

**ENGLISH**

- **Write accurately, fluently, effectively and at length for pleasure and information through:**
  - **Writing for a wide range of purposes and audiences, including:**
    - **well-structured formal expository and narrative essays**
    - **stories, scripts, poetry and other imaginative writing**
    - **notes and polished scripts for talks and presentations**
    - **a range of other narrative and non-narrative texts, including arguments, and personal and formal letters**
      - Which sentence is more formal?
  - **Summarising and organising material, and supporting ideas and arguments with any necessary factual detail**
  - **Applying their growing knowledge of vocabulary, grammar and text structure to their writing and selecting the appropriate form**
    - Is it a complete sentence or a fragment?
    - Is it a complete sentence or a run-on?
    - Is it a complete sentence, a fragment or a run-on?
    - Combine sentences using relative clauses
    - Form the singular or plural possessive
    - Identify and correct errors with plural and possessive nouns
    - Use the pronoun that agrees with the antecedent
    - Choose between subject and object pronouns
    - Compound subjects and objects with 'I' and 'me'
    - Compound subjects and objects with pronouns
    - Choose between personal and reflexive pronouns
    - Use reflexive pronouns
    - Use relative pronouns: who and whom
    - Use relative pronouns: who, whom, whose, which and that
    - Correct errors with subject-verb agreement
    - Correct errors with indefinite pronoun-verb agreement
    - Use the correct verb – with compound subjects
    - Identify and correct inappropriate shifts in verb tense
    - Form the progressive verb tenses
    - Form the perfect verb tenses
    - Choose between adjectives and adverbs
    - Form and use comparative and superlative adjectives
    - Good, better, best, bad, worse and worst
    - Form and use comparative and superlative adverbs
    - Well, better, best, badly, worse and worst
    - Positive and negative connotation
    - Use the correct homophone

- Use the correct frequently confused word
- Correct errors with frequently confused words
- Transitions with conjunctive adverbs
- Use the correct pair of correlative conjunctions
- Use parallel structure
- Remove redundant words or phrases
- Misplaced modifiers with pictures
- Select the misplaced or dangling modifier
- Are the modifiers used correctly?
- Which sentence is more formal?
- **Drawing on knowledge of literary and rhetorical devices from their reading and listening to enhance the impact of their writing**
  - Positive and negative connotation
  - Use personification
  - Interpret the meaning of an allusion from its source
  - Recall the source of an allusion
  - Interpret figures of speech
  - Classify figures of speech
- **Plan, draft, edit and proof-read through:**
  - **Considering how their writing reflects the audiences and purposes for which it was intended**
  - **Amending the vocabulary, grammar and structure of their writing to improve its coherence and overall effectiveness**
    - Is it a complete sentence or a fragment?
    - Is it a complete sentence or a run-on?
    - Is it a complete sentence, a fragment or a run-on?
    - Combine sentences using relative clauses
    - Identify and correct errors with plural and possessive nouns
    - Identify vague pronoun references
    - Correct errors with subject-verb agreement
    - Correct errors with indefinite pronoun-verb agreement
    - Use semicolons and commas to separate clauses
    - Decide whether ellipses are used appropriately
    - Correct capitalisation errors
    - Correct errors with frequently confused words
    - Transitions with conjunctive adverbs
    - Use parallel structure
    - Remove redundant words or phrases
    - Are the modifiers used correctly?
  - **Paying attention to accurate grammar, punctuation and spelling;**
    - Is it a complete sentence or a fragment?
    - Is it a complete sentence or a run-on?
    - Is it a complete sentence, a fragment or a run-on?
    - Is it a phrase or a clause?
    - Combine sentences using relative clauses

