Maths Key Stage 3

Curriculum Overview

Year 7	Week 1								Week 39
	Number	**FDP**	**Ratio and proportion**	**Algebraic Manipulation**	**Equations**	**Angles**	**Area and Perimeter**	**Graphs**	**Data**
Key content (know that…Know how…)	Calculations Types of number Negative numbers Decimals Types of number and indices Decimals and rounding Powers and roots	Compare Fractions Manipulation Calculation with fractions Percentages Compare fractions Calculations with fractions Percentages Calculations with fractions percentages	Proportion Ratio Proportion Ratio Proportion Ratio	Expressions Formula Sequences Expressions Formula Sequences Expressions Formula Sequences	Equations Equations Inequalities Equations Inequalities	Drawing and measuring angles Properties of shapes Angle properties Properties of shapes Parallel lines Polygons Angle Problems/ equations	Area and perimeter Area and perimeter 3D solids Proportion Ratio Area and perimeter 3D solids	Linear Graphs Real life graphs Linear Graphs Real life graphs Linear Graphs Real life graphs	Charts and tables Averages and range Charts and tables Averages and range Charts and tables Averages and range
Prior Knowledge	Calculate mentally Order numbers Carry out written calculations effectively Find factors and multiples Add, subtract, multiply and divide integers	Write percentages as a fraction with a denominator of 100 Write a percentage as a decimal Describe simple parts of a shape using fractions.	Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Collect together items that are alike Add and subtract directed numbers Represent symbol or images as numbers Write expressions	Carry out calculations using the 4 operations Find the inverse of a simple function Use function machines to find inputs and outputs.	Know angles are measured in degrees Identify basic angle facts on a line and at a point Use a protractor. Name angles. Estimate angles.	Identify 3D shapes Solve time problems Know units of measure Estimate capacity and area Calculate simple perimeters and areas.	Draw and label axes accurately Read numbers along a number line Read and interpret information from tables Plot and describe co-ordinates in all four quadrants.	Read information from tables and graphs Add and divide numbers Draw and label an axis accurately To read information from To draw simple charts

using a suitable written method. Multiply and divide integers by multiples of 10, 100, 1000. Use estimation to check an answer to a multiplication Divide numbers that give decimal answers Use inverse operations to check answers. Use the priority of operations including powers. Know and use the priority of operations, including brackets. Recognise prime numbers. Recognise square numbers.	Compare simple fractions Change an improper fraction to a mixed number. Identify equivalent fractions. Simplify fractions Work with equivalent fractions and decimals. Add and subtract fractions with the same denominator. Calculate simple fractions of quantities. Write one quantity as a fraction of another. Convert simple fractions to percentages Calculate simple	Use direct proportion in simple contexts Use unitary method of proportion Use percentages to compare simple proportions. Use and interpret ratio notation. Simplify simple ratios. Use direct proportion in simple contexts and solve simple problems. Use the unitary method to solve simple word problems involving direct proportion. Reduce a ratio to its simplest form Find equivalent ratios.	from word descriptions. Simplify algebraic expressions Expand single brackets (S5, G2) Use and write function machines. Substitute positive integers into simple formulae written in words and written in letters. Find patterns and rules in sequences Write and use complex expressions Expand single brackets Simplify expressions Factorise simple expressions.	Write and solve one-step equations. Solve two-step equations. Solve multi-step equations Form and solve equations. Solve equations involving brackets Describe what an inequality represents using words. Find integer values which satisfy an inequality. Represent simple inequalities on a number line.	Use angle notation Draw triangles using SAS and SAA Identify properties of triangles. Identify lines of and rotational symmetry Identify a shapes rotational symmetry. Recall angles facts that include basic shapes and lines. Identify properties of shapes and name a shape from its properties. Classify quadrilaterals by their geometric properties.	Work out the perimeters of shapes and polygons. Find the area of shapes. Understand units for length and area Calculate the area of 2D shapes Convert between metric and imperial units. Sketch nets of 3D solids Draw 3D solids. Calculate the volume and surface area of cubes and cuboids. .	Find the midpoint of a line segment. Plot and interpret basic real-life conversion graphs. Generate and plot coordinates from a rule Recognise, name, and plot straight line Plot straight line graphs using a table of values. Substitute positive and negative numbers into equations Draw, interpret and use, graphs	Find simple averages Draw and read from charts and tables. Calculate the mode, median and mean of a set of data Calculate the range

		Order positive and negative numbers. Calculate with negative numbers. Order decimals. Multiply and divide decimals by multiples of 10, 100 and 1000. Add, subtract, multiply and divide decimals Calculate with money. Round decimals	percentages (multiples of 10 and 5) Order fractions by converting them to decimals or equivalent fractions. Add and subtract fractions with different denominators. Multiply fractions. Calculate fractions of quantities. Convert between fractions, decimals, and percentages. Calculate percentages of amounts. Express one quantity as a percentage of another.	Divide a quantity into two parts in a given ratio.	Write simple formulae in words and using letter symbols. Find the value of an unknown in a formula where the unknown is not the subject. Find the nth term Generate terms of a sequence Continue and describe special sequences.					

