



Year Group: **Year 9**

This is the plan for the taught curriculum during achievement period: **Three (May-July)**

Brief summary of the topic/work being covered during this period

Students in this stage of year 9 are beginning preparations for Key Stage 4, and move to a linear scheme of work, with differentiated objectives that allow teachers to tailor learning to the abilities of their class, rather than labelling classes as "higher" or "foundation" from the outset.

This section gives a brief overview of work covered, with each point being given support/challenge as required for the particular group.

Substantive knowledge

- Know 8 points of a compass
- Transformations

Disciplinary knowledge

- Read scales from different measuring instruments; Make sensible estimates of a range of everyday measures
- Convert metric units from one to another. Use given conversions to find metric equivalents of common imperial units and convert currencies.
- Use the 8 points of a compass; Find 6 figure grid references of objects
- Measure and draw bearings on maps;
- Solve linear equations with one unknown, including that unknown being on both sides of the equals sign and setting up equations from a range of contexts.
- Solve simple linear inequalities in one variable, and represent the solution set on a number line
- Set up and solve two linear simultaneous equations in two variables algebraically
- Round numbers to the nearest whole number, ten, hundred, etc, to a given number of significant figures (sf) or decimal places (dp).
- Estimate or check, without a calculator, the result of a calculation by using suitable approximations.
- Use inequality notation to write down an error interval for a number or measurement rounded or truncated to a given degree of accuracy and find upper and lower bounds of calculations.
- Recognise and complete rotations, reflections, translations and enlargements with shapes on coordinate grids.
- Identify similar triangles; prove two triangles are similar; find missing lengths.
- Understand how to manipulate column vectors, represent them geometrically on a square grid and use in geometric arguments.

Prior knowledge needed for this unit/topic from previous teaching

Different students will have different starting points, depending on their understanding of mathematics in previous years. However, the list below outlines the basics that all students need to know before starting. Teachers will assess their own classes at the start of each topic to determine the group's starting point.

- Be able to accurately use a ruler or protractor.
- Know a range of different units of measurement and their appropriate use; Use of a scale factor to change a quantity.
- Be able to use a protractor and ruler with good accuracy.
- Understand inverse operations and fluency with the four operations.
- Understand a number line, including direction.
- Able to solve linear equations with one unknown.
- Understanding of place value in large and small numbers.
- Rounding to significant figures.
- Correct use of inequality notation to compare numbers
- Knowledge of line and rotation symmetry; able to translate shapes from a description.

Rationale for students studying this unit/topic

The topics covered during this part of year 9 are the least challenging of the Key Stage 4 topics, in order to ease students in to the style and terminology required at this level. Where students have remembered skills well from previous years, they will be stretched and challenged to apply their knowledge to open-ended problem solving in order to ensure fluency and mastery before moving onto the more challenging Key Stage 4 topics in preparation for their GCSE exams in the following two years.

Key concepts/ideas that are taught to students in this unit/topic, including any anticipated gaps in knowledge and plan to overcome these

- Correct and accurate use of measuring equipment, and an ability to make accurate estimates to check answers are sensible. Students often read the incorrect scale on a protractor, so will give an answer of 120° instead of 60° , so time needs to be spent on encouraging students to look at a diagram and think carefully about sensible answers e.g. if a diagram is given of an acute angle, the answer cannot be more than 89° .
- An understanding that the equals sign represents a balance, rather than a route (left to right) for the answer. Examples and questions should be used with the unknown on either side.
- The use of rounding to one significant figure being the most efficient way of estimating an answer to a calculation, to allow for single digit calculations which can be done quickly mentally.
- Language of transformations, particularly when describing a given transformation. A common mistake students make is to give multiple transformations as a means of getting between two shapes, even when the question states "single". Students need to be given plenty of time to practise this particular skill in order to avoid this mistake.

New key terminology students will be taught during this topic/unit

Some students will need to be taught the wide range of different imperial units available.

Tier 3

"Significant Figures"

Mathematically "similar" and "congruent"

Vectors

Plan for Assessment

- Informal assessment is ongoing through class work, contributions to class discussion, teacher assessment during lessons.
- Teachers record homework marks each week on a centrally held department tracker; the homework tasks are detailed on the schemes of work and outlined centrally within the department to ensure consistency across all classes. Teachers will take in and formally mark a written piece of homework once every two weeks. Students will then have time during a subsequent lesson to review their work and make any corrections.
- Formal assessment will take place once during this achievement period after May half term. This synoptic paper aims to assess students' progress in mathematics generally and covers questions from all topics that have been covered at any point in the students' mathematical history (not just this academic year).
- Mini start-of-topic tests will provide information for teachers regarding prior knowledge and existing misconceptions and mini end-of-topic tests will help students and teachers see the progress that has been made over the course of the teaching of the topic.