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GCSE MATHS

Geometry and measures

Edexcel 1MA1 | Subtopic collection Topic 47

Congruence and geometric proof

Foundation tier

Past paper question booklet

20	2012-2020	Foundation
question groups	available papers	tier

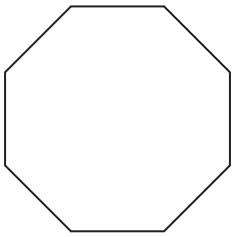
Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

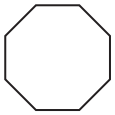
Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

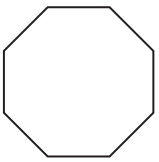
1 Here are some regular polygons.



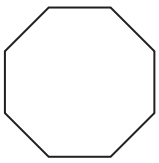
A



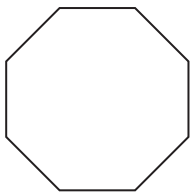
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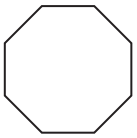
C



D



E



F

All these regular polygons have the same mathematical name.

(a) Write down this mathematical name.

.....

(1)

Two of these polygons are congruent.

(b) Write down the letters of these two polygons.

..... and .....

(1)

The interior angles of this regular polygon add up to 1080°

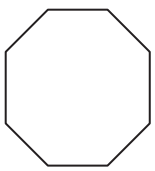


Diagram **NOT** accurately drawn

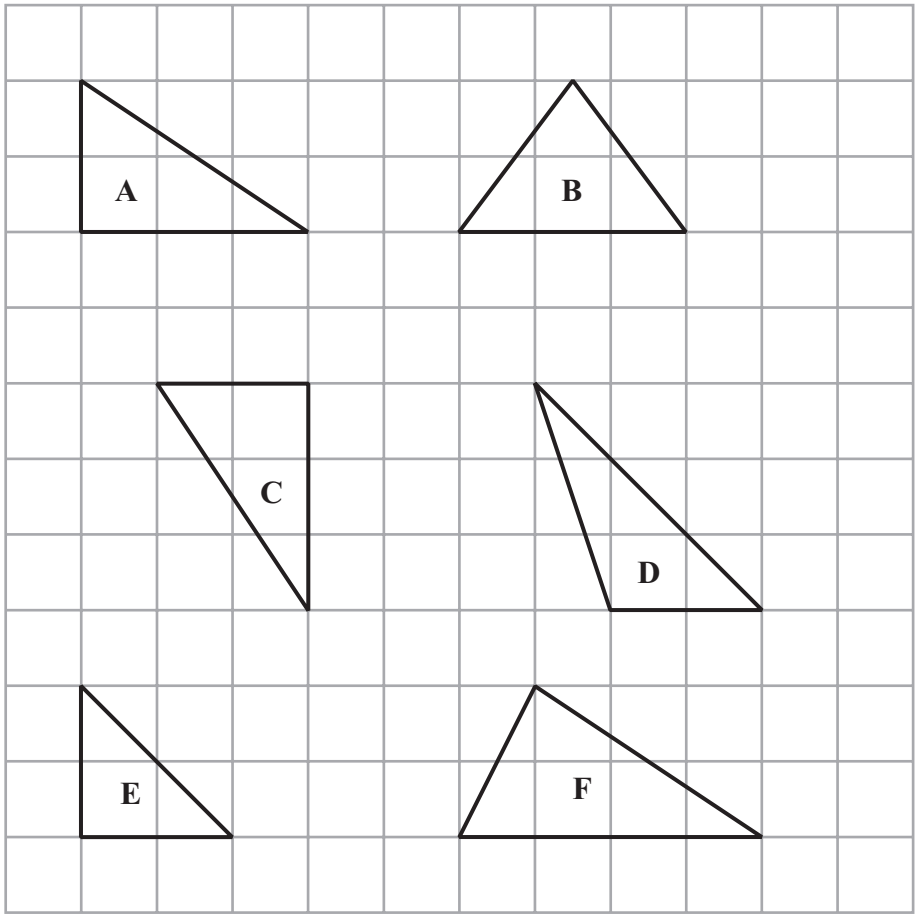
(c) What is the size of one interior angle?

..... °

(2)

(Total for Question 1 is 4 marks)

13 Here are 6 triangles drawn on a grid of centimetre squares.



(a) Write down the letters of the **two** congruent triangles.

.....

(1)

(b) Write down the letter of an isosceles triangle.

.....

(1)

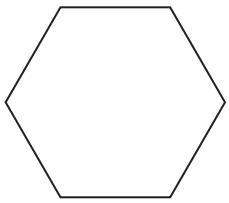
(c) Find the area of triangle **E**.

..... cm^2

(1)

(Total for Question 13 is 3 marks)

2 (a)

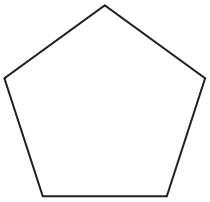


Write down the mathematical name of this polygon.

.....

(1)

(b)

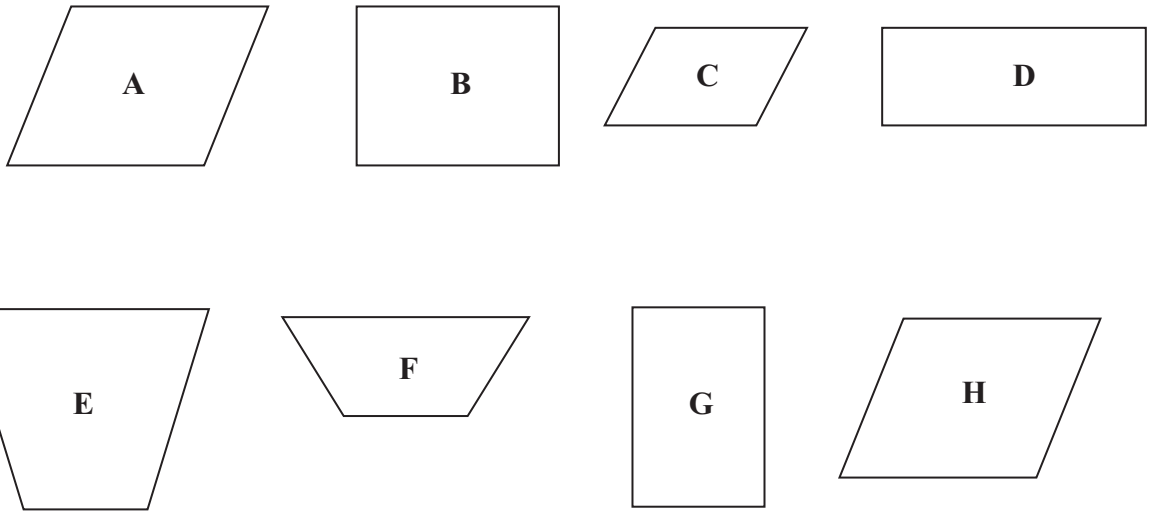


Write down the mathematical name of this polygon.

.....

(1)

(c) Here are eight shapes.



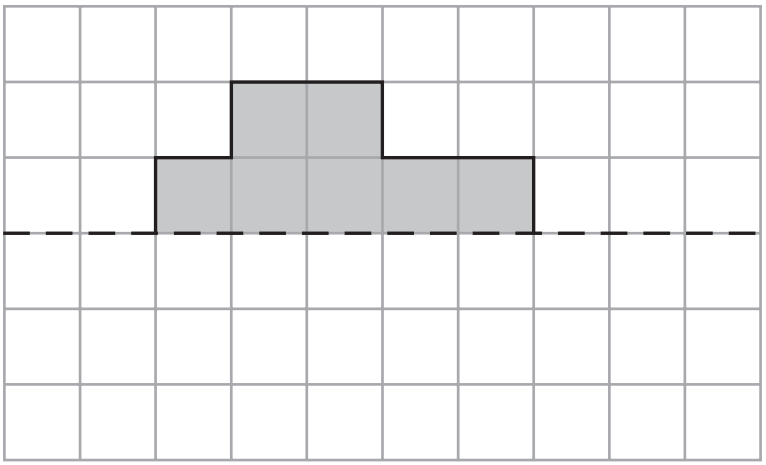
Two of these shapes are congruent.
Write down the letters of these two shapes.