KS3 National Curriculum Links	Developing fluency, reasoning mathematically and solve problems features across all units. Document number 4 - 21								
	22 – 30 34 - 37	22 25 – 27, 30- 34 56 59 60 61	54 – 60 62, 63	38 – 43 51 - 53	24- 28 32 38 - 44	66 - 70 72 - 79	64- 70	45 - 4879	84 - 86
Assessments	Assessment 1	Assessment 2	Assessment 3	Assessment 4	Assessment 5	Assessment 6	Assessment 7	Assessment 8	Assessment 9

Year 8	Week 1							Week 39

	Number	**FDP**	**Ratio and proportion**	**Algebraic Manipulation**	**Equations**	**Angles**	**Area and Perimeter**	**Graphs**
Key content (know that…Know how…)	Negative numbers Decimals Types of number and indices Decimals and rounding Powers and roots Indices Estimation Standard Form	Compare fractions Calculations with fractions Percentages Calculations with fractions Percentages Percentages	Proportion Ratio Proportion Ratio Proportion Ratio Compound measures	Sequences Expressions Formula Sequences Expressions Formula Sequences Expressions Formula Sequences	Equations Inequalities Equations Inequalities Equations Inequalities	Angle properties Properties of shapes Parallel lines Polygons Angle Problems/ equations Polygons Pythagoras Congruence and similarity	Area and perimeter 3D solids Proportion Ratio Area and perimeter 3D solids Area and perimeter 3D solids	Linear Graphs Real life graphs Linear Graphs Real life graphs Linear Graphs Non linear
Prior Knowledge	Add, subtract, multiply and divide integers using a suitable written method. Multiply and divide integers by multiples of 10, 100, 1000. Use estimation to check an answer to a multiplication	Describe simple parts of a shape using fractions. Compare simple fractions Change an improper fraction to a mixed number. Identify equivalent fractions. Simplify fractions	Use direct proportion in simple contexts Use unitary method of proportion Use percentages to compare simple proportions. Use and interpret ratio notation. Simplify simple ratios.	Write expressions from word descriptions. Simplify algebraic expressions Expand single brackets (S5, G2) Use and write function machines. Substitute positive integers into simple formulae written	Find the inverse of a simple function Use function machines to find inputs and outputs. Write and solve one-step equations. Solve two-step equations.	Use a protractor. Name angles. Estimate angles. Use angle notation Draw triangles using SAS and SAA Identify properties of triangles. Identify lines of and rotational symmetry	Work out the perimeters of shapes and polygons. Find the area of shapes. Understand units for length and area Calculate the area of 2D shapes Convert between metric and imperial units.	Plot and describe co-ordinates in all four quadrants. Find the midpoint of a line segment. Plot and interpret basic real-life conversion graphs. Generate and plot coordinates from a rule

	Divide numbers that give decimal answers Use inverse operations to check answers. Use the priority of operations including powers. Know and use the priority of operations, including brackets. Recognise prime numbers. Recognise square numbers. Order positive and negative numbers. Calculate with negative numbers. Order decimals. Multiply and divide decimals by multiples of 10, 100 and 1000. Add, subtract, multiply and divide decimals	Work with equivalent fractions and decimals. Add and subtract fractions with the same denominator. Calculate simple fractions of quantities. Write one quantity as a fraction of another. Convert simple fractions to percentages Calculate simple percentages (multiples of 10 and 5) Order fractions by converting them to decimals or equivalent fractions. Add and subtract fractions with different denominators. Multiply fractions.	Use direct proportion in simple contexts and solve simple problems. Use the unitary method to solve simple word problems involving direct proportion. Reduce a ratio to its simplest form Find equivalent ratios. Divide a quantity into two parts in a given ratio. Draw and interpret direct proportion graphs from a context. Use percentages to describe proportions. Find best buys Understand and use the relationship between percentages, ratio and proportion(	in words and written in letters. Find patterns and rules in sequences Write and use complex expressions Expand single brackets Simplify expressions Factorise simple expressions. Write simple formulae in words and using letter symbols. Find the value of an unknown in a formula where the unknown is not the subject. Find the nth term Generate terms of a sequence Continue and describe special sequences. Simplify algebraic powers (index	Solve multi-step equations Form and solve equations. Solve equations involving brackets Describe what an inequality represents using words. Find integer values which satisfy an inequality. Represent simple inequalities on a number line. Solve multi-step equations with unknowns on both sides, including fractions. Form and solve more complex equations based on written and/or geometrical information. Solve linear inequalities and represent solutions on a number line. (S8, G4)	Identify a shapes rotational symmetry. Recall angles facts that include basic shapes and lines. Identify properties of shapes and name a shape from its properties. Classify quadrilaterals by their geometric properties. Recognise, apply angle facts and solve problems involving parallel and intersecting lines Understand proofs of angle facts Calculate the sum and size of the interior and exterior angles of a polygon Solve geometrical problems showing reasoning – including all angle rules.	Sketch nets of 3D solids Draw 3D solids. Calculate the volume and surface area of cubes and cuboids. Calculate the area and perimeter of semi /quarter circles and sectors of a circle. Solve problems involving circles where answers are given as an exact value Calculate and solve problems involving the surface area and volume of prisms.	Recognise, name, and plot straight line Plot straight line graphs using a table of values. Substitute positive and negative numbers into equations Draw, interpret and use, graphs Plot the graphs of linear functions. Work out the gradient of a straight line. Write the equations of straight-line graphs in the form y = mx + c. Plot and interpret distance-time graphs.

