THIRD SPACE
LEARNING

HELLO!

Today we are going to learn about
scale factor, ratios and similar shapes

Warm up for scale factor, ratios and similar shapes

1. Work out the missing numbers.

a) $5 \times \boxed{} = 15$

b) $3 \times \boxed{} = 6$

c) $2 \times \boxed{} = 8$

d) $12 \div \boxed{} = 3$

e) $8 \div \boxed{} = 1$

f) $5 \div \boxed{} = 2.5$

2. a) What is twice as long as 4cm? $\boxed{}$

b) What is three times as long as 6cm? $\boxed{}$

3. Complete these equivalent ratios:

a) $3 : 4$ and $6 : \boxed{}$

b) $4 : 7$ and $12 : \boxed{}$

c) $1 : 3$ and $5 : \boxed{}$
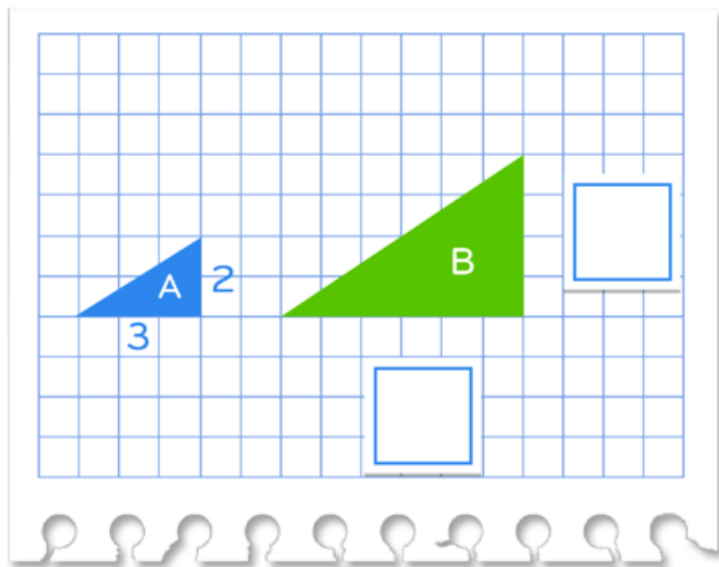
Scale factor, ratios and similar shapes

In this session, we are going to learn:

- how to enlarge a shape by a scale factor

- about similar shapes

- how to decide when two shapes are similar

- how to use scale factor to work out lengths in similar shapes

Finding the scale factor of an enlargement

These triangles are drawn on centimetre squared paper.

Write the lengths on triangle **B**.

Triangle **B** is an enlargement of triangle **A** by scale factor

Drawing an enlargement

Here is a rectangle:

2 cm

1 cm

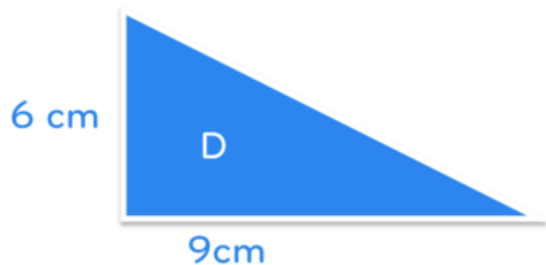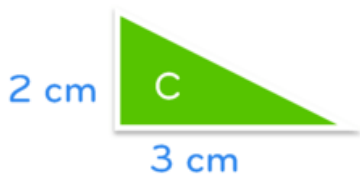To enlarge the rectangle by scale factor 3, you multiply the length and width by 3. Here is the enlargement:

Write on the lengths.

cm

cm

Similar shapes

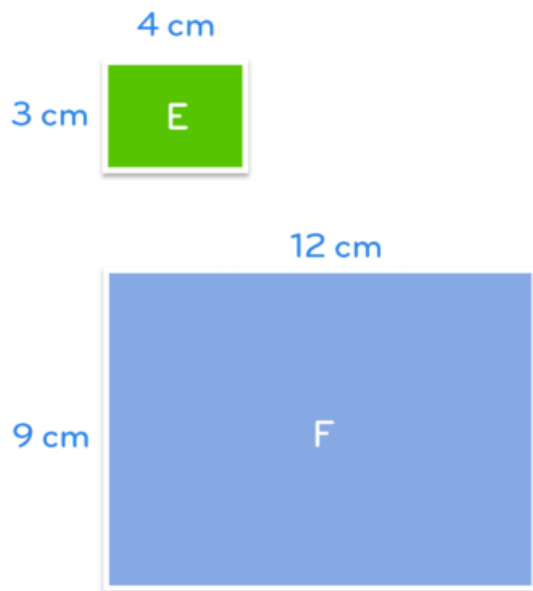Two shapes are <u>similar</u> when one is an enlargement of the other.
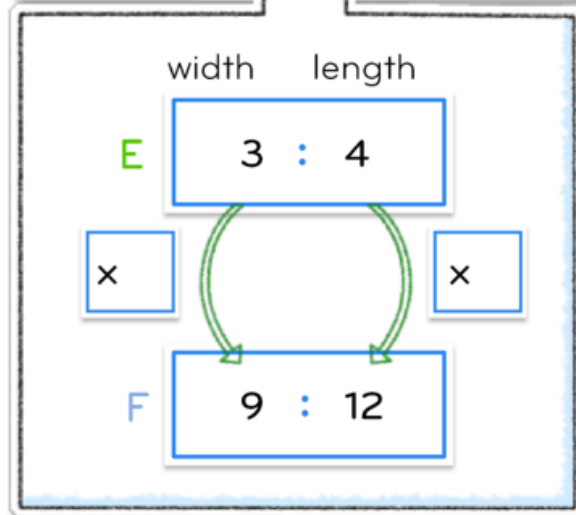
These two triangles are similar.

