Scale Factor (Whole Numbers)
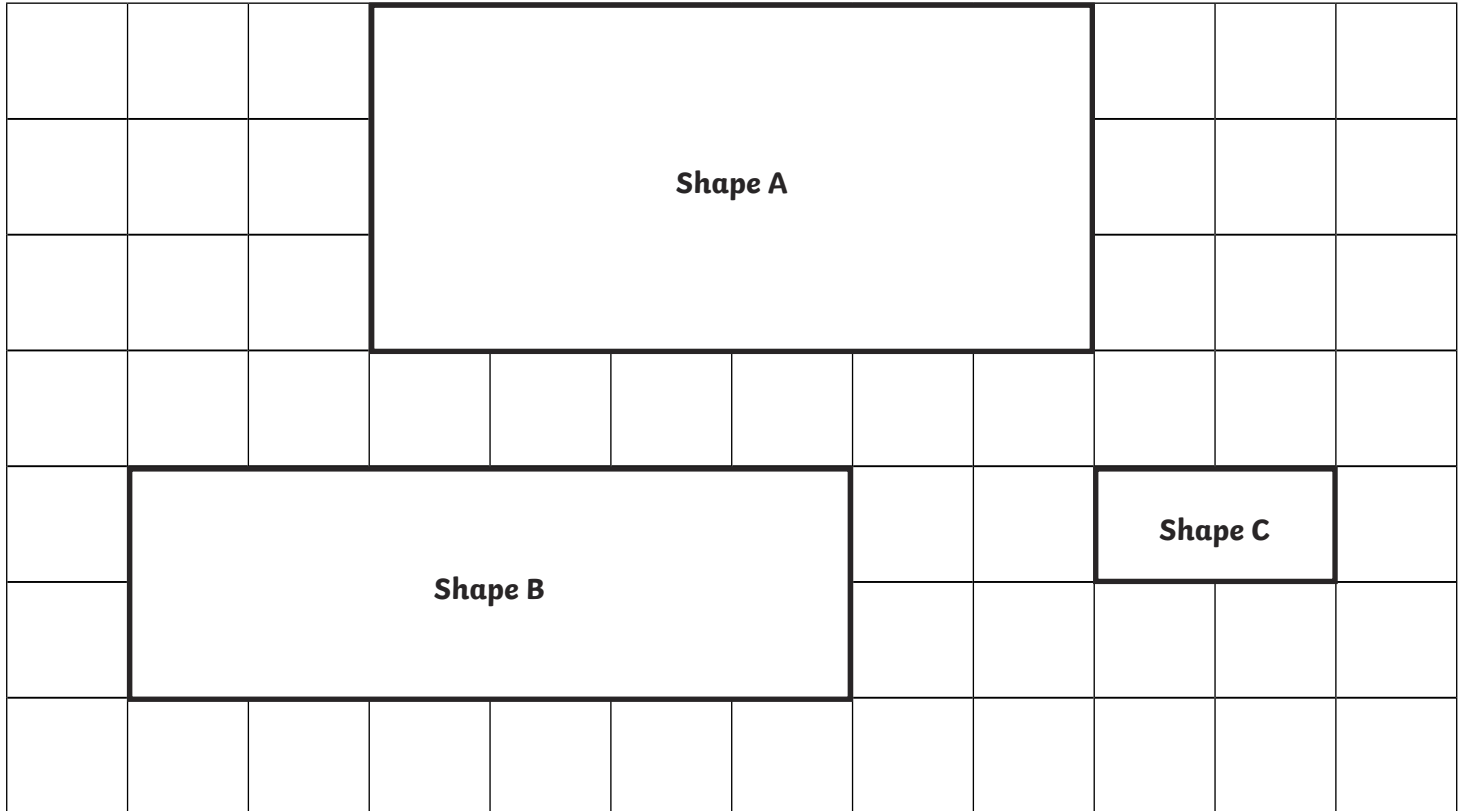
I can solve problems involving shapes where the scale factor is known or can be found.

