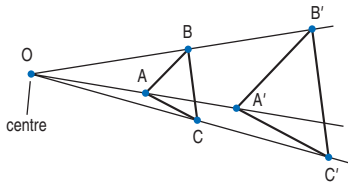


As outcomes, Year 8 pupils should, for example:

Enlargement

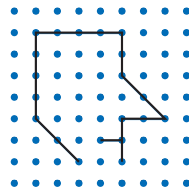
Use, read and write, spelling correctly:
enlarge, enlargement, centre of enlargement...
scale, scale factor, ratio...
scale drawing, map, plan...

Understand **enlargement** as a transformation of a plane in which points (such as A, B and C) are mapped on to images (A', B' and C') by multiplying their distances from a fixed **centre of enlargement** by the same **scale factor**. In this example, triangle ABC maps to A'B'C':



$$\text{scale factor} = \frac{OA'}{OA} = \frac{OB'}{OB} = \frac{OC'}{OC}$$

- Draw a simple shape on a 1 cm spotty grid, e.g. a 'standard angular person'.



Choosing a suitable centre, enlarge the shape by different positive scale factors, such as x2, x3, x4, (double person, treble person, quadruple person). Construct a table of measurements.

Scale factor	x1	x2	x3	x4
Width of head (cm)	4			
Width of neck (cm)	2			
Full height of head (cm)	6			
Width of mouth (cm)	1			
Diagonal length of nose (cm)	2.8			

Check that the ratio of corresponding linear measurements is always equal to the scale factor.

Experiment with different centres.

Begin to understand the property that the ratios of corresponding lengths in the image and in the object are equal to the scale factor, and to recognise this as a constant proportion:

$$\text{scale factor} = \frac{A'B'}{AB} = \frac{B'C'}{BC} = \frac{A'C'}{AC}$$

As outcomes, Year 9 pupils should, for example:

Enlargement

Use vocabulary from previous year and extend to: similar...

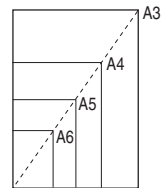
Understand and use the definition of **enlargement** from a **centre**. Recognise that:

- The object and its image are similar.
- The ratio of any two corresponding line segments is equal to the scale factor.

- Extend the 'standard angular person' activity to enlargements by a fractional scale factor, such as 1/2 or 1/4.

- Investigate the proportions of metric paper sizes, A6 to A1. For example, start with a sheet of A3 paper and, with successive folds, produce A4, A5 and A6.

Demonstrate practically that the different sizes of paper can be aligned, corner to corner, with a centre of enlargement.



Confirm by measurement and calculation that the scale factor of enlargement is approximately 0.7.

Follow an explanation that, if the metric paper has dimensions h and w, then h : w = w:h/2.

Deduce that $h = \sqrt{2}w$.

- Compare a simple shape with enlargements and reductions of it made on a photocopier. Estimate the scale factors of the enlargements as accurately as possible.