	Calculate with money. Round decimals Add, subtract, multiply and divide any decimals Use related calculations. Round numbers to a given number to an appropriate degree of accuracy. Apply decimal arithmetic to other areas of mathematics. Estimate square roots Write a number as a product of its prime factors. Use prime factor decomposition to find the HCF and LCM – including the use of Venn diagrams.	Calculate fractions of quantities. Convert between fractions, decimals, and percentages. Calculate percentages of amounts. Express one quantity as a percentage of another. Add, subtract multiply and divide mixed numbers and fractions Apply fraction arithmetic to other areas of mathematics. Work out an amount increased or decreased by a percentage using multipliers. Apply percentage increase/decrease to other areas of mathematics.	Divide a quantity in a given ratio. Share a quantity into a ratio when the difference or one share is given. Use ratios involving decimals. Write ratios in the form n:1 and 1:n Solve ratio and proportion problems within the context of percentages and fractions. Apply ratio to other areas of mathematics.	laws), including more complex versions Expand and simplify quadratics In more complex cases, change the subject of the formula Solve more complex problems involving the nth term Recognise, continue, and generate quadratic sequences.			Solve problems involving angles by forming and solving equations. (S8, G4)		

KS3 National Curriculum Links	Developing fluency, reasoning mathematically and solve problems features across all units. Document number 4 - 21							
	22 – 30 34 - 37	22 25 – 27, 30- 34 56 59 60 61	54 – 60 62, 63	38 – 43 51 - 53	24- 28 32 38 - 44	66 - 70 72 - 79	64- 70	45 – 48 79
Assessments	Assessment 1	Assessment 2	Assessment 3	Assessment 4	Assessment 5	Assessment 6	Assessment 7	Assessment 8

	Number	FDP	Ratio and proportion	Algebraic Manipulation	Equations	Angles	Area and Perimeter	Graphs
Key content (know that…Know how…)	Decimals and rounding Powers and roots Indices Estimation Standard Form **Indices** **Standard Form**	Calculations with fractions Percentages Percentages Fractions and Decimals Algebraic fractions	Proportion Ratio Proportion Ratio Compound measures Proportion Ratio Compound measures	Expressions Formula Sequences Expressions Formula Sequences Expressions Formula Sequences	Equations Inequalities Equations Inequalities Equations Inequalities	Parallel lines Polygons Angle Problems/ equations Polygons Pythagoras Congruence and similarity Trigonometry	Area and perimeter 3D solids Area and perimeter 3D solids Area and perimeter 3D solids Bounds	Linear Graphs Real life graphs Linear Graphs Non linear Linear Graphs Non linear
Prior Knowledge	Order positive and negative numbers. Calculate with negative numbers. Order decimals. Multiply and divide decimals by multiples of 10, 100 and 1000. Add, subtract, multiply and divide decimals	Order fractions by converting them to decimals or equivalent fractions. Add and subtract fractions with different denominators. Multiply fractions. Calculate fractions of quantities.	Use direct proportion in simple contexts and solve simple problems. Use the unitary method to solve simple word problems involving direct proportion. Reduce a ratio to its simplest form Find equivalent ratios.	Write simple formulae in words and using letter symbols. Find the value of an unknown in a formula where the unknown is not the subject. Find the nth term Generate terms of a sequence Continue and describe special sequences.	Solve two-step equations. Solve multi-step equations Form and solve equations. Solve equations involving brackets Describe what an inequality represents using words. Find integer values which satisfy an inequality.	Recall angles facts that include basic shapes and lines. Identify properties of shapes and name a shape from its properties. Classify quadrilaterals by their geometric properties. Recognise, apply angle facts and solve problems involving parallel and intersecting	Calculate the area of 2D shapes Convert between metric and imperial units. Sketch nets of 3D solids Draw 3D solids. Calculate the volume and surface area of cubes and cuboids. Calculate the area and perimeter of	. Generate and plot coordinates from a rule Recognise, name, and plot straight line Plot straight line graphs using a table of values. Substitute positive and negative numbers into equations Draw, interpret and use, graphs