..... and .....

(1)

(Total for Question 2 is 3 marks)

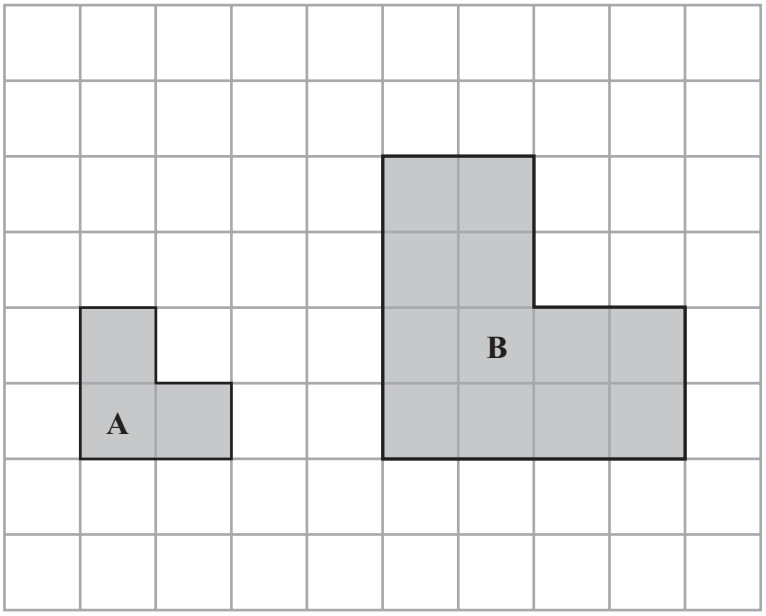
6 (a) A shaded shape is shown on the grid.



Reflect the shaded shape in the mirror line.

(1)

(b)



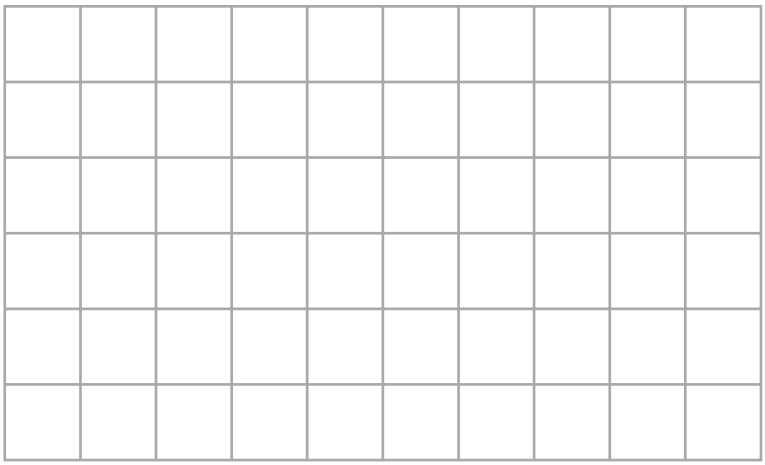
Shape **B** is an enlargement of shape **A**.

Write down the scale factor of the enlargement.

.....

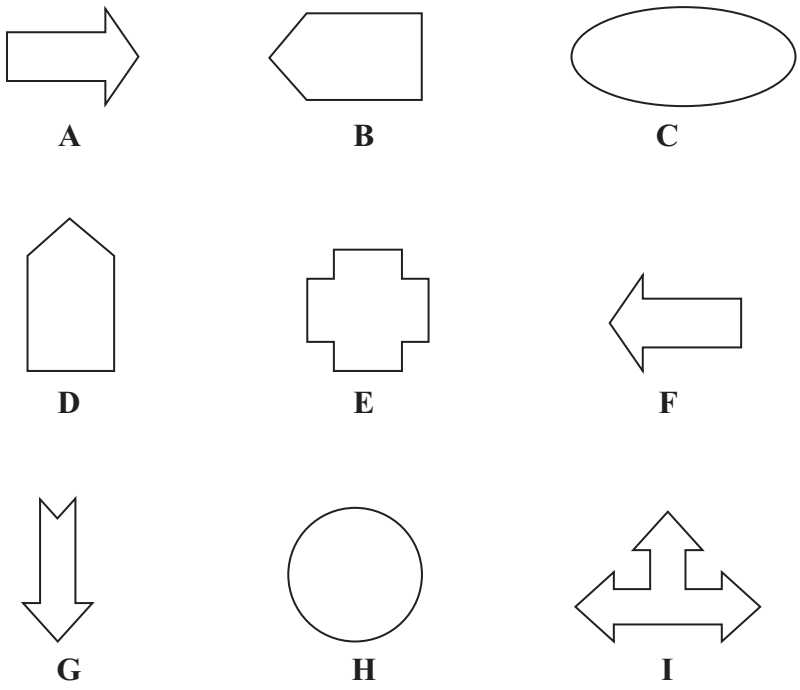
(1)

(c) On the grid, draw two parallel lines.



(1)

(d) Here are some shapes.



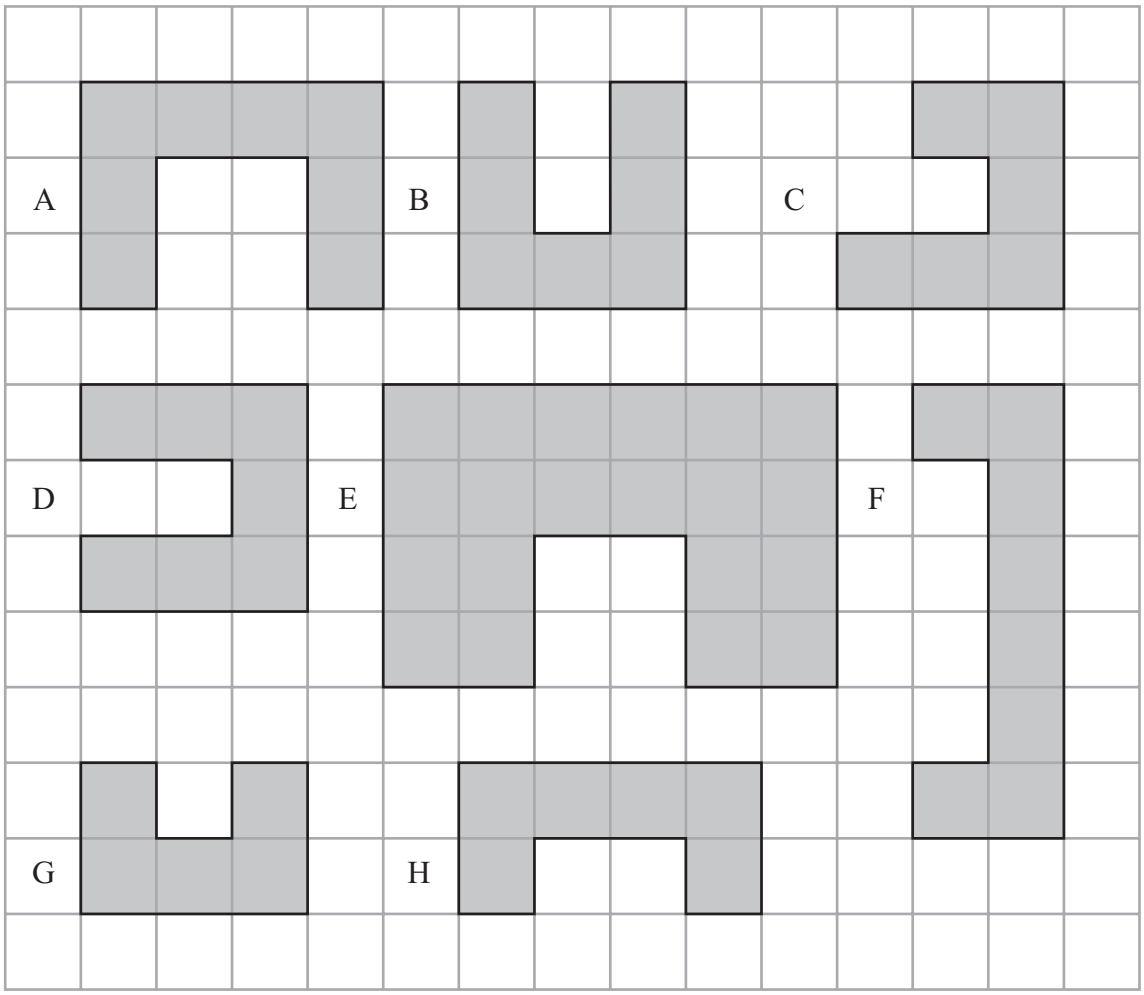
Write down the letters of two shapes that are congruent.

