**Shaping the Year 7 Curriculum:**

**Building on Year 6**

**Key Idea 4: Thinking about properties of geometrical figures**

(6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles, and area, and solve related problems).

By the end of Year 6, pupils should be able to draw a shape given certain information, for example, the length of its perimeter, its area, the size of angles and length of sides.

Pupils should also be able to solve problems involving shapes where they have to reason about properties.

There is only one Year 6 ready-to-progress criterion relating to the geometry strand of the National Curriculum. The following statutory NC statements and non-statutory guidance and notes from Years 5 and 6 are also worth considering as important pre-cursors to later work in Key Stage 3:

**Year 5 NC statements**

Pupils should be taught to

* identify:
	+ angles at a point and one whole turn (total 360°)
	+ angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)
	+ other multiples of 90°
* use the properties of rectangles to deduce related facts and find missing lengths and angles
* distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

**Notes and guidance (non-statutory)**

Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

**Year 6 NC statements**

Pupils should be taught to:

* recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

**Notes and guidance (non-statutory)**

Pupils describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements.

**Progression to Key Stage 3**

An important idea fundamental to work in geometry at Key Stage 3 is the understanding of geometrical properties and reasoning with these properties to solve problems.

When learning about vertically opposite angles, for example, it is important for pupils to do so not merely by remembering a fact (“vertically opposite angles are equal”) but to appreciate the reasoning behind the fact; why it has to be so, given that angles on a straight line sum to 180°.



(Taken from the Secondary Mastery PD Materials, Core Concept 6.1: Geometrical Properties

<https://www.ncetm.org.uk/media/hwfluxcs/ncetm_ks3_cc_6_1.pdf>)

This becomes important at Key Stage 3 when pupils learn about geometrical constructions so that the topic is not reduced to merely memorising a series of mechanical steps. All constructions are based on geometrical properties and when pupils understand these and are skilled in reasoning with them, the learning of constructions becomes part of a connected and coherent conceptual whole, rather than a series of procedural steps.

For further guidance on how to develop these important ideas in Key Stage 3, follow the links below to the relevant documents in the [NCETM Secondary PD Materials](https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/secondary-mastery-professional-development/).

**Theme Overviews:**

* [Theme 6: Geometry](https://www.ncetm.org.uk/media/yn5peevc/ncetm_ks3_theme_6.pdf)

 Theme 6 explores the properties of various geometrical shapes, the key transformations of translation, rotation, reflection and enlargement, and standard ruler and compass constructions.

**Core Concept documents:**

* [Core Concept 6.2: Perimeter, area and volume](https://www.ncetm.org.uk/media/1qabpyac/ncetm_ks3_cc_6_2.pdf)

This core concept offers guidance on developing a strong understanding of the mathematical structures that underpin the standard procedures for calculation with decimals, fractions and directed numbers

* [Core Concept 6.4: Constructions](https://www.ncetm.org.uk/media/3viclabl/ncetm_ks3_cc_6_4.pdf)

This core concept explores the following constructions: triangles of given lengths; a perpendicular bisector of a line.

August 2020