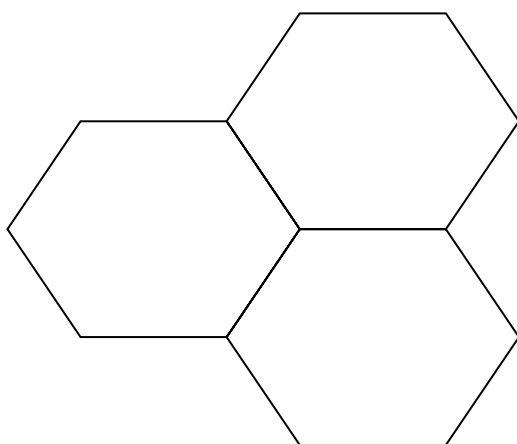
.....  
.....

Answer ..... cm (2 marks)

9 (a) (ii) On the diagram above draw in all the lines of symmetry.

(2 marks)

9 (b) Three regular hexagons are joined together as shown.



Not drawn accurately

Work out the size of an interior angle of a regular hexagon.  
You must show your working.

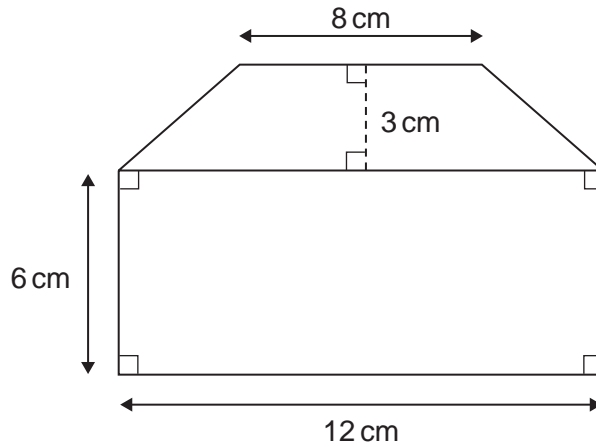
.....  
.....

Answer ..... degrees (2 marks)



10

The shape is a drawing of a dolls house.



Not drawn accurately

Work out the area of this shape.  
State the units of your answer.

.....

.....

.....

.....

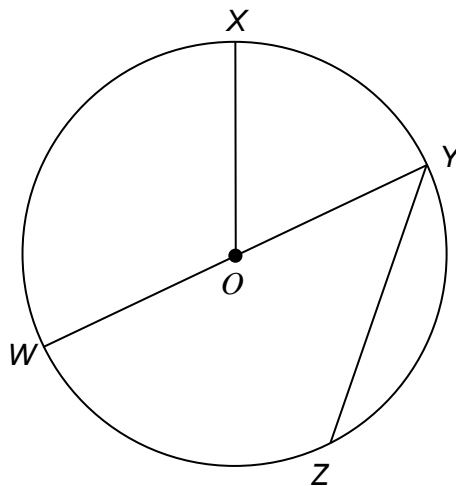
.....

.....

Answer ..... (4 marks)



11  $W, X, Y$  and  $Z$  are four points on a circle centre  $O$ .



11 (a) Here are five words that are used with circles.

**circumference      radius      chord      diameter      sector**

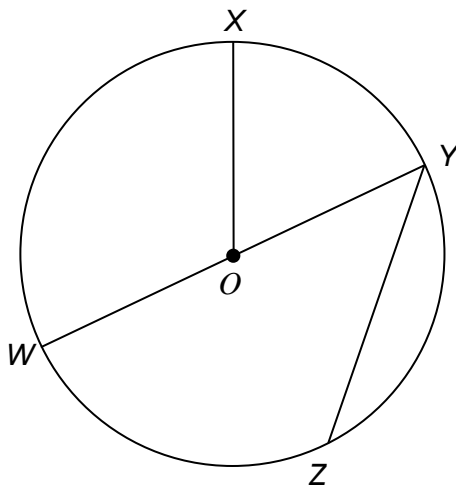
Use **one** of these words to complete the following sentences.

