MATHEMATICS

## What are the aims and intentions of this curriculum?

Students are taught how to work with numbers, algebra, ratio, proportions and rates of change, geometry and measures, probabilities and statistics. The skills attained in KS2 are consolidated mainly through visual arithmetic and concrete applications. At the end of each topic, a closing-the-gap-questionnaire in the form of a review sheet is required to be completed by the students. Homework is given on a weekly basis and is expected to be completed online. To provide students with a holistic experience, prepare them for future success, help them aspire and value mathematics, Personal Social Health and Economic (PSHE) education and Careers Education (CE) are incorporated into the curriculum

| Term | Topics | Knowledge and key terms | Skills developed | Assessment |
| :---: | :---: | :---: | :---: | :---: |
| Autumn 1 | Analysing and displaying data <br> Number skills | Data, Frequency, axis, Vertical, hypothesis, sample, survey <br> integer, factor, factorisation, divisor, simplify, cancelation, inverse, notation | Interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data, tables and line graphs for time series data and know their appropriate use. <br> CE: Research, business or annuities or market data analyst, data engineer, data quality analyst, statistician, fraud countering, insurance <br> Order positive and negative integers, decimals and fractions; apply the four operations, use the concepts and vocabulary of prime numbers, factors (divisors, multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, use positive integer powers and associated real roots. <br> CE: Auditor, data scientist, data analyst, economist, financial planner, accountant, market researcher, mathematician <br> PSHE: Analysing physical health and fitness data to promote regular exercise. | End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment |
| Autumn 2 | Expressions, functions and formulae. | Term, variable, coefficient, like term, expression, formulae, equation, function inequality, significant, interval, factor, expand scale | Use and interpret algebraic manipulation, substitute numerical values into formulae and expressions, understand and use the concepts and vocabulary of expressions, equations, formulae, terms and factors, simplify, collect like term and expanding products of two or more binomials <br> CE: Jeweler, air traffic controller, dietitian, teacher, nutritionist, broadcast technician, carpenter | End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment |


|  | Decimals and measures | Compare, magnitude, round, estimate, convert, capacity, metric and imperial, scales, place value, area, perimeter | Use standard units of mass, length, use scale factors, scale diagrams and maps, apply formulae to calculate: area of triangles, parallelograms, round number to appropriate degree of accuracy. <br> CE: Measurement technician, instrument supervisor, precision instrument technician/engineer <br> PSHE: Using substitution into formulae to evaluate BMI and raise awareness of healthy eating. |  |
| :---: | :---: | :---: | :---: | :---: |
| Spring 1 | Fractions <br> Probability | Quantity, Amount, Numerator, Denominator, <br> Theoretic, exhaustive and mutual, experimental, relative | Add and subtract decimal, multiply and divide decimals, interpret fractions and percentages as operators, express one quantity as a fraction interchangeably with terminating decimals, fraction, and percentage. <br> CE: Costumer service, cashier, manufacturing, assembler, warehouse worker <br> Relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 probability scale. Apply the property that the probabilities of an exhaustive set of outcomes sum to one; apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one. <br> CE: Actuary, biostatistician, brand optimisation analyst, business analyst, data analyst <br> PSHE: Use probability to develop an understanding of the negative effects of gambling, especially in the online context. | End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment |
| Spring 2 | Ratio and proportion <br> Lines and angles | Simplify, ratio, proportion, increase, decrease, fraction <br> Vertices, edges, planes, parallel line, perpendicular lines, polygons, symmetries, vertically opposite, alternate, corresponding angles, coordinates, quadrants, sequence, arithmetic | Express one quantity as a fraction of another, use ratio notation, divide a given quantity into two parts in a given part: part or part: whole ratio; apply ratio to real contexts and problems. <br> CE: Housekeeper, cashier, food and beverages line server, production, packer, cook, costumer service, pack line operator <br> Terms and notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, and polygons with reflection and/or rotation symmetries; apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; understand and use alternate and corresponding angles on parallel lines; derive and apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language. <br> CE: Construction, teacher, interior designer, CAD engineer, plumber <br> PSHE: Use proportion to evaluate the trustworthiness of information. | End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment |

## Sequences and

 graphs
## Transformations

Term, sequence, arithmetic, geometric quadrant

Congruence, scale factor, center of rotation and enlargement, image, object; clock and anticlock wise, mirror line

Work with coordinates in all four quadrants; plot graphs of equations that correspond to straight-line graphs in the coordinate plane; generate terms of a sequence from either a term-to-term or a position-to-term rule; recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions.

## CE: Food services, barista, housekeeper, utilities worker, librarian, assembly, cook

 machine operatorUse the basic congruence criteria for triangles (SSS, SAS, ASA, RHS) and construct them; rotation, reflection, translation and enlargement of shapes.

## CE: Construction worker, teacher, interior designer, CAD engineer, plumber, animator

PSHE: During end of year examination preparation, maintaining good health by getting enough sleep is promoted to improve concentration and overall wellbeing during times of intense examinations.

End of topic review Homework Bookmarking Classroom feedback End of year formal assessment