- Form and use plurals: review
- Form and use plurals of compound nouns
- Form the singular or plural possessive
- Identify and correct errors with plural and possessive nouns
- Use the pronoun that agrees with the antecedent
- Choose between subject and object pronouns
- Compound subjects and objects with 'I' and 'me'
- Compound subjects and objects with pronouns
- Choose between personal and reflexive pronouns
- Use reflexive pronouns
- Use relative pronouns: who and whom
- Use relative pronouns: who, whom, whose, which and that
- Identify vague pronoun references
- Identify all of the possible antecedents
- Correct errors with subject-verb agreement
- Correct errors with indefinite pronoun-verb agreement
- Use the correct verb – with compound subjects
- Irregular past tense: review
- Simple past, present and future tense: review
- Identify and correct inappropriate shifts in verb tense
- Form the progressive verb tenses
- Form the perfect verb tenses
- Choose between adjectives and adverbs
- Form and use comparative and superlative adjectives
- Good, better, best, bad, worse and worst
- Form and use comparative and superlative adverbs
- Well, better, best, badly, worse and worst
- Commas with compound and complex sentences
- Commas with direct addresses, introductory words, interjections and interrupters
- Commas with coordinate adjectives
- Commas with non-restrictive elements
- Use semicolons and commas to separate clauses
- Use semicolons, colons and commas with lists
- Use dashes
- Use hyphens in compound adjectives
- Decide whether ellipses are used appropriately
- Correct capitalisation errors
- Capitalising titles
- Formatting titles
- Formatting and capitalising titles: review
- Use the correct homophone
- Use the correct frequently confused word
- Correct errors with frequently confused words
- Transitions with conjunctive adverbs
- Use the correct pair of correlative conjunctions
- Use parallel structure
- Remove redundant words or phrases
- Misplaced modifiers with pictures

- Select the misplaced or dangling modifier
- Are the modifiers used correctly?

## MATH

- **Develop fluency**

- **consolidate their numerical and mathematical capability and place value to include decimals, fractions, powers and roots**

- Compare numbers written in standard form
- Classify numbers
- Understanding integers
- Integers on number lines
- Compare and order integers
- Decimal numbers review
- Compare and order decimals
- Decimal number lines
- Understanding fractions: word problems
- Fractions: word problems with graphs and tables
- Compare and order fractions
- Compare fractions: word problems
- Compare mixed numbers and improper fractions
- Multiply two fractions using models
- Divide whole numbers and unit fractions
- Evaluate numerical expressions involving fractions
- Identify rational numbers
- Compare rational numbers
- Put rational numbers in order
- Understanding exponents
- Estimate square roots
- What percentage is illustrated?

- **select and use appropriate calculation strategies to solve increasingly complex problems**

- Add, subtract, multiply and divide decimals: word problems
- Add, subtract, multiply and divide fractions and mixed numbers: word problems
- Estimate to solve word problems
- Multi-step word problems
- Find the number of each type of coin
- Elapsed time word problems

- **use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships**

- Solve equations with variable exponents
- Write variable expressions
- Write variable expressions: word problems
- Write an equation from words

- Write and solve equations that represent diagrams
- Solve equations: word problems
- Write a two-variable equation
- **substitute values in expressions, rearrange and simplify expressions, and solve equations**
  - Evaluate numerical expressions involving integers
  - Evaluate numerical expressions involving decimals
  - Evaluate numerical expressions involving exponents
  - Evaluate linear expressions
  - Evaluate multi-variable expressions
  - Evaluate absolute value expressions
  - Evaluate nonlinear expressions
  - Solve equations using properties
  - Write equivalent expressions using properties
  - Add, subtract and multiply linear expressions
  - Factors of linear expressions
  - Identify equivalent linear expressions
  - Which  $x$  satisfies an equation?
  - Model and solve equations using algebra tiles
  - Write and solve equations that represent diagrams
  - Solve one-step equations
  - Solve two-step equations
  - Solve equations: word problems
  - Solve equations involving like terms
  - Solve equations: complete the solution
  - Does  $(x, y)$  satisfy the equation?
- **move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]**
  - Graph integers on horizontal and vertical number lines
  - Equivalent fractions
  - Write fractions in lowest terms
  - Convert between mixed numbers and improper fractions
  - Convert between decimals and fractions or mixed numbers
  - Identify equivalent ratios
  - Write an equivalent ratio
  - Write equations for proportional relationships from tables
  - Identify proportional relationships by graphing
  - Write equations for proportional relationships from graphs
  - Write and solve equations for proportional relationships
  - Convert between percents, fractions and decimals
  - Write and solve equations that represent diagrams
  - Write a two-variable equation
  - Identify the graph of an equation
  - Graph a two-variable equation
  - Write an equation from a graph using a table
  - Write a linear function