2 cm C

3 cm

6 cm D

9cm

What is the scale factor of the enlargement?

Similar shapes

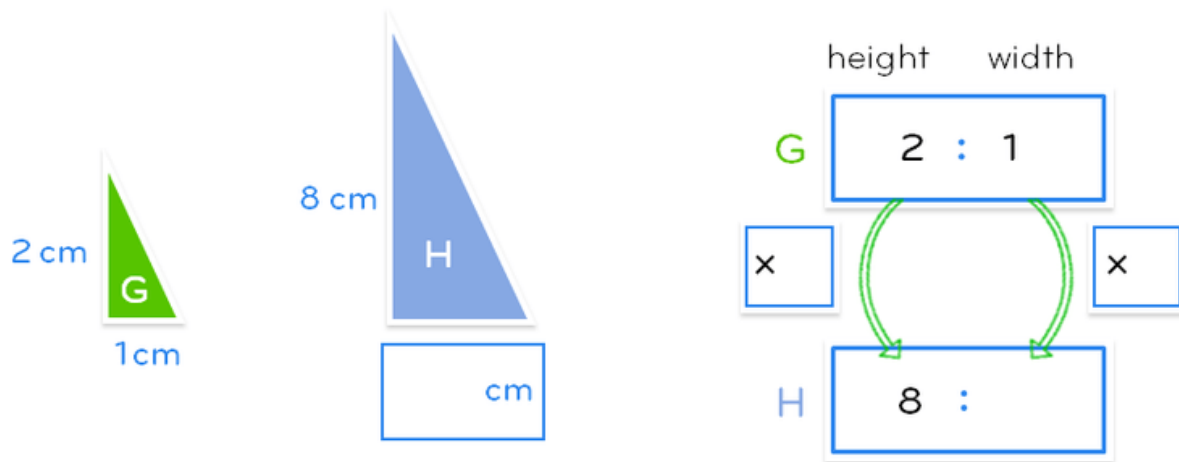When two shapes are similar, their sides are in the same ratio.

4 cm

3 cm E

12 cm

9 cm F

E and F are similar if 3 : 4 and 9 : 12 are equivalent.

width   length

E   3 : 4

×   ×

F   9 : 12

You are learning about scale factor, ratios and similar shapes

Finding missing lengths

You can use the scale factor to find missing lengths in similar shapes.

2 cm

G

1cm

8 cm

H

cm

height   width

G   2 : 1

×   ×

H   8 :