..... and .....

(1)

(Total for Question 6 is 4 marks)

12 These shapes have been drawn on a grid of centimetre squares.



(a) (i) Write down the letters of a pair of shapes that are congruent.

..... and .....

(ii) Write down the letters of a different pair of shapes that are similar.

..... and .....

(2)

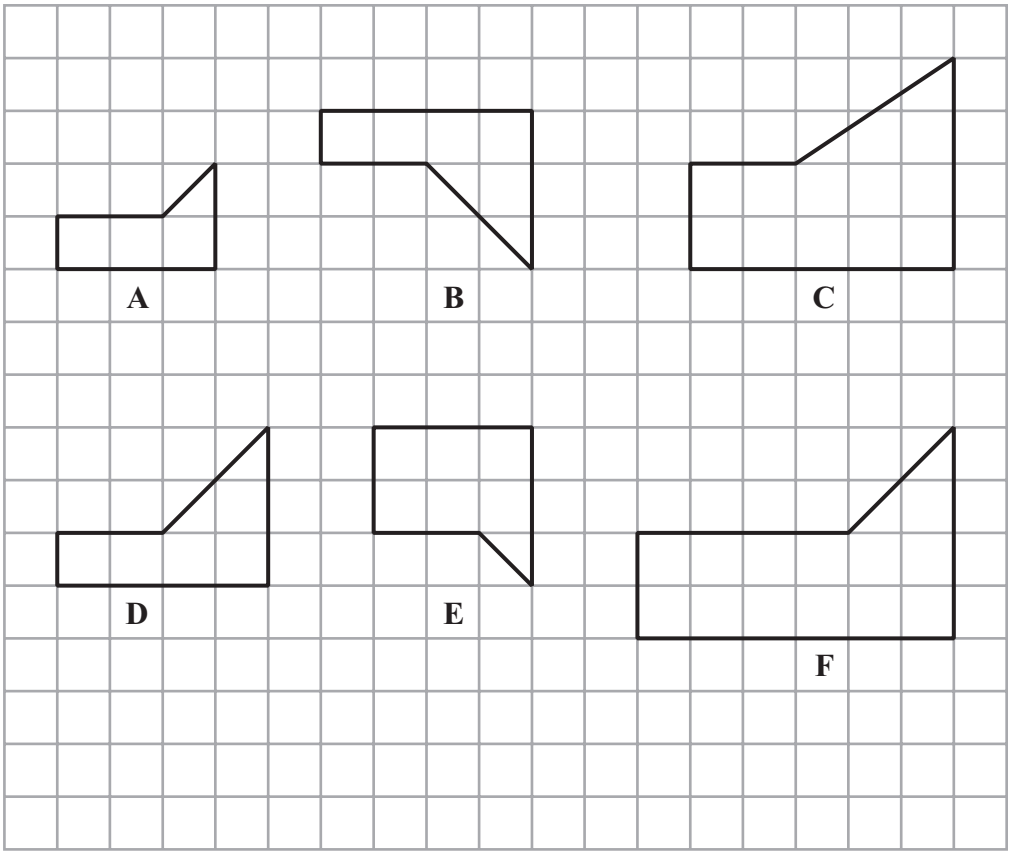
(b) Find the perimeter of shape D.

..... cm

(1)

(Total for Question 12 is 3 marks)

10 Six shapes are drawn on the grid.



Two of the shapes are congruent.

(a) Write down the letters of these two shapes.

..... and .....

(1)

One of the shapes is similar to shape **A**.

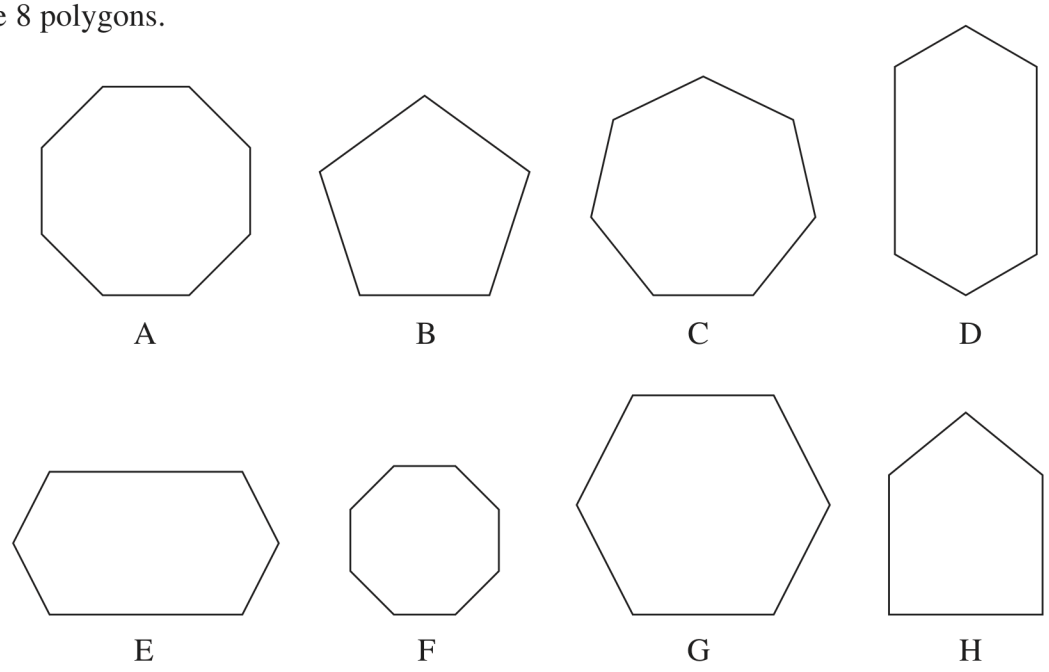
(b) Write down the letter of this shape.

.....

(1)

(Total for Question 10 is 2 marks)

3 Here are 8 polygons.



(a) Write down the mathematical name for polygon G.

.....

(1)

Two of the polygons are congruent.

(b) Write down the letters of these polygons.

..... and .....

(1)

One of the polygons is similar to polygon F.

(c) Write down the letter of this polygon.

.....

(1)

The interior angles of this regular polygon add up to 540°.