- **develop algebraic and graphical fluency, including understanding linear and simple quadratic functions**
  - Write a two-variable equation
  - Graph a two-variable equation
  - Write an equation from a graph using a table
  - Write a linear function
  - Identify linear and nonlinear functions
- **use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.**
  - Divisibility rules
  - Integer addition and subtraction rules
  - Integer multiplication and division rules
  - Identify terms and coefficients
  - Properties of addition and multiplication
  - Multiply using the distributive property
  - Solve equations using properties
  - Write equivalent expressions using properties
  - Identify and classify polygons
  - Name, measure and classify angles
  - Classify triangles
  - Identify trapeziums
  - Classify quadrilaterals
  - Lines, line segments and rays
  - Parallel, perpendicular and intersecting lines
  - Identify complementary, supplementary, vertical, adjacent and congruent angles
  - Parts of a circle
  - Bases of three-dimensional figures
  - Calculate mean, median, mode and range
  - Interpret charts to find mean, median, mode and range
  - Mean, median, mode and range: find the missing number
  - Changes in mean, median, mode and range
  - Identify representative, random and biased samples
  - Probability of simple events
  - Probability of opposite, mutually exclusive and overlapping events
  - Experimental probability
  - Make predictions
  - Compound events: find the number of outcomes
  - Counting principle
- **Reason mathematically**
  - **extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations**
    - Classify numbers
    - Integers on number lines

- Graph integers on horizontal and vertical number lines
  - Decimal number lines
  - Apply addition and subtraction rules
  - Apply multiplication and division rules
  - What percentage is illustrated?
  - Write inequalities from number lines
- **extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically**
- Understanding ratios
  - Identify equivalent ratios
  - Write an equivalent ratio
  - Equivalent ratios: word problems
  - Unit rates
  - Compare ratios: word problems
  - Scale drawings: word problems
  - Do the ratios form a proportion?
  - Do the ratios form a proportion: word problems
  - Solve proportions
  - Solve proportions: word problems
  - Estimate population size using proportions
  - Rate of change
  - Constant rate of change
  - Find the constant of proportionality from a table
  - Write equations for proportional relationships from tables
  - Identify proportional relationships by graphing
  - Write equations for proportional relationships from graphs
  - Interpret graphs of proportional relationships
  - Write and solve equations for proportional relationships
  - Compare and convert metric units
  - Metric mixed units
  - Convert between square metres and hectares
  - Convert square and cubic units of length
  - Convert between cubic metres and litres
  - Imperial mixed units
  - Convert between metric and imperial units
  - Side lengths and angle measures of similar figures
  - Similar figures and indirect measurement
- **identify variables and express relations between variables algebraically and graphically**
- Rate of change
  - Constant rate of change
  - Find the constant of proportionality from a table
  - Write equations for proportional relationships from tables
  - Write equations for proportional relationships from graphs
  - Write variable expressions
  - Identify independent and dependent variables

- Write a two-variable equation
- Identify the graph of an equation
- Graph a two-variable equation
- Write an equation from a graph using a table
- Write a linear function

**make and test conjectures about patterns and relationships; look for proofs or counter-examples**

○ **begin to reason deductively in geometry, number and algebra, including using geometrical constructions**

- Construct the midpoint or perpendicular bisector of a segment
- Construct an angle bisector
- Construct a congruent angle
- Construct a perpendicular line
- Construct parallel lines
- Construct an equilateral triangle or regular hexagon

○ **interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning**

- Add, subtract, multiply and divide decimals: word problems
- Add, subtract, multiply and divide fractions and mixed numbers: word problems

