

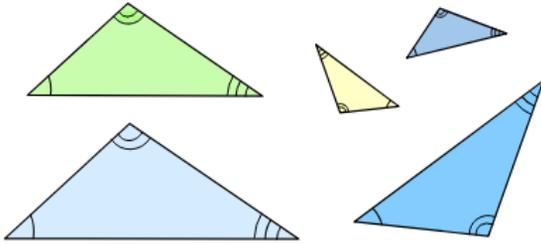


Week 1 - Similarity

1. **Shapes are similar** – If all the angles are the same (identical). Also the equivalent sides are in the same ratio. I.e there is a scale factor for the lengths of the sides from one shape to the other.

These triangles are all similar:

These triangles are all similar: they are different sizes and rotations



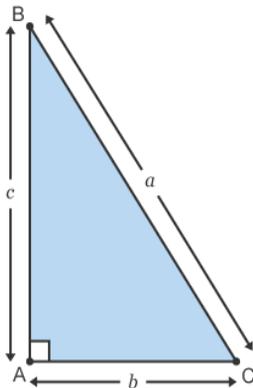
Week 2 - Congruence

- Congruence** is when two shapes are identical. That means that all angles and side lengths are the same.
- For triangles there are five possible conditions that can be given for congruence.

- Side, Side Side (SSS)** Given the lengths of all three sides are the same
- Side, Angle, Side (SAS)** Given two sides and the angle between them are the same.
- Angle, Side, Angle (ASA)** Given two angles and the side between them.
- Angle, Angle, Side (AAS)** and means that we have two triangles where we know two angles and the non-included side are equal.
- Hypotenuse, Leg (HL)** For right angled triangles we have
 - the same length of hypotenuse and
 - the same length for one of the other two legs.

Week 3: Pythagoras

Pythagoras' theorem states that for all right-angled triangles, 'The square on the **hypotenuse** is equal to the sum of the squares on the other two sides'. The hypotenuse is the longest side and it's always opposite the right angle.



In this triangle $a^2 = b^2 + c^2$ and angle A is a right angle.

Pythagoras' theorem only works for right-angled triangles, so you can use it to test whether a triangle has a right angle or not.

Week 4: Standard Form

Standard form 1

Numbers in **standard form** have two parts.

This part is a number ≥ 1 and less than 10. 7.3×10^{-6} This part is a power of 10.

Standard form is used to write very large or very small numbers.

$850\,000 = 8.5 \times 10^5$

Numbers greater than 10 have a positive power of 10.

$0.0063 = 6.3 \times 10^{-3}$

Numbers less than 1 have a negative power of 10.

Use these **non-calculator** methods for doing calculations with standard form.

Multiplying numbers in standard form

Rearrange so powers of 10 are together

Multiply the number parts
 $(3 \times 10^3) \times (5 \times 10^5)$
 $= (3 \times 5) \times (10^3 \times 10^5)$
 $= 15 \times 10^8$

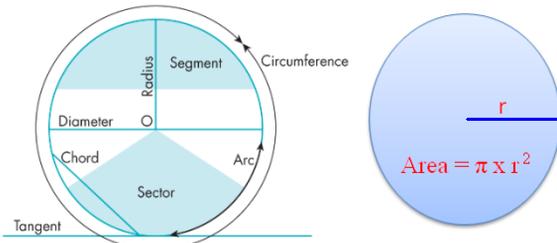
Add the powers

$a^m \times a^n = a^{m+n}$

Rewrite your answer in standard form if necessary
 $= (1.5 \times 10^1) \times 10^8$
 $= 1.5 \times 10^{10}$

Week 5: Circles

- Make sure that you know the names associated below with Circles. Including area and Circumference,



Week 6: Trigonometry

- Label the sides** – Opposite, Hypotenuse and Adjacent (If no information don't label it)
- Select the Triangle** – Given the sides that you have labelled select one of **SOH CAH TOA**.
- Calculate** – Covering up the one that you need use the triangle to calculate the value. If you are after an angle you need to use inverse sin cos or tan.

Note make sure that your calculator is set up for degrees i.e. has a D shown at the top.