**Southmoor Academy**

**Mathematics Curriculum**

**Aspire Achieve Enjoy**

**Aim**

Here at Southmoor Academy, we aim to securely equip **all** of our students for life beyond school as successful, confident, responsible and respectful citizens. We believe that education provides the key to **social mobility** and our curriculum is designed to build strong foundations in the knowledge, understanding and skills which lead to **academic and personal success**. We want our students to **enjoy** the challenges that learning offers.

Our aims are underpinned by a culture of **high aspirations**. Through developing positive relationships, we work towards every individual having a strong belief in their own abilities so that they work hard, build resilience and **achieve** their very best.

**Intent**

The curriculum includes formal teaching through subject areas, assemblies and extracurricular activities. We regularly review content to ensure we continue to meet our curriculum aims. The Math’s curriculum is planned to enable all students to develop skills in the following areas:

* Number
* Algebra
* Ratio, proportion and rates of change
* Geometry and measures
* Probability
* Statistics

All students are taught in a way which supports them to develop fluency, reason mathematically and solve problems linked to real life situations, by applying the knowledge and skills they have developed over time.

Throughout our programmes of study, every attempt is made to make explicit links to careers and the world of work. In addition to subject specific links, we aim to explicitly reinforce the skills and aptitudes which support employers say are important in the workplace;

* Resilience (Aiming High, Staying Positive, Learning from Mistakes)
* Collaboration (Teamwork, Leadership, Communication)
* Creativity (Originality, Problem Solving, Independent Study)

The British values of democracy, the rule of law, individual liberty, and mutual respect of those with different faiths and beliefs are taught explicitly and reinforced in the way in which the school operates.

**Sequence and structure**

Our curriculum is split into years 7 - 11 and sixth form).

Pupils can sit external examinations in

GCSE Mathematics

GCSE Further Mathematics

Level 3 Mathematical studies

GCE AS/A level Mathematics

GCE AS/A level Further Mathematics

The Math’s department uses the whole school lesson structure to support consistency. This is used to connect previous learning to new situations, it delivers content through worked examples and models that students can refer to and it consolidates understanding and application through the use of problem solving/functional questions.

Where appropriate maths lessons should include multi step/problem solving and/or functional questions.

**Our Math’s Curriculum includes the following areas of study:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| KS3 | Half Term 1 | Half Term 2 | Half Term 3 | Half Term 4 | Half Term 5 | Half Term 6 |
| Year 7 | Number work: Four operations, indices and decimals.  Geometry: Angles | Algebra:  Expanding and factorising single brackets.  Number work: Working with negative numbers, | Algebra:  Solving equations  Data analysis and probability | Presenting and Representing Data, Solving Equations. | Probability:  Be able to draw frequency trees  Number: Bidmas and indices | Geometry: constructions, congruence and similarity |
| Year 8 | Number work including the use of fractions decimals and percentages.  Algebra: Including sequences, nth term and expanding brackets | Number work: Calculating percentages, increase and decrease, percentage change.  Problems involving Ratio | Geometry: Plotting simple straight-line graphs in the form  y = mx + c  Plotting simple quadratic graphs  Working with semi/quarter circles and more challenging worded questions. | Algebra: Basic inequalities and inequalities on a number line  Plans and elevations  Surface area of cuboids; triangular prisms etc | Statistics: Averages from raw data and averages from tables. Cumulative frequency.  Geometry:  Angle and line bisector revision and problem-solving development | Probability: Venn Diagrams  Transformations:  Be able to translate simple 2D shapes. Be able to enlarge by a positive scale factor from a centre of enlargement. |
| Year 9 | Number work: Indices, powers and roots.  Angles, sequences and graphs | Number work: Calculations and accuracy  Algebra  Geometry: Constructions  Statistics: Interpreting results | Geometry: Transformations, Ratio and proportion, Statistical enquiry | Number work: Ratio and proportion, fractions, decimals and percentages. | Geometry: Area and volume, Algebra: equations and inequalities | Geometry: Pythagoras and trigonometry,  Number work: percentages  consolidation for the year |
| Year 10 | Geometry: Angle Properties, Volume / Surface Area, Circles, Plans and Elevations,  Statistics: Averages from tables. | Geometry: 3D shapes, constructions | Geometry: Transformations  Probability | Further probability  Number work: Ratio and proportion.  Proportionality.  Set up, solve and interpret answers for growth and decay. | Similar Shapes, Percentages, Compound Interest, Direct / Indirect Proportion, Formulae, Quadratic Equations, Equation of a Circle. | Algebra: Working with quadratics  Number: Fractions and reciprocals, Indices, standards form,  Geometry: Vectors and graph work |
| Year 11 | Gap Analysis- Areas of Weakness. | Gap Analysis- Areas of Weakness. | Gap Analysis- Areas of Weakness. | Gap Analysis- Areas of Weakness. | Gap Analysis- Areas of Weakness. | GCSE Examination dates. |
| Year 12 | Pure:  Algebraic expressions, Quadratics, Equations and Inequalities, Graphs and Transformations, Circles | Pure:  Algebraic methods, binomial expansion, trigonometric ratios, trigonometric identities and equations and vectors | Pure: Differentiation, Integration, exponentials and logarithms.  Statistics and Mechanics:  Data collection, measures of location and spread. | Statistics and Mechanics:  Representations of data, statistical distributions, hypothesis testing and modelling in mechanics. | Statistics and Mechanics:  Constant acceleration, Forces and motion, variable acceleration. Pure:  Algebraic methods, functions and maps. | Pure:  Sequences and series, binomial expansion and radians. |
| Year 13 | Pure:  Trigonometric functions, Trigonometry and modelling, parametric equations.  Statistics and Mechanics:  Regression and correlation. | Pure:  Differentiation, numerical methods, integration and vectors,  Statistics and Mechanics:  Conditional probability and normal distribution. Moments. | Statistics and Mechanics:  Forces and Friction, projectiles, application of forces, Further kinematics.  GAP analysis and exam prep. | GAP analysis and exam prep. | GAP analysis and exam prep. | GCE exams |

