

Y6 Scale Factors

KS2 Y6 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

A rectangle 3 cm by 2 cm is enlarged by scale factor 3. What are the new lengths?

Step 1 · Multiply every length by 3

$$3 \times 3 = 9, 2 \times 3 = 6$$

Answer: 9 cm by 6 cm

Check: Both sides are 3 times, so the shape is similar ✓

2. Now try one with the steps

A triangle has a 4 cm side. In an enlargement the same side is 12 cm. Another side was 5 cm. How long is it now?

Step 1 · Scale factor: $12 \div 4$

Step 2 · 5×3

Answer:

3. Practice

Have a go at each one. There is space underneath to work it out.

1. A rectangle 4 cm by 1 cm is enlarged by scale factor 2. What are its new lengths?

2. A side is 5 cm long. The shape is enlarged by scale factor 3. How long is that side now?

3. A 2 cm by 6 cm rectangle is enlarged to 6 cm by 18 cm. What is the scale factor?

4. A triangle has sides 3 cm, 4 cm and 5 cm. It is enlarged by scale factor 4. What are the new side lengths?

5. A shape has sides 12 cm and 8 cm. In an enlargement the 12 cm side becomes 36 cm. How long does the 8 cm side become?

6. A scale drawing uses 1 cm to represent 2 m. A room is 4 cm long on the drawing. How long is the real room?

7. On a map, 1 cm represents 5 km. Two villages are 6 cm apart on the map. What is the real distance?

8. A model train is built to a scale of 1 : 50. The model is 30 cm long. How long is the real train, in metres?

9. A tower is 60 m tall. A model of it is built to a scale of 1 : 200. How tall is the model, in centimetres?

10. A square has sides of 3 cm. It is enlarged by scale factor 2. What is the perimeter of the new square?

11. Shape A is 6 cm by 8 cm. Shape B is 9 cm by 12 cm. Is B an enlargement of A? If so, by what scale factor?

12. Shape C is 4 cm by 6 cm. Shape D is 8 cm by 10 cm. Is D an enlargement of C?

13. Ella's garden is 12 m by 9 m. She draws it using 1 cm to represent 3 m. What size is her drawing?

14. A photo 10 cm by 15 cm is enlarged by scale factor 4 for a poster. What size is the poster?

15. A shape is enlarged by scale factor 2. Does the size of its angles change? Explain.

4. Before you hand it in

Enlarging a 3 cm by 2 cm rectangle by scale factor 3 as 6 cm by 5 cm.

A scale factor multiplies every length: 9 cm by 6 cm.

Multiplying only one side.

Every side is multiplied by the scale factor, or the shape will be stretched out of shape.

With a map scale of 1 cm to 5 km, finding the map distance for 45 km as 225 cm.

Map → real: multiply. Real → map: divide. $45 \div 5 = 9$ cm.