

Year 10 Topic and Contents

Regular assessments will take place in class at the end of each topic.
Formal mocks examinations will take place in Term 3 and Term 5.

Term 1

<p>Angles: Students should be able to</p> <ul style="list-style-type: none">● calculate unknown angles on a straight line and around a point● calculate unknown angles in a triangle● angles on parallel lines● use knowledge of interior/exterior angle sums of polygons <p>Bearings: Students should be able to...</p> <ul style="list-style-type: none">● identify a return bearing● measure and use bearings
<p>Congruence and Similarity: Students should be able to...</p> <ul style="list-style-type: none">● identify congruent or similar shapes● apply conditions of congruence● use scale factors with lengths● use scale factors with areas and volumes
<p>Perimeter and Area: Students should be able to...</p> <ul style="list-style-type: none">● Calculate the perimeter of 2D shapes● Calculate the perimeter of a composite shape● use the formula for the circumference of a circle● calculate an arc length or perimeter of a sector● calculate the area of a composite shape● calculate the area of triangles, trapezia and parallelograms● use the formula for the area of a circle● calculate the area of a sector <p>Volume: Students should be able to...</p> <ul style="list-style-type: none">● calculate the volume of a prism● calculate the volume of 3D shapes● calculate the volume of a frustum
<p>Transformations: Students should be able to...</p> <ul style="list-style-type: none">● identify enlargements with integer or fractional scale factors● identify simple transformations● identify enlargements with negative or fractional scale factors● recognise combined transformations

Term 2

Place Value and Rounding: Students should be able to...

- Round to the nearest integer, 10, 100, 1000
- Round to a given number of decimal places
- Round to a given number of significant figures

Integers: Students should be able to...

- Operate with integers
- Divide and multiply whole numbers by 10, 100 or 1000
- Write efficient methods of addition and subtraction
- Read large numbers and use symbols \approx
- Use mental calculations for multiplication/division (times table)

BIDMAS. Students should be able to...

- Apply BIDMAS order of operations

Fraction. Students should be able to...

- Write a fraction represented by a diagram
- add/subtract fractions with common denominators
- add/subtract fractions with different denominators
- add/subtract mixed numbers
- Compare two fractions
- Convert between fractions, decimals and percentages
- Convert between vulgar fractions and mixed numbers
- Divide fractions by a whole number
- Find a fraction of an amount
- Multiply a fraction by a whole number
- multiply/divide fractions
- Simplify a fraction

Percentages: Students should be able to...

- Define percentages as a number per 100
- Find a percentage change
- Find a percentage of an amount
- increase/decrease an amount by a given percentage
- Solve problems involving interest
- Write one number as a percentage of another
- Find a reverse percentage
- Solve problems involving compound interest (growth/decay)
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Factors, multiples and primes: Students should be able to...

- Identify factors and common factors
- Identify multiples and common multiples
- Recognise prime numbers
- Find the HCF or LCF of 2 or more numbers
- Reduce a number to a list of prime factors

Indices: Students should be able to...

- Recognise and describe square numbers
- Recall simple powers
- Use the first 3 index laws

Surds: Students should be able to...

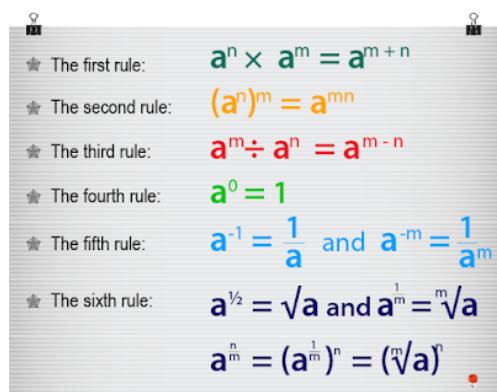
- Simplify Surds
- Operate with Surds
- Rationalise the denominator

Personal Money WEEK**Term 3****Expression: Terms and Expressions/Simplifying Expressions.** Students should be able to...

- Use algebraic notation.
- Substitute numbers into formulae and expressions.
- Use and understand the words expressions, equations, formulae, terms and factors.
- Collect like terms and simplify expressions involving sums, products, powers and surds.
- Take out common factors in an expression.

Indices Students should be able to...