**How does our Curriculum cater for students with SEND?**

Southmoor is an inclusive academy where every child is valued and respected. We are committed to the inclusion, progress and independence of all our students, including those with SEN. We work to support our students to make progress in their learning, their emotional and social development and their independence. We actively work to support the learning and needs of all members of our community.

A child or young person has SEN if they have a learning difficulty or disability which calls for special educational provision to be made that is additional to or different from that made generally for other children or young people of the same age. (CoP 2015, p16)

Teachers are responsible for the progress of ALL students in their class and high-quality teaching is carefully planned; this is the first step in supporting students who may have SEND. All students are challenged to do their very best and all students at the Academy are expected to make at least good progress.

Specific approaches which are used within the curriculum areas include:

* Mastery approach to planning
* A focus on embedding key concepts into long term memory.
* Exposing students to mathematical problems in everyday life and teaching student's problem-solving strategies.
* Seating to allow inclusion
* Resources are accessible and their use explained by the teacher
* Displays and visual learning tools are used where necessary
* Multi-sensory approaches
* Where appropriate support from additional adults is planned to scaffold students learning
* Groups work and discussion
* Clear teacher/student communication
* Feedback that allows students to make progress, whether written or verbal
* Independent study/homework.
* Reduce the reliance on memory and embed a deeper understanding of mathematical concepts.

**How does our curriculum cater for disadvantaged students and those from minority groups?**

As a school serving an area with high levels of deprivation, we work tirelessly to raise the attainment for all students and to close any gaps that exist due to social contexts. The deliberate allocation of funding and resources has ensured that attainment gaps are closing in our drive to ensure that all pupils are equally successful when they leave the Academy. More specifically within the teaching of Math’s, we;

* Work to identify barriers, interests and what might help each pupil make the next steps in learning.
* Provide targeted support for under-performing pupils during lesson time, in addition to revision lessons outside school hours.
* use strategies best suited to addressing individual needs, rather than just fitting pupils into their existing support strategies

**How do we make sure that our curriculum is implemented effectively?**

The Math’s curriculum leader and LPs are responsible for designing the Math’s curriculum and monitoring implementation.

The subject leader’s monitoring is validated by senior leaders.

Staff have regular access to professional development/training to ensure that curriculum requirements are met.

Effective assessment informs staff about areas in which interventions are required. These interventions are delivered during curriculum time to enhance pupils’ capacity to access the full curriculum.

Curriculum resources are selected carefully and reviewed regularly.

Assessments are designed thoughtfully to assess student progress and also to shape future learning.

Assessments are checked for reliability within departments and across the Trust.

We have staff who mark for exam boards and provide vital CPD to the rest of the department to ensure reliability of data.

Gap analysis spreadsheets are used to identify areas of development for students and the Math’s department.

Maths specific CPD across the trust, which is used to enhance teaching and further pupil progress

**How do we make sure our curriculum is having the desired impact?**

* Examination results analysis and evaluation
* Termly assessments-analysis and evaluation meetings
* Lesson observations
* Learning walks
* Book scrutiny
* Regular feedback from Teaching Staff during department meetings
* Regular feedback from Middle Leaders during curriculum meetings
* Pupil Surveys
* Parental feedback