Shape A

Shape B

Shape C

1. Julianna says, 'All of these three shapes are similar.' Do you think she is correct? Explain your answer:

Scale Factor (Whole Numbers)

★

I can solve problems involving shapes where the scale factor is known or can be found.
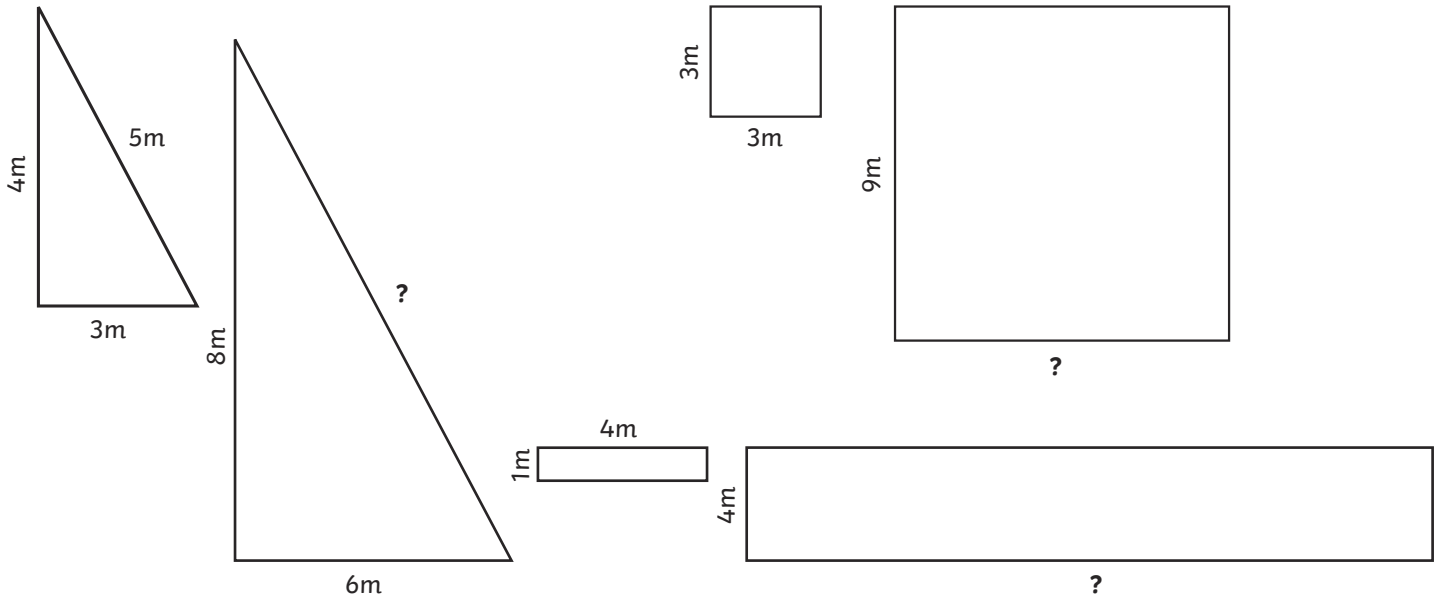

4m 5m 3m

8m ? 6m

3m 3m

9m ?

1m 4m

4m ?

2. In each pair of similar shapes, work out the missing side length and explain how you calculated them:

| Triangle missing side length:	Square missing side length:	Rectangle missing side length:
_____	_____	_____
How I know:	How I know:	How I know:

Scale Factor

I can solve problems involving shapes where the scale factor is known or can be found.