11 (a) (i) The straight line  $WY$  is a ..... of the circle.  
(1 mark)

11 (a) (ii) The straight line  $YZ$  is a ..... of the circle.  
(1 mark)

11 (a) (iii) The straight line  $OX$  is a ..... of the circle.  
(1 mark)

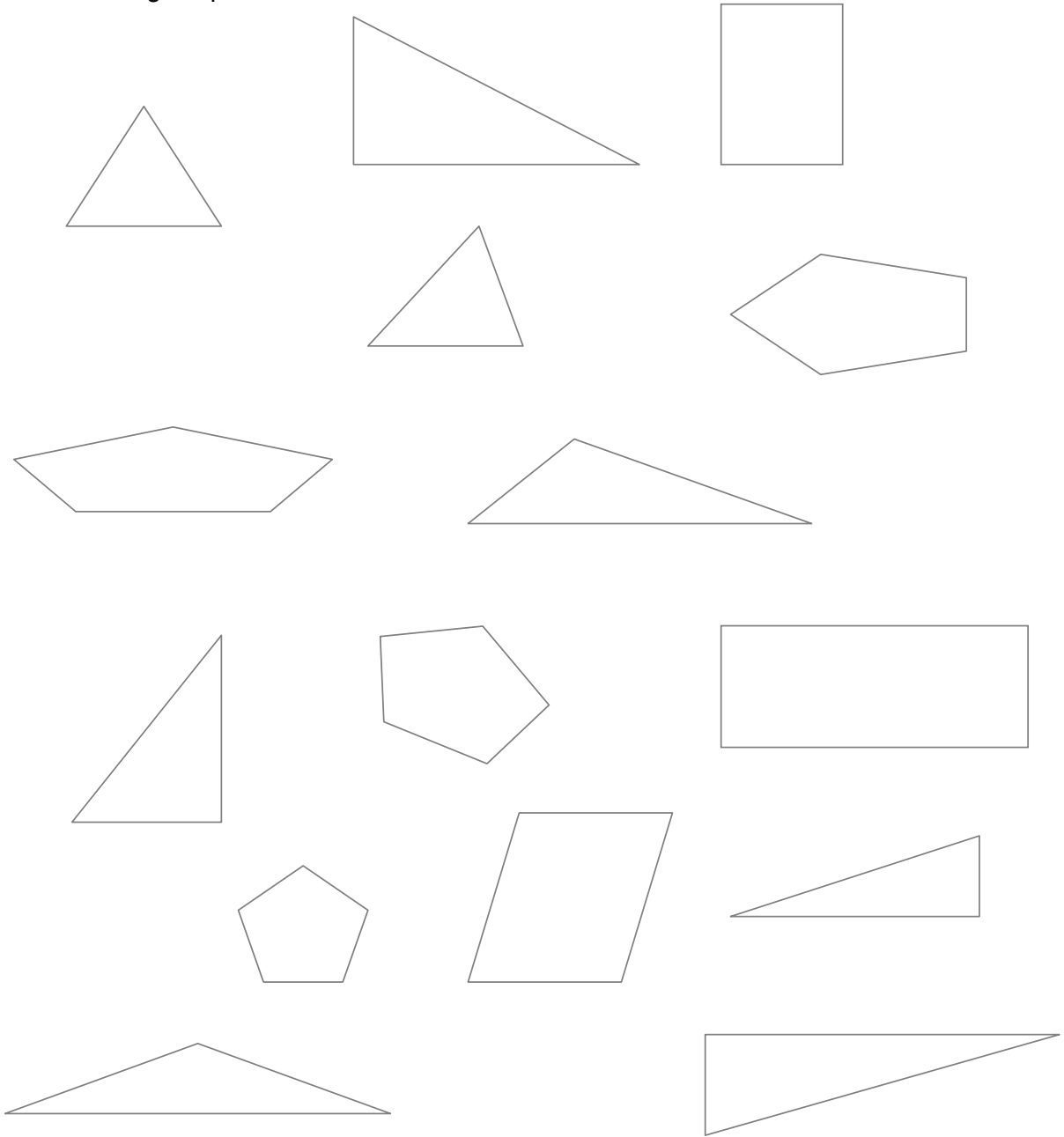
11 (b) On the diagram below draw a tangent to the circle at point  $W$ .