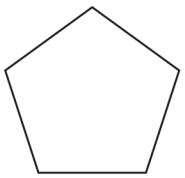


Diagram **NOT** accurately drawn

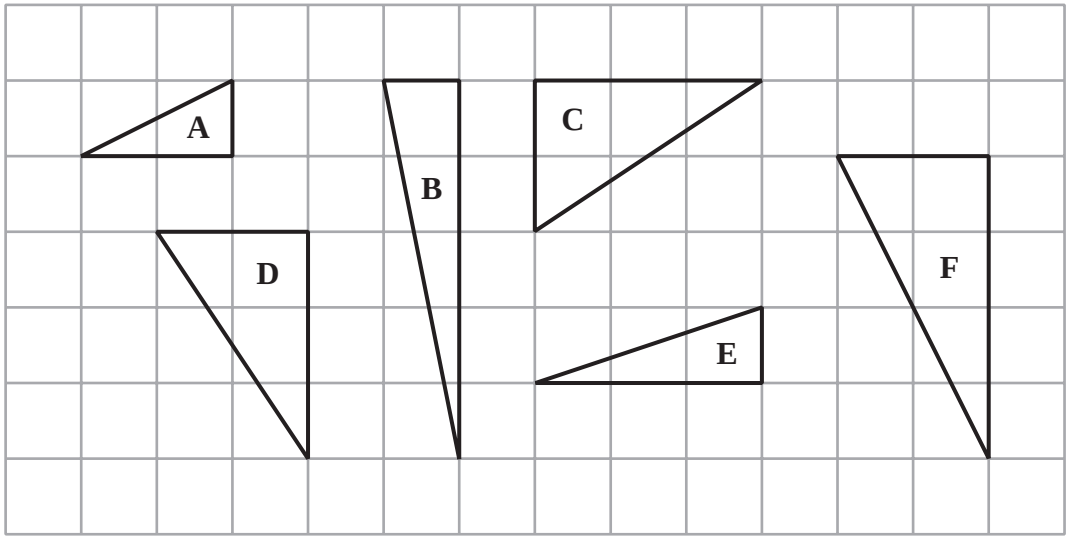
(d) What is the size of one interior angle?

..... °

(2)

(Total for Question 3 is 5 marks)

7 Here are some triangles drawn on a grid.



Two of the triangles are congruent.

(a) Write down the letters of these two triangles.

..... and .....

(1)

One of the triangles is an enlargement of triangle **A**.

(b) (i) Write down the letter of this triangle.

.....

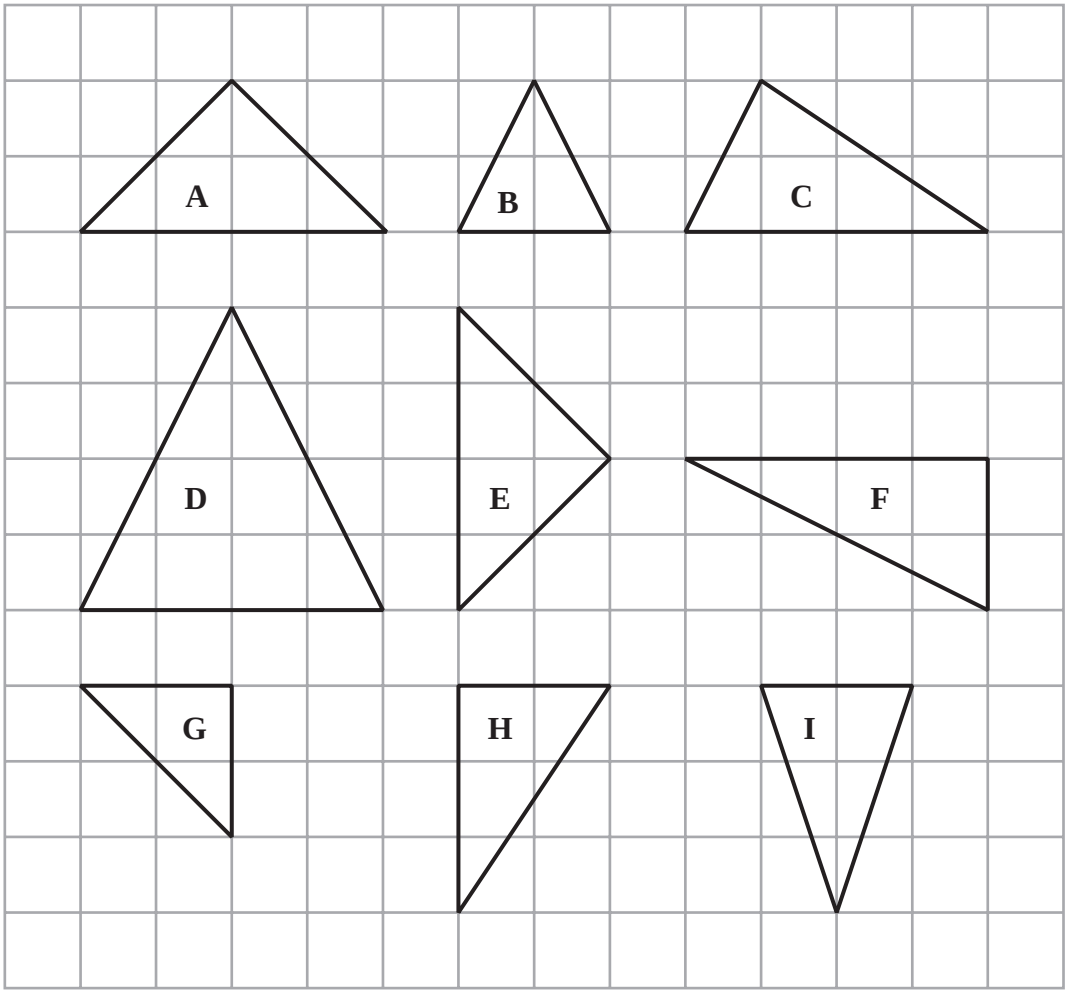
(ii) Write down the scale factor of the enlargement.

.....

(2)

(Total for Question 7 is 3 marks)

2 Here are some triangles drawn on a grid.



Two of these triangles are congruent.

(a) Write down the letters of these triangles.

..... and .....

(1)

One of the triangles is similar to triangle **B**.

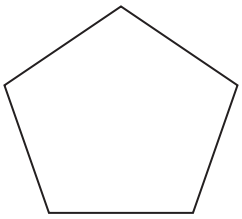
(b) Write down the letter of this triangle.

.....

(1)

(Total for Question 2 is 2 marks)

2 Here is a polygon.



(a) Write down the mathematical name of this polygon.

.....

(1)

(b) Write down the number of sides of a heptagon.

.....

(1)

The diagram shows a quadrilateral.

