

# Mathematics

## Intent

### **Curriculum design:**

- Number, Algebra, Ratio and proportion, Geometry, Statistics and probability
- Cross-curricular links and support from year 7-13
- Preparation for further study
- Every pupil has the opportunity to study Maths at key stage 5- A-level Maths, Further Maths or Maths Studies
- Retake GCSE
- Numeracy day

### **What do we want learners to learn?**

- Numerical fluency, problem solving, Maths as a life skill, deep mathematical understanding of concepts to be resilient. See Maths beyond and outside of Maths GCSE and A level, relevance to life. Using Maths creatively – seeing Maths as a creative subject (Goal free problems/ more than one way to complete a problem/ open ended questions). To be able to formally use mathematical language to communicate reasoning. We want them to develop mathematically so that they can use skills, knowledge and understanding.

### **How do we want them to learn?**

- Through a variety of well-planned engaging activities- mastery, communication, practise and use skill, further enquiry. Discussing different approaches to questions. To be able to work independently and collaboratively. To be creative in how they answer problem by looking for different methods to answer problems and be critical thinkers. Look for the most succinct way to approach a problem.

## Implementation

### **Curriculum delivery**

- KS3 curriculum split in to 3 different levels (high, middle, low attainers)
- Low attainment sets have an extra numeracy lesson once a fortnight in year 7 and 8
- KS4 curriculums split in to 3 different levels (higher, cross-over, foundation) KS4 curriculum links to either entry at the Higher Tier or Foundation Tier. The level of tier entry is finally made after Christmas in year 11.

Extra Numeracy lessons for double science students once a week (mainly pupils working towards grade below a 6)

- A-level Further Mathematics taught concurrently with Mathematics

Maths Studies (level 3) taught as a one year course to allow pupils to benefit from what they have learnt in year 12 and to free up extra time for them to study in year 13.

- Supporting the department in their professional development by:
- Attending and sharing information from courses
- Focusing on teaching for mastery in our team meetings.
- Discussing, reading and implementing what we have learnt from current research to improve our practise.

### **Teaching**

- Model examples to whole class and individuals
- Teachers evaluate pupils work to identify and address misconceptions
- Good quality direct instruction and pupil practice
- Opportunities to develop deeper understanding and mastery, showing links between topics and the coherence of mathematics
- Homework set to consolidate learning with further practise and extensive website to enable independent learning
- Intervention groups
- Pupils encouraged to come and speak to their teachers if they have any concerns or if they want to further develop their understanding (KS3 club, KS4 intervention, KS4 individual teachers, KS5 club)

### **Assessment**

- All formal exams used summatively and formatively
- KS3- 3 Exams a year (one in the hall)
- End of topic informal assessment used to evaluate and improve student understanding
- KS4- 6 exams a year (one set of mock papers in hall)
- To maintain pupil focus and give them practise of the new-style exam questions
- KS5- A-level 6 exams a year (one set of mock papers in hall)
- Maths Studies (1 Classroom exam and 2 mock papers over the year)

## **Delivery ... skills**

### **How are skills developed over time**

#### **How does KS3 learning lead to KS4 and KS5**

- KS3 and KS4 curriculum integrated.
- High attainers at KS4 taught with an emphasis on algebra, graph work and trigonometry. Top band given chance to study further Maths GCSE to further link to the A-level course.

## **Impact**

### **Attainment**

- Outstanding GCSE and A-Level results
- A large uptake of pupils wanting to take KS5 Maths
- Dedicated learners who are interested and keen on mathematics
- Maths challenge (Junior, Intermediate and senior)
- Top band given chance to study further Maths GCSE to further link to the A-level course.
- Maths feast
- Year 8 master classes
- Year 8 flying start

### **Progress**

- Intervention focused on higher and middle attainers. In recent years we have had to shift the attention from historically a gap with middle attainers to currently wanting to close the gap in progress with higher attainers.

### **Knowledge and Skills**

- Pupils are confident in their abilities and report that they are improving
- Students are able to solve problems effectively

### **Over time**

- Spiral curriculum - Subjects revisited and depth of knowledge increased across the years.

### **Destinations**

- A large uptake of pupils wanting to take KS5 Maths
- Pupils go on to study Maths, engineering, economics, accounting, medicine, a science or social-science based subject

### **Student attributes at the end of each key stage**

- Pupils build and broaden their knowledge and understanding at each key stage.