Practice time

1. These triangles are drawn on centimetre squared paper.
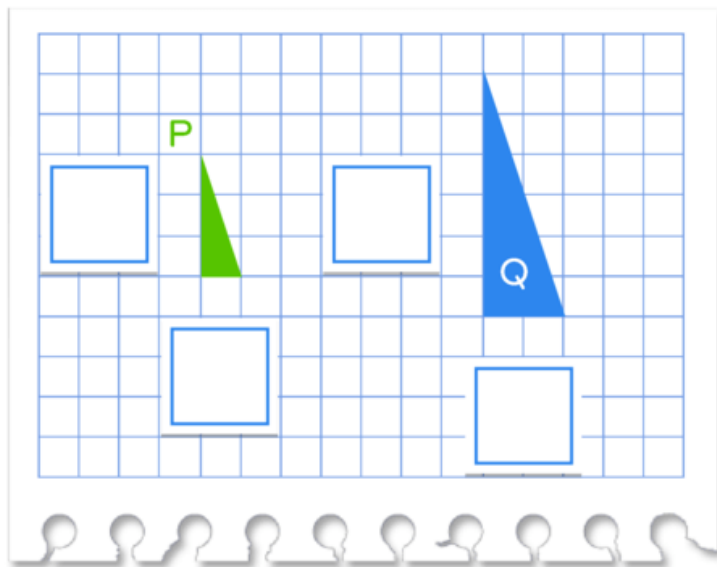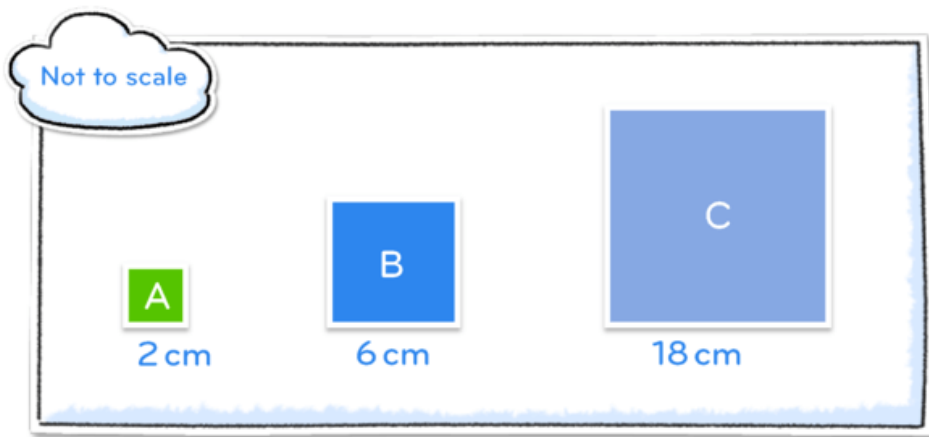

✏️ **Write the lengths on the triangles.**

Triangle **Q** is an enlargement of triangle **P** by scale factor

Practice time

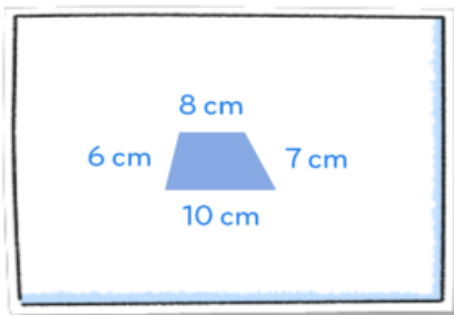2. A, B and C are squares. Work out the scale factor of these enlargements:

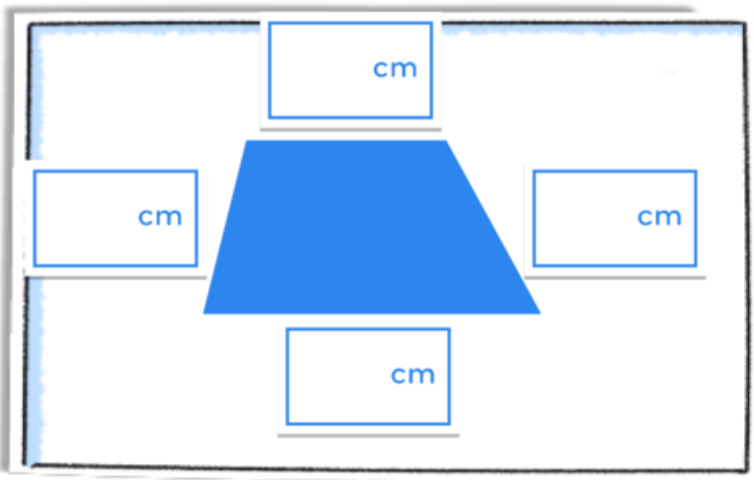Not to scale

A
2 cm

B
6 cm

C
18 cm

a)   A to B scale factor

b)   A to C scale factor

c)   B to C scale factor

You are learning about scale factor, ratios and similar shapes

Practice time

3. Here is a trapezium:

8 cm

6 cm   7 cm

10 cm

Here is an enlargement of the trapezium by scale factor 3.

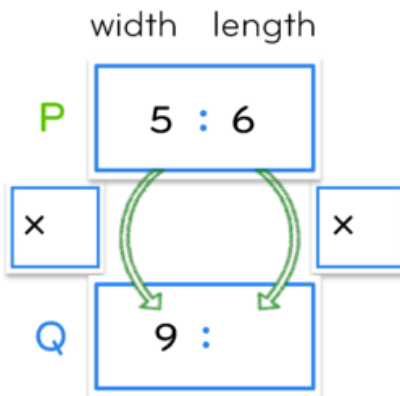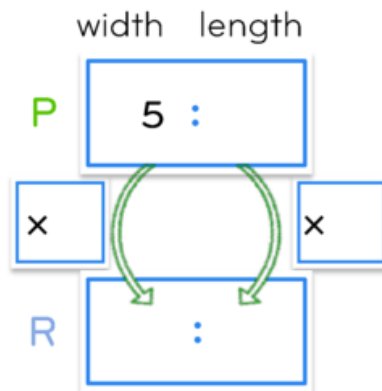✏️ Write on the lengths.

