UNIT 1 - NUMBER

MATHEMATICS 1

Content

- Place value
- Using calculators effectively
- Checking solutions
- Directed numbers
- Time and money
- Decimals, fractions and percentages
- Indices
- Standard form
- Ratio
- Proportion
- Estimation
- Accurracy

Resources & ICT

- Textbook
- Worksheets
- Calculators
- Online resources from the BM website
- www.myimaths.com
- www.wolframalpha.com
- Interlocking plastic cubes

Types of assessment

- Exercises from textbooks and worksheets
- Relevant questions from Core IGCSE and SAT papers
- Formative assessment of homework and test results
- Structured questioning during lessons
- Judgments based on class participation and effort

Students to Know

- The meaning of advanced mathematical symbols
- How to interpret numeric information
- Practical applications of basic techniques

Students to Understand

- How to approach problems using a variety of techniques
- When to apply a variety of different methods
- Different representations of quantities
- The necessary standard to attain marks in an IGCSE or SAT exam question

Students to be able to Do

- Calculate with a wide variety of different types of numbers
- Use their calculators effectively
- Understand mathematical vocabulary
- Answer exam standard questions

Cross curricular links

- Science and Geography; using numbers to describe quantities
- Economics; using money, developing problem solving skills
- History; the development of mathematics and key figures in history
- Sport; timing activities, analysing performance

Differentiation incl. EAL

- Extension tasks for gifted students
- Puzzle competitions
- Emphasis on vocabulary (especially for non native speakers of English)
- Group work and Academic Champions to encourage peer learning

Learning styles activities

- Students encouraged to approach tasks using different methods
- Individual guidance to improve understanding
- Lessons taught using a range of techniques

Global citizenship, internationalism, local environment

- Links to countries where the mathematics at hand was first developed
- Discussion of mathematics in topical stories
- Sharing of ideas from students with different mathematical backgrounds

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UNIT 2 - ALGEBRA

MATHEMATICS I

Content

- Sequences
- Functions
- Graphs
- Equations
- Formulae
- Identities
- Expressions
- Using ICT

Resources & ICT

- Textbook
- Worksheets
- Calculators
- Online resources from the BM website
- www.myimaths.com
- www.wolframalpha.com
- Interlocking plastic cubes

Types of assessment

- Exercises from textbooks and worksheets
- Relevant questions from Core IGCSE and SAT papers
- Formative assessment of homework and test results
- Structured questioning during lessons
- Judgments based on class participation and effort

Students to Know

- How to simplify complex expressions and solve linear equations
- The format of a straight line equation
- Elimination and Substitution techniques for solving simultaneous equations
- How to use and interpret inequalities
- Quadratic equation techniques
- Problems involving algebraic fractions

Students to Understand

- How to approach problems using a variety of techniques
- How to find equation of a line and how it relates to the graph
- How to draw a function (including quadratics) from its equation
- The necessary standard to attain marks in an IGCSE and SAT exam question

Students to be able to Do

- Solve complex linear equations
- Use algebra techniques to a variety of problems
- Solve quadratic equations
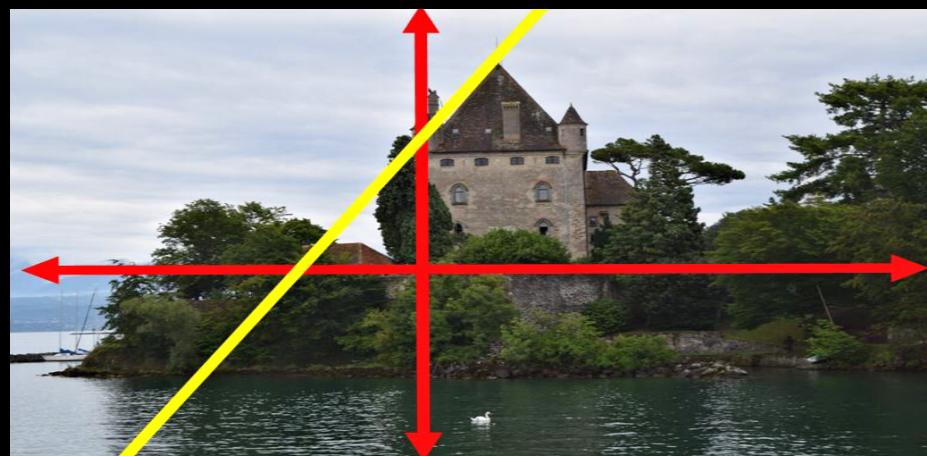- Answer exam standard questions