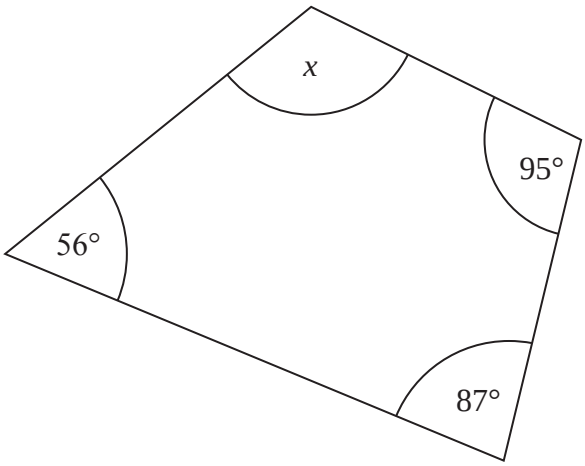


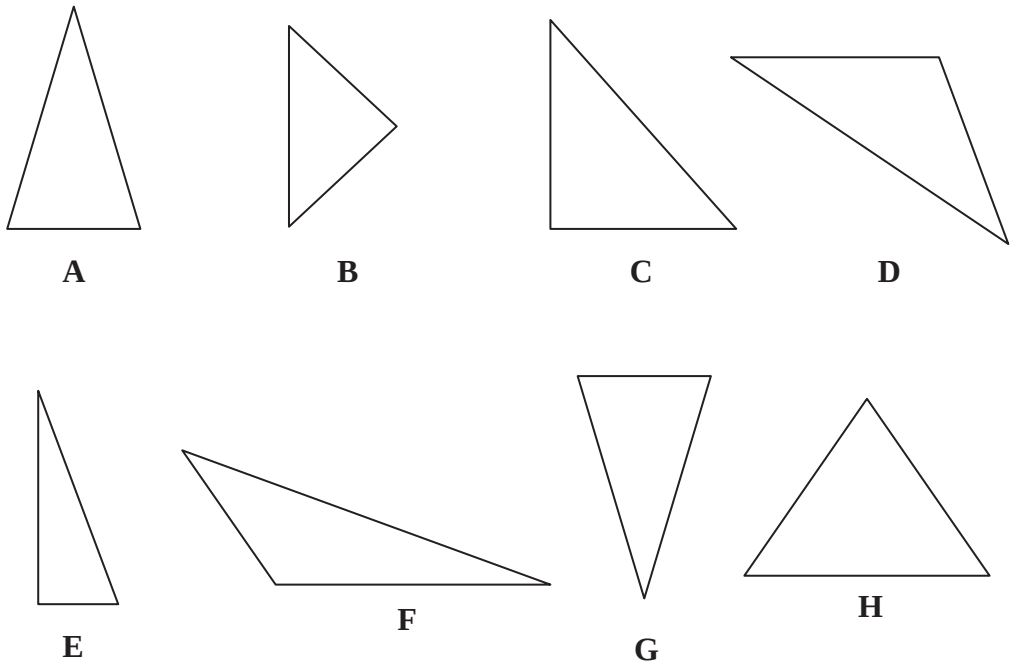
Diagram **NOT** accurately drawn

(c) Work out the size of the angle marked x.

.....°

(2)

Here are eight triangles.



Two of these triangles are congruent.

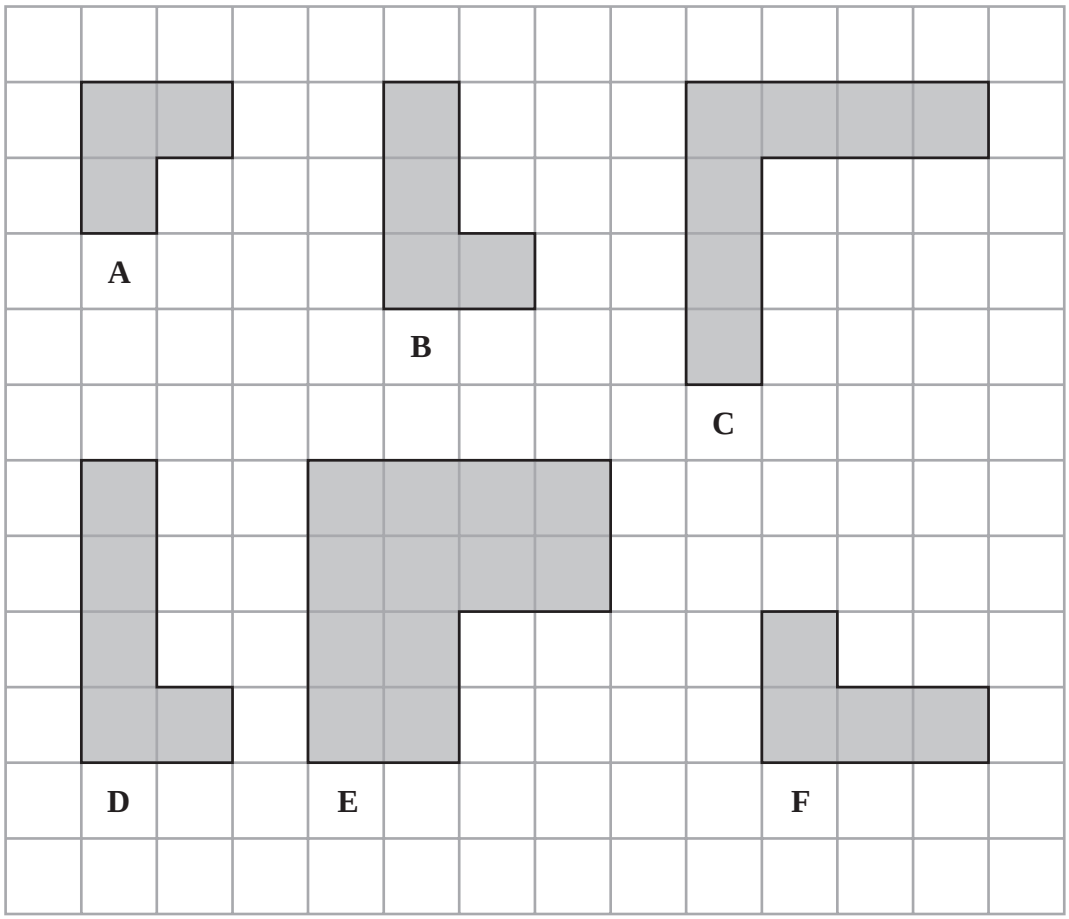
(d) Write down the letters of these two triangles.

..... and .....

(1)

(Total for Question 2 is 5 marks)

2 Here are six shapes on a grid of centimetre squares.



Two of the shapes are congruent.

(a) Write down the letters of these two shapes.

..... and .....

(1)

One of the shapes is similar to shape **E**.

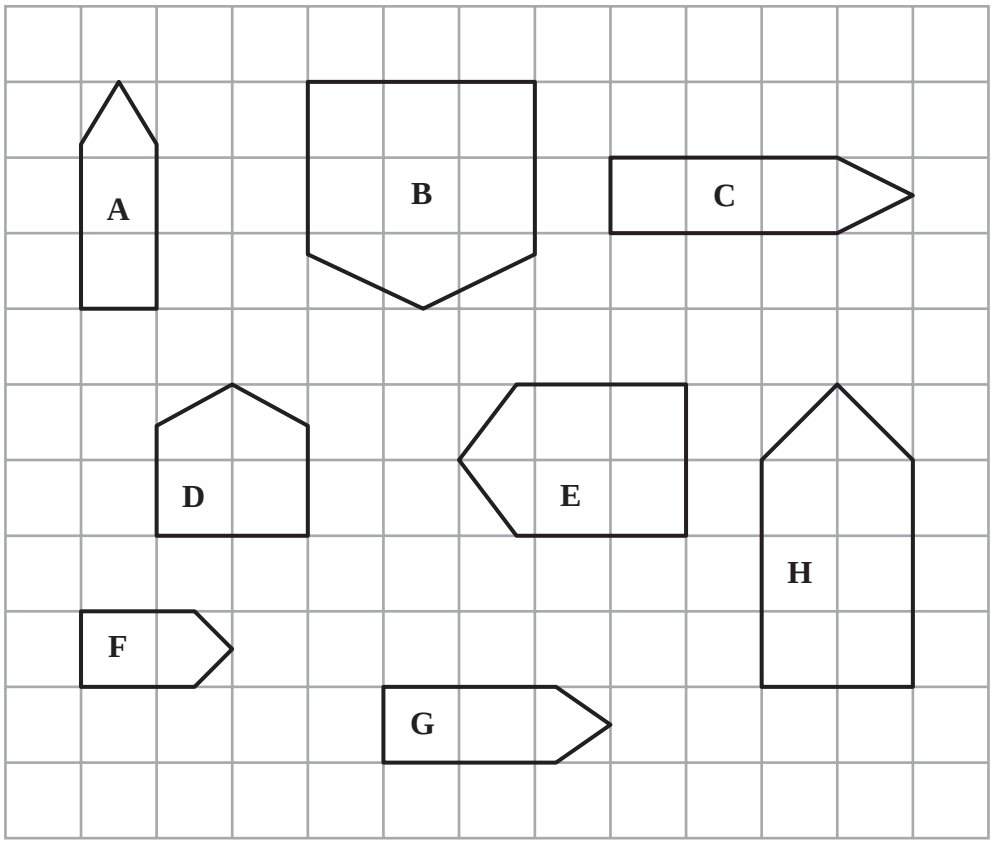
(b) Write down the letter of this shape.

.....

(1)

(Total for Question 2 is 2 marks)

2 Here are eight shapes drawn on a grid of centimetre squares.



Two of these shapes are congruent.

(a) Write down the letters of these two shapes.

..... and .....

(1)

Shape **H** is an enlargement of one of the other shapes.