(1 mark)



12\* Joe is sorting shapes.



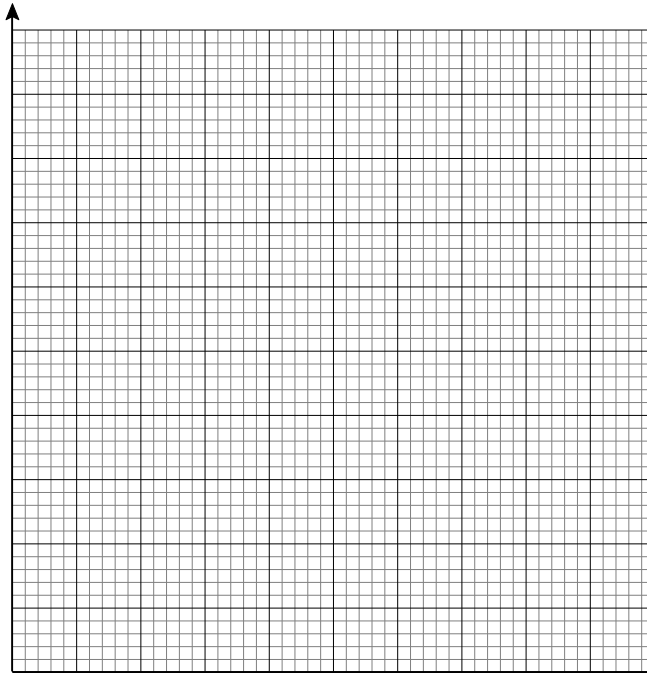
12 (a) Complete the tally table.

	Tally	Frequency
Triangles		
Quadrilaterals		
Pentagons		

(3 marks)



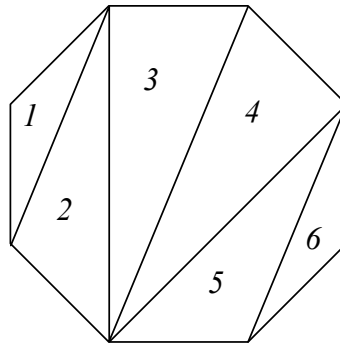
**12 (b)** On the grid draw a suitable diagram to show this information.



*(3 marks)*



13 A regular octagon is split into triangles 1, 2, 3, 4, 5 and 6.

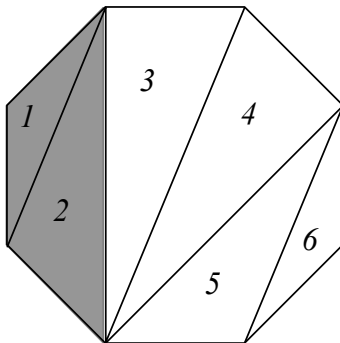


13 (a) Complete this list of pairs of congruent triangles.

3 and 4  
 2 and .....  
 1 and .....

(2 marks)

13 (b) Triangles 1 and 2 make a trapezium as shown.

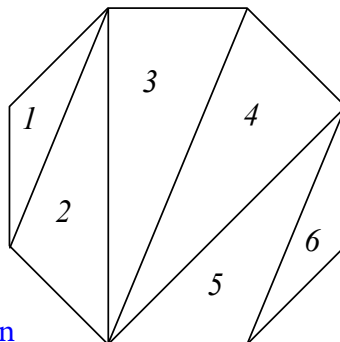


Which of the following triangles also make a trapezium?  
 Circle your answers.

2 and 3      3 and 4      4 and 5      5 and 6

(2 marks)

13 (c) Shade **two** triangles in this diagram to make a kite.