○ **explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally.**

- Identify representative, random and biased samples

● **Solve problems**

○ **develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems**

- Multi-step word problems
- Guess-and-check word problems
- Write variable expressions: word problems
- Solve equations: word problems

○ **develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics**

- Add, subtract, multiply and divide money amounts: word problems
- Price lists
- Unit prices
- Unit prices: find the total price
- Percent of a number: VAT, discount and more
- Find the percent: discount and mark-up
- Sale prices: find the original price
- Multi-step problems with percents
- Estimate tips
- Simple interest
- Compound interest



- Solve word problems involving two-variable equations
- Area and perimeter: word problems
- Circles: word problems
- Interpret charts to find mean, median, mode and range
- Probability of simple events
- Probability of opposite, mutually exclusive and overlapping events
- Experimental probability
- Make predictions
- Compound events: find the number of outcomes
- Counting principle
- **begin to model situations mathematically and express the results using a range of formal mathematical representations**
  - Write variable expressions for arithmetic sequences
  - Write variable expressions
  - Write variable expressions: word problems
  - Solve equations: word problems
  - Write a two-variable equation
  - Identify the graph of an equation
  - Graph a two-variable equation
  - Graph a line using gradient
  - Create line plots
  - Create bar graphs for categorical data
  - Create bar graphs for continuous data
  - Create frequency charts
  - Create line graphs
  - Choose the best type of graph
- **select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.**
  - HCF and LCM: word problems
  - Add, subtract, multiply and divide decimals: word problems
  - Maps with decimal distances
  - Add, subtract, multiply and divide fractions and mixed numbers: word problems
  - Estimate to solve word problems
  - Find the number of each type of coin
  - Elapsed time word problems

## Number

[www.kumonstudies.com](http://www.kumonstudies.com)

- **Understand and use place value for decimals, measures and integers of any size**
  - Precision
- **Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥**
  - Integers on number lines
  - Compare and order integers
  - Compare and order decimals

- Decimal number lines
- Compare and order fractions
- Compare fractions: word problems
- Compare mixed numbers and improper fractions
- Compare rational numbers
- Put rational numbers in order
- Write inequalities from number lines
- **Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property**
  - Prime or composite
  - Prime factorisation
  - Highest common factor
  - Lowest common multiple
  - HCF and LCM: word problems
  - Sort factors of expressions
- **Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative**
  - Add and subtract integers using counters
  - Add and subtract integers
  - Complete addition and subtraction sentences with integers
  - Multiply and divide integers
  - Complete multiplication and division sentences with integers
  - Evaluate numerical expressions involving integers
  - Add and subtract decimals
  - Multiply decimals
  - Divide decimals
  - Multiply and divide decimals by powers of ten
  - Evaluate numerical expressions involving decimals
  - Add and subtract fractions
  - Add and subtract mixed numbers
  - Multiply fractions and whole numbers
  - Multiply two fractions using models
  - Multiply fractions
  - Multiply three or more fractions and whole numbers
  - Divide whole numbers by unit fractions using models
  - Divide whole numbers and unit fractions
  - Divide fractions
  - Evaluate numerical expressions involving fractions
  - Add and subtract rational numbers
  - Apply addition and subtraction rules
  - Multiply and divide rational numbers
  - Apply multiplication and division rules

- **Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals**
  - Evaluate numerical expressions involving integers
  - Evaluate numerical expressions involving decimals
  - Evaluate numerical expressions involving fractions
  - Evaluate numerical expressions involving exponents
- **Recognise and use relationships between operations including inverse operations**
  - Multiplicative inverses
- **Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations**
  - Understanding exponents
  - Evaluate exponents
  - Solve equations with variable exponents
  - Exponents with negative bases
  - Exponents with decimal and fractional bases
  - Evaluate numerical expressions involving exponents
  - Square roots of perfect squares
  - Estimate square roots
- **Interpret and compare numbers in standard form  $A \times 10^n$   $1 \leq A < 10$ , where n is a positive or negative integer or zero**
  - Standard form
  - Compare numbers written in standard form
- **Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and  $\frac{7}{2}$  or 0.375 and  $3\frac{3}{8}$ )**
  - Convert between decimals and fractions or mixed numbers
  - Compare rational numbers
  - Put rational numbers in order
  - Add and subtract rational numbers
  - Multiply and divide rational numbers
- **Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%**
  - What percentage is illustrated?
  - Convert between percents, fractions and decimals
  - Compare percents to fractions and decimals
  - Estimate percents of numbers
  - Percents of numbers and money amounts
  - Percents of numbers: word problems
  - Solve percent equations
  - Solve percent equations: word problems

