

Using Scale Factors

Reasoning and Problem Solving

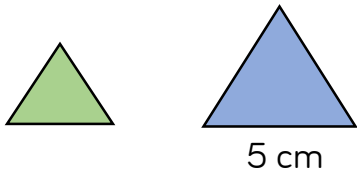
Draw a rectangle 3 cm by 4 cm.

Enlarge your rectangle by scale factor 2.

Compare the perimeter, area and angles of your two rectangles.

The perimeter has doubled, the area is four times as large, the angles have stayed the same.

Here are two equilateral triangles. The blue triangle is three times larger than the green triangle.



(Not drawn to scale)

Find the perimeter of both triangles.

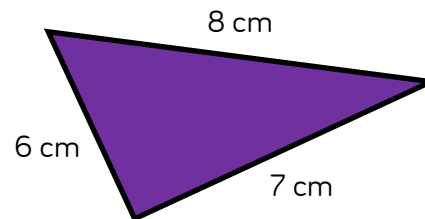
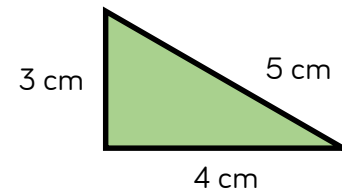
The blue triangle has a perimeter of 15 cm.

The green triangle has a perimeter of 5 cm.

Jack says:



The purple triangle is green triangle enlarged by scale factor 3



Do you agree?
Explain why.

Possible answer
I do not agree because Jack has increased the green shape by adding 3 cm to each side, not increasing it by a scale factor of 3

Calculating Scale Factors

Reasoning and Problem Solving

A rectangle has a perimeter of 16 cm.
An enlargement of this rectangle has a perimeter of 24 cm.

The length of the smaller rectangle is 6 cm.

Draw both rectangles.

Smaller rectangle:
length – 6 cm
width – 2 cm

Larger rectangle:
length – 9 cm
width – 3 cm

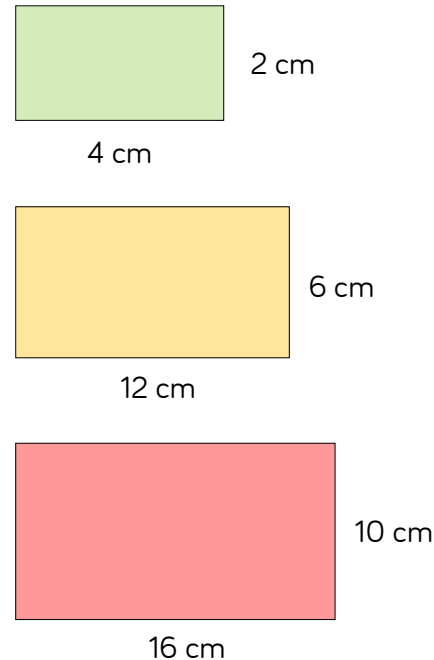
Scale factor: 1.5

Always, sometimes, or never true?

To enlarge a shape you just need to do the same thing to each of the sides.

Sometimes.
This only works when we are multiplying or dividing the lengths of the sides. It does not work when adding or subtracting.

Ron says that these three rectangles are similar.



Do you agree?
Explain your answer.

Ron is incorrect.
The orange rectangle is an enlargement of the green rectangle with scale factor 3. The red rectangle, however, is not similar to the other two as the side lengths are not in the same ratio.