Year 8 Curriculum Intent for Maths

At Dixons Cottingley we develop students to lead successful and happy lives and make a positive contribution to their community. Our curriculum in each year is designed to provide experiences, opportunities, knowledge and skills that enrich and challenge our students. We understand that the curriculum is key to determining the life chances and choices for our students and therefore we will not compromise on providing the very best. We achieve this in maths through the below:

During Year 8 students at Dixons Cottingley studying maths will be exposed to the following:

- Ratio and scale
- Multiplicative change
- Multiplying and dividing fractions
- Working in the Cartesian plane
- Representing data
- Tables and probability
- Brackets, equations and inequalities
- Sequences
- Indices
- Fractions and percentages
- Standard index form
- Number sense
- Angles in parallel lines and angles in polygons
- Area of trapezia and circles
- Line symmetry and reflection
- The data handling cycle
- Measures of location

By the end of Year 8 students at Dixons Cottingley studying maths will be taught the following skills:

- Drawing and constructing scale diagrams and maps using a ruler and compass
- Using graphs to convert between different units, including currencies
- Using mental strategies to solve numerical problems quickly
- Using estimation strategies to check the validity of answers (including using significant figures)
- Interpreting and constructing statistical diagrams, including bar charts and pie charts, using a compass and ruler
- Using a calculator to evaluate roots, and to compare estimates to true answers

In order to truly appreciate the subject and create deep schema, maths has been sequenced with the following rationale:

- The Year 8 scheme of work is designed to build upon the knowledge gained in Year 7 and to prepare students for the transition into KS4. Year 7 topics are revisited in more depth, and new, more challenging concepts are introduced. In order to prepare students for the KS4 transition, greater emphasis is placed on the relationships between different mathematical fields. The first half of the autumn term is spent teaching proportional reasoning, allowing students to revise the number skills they learned in Year 7 and start to make links between different themes: ratio and scale, multiplicative change and fractional operations. Sequences are revisited and expanded upon in the Cartesian Plane topic, a topic which allows the students to see the relationship between numeracy, geometry and algebra. By the end of Year 8, students will have reviewed their Year 7 knowledge, accessed new topics, and developed a much deeper understanding of mathematics by exploring the connections between themes.
- Throughout Year 8 all six key maths strands of: number; algebra; ratio, proportion and rates of change; geometry and measure; probability; and statistics are covered, ensuring that fluency, reasoning, and problem solving are embedded in each strand throughout the entire course. Content is designed with interleaving as a key element meaning skills learnt are woven throughout this and subsequent years so that students constantly reinforce and extend their understanding. In addition it features smaller learning steps to help embed deeper learning, ensuring students have secured the prior knowledge needed to progress onto a pathway to a Grade 5 (Foundation) or Grade 9 (Higher) at Key Stage 4.

The maths curriculum at Cottingley has been influenced by:

- White Rose Maths' work on creating a new culture of deep understanding, confidence and competence in maths – a culture that produces strong, secure learning and real progress.
- The Key Stage 3 National Curriculum – our scheme of work covers every aspect detailed in the National Curriculum.

Our maths curriculum ensures that social disadvantage is addressed through:

Research shows that teaching maths for Mastery has a positive impact on all pupils, particularly ensuring that disadvantaged students have a secure understanding of mathematical concepts to the same level as their peers. For this reason, our curriculum is based on Maths Mastery and is supported using the following strategies:

- 1 – to – 1 catch up support for selected pupils with SEN needs
- Varied representation of concepts, including pictorial representation, to support SEN and EAL students
- An optional weekly after-school club to support students, particularly disadvantaged, with their homework
- A focus on disadvantaged students when planning in-class interventions
- Dedicated lesson time throughout Year 8 for weaker students to practice timestables and to develop mathematical vocabulary, particularly to support SEN and EAL students.

Our belief is that homework is used for deliberate practice of what has been taught in lessons. We also use retrieval practice and spaced revision to support all students with committing knowledge to long term memory. In Year 8, homework will be delivered through Hegarty Maths, as this platform provides video tuition to support student understanding and hence ensure **all** students are able to perform highly.

Opportunities to build an understanding of social, moral and ethical issues are developed alongside links to the wider world, including careers, through:

- The use of examples which pupils may come across in real-life
- Discussion of how maths is applied to real-world problems and in particular jobs
- Dedicated 20 minute lessons (one per Cycle) on STEM careers, exploring their importance and the different types of careers available
- Dedicated 20 minute lessons (a minimum of one per year) exploring issues linked to the Global Dimension such as social justice, climate change, and equality and diversity, with mathematical themes.

Further Information can be found in:

- Long term plans
- https://whiterosemaths.com/wp-content/uploads/2019/12/National-Curriculum-Progression-Secondary.pdf