- **Interpret fractions and percentages as operators**
  - Percents of numbers and money amounts
  - Percents of numbers: word problems
- **Use standard units of mass, length, time, money and other measures, including with decimal quantities**
  - Add, subtract, multiply and divide money amounts: word problems
  - Price lists
  - Estimate metric measurements
  - Compare and convert metric units
  - Metric mixed units
  - Convert between square metres and hectares
  - Convert square and cubic units of length
  - Convert between cubic metres and litres
  - Imperial mixed units
  - Convert between metric and imperial units
- **Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]**
  - Round decimals
  - Round mixed numbers
  - Estimate metric measurements
  - Estimate imperial measurements
- **Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation  $a < x \leq b$** 
  - Estimate sums, differences and products of decimals
  - Estimate sums and differences of mixed numbers
  - Estimate products and quotients of fractions and mixed numbers
  - Estimate square roots
  - Estimate population size using proportions
  - Estimate percents of numbers
  - Estimate tips
  - Estimate to solve word problems
- **Use a calculator and other technologies to calculate results accurately and then interpret them appropriately**
- **Appreciate the infinite nature of the sets of integers, real and rational numbers.**

## Algebra

- **Use and interpret algebraic notation, including:**
  - **ab in place of  $a \times b$** 
    - Write variable expressions
  - **$3y$  in place of  $y + y + y$  and  $3 \times y$**

- Add and subtract like terms
  - **$a^2$  in place of  $a \times a$ ,  $a^3$  in place of  $a \times a \times a$ ;  $a^2b$  in place of  $a \times a \times b$** 
    - Understanding exponents
  - **$a/b$  in place of  $a \div b$** 
    - Multiply and divide integers
  - **coefficients written as fractions rather than as decimals**
  - **brackets**
    - Multiply using the distributive property
- **Substitute numerical values into formulae and expressions, including scientific formulae**
  - Evaluate variable expressions for number sequences
  - Evaluate linear expressions
  - Evaluate multi-variable expressions
  - Evaluate absolute value expressions
  - Evaluate nonlinear expressions
- **Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors**
  - Identify terms and coefficients
  - Sort factors of expressions
  - Factors of linear expressions
- **Simplify and manipulate algebraic expressions to maintain equivalence by:**
  - **collecting like terms**
    - Add and subtract like terms
    - Add, subtract and multiply linear expressions
    - Identify equivalent linear expressions
  - **multiplying a single term over a bracket**
    - Multiply using the distributive property
- **Understand and use standard mathematical formulae; rearrange formulae to change the subject**
  - Area between two shapes
- **Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs**
  - Write equations for proportional relationships from tables
  - Identify proportional relationships by graphing
  - Write equations for proportional relationships from graphs
  - Write and solve equations for proportional relationships
  - Follow directions on a coordinate plane
  - Write variable expressions for arithmetic sequences
  - Write variable expressions
  - Write variable expressions: word problems