1. George has produced a logo design for his dad's company. They want to use the design, but have to enlarge it by a scale factor of two. Draw the enlarged shape below and explain how you completed it:
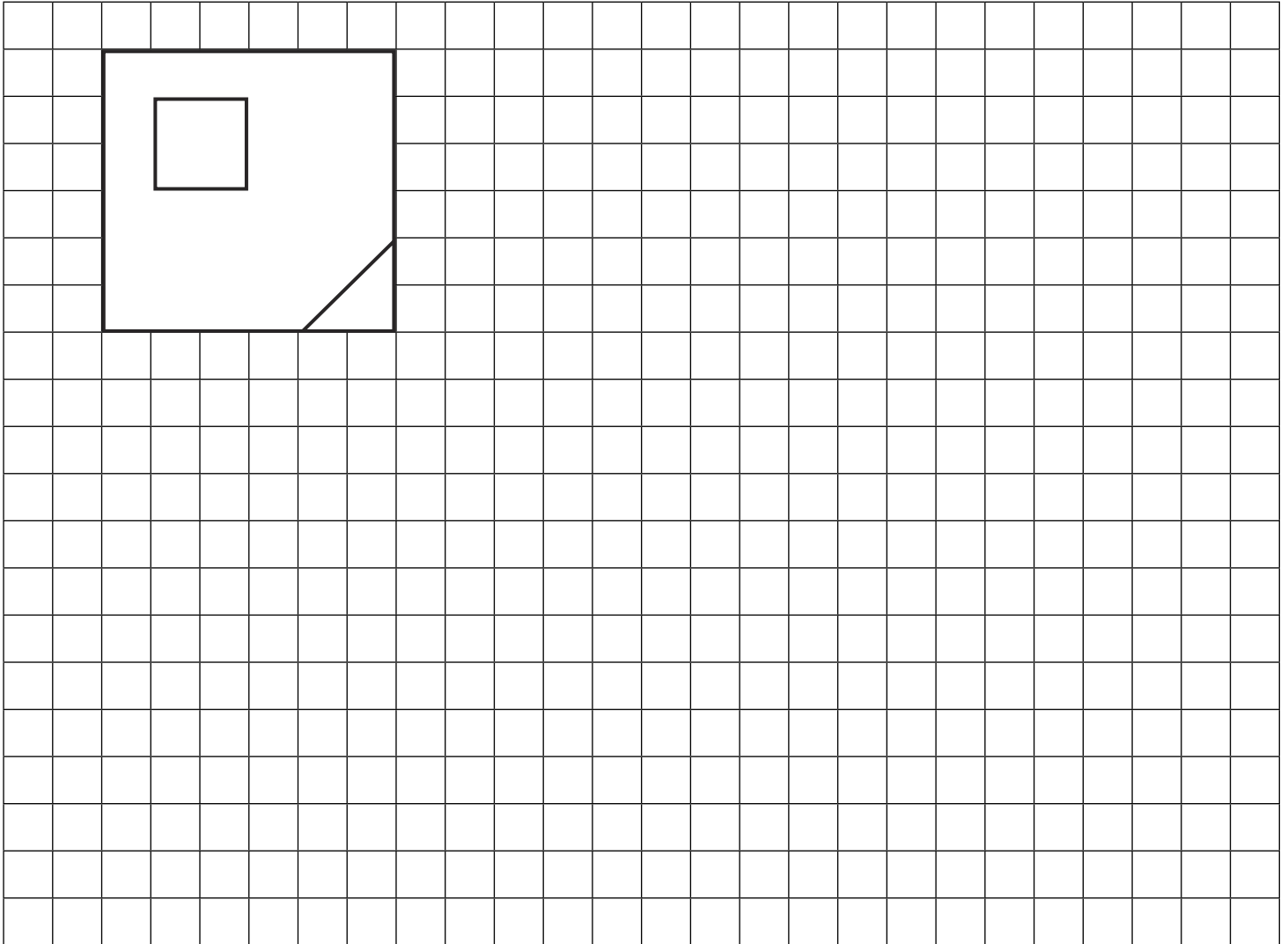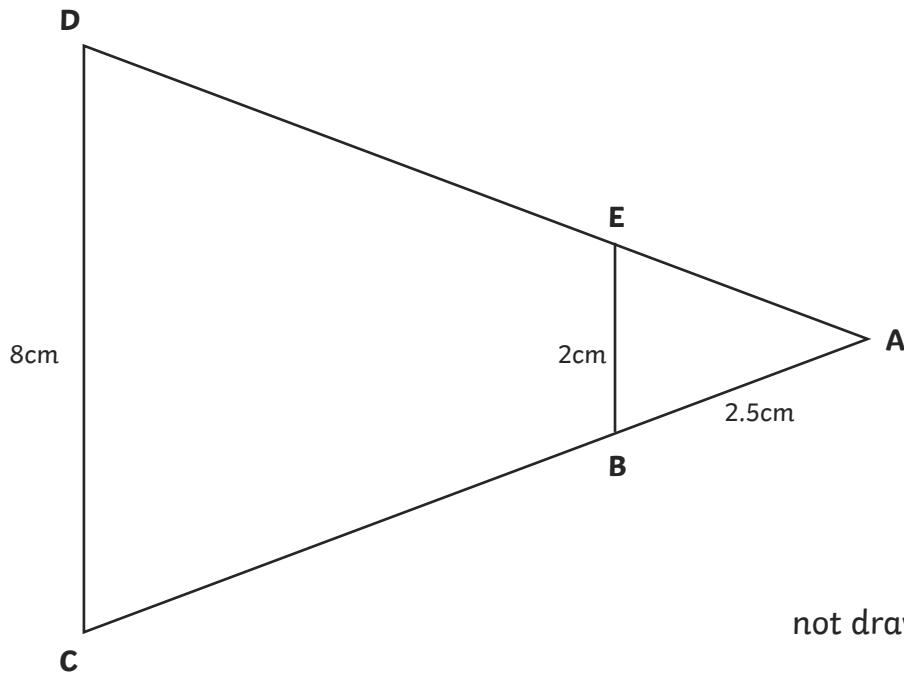
How I enlarged the design:

Scale Factor

I can solve problems involving shapes where the scale factor is known or can be found.

2. This picture shows two triangles: triangle ACD and triangle ABE.
   They are similar triangles. Calculate the length of side AD. Explain how you worked it out.

D

8cm

E

2cm

A

2.5cm

B

C

not drawn to scale

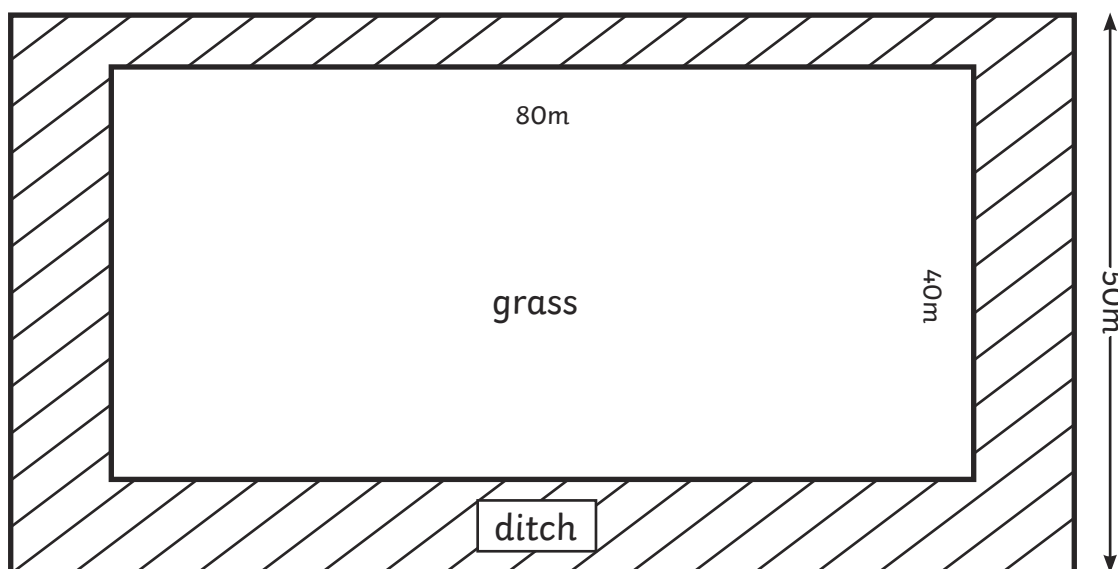Length of AD _____

My reasoning for this:

Scale Factor (Problem-Solving)

I can solve problems involving shapes where the scale factor is known or can be found.

1. Here are the dimensions of a field. The field has a grassed area in the middle, ditch around the grass and a fence around the outside of the ditch. The distance from the edge of the grass to the edge of the ditch is equal around the field. A farmer has another field which is an enlargement of this field by a scale factor of two (both grassed area and ditch are enlarged). How much fencing would the farmer need to put a fence around the outer edge of the ditch of the larger field? Explain how you worked this out.

