MATHEMATICS   Key Stage 3 Mastery Curriculum - Year 7

Number

Skill	Emerging	Developing	Secure	Mastered
Addition and subtraction	Mental strategies Number bonds Money +/- Measurement	Place value Add/subtract whole numbers Perimeter	Add/subtract decimals Estimation Word	Different number systems Upper/lower bounds
Multiply and divide	Mental strategies Multiplication facts Written method for multiplying Multiply by 10, 100, 1000	Column method for long multiplication Short division Area of simple shapes Divide by 10, 100, 1000	Factors & Multiples LCM, HCF Prime, Square and Triangle numbers Calculate the mean Multiply by 0.1, 0.01, 0.001	Long multiplication with decimals Long division without remainders Divide by 0.1, 0.01, 0.001

Algebra

Skill	Emerging	Developing	Secure	Mastered
Applications of algebra	Use formulae for area of simple shapes Number patterns	Use algebraic notation	Use BIDMAS correctly Substitute into expressions Solve word problems with expressions Find term to term rule	Expressions with negatives and fractions Inequality expressions Formulate and evaluate expressions Linear equations (inc word probs) Sequences n^{th} term
Graphs and equations	Plot co-ordinates in positive quadrant	Plot co-ordinates in all four quadrants	Read and choose scales Draw linear graph from information given	Use table of values to find co-ordinates from equation. Sequences and linear graphs Real life graphs (distance-time etc)

Fractions, Proportion and rates of change

Skill	Emerging	Developing	Secure	Mastered
Fractions	Equal parts Factors and multiples Tenths and hundredths	Word problems Fractional areas Equivalent fractions	Compare and order fractions and decimals Convert between mixed numbers and improper fractions	Fraction of a quantity Multiply and divide fractions Add and subtract fractions
Percentages	Equal parts of a hundred Know half, quarter, tenth as percentages	Convert between decimals and percentages	Convert between fractions and percentages Percentage of a quantity	Find the whole given value of a percentage
Proportional Reasoning	Bar modelling with fractions	Rounding whole numbers FDP equivalence	Bar modelling with equations Compare quantities as ratios	Rounding – decimal places, significant figures Estimation Split quantities into given ratios

Geometry

Skill	Emerging	Developing	Secure	Mastered
Geometry basics	Units and measures Work with angles Names of shapes	Parallel and perpendicular Use ruler accurately to draw and measure lines	Draw, measure and name acute, obtuse and reflex angles Use angle facts to find unknown angles Know the properties of triangles and quadrilaterals	Bearings Constuct SAS, SSS traingles Convert between metric measures Areas of parallelogram and trapeziums
3-D Geometry		Names of 3-D shapes	Symmetry Transformation (reflection)	Area and circumference of a circle Visualise and identify 3-D shapes & nets Volume of cuboid, prism, cylinder, composite solids

Probability

Skill	Emerging	Developing	Secure	Mastered
Probability	Equal chance problems	Language of probability Probability line List outcomes	Use FDP to describe probabilities Use numbers on probability line Sample space	Relative frequency Mutually exclusive Sum of probabilities = 1 P(not x) = 1 − P(x)

Statistics

Skill	Emerging	Developing	Secure	Mastered
Statistical diagrams	Bar charts Tally charts Pictograms	Interpret pie charts	Construct pie charts Venn Diagrams Two way tables	Interpret and compare statistical representations Scatter graphs
Averages and measure of spread	Understand the concept of an average	Calculate the mean Identify mode	Calculate median and range Collect and organise data	Outliers Discrete and continuous data

Number

Skill	Emerging	Developing	Secure	Mastered
Addition and subtraction	Place value Add/subtract whole numbers Perimeter	Add/subtract decimals Estimation Word	Different number systems Upper/lower bounds	Add and subtract negative numbers
Multiply and divide	Column method for long multiplication Short division Area of simple shapes Divide by 10, 100, 1000	Factors & Multiples LCM, HCF Prime, Square and Triangle numbers Calculate the mean Multiply by 0.1, 0.01, 0.001	Long multiplication with decimals Long division without remainders Divide by 0.1, 0.01, 0.001	Mean from grouped frequency tables Area and circumference of circles Multiply and divide negative numbers

Algebra

Skill	Emerging	Developing	Secure	Mastered
Applications of algebra	Use algebraic notation	Use BIDMAS correctly Substitute into expressions Solve word problems with expressions Find term to term rule	Expressions with negatives and fractions Inequality expressions Formulate and evaluate expressions Linear equations (inc word probs) Sequences n^{th} term	Arithmetic and geometric sequences Algebraic manipulation Rearranging formulae Expansion and Factorisation
Graphs and equations	Plot co-ordinates in all four quadrants	Read and choose scales Draw linear graph from information given	Use table of values to find co-ordinates from equation. Sequences and linear graphs Real life graphs (distance-time etc)	Use gradient and intercept to draw straight line graph

Fractions, Proportion and rates of change

Skill	Emerging	Developing	Secure	Mastered
Fractions	Word problems Fractional areas Equivalent fractions	Compare and order fractions and decimals Convert between mixed numbers and improper fractions	Fraction of a quantity Multiply and divide fractions Add and subtract fractions	Terminating and recurring decimals
Percentages	Convert between decimals and percentages	Convert between fractions and percentages Percentage of a quantity	Find the whole given value of a percentage	Reverse percentages
Proportional Reasoning	Rounding whole numbers FDP equivalence	Bar modelling with equations Compare quantities as ratios	Rounding – decimal places, significant figures Estimation Split quantities into given ratios	Direct and Inverse proportion Percentage increase and decrease Standard form

Geometry

Skill	Emerging	Developing	Secure	Mastered
Geometry basics	Parallel and perpendicular Use ruler accurately to draw and measure lines	Draw, measure and name acute, obtuse and reflex angles Use angle facts to find unknown angles Know the properties of triangles and quadrilaterals	Bearings Constuct SAS, SSS traingles Convert between metric measures Areas of parallelogram and trapeziums	Angles in parallel and intersecting lines Convert between metric and imperial units Similarity and congruence Areas of compound shapes
3-D Geometry	Names of 3-D shapes	Symmetry Transformation (reflection)	Area and circumference of a circle Visualise and identify 3-D shapes & nets Volume of cuboid, prism, cylinder, composite solids	Pythagoras theorem Transformations (rotations,translation) Simple angle proofs Plans and elevations

Probability

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Probability	Language of probability Probability line List outcomes	Use FDP to describe probabilities Use numbers on probability line Sample space	Relative frequency Mutually exclusive Sum of probabilities = 1 P(not x) = 1 – P(x)	Tree diagrams Use two way table to find probabilities

Statistics

Skill	Emerging	Developing	Secure	Mastered
Statistical diagrams	Interpret pie charts	Construct pie charts Venn Diagrams Two way tables	Interpret and compare statistical representations Scatter graphs	Stem and leaf diagrams
Averages and measure of spread	Calculate the mean Identify mode	Calculate median and range Collect and organise data	Outliers Discrete and continuous data	Compare two data sets Mean of grouped data

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