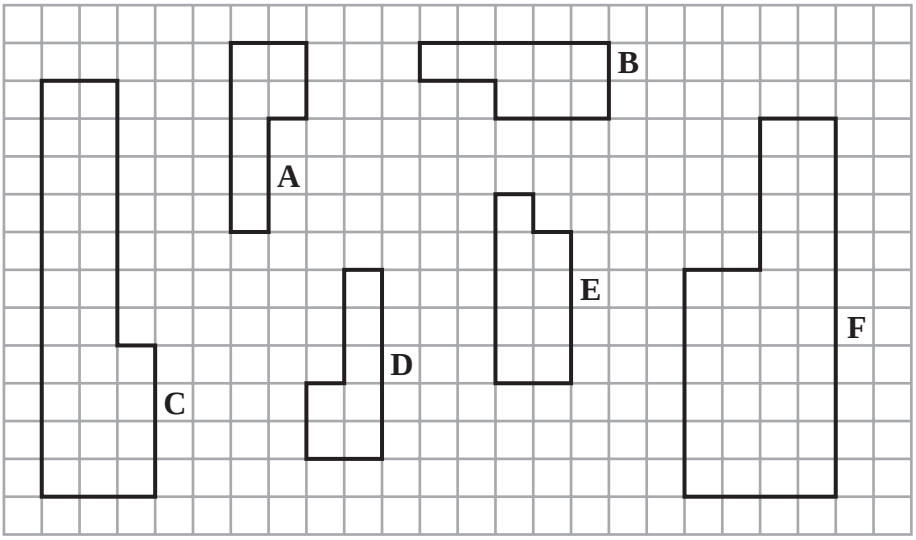
(b) Which shape?

.....

(1)

(Total for Question 2 is 2 marks)

3 Six shapes are drawn on the grid of squares.



Two of the shapes are congruent.

(a) Write down the letters of these two shapes.

..... and .....

(1)

One of the shapes is similar to shape **F**.

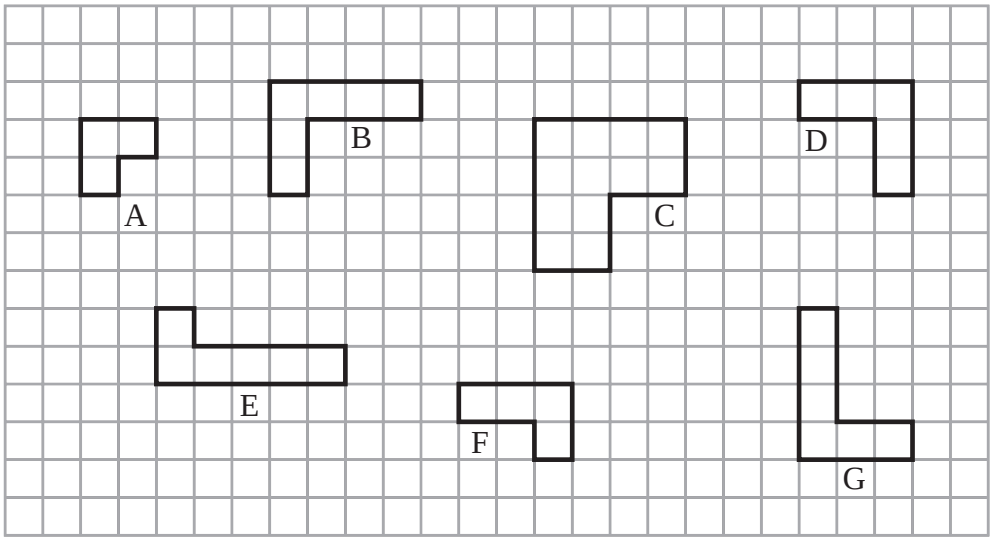
(b) Write down the letter of this shape.

.....

(1)

(Total for Question 3 is 2 marks)

3 Here are seven shapes shown on a grid.



Two of the shapes are congruent.

(a) Write down the letters of these two shapes.

..... and .....

(1)

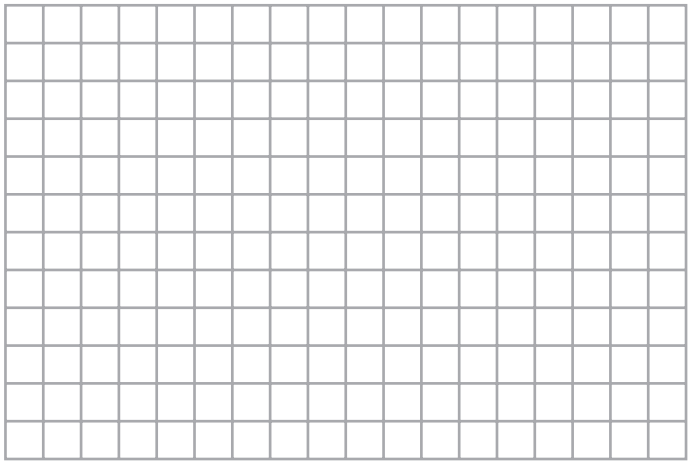
One of the shapes is similar to shape A.

(b) Write down the letter of the shape.

.....

(1)

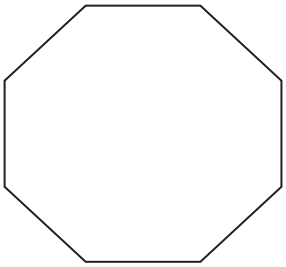
(c) On the grid below, draw an enlargement of shape F with scale factor 3



(2)

(Total for Question 3 is 4 marks)

5 Here is a polygon.

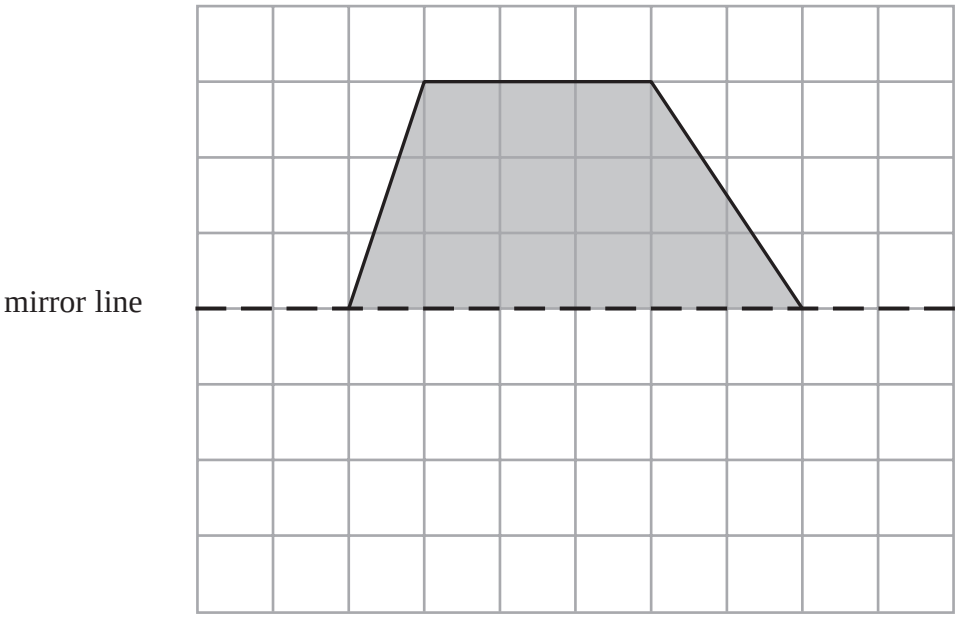


(a) Write down the mathematical name of this polygon.

.....

