**Curriculum Content Map**

**Year group: 7**

**Subject: Maths**

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|  | **Term 1** | | | | | | **Term 2** | | | | **Term 3** | | | | | |
| Month | **September** | **October** | | **November** | **December** | | **January** | **February** | | **March** | **April** | | **May** | **June** | | **July** |
| Virtue | **Friendliness & Civility** | **Justice & Truthfulness** | | **Courage** | **Generosity** | | **Gratitude** | **Good Speech** | | **Good Temper & Humour** | **Self-Mastery** | | | **Compassion** | | **Good Sense** |
| Skill | **Listening** | **Leadership** | | **Problem-Solving** | **Creativity** | | **Staying Positive** | **Speaking** | | **Staying Positive** | **Aiming High** | | | **Speaking** | | **Teamwork** |
| Curriculum Content | Analysing & Displaying Data  DATA | Number Skills  NUMBER | | Expressions, Functions & Formulae  ALGEBRA | | | Decimals & Measures  NUMBER SHAPE | Fractions & Percentages  NUMBER | | Probability  DATA | Ratio & Proportion  RATIO | | Lines and Angles  SHAPE | Sequences & Graphs  ALGEBRA | | Transformations  SHAPE |
| National Curriculum area | “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)” | “order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥”  “use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative”  “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” | | “use and interpret algebraic notation, including:  ab in place of a × b  3y in place of y + y + y and 3 × y a² in place of a × a, a³ in place of a × a × a  a²b in place of a × a × b  b/a in place of a ÷ b  coefficients written as fractions rather than as decimals  brackets”  “substitute numerical values into formulae and expressions, including scientific formulae”  “understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors”  “simplify and manipulate algebraic expressions to maintain equivalence by:  collecting like terms multiplying a single term over a bracket  taking out common factors  expanding products of two or more binomials”  “understand and use standard mathematical formulae; rearrange formulae to change the subject” | | | “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)”  “calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes”  “change freely between related standard units [for example time, length, area, volume /capacity, mass]”  “use scale factors, scale diagrams and maps” | “use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative”  “interpret fractions and percentages as operators” | | “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”  “ understand that the probabilities of all possible outcomes sum to 1” | “solve problems involving direct and inverse proportion, including graphical and algebraic representations”  “express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1”  “use ratio notation, including reduction to simplest form”  “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”  “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” | | “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”  “apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles” | “work with coordinates in all four quadrants”  “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”  “generate terms of a sequence from either a term-to-term or a position-to-term rule”  “recognise arithmetic sequences and find the nth term”  “recognise geometric sequences and appreciate other sequences that arise” | | “identify properties of, and describe the results of, translations, rotations and reflections applied to given figures”  “identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids” |
| Link to Virtue | Students will be conducting a project about the ‘average’ student and will need to demonstrate friendliness in working together and also in the data they collect | Students will look at justice of minimum wage and calculating salary | | Students will need courage to tackle algebra skills properly for the first time. | Students will be generous with their time to help each other with work | | Students will be designing a bedroom plan and will be practicing gratitude for the space in the room and for the material things they have | Students will have a lot of opportunity for discussion of fractions and percentages understanding as well as presenting their own explanations of methods | | Students will look at the differences of humour and temper in dealing with probability linked to gambling addiction | Students will be mastering a new skill that they have not really seen at KS2. They will learn to master their learning through techniques for double-checking | | Students will master the skills they developed at KS2 and use this to move them forward | Students will need to have compassion for each other as they help with drawing graphs | | Students will use good sense to decide which symmetrical brick-paving pattern is best. Students will also use good sense to decide how the shape changes based on the transformation being used |
| Link to Skill | Students will need to listen to each other when collecting data for their project | Students will demonstrate leadership through leading on carousel tasks | | Students will look at using their problem-solving skills to look at algebra linked to shape knowledge | Students will be creative in learning algebraic language to write their own expressions | | Students will need to stay positive as they tackle metric conversions to remember what measurements converts and whether it is multiply or divide | Students will have a lot of opportunity for discussion of fractions and percentages understanding as well as presenting their own explanations of methods | | Students will need to stay positive during a lesson requiring problem solving and teamwork. Students will also need to stay positive during the experimental probability investigation if they make a mistake | Students will aim high as they tackle a skill they have not seen before. They will be pushed to learn new techniques and skills | | Students will aim high in constructions lessons as they learn new skills | Students will have many opportunities for discussion about sequences and terms of a sequence | | Students will use teamwork during their brick-paving activity. They will also use teamwork to tackle the obstacle course in the rotation lesson. |
