## The John Wallis Academy – Curriculum Overview 2019-20

### Subject: Maths  
**Year Group:** 10F  
**Academic Year:** 2019-20

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| **Topic** | 9 Graphs  
10 Transformations  
11 Ratio and proportion | 12 Right-angled triangles  
13 Probability  
14 Multiplicative reasoning | 15 Constructions, loci and bearings  
16 Quadratic equations and graphs  
17 Perimeter, area and volume 2 |
| **Lesson Summary Breakdown** | | | |
| 9.1 Coordinates  
9.2 Linear graphs  
9.3 Gradient  
9.4 \( y = mx + c \)  
9.5 Real-life graphs  
9.6 Distance-time graphs  
9.7 More real-life graphs  
9.8 Translation  
9.9 Reflection  
9.10 Rotation  
9.11 Enlargement  
9.12 Describing enlargements  
9.13 Combining transformations | 11.1 Writing ratios  
11.2 Using ratios 1  
11.3 Ratios and measures  
11.4 Using ratios 2  
11.5 Comparing using ratios  
11.6 Using proportion  
11.7 Proportion and graphs  
11.8 Proportion problems | 12.1 Pythagoras' theorem 1  
12.2 Pythagoras' theorem 2  
12.3 Trigonometry: the sine ratio 1  
12.4 Trigonometry: the sine ratio 2  
12.5 Trigonometry: the cosine ratio  
12.6 Trigonometry: the tangent ratio  
12.7 Finding lengths and angles using trigonometry | 13.1 Calculating probability  
13.2 Two events  
13.3 Experimental probability  
13.4 Venn diagrams  
13.5 Tree diagrams  
13.6 More tree diagrams  
14.1 Percentages  
14.2 Growth and decay  
14.3 Compound measures  
14.4 Distance, speed and time  
14.5 Direct and inverse proportion | 15.1 3D solids  
15.2 Plans and elevations  
15.3 Accurate drawings 1  
15.4 Scale drawings and maps  
15.5 Accurate drawings 2  
15.6 Constructions  
15.7 Loci and regions  
15.8 Bearings  
16.1 Expanding double brackets  
16.2 Plotting quadratic graphs  
16.3 Using quadratic graphs  
16.4 Factorising quadratic expressions  
16.5 Solving quadratic equations algebraically | 17.1 Circumference of a circle 1  
17.2 Circumference of a circle 2  
17.3 Area of a circle  
17.4 Semicircles and sectors  
17.5 Composite 2D shapes and cylinders  
17.6 Pyramids and cones  
17.7 Spheres and composite solids |
| **Progress Range** | F2 - 4 | F2 - 5 | F1 - 5 |
| **Assessment** | Unit tests – Termly Assessments | Unit tests – Termly Assessments | Unit tests – End of Year Assessment |
SMSC Links in Mathematics

Spiritual development in Mathematics
The study of mathematics enables students to make sense of the world around them and we strive to enable each of our students to explore the connections between their numeracy skills and every-day life. Developing deep thinking and an ability to question the way in which the world works promotes the spiritual growth of students. Students are encouraged to see the sequences, patterns, symmetry and scale both in the man-made and the natural world and to use maths as a tool to explore it more fully.

Moral development in Mathematics
The moral development of students is an important thread running through the mathematics syllabus. Students are provided with opportunities to use their maths skills in real life contexts, applying and exploring the skills required in solving various problems. For example, students are encouraged to analyse data and consider the implications of misleading or biased statistical calculations. All students are made aware of the fact that the choices they make lead to various consequences. They must then make a choice that relates to the result they are looking for. The logical aspect of this relates strongly to the right/wrong responses in maths.

Social development in Mathematics
Problem solving skills and teamwork are fundamental to mathematics through creative thinking, discussion, explaining and presenting ideas. Students are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Over time they become more independent and resilient learners.

Cultural development in Mathematics
Mathematics is a universal language with a myriad of cultural inputs throughout the ages. Various approaches to mathematics from around the world are used and this provides an opportunity to discuss their origins. This includes different multiplication methods from Egypt, Russia and China, Pythagoras’ Theorem from Greece, algebra from the Middle East and debates as to where Trigonometry was first used. We try to develop an awareness of both the history of maths alongside the realisation that many topics we still learn today have travelled across the world and are used internationally.