(1)

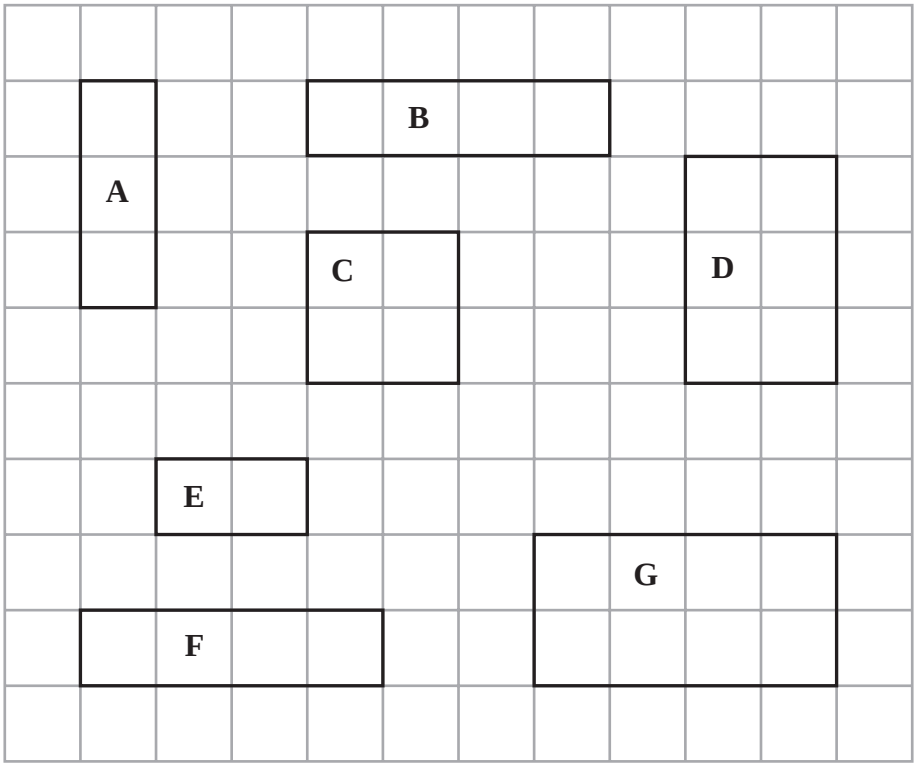
(b)



Reflect the shaded shape in the mirror line.

(1)

Here are seven rectangles on a grid.



Two of the rectangles are congruent.

(c) Write down the letters of these two rectangles.

..... and .....

(1)

One of the rectangles is similar to rectangle **E**.

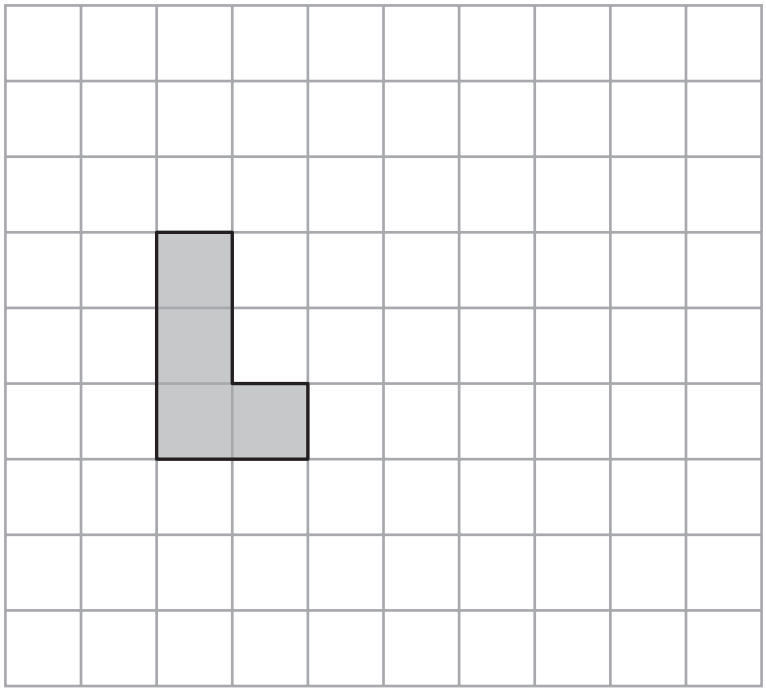
(d) Write down the letter of this rectangle.

.....

(1)

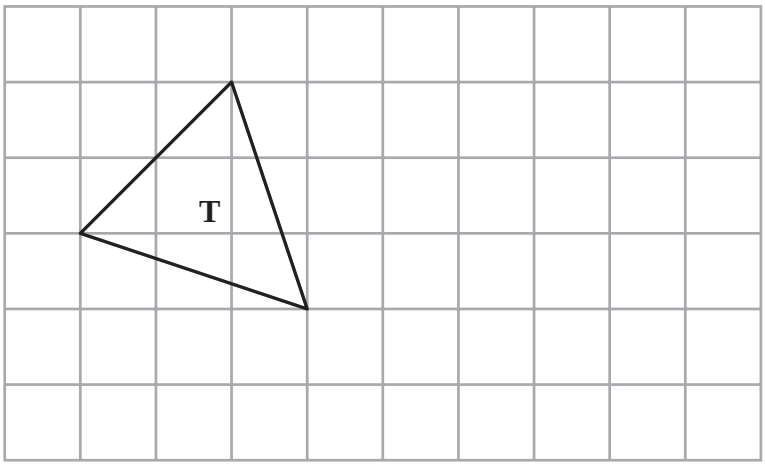
(Total for Question 5 is 4 marks)

15 (a) On the grid, show how the shaded shape will tessellate.
You should draw at least **six** more shapes.



(2)

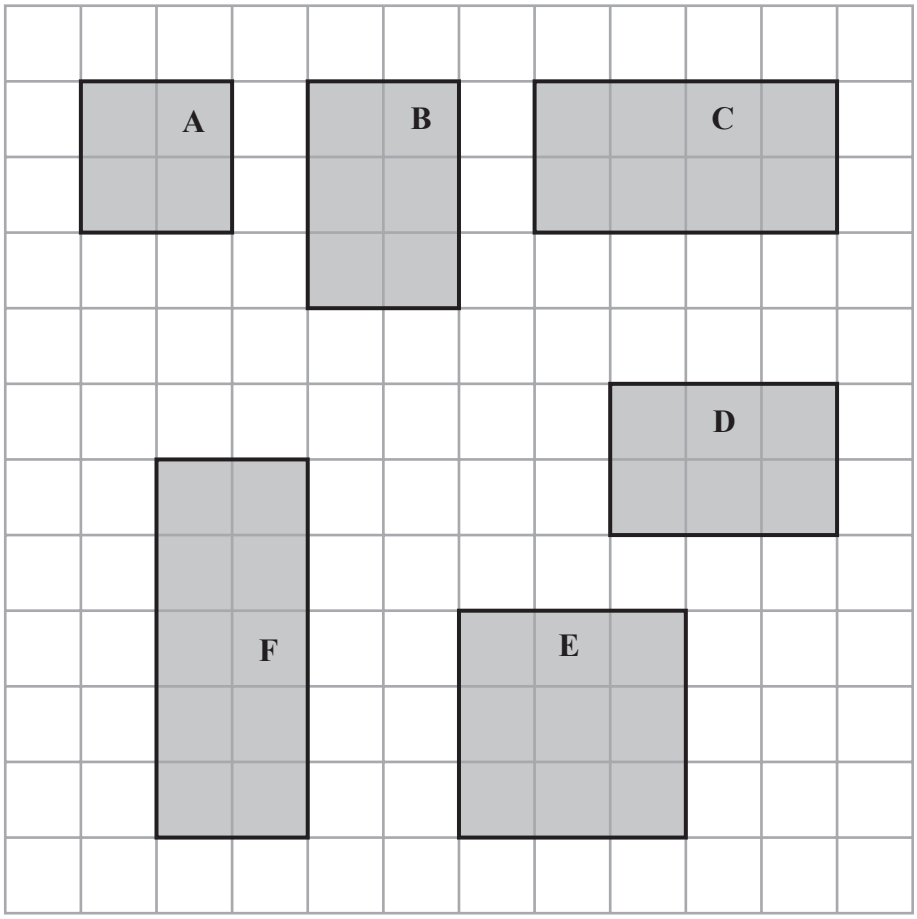
(b) On the grid below, draw a shape that is congruent to shape **T**.