80m

grass

40m

50m

ditch

not drawn to scale

Amount of fencing needed for the larger field _____
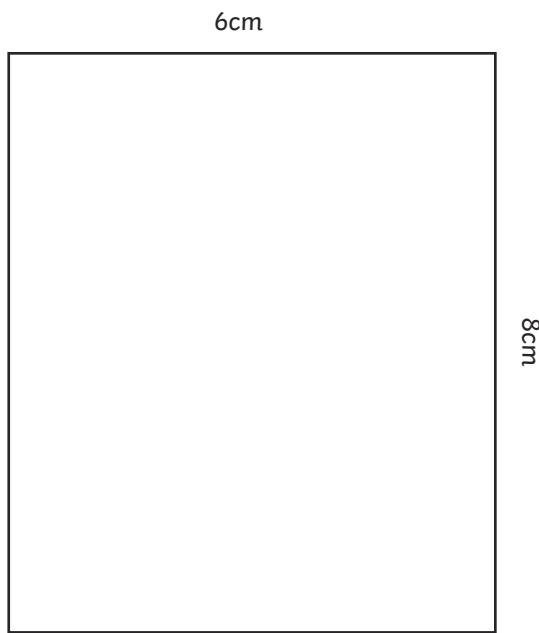
How I worked this out:

Scale Factor (Problem-Solving)

I can solve problems involving shapes where the scale factor is known or can be found.

2. Enlarge this rectangle by a scale factor of 1.5 then calculate the area of the shape. Show how you worked it out:

6cm

8cm

not drawn to scale

Area of the rectangle _____

How I worked this out:

Scale Factor (Whole Numbers) - Answers

1. Julianna says, 'All of these three shapes are similar.' Do you think she is correct? Explain your answer:

Answer to indicate that Shapes A and C are similar – Shape A has been enlarged by a scale factor of three to give Shape C however Shape B is not similar to either of the other shapes.

2. In each pair of similar shapes, work out the missing side length and explain how you calculated them:

Triangle missing side length:	Square missing side length:	Rectangle missing side length:
10m	**9m**	**16m**
How I know:	How I know:	How I know:
Explanation indicates that the dimensions have been multiplied by 2, so 5 × 2 = 10	**Explanation indicates that the dimensions have been multiplied by 3, so 3 × 3 = 9**	**Explanation indicates that the dimensions have been multiplied by 4, so 4 × 4 = 16**

Scale Factor - Answers

1. George has produced a logo design for his dad's company. They want to use the design, but have to enlarge it by a scale factor of two. Draw the enlarged shape below and explain how you completed it:

Logo has been enlarged with dimensions that are doubled in size. Explanation indicates that they counted squares, doubled the dimensions and also used these methods to position the square and the triangle.

2. This picture shows two triangles: triangle ACD and triangle ABE. They are similar triangles. Calculate the length of side AD. Explain how you worked it out.

Side AD measures 10cm. Explanation indicates that the base of the small triangle has been increased by a scale factor of four. The length of the side of the triangle given is 2.5cm, so the length of AD is 2.5 × 4 = 10

Scale Factor (Problem-Solving) - Answers

1. Here are the dimensions of a field. The field has a grassed area in the middle, ditch around the grass and a fence around the outside of the ditch. The distance from the edge of the grass to the edge of the ditch is equal around the field. A farmer has another field which is an enlargement of this field by a scale factor of two (both grassed area and ditch are enlarged). How much fencing would the farmer need to put a fence around the outer edge of the ditch of the larger field? Explain how you worked this out.

Amount of fencing needed for the larger field   <u>560m</u>

How I worked this out:

Working out shows calculation that the perimeter of the field before enlargement was

50m × 2 = 100m and 90m × 2 = 180m, total 280m.

The larger field is double this: 560m

2. Enlarge this rectangle by a scale factor of 1.5 then calculate the area of the shape. Show how you worked it out:

Area of rectangle: <u>108m²</u>

How I worked this out:

Working out shows calculation that the sides of the rectangle when enlarged by scale factor 1.5 are 9m (from 6m) and 12m (from 8m). Then complete the following calculation: 9 × 12= 108.