(1 mark)



**14** John's garden is a rectangle measuring 9 metres by 6 metres.  
He decides to make one-third of the area into a vegetable plot and the rest into a lawn.

**14 (a)** On the grid draw accurately a possible design for John's garden.  
Use the scale 1 centimetre represents 1 metre.  
Label your design.

1 cm represents 1 m



(4 marks)

**14 (b)** Lawn turf (grass) costs £2.50 per square metre.  
How much will it cost John to turf his new lawn?

.....  
.....  
.....  
.....

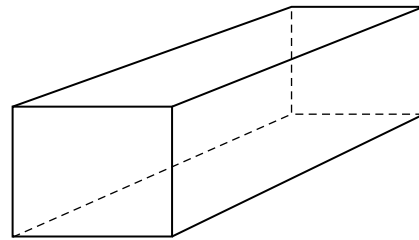
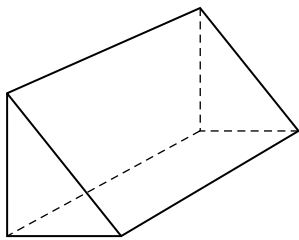
Answer £ ..... (3 marks)



15 (a) Draw a 3-D sketch of a square based pyramid.

(1 mark)

15 (b) Give the mathematical name of these solid shapes.



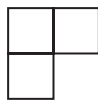
Answer .....

(2 marks)

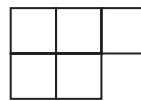
16 A pattern is formed from squares.



Pattern 1



Pattern 2



Pattern 3

Pattern 4

(1 mark)

16 (a) Draw Pattern 4 in the space above.

16 (b) Find the number of squares in Pattern 6.

.....  
.....

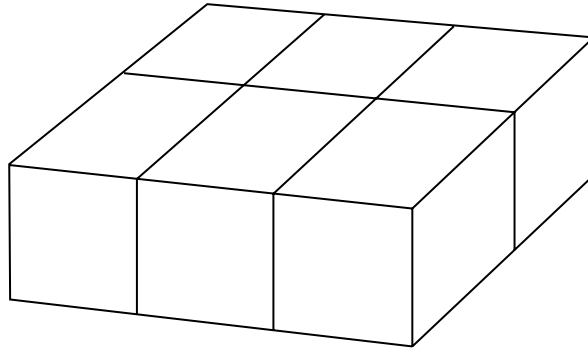
Answer ..... (1 mark)



17 (a) How many faces does a cuboid have?

Answer ..... (1 mark)

17 (b) This cuboid is made from centimetre cubes.



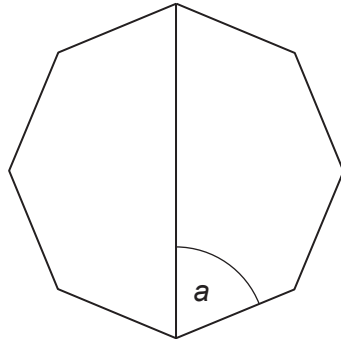
Find the total surface area of the cuboid.

.....  
.....

Answer .....  $\text{cm}^2$  (2 marks)



18 Below is a regular octagon.



Not drawn accurately

Work out the value of  $a$ .

.....

.....

.....

.....

Answer ..... degrees (3 marks)



19 Here are the standard quadrilaterals

Square

Rectangle

Parallelogram

Kite

Rhombus

Trapezium

19 (a) Three different quadrilaterals have these two properties.

Both pairs of opposite sides are equal.  
Rotational symmetry order 2

Name the **three** quadrilaterals.

Answer .....

.....

.....

(2 marks)

19 (b) Two of the quadrilaterals in part (a) also have this property

Diagonals do not cross at right  
angles. Name the **two** quadrilaterals.

Answer .....

.....

(1 mark)

19 (c) For one of the quadrilaterals in part (b), write down an extra property that will distinguish it from the other.

Quadrilateral chosen .....

Property .....

.....

(1 mark)