(1)

(Total for Question 15 is 3 marks)

3 Here are six shapes drawn on a centimetre grid.



Two of the shapes are congruent.

(a) Write down the letters of these two shapes.

..... and .....

(1)

One of the shapes is similar to shape **A**.

(b) Write down the letter of this shape.

.....

(1)

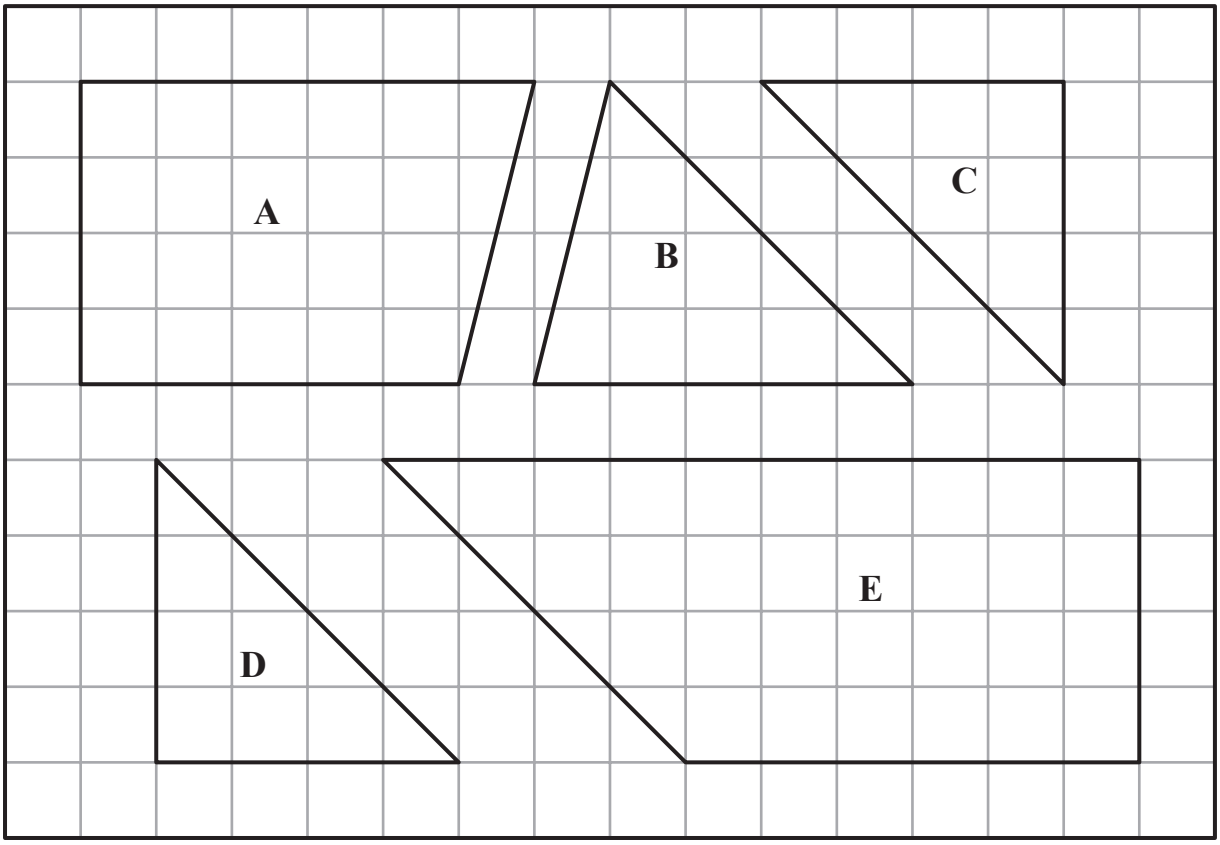
(c) Find the area of shape **F**.

..... cm^2

(1)

(Total for Question 3 is 3 marks)

9 The diagram shows five shapes on a centimetre grid.



(a) Write down the name of shape **E**.

.....

(1)

Two of the shapes are congruent.

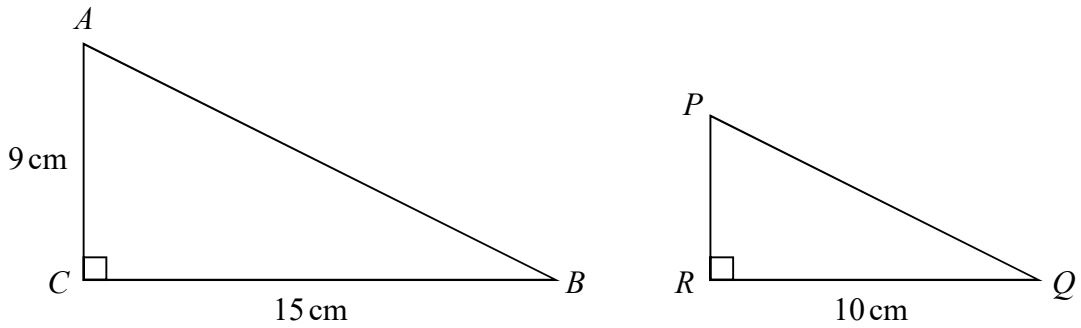
(b) Write down the letters of these two shapes.

..... and .....

(1)

(Total for Question 9 is 2 marks)

29 *ABC* and *PQR* are similar right-angled triangles.



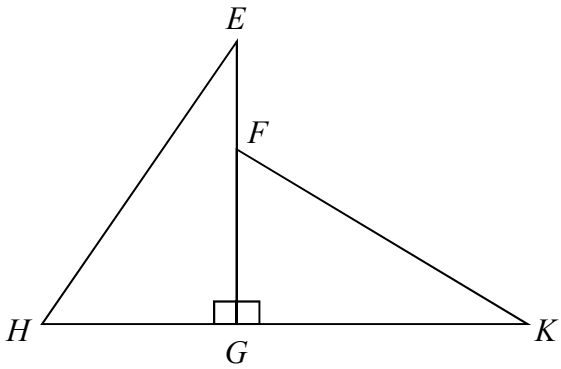
angle *ABC* = angle *PQR*

(a) Work out the length of *PR*.

..... cm

(2)

Triangle *EGH* is congruent to triangle *KGF*.



HK = 10 cm.
HG = 4 cm.

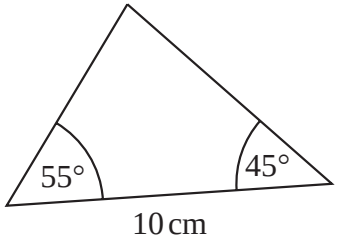
(b) Work out the length of *EF*.

..... cm

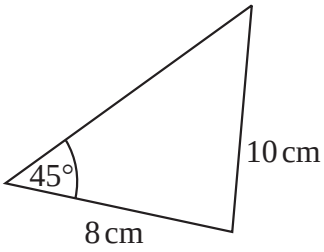
(2)

(Total for Question 29 is 4 marks)

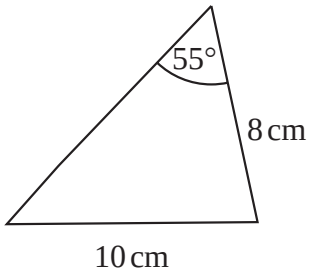
23 The diagram shows four triangles.



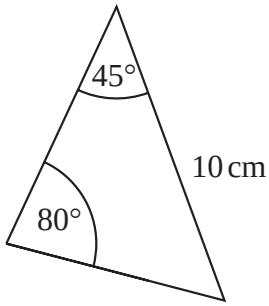
Triangle **A**



Triangle **B**



Triangle **C**



Triangle **D**

Two of these triangles are congruent.

Write down the letters of these two triangles.

..... and .....

(Total for Question 23 is 1 mark)