- Write an equation from words
- Write and solve equations that represent diagrams
- Solve equations: word problems
- Solve word problems involving two-variable equations
- Interpret a graph: word problems
- Write an equation from a graph using a table
- Write a linear function
- **Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)**
  - Solve percent equations
  - Solve equations using properties
  - Model and solve equations using algebra tiles
  - Write and solve equations that represent diagrams
  - Solve one-step equations
  - Solve two-step equations
  - Solve equations: word problems
  - Solve equations involving like terms
  - Solve equations: complete the solution
- **Work with coordinates in all four quadrants**
  - Coordinate plane review
  - Quadrants and axes
  - Follow directions on a coordinate plane
  - Distance between two points
  - Graph triangles and quadrilaterals
- **Recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in  $x$  and  $y$  and the Cartesian plane**
  - Identify proportional relationships by graphing
  - Identify the graph of an equation
  - Graph a two-variable equation
  - Graph a line using gradient
- **Interpret mathematical relationships both algebraically and graphically**
  - Solve proportions
  - Solve proportions: word problems
  - Estimate population size using proportions
  - Rate of change
  - Constant rate of change
  - Find the constant of proportionality from a table
  - Identify proportional relationships by graphing
  - Write equations for proportional relationships from graphs
  - Identify proportional relationships
  - Write variable expressions for arithmetic sequences
  - Write and solve equations that represent diagrams
  - Solve word problems involving two-variable equations
  - Write a two-variable equation
  - Identify the graph of an equation
  - Graph a two-variable equation

- Interpret a graph: word problems
- Write an equation from a graph using a table
- Write a linear function
- Identify linear and nonlinear functions
- **Reduce a given linear equation in two variables to the standard form  $y = mx + c$ ; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically**
  - Find the gradient from a graph
  - Find the gradient from two points
  - Find the gradient from an equation
- **Use linear and quadratic graphs to estimate values of  $y$  for given values of  $x$  and vice versa and to find approximate solutions of simultaneous linear equations**
  - Interpret a graph: word problems
- **Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs**
  - Interpret a graph: word problems
- **Generate terms of a sequence from either a term-to-term or a position-to-term rule**
  - Arithmetic sequences
  - Geometric sequences
  - Evaluate variable expressions for number sequences
- **Recognise arithmetic sequences and find the  $n$ th term**
  - Identify arithmetic and geometric sequences
  - Arithmetic sequences
  - Evaluate variable expressions for number sequences
- **Recognise geometric sequences and appreciate other sequences that arise.**
  - Identify arithmetic and geometric sequences
  - Geometric sequences
  - Number sequences: mixed review
  - Number sequences: word problems

## Ratio, proportion and rates of change

- **Change freely between related standard units [for example time, length, area, volume/capacity, mass]**
  - Compare and convert metric units
  - Metric mixed units
  - Convert between square metres and hectares
  - Convert square and cubic units of length
  - Convert between cubic metres and litres
  - Imperial mixed units
  - Convert between metric and imperial units
- **Use scale factors, scale diagrams and maps**

- Maps with decimal distances
- Scale drawings: word problems
- **Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1**
  - Understanding fractions: word problems
- **Use ratio notation, including reduction to simplest form**
  - Understanding ratios
  - Identify equivalent ratios
  - Write an equivalent ratio
  - Equivalent ratios: word problems
- **Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio**
  - Understanding ratios
- **Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction**
- **Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions**
- **Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics**
  - Percents of numbers and money amounts
  - Percents of numbers: word problems
  - Solve percent equations
  - Solve percent equations: word problems
  - Percent of a number: VAT, discount and more
  - Find the percent: discount and mark-up
  - Sale prices: find the original price
  - Multi-step problems with percents
  - Estimate tips
  - Simple interest
- **Solve problems involving direct and inverse proportion, including graphical and algebraic representations**
  - Scale drawings: word problems
  - Solve proportions
  - Solve proportions: word problems
  - Estimate population size using proportions
  - Find the constant of proportionality from a table
  - Write equations for proportional relationships from tables
  - Identify proportional relationships by graphing
  - Write equations for proportional relationships from graphs
  - Interpret graphs of proportional relationships
  - Write and solve equations for proportional relationships
- **Use compound units such as speed, unit pricing and density to solve problems.**

