II Similar

AC
EA
AA
AM
AP

> We are learning the properties of similar triangles

Prior knowledge:
- Letters as specific unknowns
- Enlargement and the scale factor of enlargement
- Fractions as divisions
- How to simplify a fraction
- The relationship between fractions and decimals, and converting fractions to decimals
- The activity 'developing similarity' and the concept of similarity

Equipment
A calculator

Using Materials
Draw 2 right angled triangles on the board.
Tell students that they are similar triangles.

2cm

1cm

$x$cm

3cm
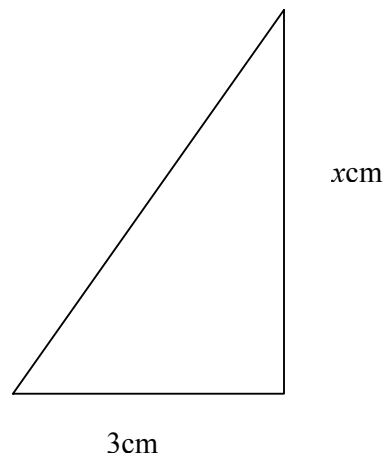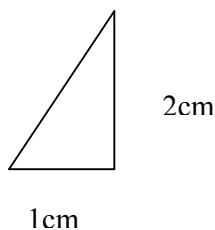
Ask: "what is the missing number?" and "how do you know?" Explore the logics used and ensure that all can identify what the number should be and why. Next ask "what is the scale factor of the enlargement?" and "how do you know?" Finish by asking "can we create a formula for working out the scale factor for enlargement?"

Here $\dfrac{image}{object}$ would be a good start point, but the formula SF $= \dfrac{image}{object}$ needs to be developed.

(Students should also be given practice recording the calculation of scale factors using this formula to embed the idea.) Make sure that the triangles do not always have the same orientation, and that the numbers do not always end up as whole numbers. For example:

4cm

2cm

$x$cm

3cm
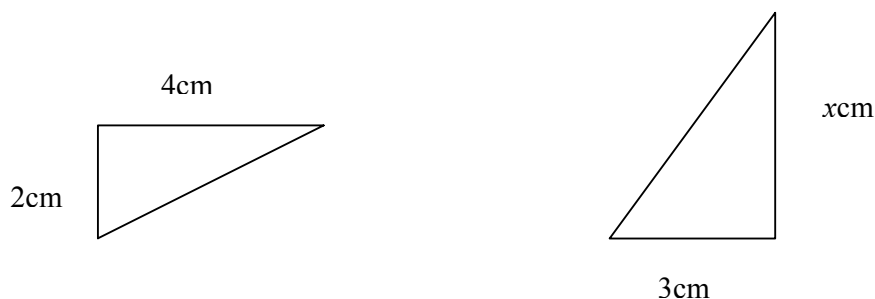
Using Representations
John's group has been given the task of measuring the height of a tree in the school yard. They decide to take some measurements to help them work things out, then draw a scale diagram where

1cm = 1m. By measuring the tree on the diagram and using enlargement they expect to find out the height of the tree. As a method, why would this work? How tall is the tree?

45°

10m
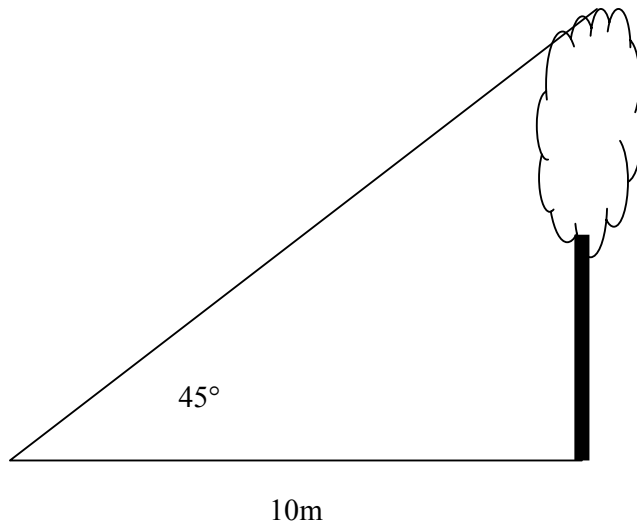
Using Number Properties

Rupert is using a similar idea to work out the height of the flagpole. He measures 12m from the base of the flagpole then works out the angle from the ground to the top of the flagpole is 38°. How tall do you think the flagpole is? How will you work it out?

You are to work out the height of the building this classroom is in. Work out a way of measuring the angle from the ground to the top of the building, and go and measure the building.