



Unit:	Lesson Sequence			
<p>Number, Percentages & Area/Volume</p>	<p>Equations, Inequalities and Formulae</p> <ol style="list-style-type: none"> Solve equations and inequalities Solve equations and inequalities with brackets Inequalities with negative numbers (E) Solve equations and inequalities with unknowns on both sides Solve problems with equations and inequalities Substitute into formulae and equations Change the subject of a formula (one-step) Change the subject of a formula (two-step) Change the subject of complex formula (E) 	<p>Fractions</p> <ol style="list-style-type: none"> Add and subtract fractions Multiply and divide fractions Fraction of an amount 	<p>Rates</p> <ol style="list-style-type: none"> Speed, distance and time Distance-time graphs Flow problems and their graphs Rates of change and their units Convert compound units (E) 	<p>Standard Form</p> <ol style="list-style-type: none"> Numbers in standard form Compare and order numbers in standard form Multiply and divide numbers in standard form Add and subtract numbers in standard form
<p>Knowledge & Skills development</p>	<p>Fluency:</p> <ul style="list-style-type: none"> Solve linear equations with one variable Solve simple quadratic equations Rearrange simple algebraic expressions and equations Simplify and solve equations involving fractions or decimals. Solve simple linear inequalities 	<p>Fluency</p> <ul style="list-style-type: none"> Perform operations with fractions quickly and accurately, including addition, subtraction, multiplication, and division Simplify fractions and convert between improper fractions and mixed numbers Convert fractions to decimals and percentages and vice versa <p>Reasoning</p>	<p>Fluency</p> <ul style="list-style-type: none"> Calculate rates quickly and accurately, such as speed, density, or unit prices Convert between different units to express rates correctly (e.g., km/h to m/s) Understand and work with compound rates, like cost per unit time or distance per unit fuel <p>Reasoning</p>	<p>Fluency</p> <ul style="list-style-type: none"> Convert numbers to and from standard form quickly and accurately Perform arithmetic operations (addition, subtraction, multiplication, division) with numbers in standard form Understand and use powers of ten confidently <p>Reasoning</p>

	<ul style="list-style-type: none"> • Solve and graph inequalities on a number line. • Express inequalities algebraically and find solutions. • Substitute values into given formulas for area of a circle). • Rearrange simple formulae. <p>Reasoning:</p> <ul style="list-style-type: none"> • Deduce the steps to solve an equation logically. • Justify why certain values of variables satisfy or do not satisfy an equation. • Recognize equivalent forms of an equation and explain how to simplify or manipulate them. • Explain the meaning of an inequality in terms of a solution set. • Use the properties of inequalities (e.g., multiplying/dividing by a negative number reverses the inequality). • Interpret and justify why a solution is valid for a given inequality. • Explain the role of a formula in solving real-world problems (e.g., using a speed-time-distance formula). • Justify how to rearrange a formula based on the context of the problem. 	<ul style="list-style-type: none"> • Explain why certain operations with fractions work, such as finding a common denominator for addition or multiplication of numerators and denominators • Compare and order fractions by reasoning about their size and equivalence • Understand and justify how fractions represent parts of a whole or ratios between quantities <p>Problem-Solving</p> <ul style="list-style-type: none"> • Apply fractions to solve real-life problems involving portions, ratios, and scaling recipes or measurements • Tackle multi-step problems that require combining fractions with other operations or concepts, like percentages or ratios • Use reasoning to estimate and check the reasonableness of answers involving fractions • Interpret word problems and translate them into fraction operations to find solutions 	<ul style="list-style-type: none"> • Explain the relationship between quantities in a rate and how changing one affects the other • Compare different rates to determine which is more efficient or cost-effective • Use proportional reasoning to interpret and solve rate problems <p>Problem-Solving</p> <ul style="list-style-type: none"> • Apply rates to real-life situations such as travel time, work done, or pricing • Solve multi-step problems involving combined or varying rates • Use rates in conjunction with other concepts like ratios, percentages, or algebra to tackle complex problems • Check the plausibility of answers by reasoning about units and magnitude 	<ul style="list-style-type: none"> • Explain why standard form is useful for expressing very large or very small numbers • Interpret the meaning of the exponent and how it affects the size of the number • Use estimation to check whether answers in standard form are reasonable <p>Problem-Solving</p> <ul style="list-style-type: none"> • Apply standard form to solve real-world problems involving very large or very small quantities, such as in science and engineering • Combine standard form with other mathematical concepts, like multiplication of measurements or scientific calculations • Handle multi-step problems that require converting between standard form and ordinary numbers • Use logical reasoning to simplify expressions and solve equations involving numbers in standard form
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- Identify the conditions under which a formula is valid or when it needs adjustment
- Problem-Solving:**
- Solve multi-step equations that require simplification, factorization, or
 - Apply equations to real-life situations, such as solving for unknown values in word problems.
 - Use systems of equations to solve problems with multiple variables (e.g., solving simultaneous equations).
 - Solve word problems involving inequalities (e.g., finding ranges of values that satisfy a condition).
 - Interpret graphical solutions to inequalities.
 - Apply inequalities in contexts such as budgeting, comparisons, and optimization
 - Apply formulae to solve real-life problems (e.g., calculating area, volume, speed, or financial formulas).
 - Solve problems where multiple formulae are required (e.g., combining area and perimeter formulas).
 - Use given formulae to model problems in various contexts (e.g., physics, economics, geometry).

