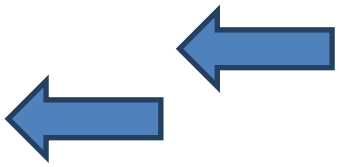
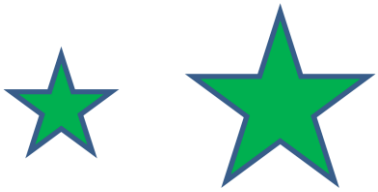
SIMILARITY

Congruent and Similar Shapes

Two objects which have the same shape and size are **congruent**.



When an object is an enlargement or reduction of another the shapes are **similar**.



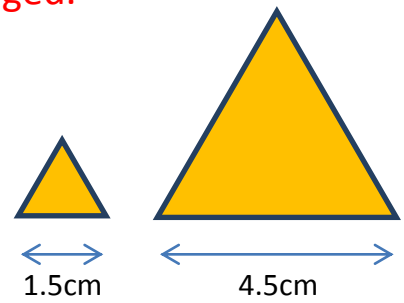
Scale Factor

A scale factor gives the size of the enlargement or reduction.
If the scale factor > 1 then the object is enlarged.
If the scale factor < 1 then the object is reduced.

In the diagram opposite the first shape has been enlarged.

1.5 x scale factor = 4.5

scale factor = $\frac{4.5}{1.5}$ = 3

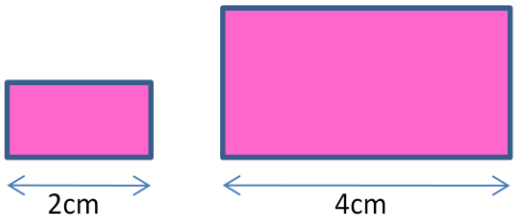


So the second shape is 3 times bigger than the first.

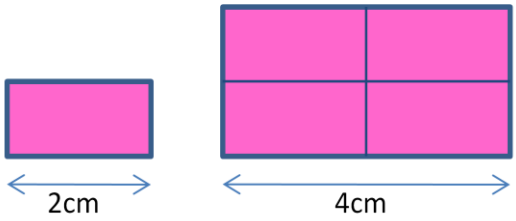
Area of Similar Shapes

The rectangles are similar.

scale factor = $\frac{4}{2}$ = 2



We can see that the area is 4 times larger.



When the lengths increase/decrease by a factor of k the area will increase/decrease by a factor of k^2 i.e. the area scale factor = $(\text{scale factor})^2$.

Volume of Similar Shapes

The cuboids are similar.

scale factor = $\frac{4}{2} = 2$

We can see that the volume is 8 times larger.

When the lengths increase/decrease by a factor of k the volume will increase/decrease by a factor of k^3 i.e. the volume scale factor = (scale factor)^3.

Similarity Practice

http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8i19/bk8_19i1.htm

http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8i19/bk8_19i2.htm

http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8i19/bk8_19i3.htm

Learn about similarity. Try the questions.

http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8_19.pdf

Learn about similarity. Try the exercises.

http://www.bbc.co.uk/bitesize/standard/maths_ii/measure/similarity/revision/1/

Revise similarity. Try the test.

http://www.supermathsworld.com/ Ask your teacher for login details.

Select SHAPE from the menu at the bottom of the page. Select SIMILAR SHAPES. Try on EASY, MEDIUM & HARD levels.