cm

cm   cm

cm

Practice time

4. Complete the arrow diagrams to work out if the shapes are similar.
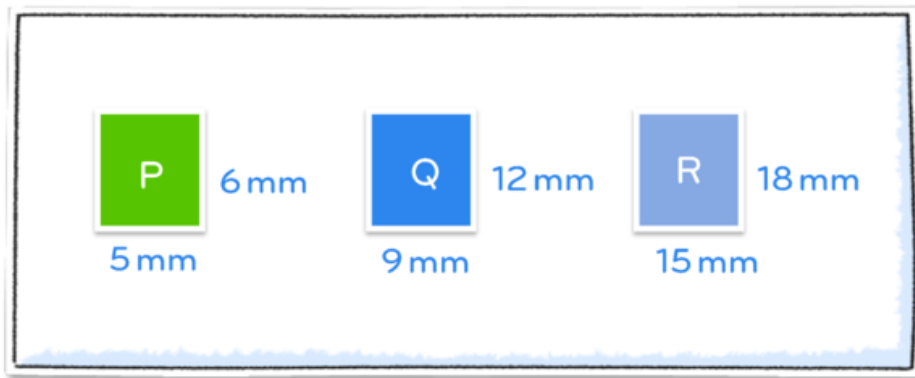
a) Are P and Q similar?

b) Are P and R similar?

c) Are Q and R similar?

width   length

P   5 : 6

×   ×

Q   9 :

width   length

P   5 :

×   ×

R   :

Practice time

5. Which of these rectangles are similar to A?

A 2 cm
3 cm

E 4 cm
9 cm

F 6 cm
9 cm

F 6 cm
8 cm
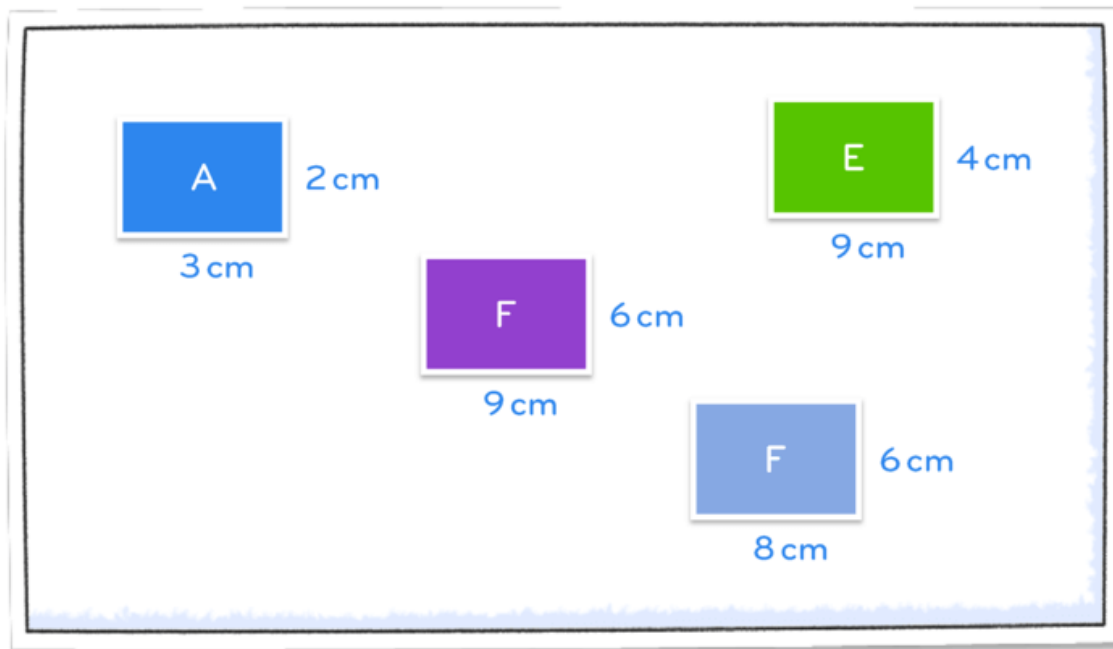
Practice time

6. Rectangle X and rectangle Y are similar.

   What is the missing length on rectangle Y?

   11mm

   | X |
   5 mm

   33 mm

   | Y |

   mm

7. Sketch a rectangle similar to rectangle X, with length 55mm.

   Label its width.

8. Sketch a rectangle similar to X with width 2.5 mm.

   Label its length.

You are learning about scale factor, ratios and similar shapes

Scale factor, ratios and similar shapes

THIRD SPACE LEARNING

What made you proud in

today's session?