- Unit rates
- Unit prices
- Unit prices: find the total price

## Geometry and measures

- **Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)**
  - Perimeter
  - Area of rectangles and parallelograms
  - Area of triangles and trapeziums
  - Area and perimeter: word problems
  - Volume
  - Surface area
- **Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes**
  - Circles: calculate area, circumference, radius and diameter
  - Circles: word problems
  - Semicircles: calculate area, perimeter, radius and diameter
  - Quarter circles: calculate area, perimeter and radius
  - Area of compound figures with triangles, semicircles and quarter circles
  - Area between two shapes
- **Draw and measure line segments and angles in geometric figures, including interpreting scale drawings**
  - Name, measure and classify angles
- **Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line**
  - Construct the midpoint or perpendicular bisector of a segment
  - Construct an angle bisector
  - Construct a perpendicular line
- **Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric**
  - Identify and classify polygons
  - Name, measure and classify angles
  - Graph triangles and quadrilaterals
  - Lines, line segments and rays
  - Parallel, perpendicular and intersecting lines
  - Symmetry
  - Construct a perpendicular line
  - Construct parallel lines

- Construct an equilateral triangle or regular hexagon
- **Use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles**
  - Name, measure and classify angles
- **Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies**
  - Classify triangles
  - Classify quadrilaterals
  - Find missing angles in triangles and quadrilaterals
  - Transversal of parallel lines
  - Parts of a circle
  - Side lengths and angle measures of similar figures
- **Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures**
  - Identify reflections, rotations and translations
  - Translations: graph the image
  - Translations: find the coordinates
  - Reflections: graph the image
  - Reflections: find the coordinates
  - Rotations: graph the image
  - Rotations: find the coordinates
- **Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles**
  - Identify complementary, supplementary, vertical, adjacent and congruent angles
  - Find measures of complementary, supplementary, vertical and adjacent angles
  - Transversal of parallel lines
- **Understand and use the relationship between parallel lines and alternate and corresponding angles**
  - Transversal of parallel lines
- **Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons**
  - Interior angles of polygons
- **Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs**
  - Find missing angles in triangles and quadrilaterals
  - Side lengths and angle measures of congruent figures
  - Side lengths and angle measures of similar figures
- **Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D**



- Nets of three-dimensional figures
- Front, side and top view
- Volume
- Surface area
- **Interpret mathematical relationships both algebraically and geometrically.**
  - Model and solve equations using algebra tiles
  - Find missing angles in triangles and quadrilaterals
  - Find measures of complementary, supplementary, vertical and adjacent angles
  - Side lengths and angle measures of congruent figures
  - Side lengths and angle measures of similar figures
  - Similar figures and indirect measurement
  - Area between two shapes
  - Perimeter, area and volume: changes in scale

## Probability

- **Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale**
  - Experimental probability
- **Understand that the probabilities of all possible outcomes sum to 1**
  - Probability of opposite, mutually exclusive and overlapping events
- **Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams**
  - Use Venn diagrams to solve problems
  - Compound events: find the number of outcomes
  - Counting principle
- **Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.**
  - Probability of simple events
  - Probability of opposite, mutually exclusive and overlapping events
  - Make predictions
  - Compound events: find the number of outcomes
  - Counting principle

## Statistics

- **Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)**
  - Calculate mean, median, mode and range
  - Interpret charts to find mean, median, mode and range

- Mean, median, mode and range: find the missing number
- Changes in mean, median, mode and range
- **Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data**
  - Interpret tables
  - Interpret line plots
  - Create line plots
  - Interpret stem-and-leaf plots
  - Interpret bar graphs for categorical data
  - Create bar graphs for categorical data
  - Interpret bar graphs for continuous data
  - Create bar graphs for continuous data
  - Create frequency charts
  - Interpret pie charts
  - Pie charts and central angles
  - Interpret line graphs
  - Create line graphs
  - Interpret box-and-whisker plots
  - Choose the best type of graph
- **Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.**
  - Scatter plots

## SCIENCE

1. Introduction to Science
2. Cells and Organisation
3. States of Matter
4. Atoms and the Periodic Table
5. Energy Changes and Transfers
6. Forces
7. Electricity and Magnetism
8. Space

## COMPUTING

### Programming Language

1. Python
2. Introduction to Python

### Algorithms

### Flowcharts and Pseudocode