Assessment / Feedback Opportunities	Formative Assessment Assessment for learning is integrated throughout each small step with suggested questions, activities and checks for understanding that are adapted for the setting.		Summative assessment Summative assessment includes end of block assessments and mark schemes as well as interleaved end of term assessments and mark schemes.	
Key Vocabulary	Variable, constant, coefficient, term, expression, equation, identity, formula, inequality, solve, substitute, rearrange, inverse operation, isolate, less than (<), greater than (>), less than or equal to (\leq), greater than or equal to (\geq), not equal to (\neq),	Fraction, numerator, denominator, proper fraction, improper fraction, mixed number, equivalent fractions, simplify, common denominator, lowest common denominator, highest common factor (HCF), lowest common multiple (LCM), convert, reciprocal,	Rate, ratio, unit rate, speed, distance, time, density, mass, volume, pressure, proportion, direct proportion, inverse proportion, per, units, conversion, currency exchange, scale, scale factor, simplify ratio, compare ratios, gradient, constant rate, variable rate	Standard form, index, power, base, coefficient, exponent, multiply, divide, scientific notation, significant figures, decimal point, large number, small number, positive power, negative power, convert
Personal Development (Including British Values, RSE, Citizenship)	Lessons on speed, distance and time and distance-time graphs can be linked to PSHE NC H31, by encouraging students to assess personal safety in travel scenarios—such as walking home at night or planning routes—using time and distance calculations to evaluate and reduce risk. Working with standard form can be connected to understanding large-scale data such as the reach of social media or the spread of misinformation (PSHE NC L24, L26), supporting students in evaluating digital content critically.			
Career Opportunities	<p>Equations, Inequalities and Formulae, Fractions, Rates, and Standard Form are deeply connected to a wide variety of careers that rely on analytical thinking and precise calculations. In fields like engineering, physics, and computer science, equations and formulae are used to model real-world systems, develop algorithms, and solve technical problems. Engineers rely on these concepts to design systems and predict how different variables will interact under specific conditions. Scientists use equations and inequalities to express relationships between physical quantities and to test hypotheses.</p> <p>Fractions are vital in careers such as pharmacy, culinary arts, construction, and finance. Pharmacists use fractions to calculate correct drug dosages based on patient weight or age. Chefs use them for scaling recipes, and construction workers apply them when measuring and cutting materials to size. In finance, fractions are used in investment calculations, interest rates, and share prices.</p> <p>Rates are essential in professions like transportation, logistics, and health sciences. These roles often involve calculating speed, fuel consumption, productivity, or growth rates. Economists and data analysts also use rates to compare changes over time, such as inflation or population growth.</p> <p>Standard form, or scientific notation, is especially important in scientific and technical careers. Physicists, chemists, and astronomers use it to handle extremely large or small numbers, such as the mass of atoms or distances between stars. It also plays a role in computer science and any field dealing with data that spans many orders of magnitude.</p>			