Cross curricular links

- Science; using formula, solving equations and algebraic manipulation
- Physics; speed-time and distance-time graphs
- Physics and Chemistry; experimental data modelled with straight line equations
- ICT; variables and generalisation of numeric quantities

Differentiation incl. EAL

- Extension tasks for gifted students
- Puzzle competitions
- Emphasis on vocabulary (especially for non native speakers of English)
- Group work and Academic Champions to encourage peer learning

Learning styles activities

- Students encouraged to approach tasks using different methods
- Individual guidance to improve understanding
- Lessons taught using a range of techniques

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Throughout the year - 8 weeks

UNIT 3 - SHAPE AND SPACE

Content

- Geometrical reasoning: lines, angles and shapes
- Construction and loci
- Measures and mensuration; area & volume
- Transformations and coordinates
- Geometrical reasoning: trigonometry

Resources & ICT

- Textbook
- Worksheets
- Calculators
- Online resources from the BM website
- www.myimaths.com
- www.wolframalpha.com
- Interlocking plastic cubes

Types of assessment

- Exercises from textbooks and worksheets
- Relevant questions from Core IGCSE and SAT papers
- Formative assessment of homework and test results
- Structured questioning during lessons
- Judgments based on class participation and effort

Students to Know

- Which formulae to use in appropriate situations
- Details of reflections, rotations, translations and enlargements
- Compass techniques to solve varied loci problems
- How to use linear, area and volume scale factors
- Vector notation and problem solving techniques

Students to Understand

- When to apply area and volume formulae
- How to describe combinations of transformations
- Angle properties of polygons and circles
- Geometry relating to fractions of circles.
- The necessary standard to attain marks in an IGCSE or SAT exam question

Students to be able to Do

- Use their calculators effectively
- Understand mathematical vocabulary
- Solve a variety of geometrical problems involving using basic trigonometry
- Answer exam standard questions

Cross curricular links

- Science; symmetry in crystal structures and chemical formulae
- Architecture; symmetry in buildings
- Art & Photography; enlargements and scale factors
- ICT; computer graphics and the application of transformations

Differentiation incl. EAL

- Extension tasks for gifted students
- Puzzle competitions
- Emphasis on vocabulary (especially for non native speakers of English)
- Group work and Academic Champions to encourage peer learning

Learning styles activities

- Students encouraged to approach tasks using different methods
- Individual guidance to improve understanding
- Lessons taught using a range of techniques

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UNIT 4 - DATA

MATHEMATICS I

Content

- Types of data
- Statistical diagrams for discrete data
- Statistical diagrams for continuous data
- Misleading diagrams
- Theoretical probability
- Experimental probability
- Statistical measures
- Interpreting and discussing results

Resources & ICT

- Textbook
- Worksheets
- Calculators
- Online resources from the BM website
- www.myimaths.com
- www.wolframalpha.com
- Interlocking plastic cubes

Types of assessment

- Exercises from textbooks and worksheets
- Relevant questions from Core IGCSE and SAT papers
- Formative assessment of homework and test results
- Structured questioning during lessons
- Judgments based on class participation and effort

Students to Know

- Statistics terminology
- The properties of the probability scale
- The difference between theoretical and experimental probability

Students to Understand

- How to approach problems using a variety of techniques
- Which diagrams are appropriate for different types of data
- How to construct a number of different statistical diagrams
- How to work with probabilities appropriately for combined events
- The necessary standard to attain marks in an IGCSE or SAT exam question

Students to be able to Do

- Use their calculators effectively
- Understand more advanced statistical vocabulary
- Use Venn and tree diagrams to organise probability problems
- Answer exam standard questions

Cross curricular links

- Science; using statistical diagrams to interpret data from experiments
- Citizenship, Geography and Economics; using mathematics to make sense of real life statistics
- Sport; statistical analysis of performance over time

Differentiation incl. EAL

- Extension tasks for gifted students
- Puzzle competitions
- Emphasis on vocabulary (especially for non native speakers of English)
- Group work and Academic Champions to encourage peer learning

Learning styles activities

- Students encouraged to approach tasks using different methods
- Individual guidance to improve understanding
- Lessons taught using a range of techniques

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Global citizenship, internationalism, local environment

- Links to countries where the mathematics at hand was first developed
- Discussion of mathematics in topical stories
- Sharing of ideas from students with different mathematical backgrounds

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Throughout the year - 8 weeks