	Calculate with money. Round decimals Add, subtract, multiply and divide any decimals Use related calculations. Round numbers to a given number to an appropriate degree of accuracy. Apply decimal arithmetic to other areas of mathematics. Estimate square roots Write a number as a product of its prime factors. Use prime factor decomposition to find the HCF and LCM – including the use of Venn diagrams. To use fractional and negative indices.	Convert between fractions, decimals, and percentages. Calculate percentages of amounts. Express one quantity as a percentage of another. Add, subtract multiply and divide mixed numbers and fractions Apply fraction arithmetic to other areas of mathematics. Work out an amount increased or decreased by a percentage using multipliers. Apply percentage increase/decrease to other areas of mathematics. Convert a recurring decimal to a fraction. Complete calculations involving recurring decimals.	Divide a quantity into two parts in a given ratio. Draw and interpret direct proportion graphs from a context. Use percentages to describe proportions. Find best buys Understand and use the relationship between percentages, ratio and proportion(Divide a quantity in a given ratio. Share a quantity into a ratio when the difference or one share is given. Use ratios involving decimals. Write ratios in the form n:1 and 1:n Solve ratio and proportion problems within the context of	Simplify algebraic powers (index laws), including more complex versions Expand and simplify quadratics In more complex cases, change the subject of the formula Solve more complex problems involving the nth term Recognise, continue, and generate quadratic sequences. Expand triple brackets. Factorise quadratic expressions into double brackets Factorise expressions involving the difference of two squares. Factorise quadratic	Represent simple inequalities on a number line. Solve multi-step equations with unknowns on both sides, including fractions. Form and solve more complex equations based on written and/or geometrical information. Solve linear inequalities and represent solutions on a number line. Solve two linear simultaneous equations algebraically, where neither or one equation needs multiplying Solve complex linear equations with unknowns on both sides, including those with fractional coefficients and fractions on both sides.	lines Understand proofs of angle facts Calculate the sum and size of the interior and exterior angles of a polygon Solve geometrical problems showing reasoning – including all angle rules. Solve problems involving angles by forming and solving equations. Use conventions for naming the sides of a right-angled triangle. Use the tangent ratio to work out an unknown side of a right-angled triangle. Use the sine ratio to work out an unknown side of a right-angled triangle. Use the cosine ratio to work out an unknown side of a right-angled triangle.	semi /quarter circles and sectors of a circle. Solve problems involving circles where answers are given as an exact value Calculate and solve problems involving the surface area and volume of prisms. To be able to work backwards to find the radius when given find the area of a sector or arc length. To be able to calculate the surface area and volume of a spheres and cones. Find the lower and upper bounds for a measurement. Calculate percentage error intervals.	Plot the graphs of linear functions. Work out the gradient of a straight line. Write the equations of straight-line graphs in the form y = mx + c. Plot and interpret distance-time graphs. Find the equations of straight line when given two points or when given one point and the gradient. Interpret more complex co-ordinate problems involving parallel and perpendicular lines Plot more complex quadratic graphs and use these to find solutions (including linear

	Solve complex problems involving indices,

Multiply and divide numbers in standard form.
Add and subtract numbers in standard form.
Solve problems and apply standard form to other areas of mathematics | Add and subtract algebraic fractions
Simplify algebraic fractions. | percentages and fractions.
Apply ratio to other areas of mathematics.

Use algebra to solve problems involving direct or inverse proportion.
Solve problems involving direct/inversely proportional to the square or cube.
Recognise and interpret proportion graphs
Apply proportion reasoning to other areas of mathematics.

Sub divide ratios into different parts or fractions
Calculate a new amount after a ratio change.

Interpret compound measures problems | expressions with a coefficient of x2 > 1

Change the subject of a formula including where the subject is on both sides

Find the nth term of a quadratic sequence.
To be able to solve problems using geometric sequences | Solve quadratic equations by factorising.
Solve quadratic equations using the quadratic formula

Represent simple inequalities graphically. | Use the trigonometric ratios to work out an unknown angle in a right-angled triangle.
Begin to investigate exact trigonometric values. (
 Use trigonometry to find missing lengths and angles in cubes and cuboids | Use bounds in area, perimeter, and volume problems. | and quadratic simultaneous equations).
To be able to draw graphs of cubic and reciprocal functions
To be able to recognise a graph from its shape
To be able to solve equations using quadratic graphs
 To be able to draw the graph of a circle with centre (0,0) |

		involving more complex units o)						

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