| Image result for skills iconSequencing | Builds from KS2:  Tally Charts  Bar Charts | Builds from KS2:  Number Skills – Four Operations  Negative Numbers (Add / Subtract)  Types of Numbers | | Builds from KS2:  Function Machines | | | Builds from KS2:  Measurement  Reading Scales  Decimals (Four Operations)  Perimeter  Area of Rectangle | Builds from KS2:  Comparing Fractions  Simplifying Fractions  Adding & Subtracting Fraction (same denominator)  Converting Fractions, Decimals and Percentages | | Builds from KS2:  Probability Scales  Probability Language | Builds from KS2:  Understanding of proportion (through fractions) | | Builds from KS2:  Types of Angles  Draw & Measure Angles  Angle Rules (line, point, triangle) | Builds from KS2:  Term-to-term rule  Co-ordinates in four quadrants | | Builds from KS2:  Symmetry  Reflection (using a mirror) |
| Further develops in Y8:  Frequency Tables  Two-Way Tables | Further develops in Y8:  Negative Numbers (Four Operations)  Prime Factors  HCF & LCM using Venn | | Further to develops in Y8:  Factorising Linear Expressions  Solving Equations | | | Further develops in Y8:  Area of 2D shapes  Volume of Cuboids  Surface Area of Cuboids  Converting volume and capacity measurements | Further develops in Y8:  Multiplying & Dividing Fractions  Percentage Increase and Decrease – Calculator and Non-Calculator Methods | | Further develops in Y8:  Use of venn diagrams (HCF & LCM)  Further develops in Y9:  Mutually Exclusive Events  Sample Space Diagrams  Two-Way Tables  Venn Diagrams | Further develops in Y8:  Ratio & Decimals  Ratio Problem Solving | | Further develops in Y8:  Parallel Line Rules  Angles in Polygons  Exterior & Interior Angles | Further develops in Y8:  Gradient  Equations of lines  Investigating y=mx+c  Real-Life Graphs | | Further develops in Y9:  Enlargement from a point, with fractional and negative scale factors |
| Retrieval C:\Users\meltynegate\Pictures\icons for booklet\cloud.png | Averages from a list  Tally Charts  Basic Bar Charts | Four Operations (using written methods)  BIDMAS  Ordering Negatives  Add / Subtract Negatives  Types of Number | | Function Machines | | | Reading Scales  Decimals (Four Operations) | Comparing Fractions  Simplifying Fractions  Adding & Subtracting Fraction (same denominator)  Converting Fractions, Decimals and Percentages | | Probability Scales  Probability Language | Understanding proportion | | Types of Angles  Draw & Measure Angles  Angles on a Line  Angles around a point  Angles in a triangle | Term-to-term rule  Co-ordinates in four quadrants | | Symmetry  Basic Reflection |
| New Learning C:\Users\meltynegate\Pictures\icons for booklet\steps.png | Grouped Data  Modal Class  Comparing Data using Averages  Line Graphs  Dual & Compound Bar Charts | Rounding to 1 significant figure  Estimation  HCF & LCM | | Simplifying Expressions  Expanding Single Brackets  Writing Expressions  Substitution  Writing Formulae | | | Rounding to decimal places  Metric Conversions  Scale Drawing  Area & Perimeter of Compound Shapes (rectangles)  Metric vs. Imperial measurements | Converting mixed numbers and improper fractions  Adding & Subtracting Fractions Different Denominator  Fractions of Amounts  Percentages of Amounts | | Calculating Probability  Probability of something ‘not’ happening  Experimental Probability  Expected Outcomes | Direct Proportion / Unitary Method  Writing & Simplifying a Ratio  Using a Ratio  Sharing in a Ratio  Ratio & Fractions  Proportion & Percentages | | Constructing Triangles (SAS, ASA, SSS)  Angles in special triangles  Angles in quadrilaterals | Pattern sequences  Position-to-term rule (Nth Term)  Midpoints  Linear Graphs | | Congruency  Enlargement  Rotational Symmetry  Reflection on a grid  Rotation  Translation |
| Independent Practice | Average Student Project – Collecting Data, Analysing Data and Presenting Data | Functional Skills tasks in this topic:  Understanding Number  Money / Salary  Time / Time Difference | | Functional Skills task linked to using formulae for calculating alcohol percentages | | | Functional Skills tasks in this topic:  Scale Drawing a bedroom plan  Area of Flooring in house | Various activities to focus and practice their fraction skills, build their confidence and resilience and, ultimately, strengthen their knowledge | | Probability Murder Mystery requiring teamwork and problem solving.  Experimental probability investigation | Functional Skills task on map reading focusing on the relationship between scale and ratio in maps | | Constructing a picture of a rocket using all construction techniques | Various activities to ensure students are confident and skilled at drawing linear graphs | | Functional Skills task linked to symmetry through brick-paving |
| Misconceptions |  |  | |  | | |  |  | |  |  | |  |  | |  |
| Vocabulary and Comprehension | Average  Data  Grouped Data  Range  Trend  Compound | Significant  Round  Estimate  Common  Factor  Multiple | | Simplify  Expand  Expression  Equation  Substitute  Formulae | | | Metric  Imperial  Scale  Compound | Improper  Fraction  ‘of’ in terms of maths  Percentage | | Probability  Certain  Impossible  Experimental  Theoretical | Proportion  Unitary  Ratio  Share | | Construct  Compass  Quadrilateral  Isosceles | Sequence  Pattern  Midpoint  Linear  Co-Ordinate | | Congruent  Enlarge  Reflect  Rotate  Translate  Symmetry |
