

Subject: Mathematics

Department Staff – Mr E Addo, Mr E DeSouza, Mr E Gakpo,
Mr A Hosseinian, Mr P Kelly, Mr S McCann, Mr K Pillay,
Mr A Sztranyovszky, Ms D Thompson

Year 10: Sets 1, 2, 3 and 4 - Autumn Term 2010

Contents: what you will study

Number:

- Solving real problems
- Division by decimals
- Estimation, Multiples, factors and prime numbers
- Prime factors
- LCM and HCF
- Negative numbers
- One quantity as a fraction of another
- Adding and Subtracting Fractions
- Multiplying Fractions
- Dividing by a Fraction
- Percentage increase and decrease
- Expressing one quantity as a percentage of another
- Compound interest and repeated percentage change
- Finding the original quantity (Reverse percentage)
- Ratio
- Speed, Time and Distance
- Direct Proportional Problems
- Best Buy
- Density

Algebra:

- Basic algebra : Substitution, Expansion, Simplification, Factorisation, Solving linear equations:
- Fractional equations, Brackets, Equations with variables on both sides, Setting up linear equations, Rearranging Formulae, Simultaneous equations: Solving problems by using simultaneous equations, Trial and improvement
- Linear and quadratic sequences
- Straight line graphs
- Factorising quadratic expressions
- Simplifying algebraic expressions
- Equivalence of numerical, algebraic and graphical representations.

Shape and Space:

- Angles at a point, angles on a straight line, perpendicular lines, vertically opposite angles.
- Special types of quadrilaterals.
- Symmetry of 2D shapes
- Circle theorems, including the intersecting chord theorem
- Transformations of shapes
- Proof of some geometric results
- Vectors
- Congruence and similarity
- Circumference and area of circles

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Data Handling:

- Vocabulary of probability
- Use of probability scales
- Theoretical probability models, including the model of equally likely outcomes.
- Estimates of probability from relative frequency.
- Sample spaces
- Mutually exclusive and exhaustive events
- Venn diagrams
- Tree diagrams

National Curriculum levels at which you will work

The Higher tier exam enables pupils to achieve a grade C up to an A* grade

Assessment: how you will be tested this term

In addition to classwork and homework assignments (2 per week), you will have an end of half term test on all the topics taught this term. You will also do a Mock GCSE paper in December 2009. This will consist of a calculator paper and a non-calculator paper.

NOTE - The Maths GCSE no longer requires coursework but you must demonstrate your ability to use and apply Maths concepts.

Equipment you will need for this term's work:

Pen, pencil, ruler, compass, protractor, exercise book and calculator.

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Year 10: Sets 1, 2, 3 and 4 - Spring Term 2011

Contents: what you will study

Algebra:

- Setting up equations involving proportion
- Graphical representations of equations involving proportion
- Constructing the graphs of simple loci, including the circle $x^2 + y^2 = r^2$
- Solving by substitution a pair of simultaneous equations (one non-linear)
- Use simultaneous equations to calculate where a straight-line graph meets a circle
- Using graphs to solve a pair of simultaneous equations (one non-linear)
- Using graphs to show where a straight-line graph intersects a circle
- Drawing, sketching and describing the graphs of trigonometric functions
- Applying transformations to the function $y = f(x)$, $y = f(x) + a$, $y = f(ax)$, $y = f(x + a)$, $y = af(x)$ (for linear, quadratic, sine and cosine functions)
- Flow charts
- Algebraic expressions
- Linear programming problems

Handling Data

- Comparison of experimental and theoretical probabilities

Number

- Powers, roots, fractional indices, negative indices and standard index form
- Multiple common factor, common multiple, prime number
- Percentages, including multipliers, repeated percentage problems and reverse percentages.
- Approximations
- Equivalences between fractions, decimals and percentages.
- Proportional change
- Using calculators efficiently
- APR, AER, appreciation and depreciation
- Using spreadsheets to model financial, statistical and other numerical situations.
- Limits of accuracy

Shape, space and measures

- Trigonometry
- Angle properties of straight lines, perpendicular lines and vertically opposite angles.
- Types of quadrilaterals
- Symmetry and transformations
- Congruence and similarity, relationship between lengths, areas and volumes in similar shapes.
- Circumference and area of a circle.
- Perimeter and area
- Interpreting scales

National Curriculum levels at which you will work

Subject: *Mathematics*

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<i>Assessment: how you will be tested this term</i>
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In addition to classwork and homework assignments (2 per week), you will have an end of half term test on all the topics taught this term. You will also do a second Mock GCSE paper.

<i>Equipment you will need for this term's work:</i>

Pen, pencil, ruler, compass, protractor, exercise book and calculator.
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Year 10: Sets 1, 2, 3 and 4 - Summer Term 2011

Contents: what you will study

Shape and space:

- Converting measurements from one unit to another
- Measure and draw lines and angles

Handling data

- Statistical problem solving process and handling data cycle
- Experiments and surveys
- Two way tables
- Comparing data using averages
- Bar charts, pie charts, frequency diagrams, stem and leaf diagrams
- Histograms
- Cumulative frequency
- Box and whisker diagrams
- Correlation and line of best fit and its interpretation
- Quartiles, inter quartile range.

National Curriculum levels at which you will work

The Higher tier exam enables pupils to achieve a grade C up to an A* grade

Assessment: how you will be tested this term

In addition to classwork and homework assignments (2 per week), you will have an end of half term test on all the topics taught this term. You will sit GCSE Maths in June 2010. You will also do a Functional Skills test which you must pass before you can achieve a pass grade in the GCSE Maths exam.

Equipment you will need for this term's work:

Pen, pencil, ruler, compass, protractor, exercise book and calculator.