- Use the first 3 laws of indices

**Expanding & Factorising** Students should be able to...

- Multiply a single term over a bracket.
- Take out common factors in an expression.

Expanding & Factorising Expressions/Algebraic Fractions

Students should be able to...

- Multiply a single term over a bracket.
- Take out common factors in an expression.
- Use and understand the words expressions, equations, formulae, terms and factors.
- Simplify expressions involving sums, products, powers and surds.

Formulae and Function: . Students should be able to...

- Substitute numerical values into formulae and expressions.
- Rearrange formulae to change the subject.
- Identify equations, inequalities, formulae and identities.
- Expand double brackets.
- Factorise quadratic equations and the difference of two squares.
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Write an equation to represent a function and find inputs and outputs. Find the inverse of a function and construct and use composite function.

Equations, Identities and Functions/ Expanding and Factorising

Students should be able to...

- Identify equations, inequalities, formulae and identities.
- Expand double brackets.
- Factorise quadratic equations and the difference of two squares.
- Construct proofs of simple statements using algebra.

Equations and Inequalities (Solve Linear/Quadratic Equations)

Students should be able to...

- Set up and solve simple linear equations.
- Solve quadratic equations algebraically by factorizing.
- Derive and solve two linear simultaneous equations in two variables.
- Find approximate solutions to two linear simultaneous equations using a graph.
- Solve linear inequalities in one variable and represent the solution on a number line.
- Set up and solve linear equations including when the unknown appears on both sides.
- Solve quadratic equations algebraically by factorizing, completing the square and by quadratic formula.
- Derive and solve two linear simultaneous equations in two variables plus quadratic simultaneous equations

Equations and Inequalities (Simultaneous Equations/Inequalities). Students should be able to...

- Derive and solve two linear simultaneous equations in two variables.
- Find approximate solutions to two linear simultaneous equations using a graph.
- Solve linear inequalities in one variable and represent the solution on a number line.
- Solve inequalities and represent the solution on a number line or a graph.
- Use iterative processes to find approximate solutions to equations

Term 4

Handling Data

Students should be able to...

- Construct and interpret two-way tables, bar charts and pie-charts.
- Calculate the mean, median and mode of a data set.
- Calculate the range and interquartile range of a data set.
- Use averages and measures of spread to compare data sets.
- Use frequency tables to represent grouped data.
- Construct histograms with equal or unequal class widths.

Ratio and Proportion

Students should be able to...

- Express proportions of amounts as fractions or percentages.
- Divide a quantity into a given ratio.
- Use scale factors to convert between lengths on maps and scale diagrams and the distances they represent.
- Calculate percentage increases and decreases using multiplication.
- Find the original value of a quantity that has undergone a percentage increase or decrease.

Handling Data 2

Students should be able to...

- Calculate summary statistics from a grouped frequency table.
- Construct and interpret cumulative frequency curves and box plots.
- Plot scatter graphs and recognise correlation.

- Use tables and line graphs to represent time series data.

Term 5

CHAPTER 14: Graph 1

Students should be able to...

- Work with coordinates in all four quadrants
- Plot straight-line graphs including diagonal, vertical and horizontal lines
- Identify gradients and intercepts of straight lines graphically and algebraically.
- Use the form $y=mx+c$ to identify parallel lines
- Use one point and the gradient of the line to find its equation.
- Use two points to find the equation of a line
- Interpret the gradient of a straight line graph as a rate of change
- Plot and interpret graphs involving distance, speed and acceleration
- Find and interpret the gradient and y-intercept of a line and relate these to the equation form $y=mx+c$
- Identify parallel and perpendicular lines using their equation
- Draw line graphs and quadratic curves
- Identify roots, intercepts and turning points of a quadratic curves using graphical and algebraic methods
- Use graphs to solve problems involving distance, speed and acceleration.

CHAPTER 8: Probability

Students should be able to...

- Use experimental data to estimate probabilities and expected frequencies.
- Calculate theoretical probabilities and expected frequencies using the idea of equally likely events.
- Compare theoretical probabilities with experimental probabilities.
- Recognise mutually exclusive events and exhaustive events and know that the probabilities of mutually exclusive exhaustive events sum to 1.
- Use tables to represent the outcomes of probability experiments.