| C:\Users\meltynegate\Pictures\icons for booklet\glasses.pngLiteracy | Reading Link attached to each lesson.  In the murder mystery, students will need to read and interpret instructions carefully  Looking at data about reading in other countries (International Literacy Day – 8th Sept) | Reading Link attached to each lesson.  Understanding and interpreting information in functional skills tasks | | Reading Link attached to each lesson.  Understanding and interpreting information in functional skills tasks | | | Reading Link attached to each lesson.  Understanding and interpreting information in functional skills tasks | Reading Link attached to each lesson.  Worded questions related to fractions and percentages | | Reading Link attached to each lesson.  In the murder mystery, students will need to read and interpret instructions carefully | Reading Link attached to each lesson.  Understanding and interpreting information in functional skills tasks | | Reading Link attached to each lesson.  Reading all information for hints and tips to start problem-solving tasks | Reading Link attached to each lesson. | | Reading Link attached to each lesson.  Understanding and interpreting information in functional skills task |
| Image result for numeracy iconNumeracy | Averages  Data | Basic Arithmetic Skills  Estimation | | Negative number skills  Algebraic literacy | | | Divide and Multiply by 10, 100, 1000  Rounding  Multiplication | Common multiples  Fractions of and percentages of amounts | | Scales | Unitary Method  Ratio  Proportion | | Angle Rules | Co-ordinates  Term-to-term rule | | Scale factors |
| Oracy | Presenting analysis from Average Student Project |  | |  | | | Presenting bedroom plan and justifying decisions |  | |  |  | |  | Specific activities to include discussion about sequences and term-to-term rules | |  |
| Careers |  |  | |  | \*\*\*\*\* | |  |  | |  | Map Reading – Careers in Navigation / Orienteering | |  |  | | Brick Paving – Careers in Construction |
| Super Curricular Links | 8th Sept – International Literacy Day – Data linked to reading ages | 4th – 10th – World Space Week – the importance of Maths in Science  13th – World Sight Day – how you use written methods of maths without sight | | 30th November – Computer Security Day – linked to algorithms and formulae | | | 16th – 30th January – Big Schools Garden Watch – linked to scale drawings of garden space | National LGBT History Month – linked to fractions of and percentages of as we can look at data  20th – 26th February – Student Volunteering Week – some sort of mentoring of students (possibly KS2?) | | 7th March – World Maths Day – linked to all topics  9th – 18th March – National Science & Engineering Week – links to probability of something working and prototypes | 2nd April – International Children’s Book Day – linked to ratio and sharing books from library | | Local and Community History Month – looking at the constructions of important historical buildings in the local area | 1st – 7th June – Volunteers Week – looking at pattern of increase in number of volunteers over the course of the week  The above could also be used for recycling weeks during 18th – 24th June and 20th – 26th June | | 7th – 14th July – National Transplant Week – raising awareness of transplants by looking at the transformations needed to ensure organs fit in the body |
| British values  and SMSC | Mutual Respect  Social  Moral  Cultural | Democracy  Social  Moral | | Individual Liberty  Social  Moral | | | Rule of Law  Social  Cultural | Tolerance  Social  Moral  Cultural | | Individual Liberty  Social  Moral | Democracy  Social  Cultural | | Mutual Respect  Social  Cultural | Rule of Law  Social  Moral  Cultural | | Tolerance  Social  Moral  Cultural |
| Summative assessment |  | |  | | |  | | |  | | |  | | |  | |
| Scaffolding for LA | Modelled Examples given to students.  Scales given when plotting / drawing graphs. | Modelled Examples given to students. | | Modelled Examples given to students.  Use of addition / subtraction pyramids when learning to simplify expressions initially  Filling in missing numbers in examples to get started | | | Modelled Examples given to students.  Image of how to convert metric measurements | Modelled Examples given to students.  Fraction wall for students if helpful | | Modelled Examples given to students.  Table already drawn to record investigation data. | Modelled Examples given to students. | | Modelled Examples given to students.  Assistance with use of equipment. Some examples to trace given first. | Modelled Examples given to students.  Scaffolded worksheet to allow students to find the y-values in the table of values | | Modelled Examples given to students.  Scaffolded worksheets without a graph first, then introduction of the graph later |
| Challenge for HA  ✰ | HA students to follow use Depth Book for extension and challenge tasks | HA students to follow use Depth Book for extension and challenge tasks | | HA students to follow use Depth Book for extension and challenge tasks | HA students to follow use Depth Book for extension and challenge tasks | | HA students to follow use Depth Book for extension and challenge tasks | HA students to follow use Depth Book for extension and challenge tasks | | HA students to follow use Depth Book for extension and challenge tasks | HA students to follow use Depth Book for extension and challenge tasks | | HA students to follow use Depth Book for extension and challenge tasks | HA students to follow use Depth Book for extension and challenge tasks | | HA students to follow use Depth Book for extension and challenge tasks |