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|------------------------------------|--|--|----|---|----|-----|
| NAME | | TEACHER | | | | |
| My GCSE Target Grade is | | End of Cycle Teacher Assessment Please circle | | | | |
| | | SAE | AE | E | BE | SBE |
| End of unit assessment type | | Your end of topic assessment will be a written exam. | | | | |

YEAR 7 CYCLE 1: ANALYSING DATA & NUMBER SKILLS

| Knowledge | | Prior knowledge | End of topic |
|--|---|-----------------|--------------|
| 7 to 9 | Two Way Tables - I can use two way tables and complete to find missing values | | |
| | Pie Charts - I can draw and interpret pie charts | | |
| | Scatter Graphs - I can use graph paper and draw scatter graphs, describe the correlation and use a line of best fit to estimate values | | |
| | Factors, Multiples & Primes – I can find the factor pairs of any whole number and the HCF and LCM of two numbers | | |
| | Squares & Cubes – I can calculate using squares & square roots, cubes & cube roots and use index notation | | |
| Estimation – I can estimate answers to complex calculations and solve worded problems | | | |
| 6 | Mode, Median and Range - I can find the mode, median and range of a set of data and compare two sets of data | | |
| | Displaying Data - I can draw grouped bar charts, line charts and construct frequency tables | | |
| | Analysing Data – I can find the mode and modal class from a set of data and a chart | | |
| | Mental Maths – I can use the laws of BIDMAS and multiply and divide by 10, 100 and 1000 | | |
| | Multiplying & Dividing – I can multiply and divide numbers using a written method and check answers using the inverse operation | | |
| Factors, Multiples & Primes – I can use multiples, factors and primes | | | |
| 5 | Grouped Data - I can draw and interpret pictograms, tally charts, frequency tables | | |
| | Displaying Data - I can draw a line graph, dual bar chart and compound bar chart | | |
| | Calculating – I can add and subtract double digit numbers and work backwards | | |
| | Multiplying & Dividing – I can multiply and divide numbers and recognise square numbers | | |
| | Positive & Negative Numbers – I can use simple negative numbers and continue a sequence | | |

LEARNING TOOLS

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|----------------------|--|--|-------------------------------------|--------------------------------|
| KEY CONCEPTS | Averages | To find the median, we must first put the data set in order and then _____. | | |
| | Analysing Data | We use different ways of displaying data to make comparisons between sets of data and we use averages to help support this | | |
| KEY QUESTIONS | A bar chart must have _____ spacing between the bars | How do you identify the mode? | What is the range of a set of data? | Describe a significant figure: |
| | | | | |
| KEY EQUATION | | Mean = Total of all values / number of values | | |

YEAR 7 CYCLE 1: ANALYSING DATA & NUMBER SKILLS

| | Skills | Prior knowledge | End of topic |
|---------------------------------|---|-----------------|--------------|
| 7 to 9 Delta | S1 – understand the properties of populations or distributions from a sample, while knowing the limitations of sampling | | |
| | S3 - construct and interpret diagrams for grouped discrete data and continuous data | | |
| | S5 - apply statistics to describe a population | | |
| | S6 - use and interpret scatter graphs; recognise correlation; draw estimated lines of best fit; make predictions | | |
| | N7 - calculate with roots, and with integer indices | | |
| 6 Theta | N1 - order positive and negative integers; use the symbols =, ≠, <, >, ≤, ≥ | | |
| | N2 - apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative; understand and use place value | | |
| | N3 - recognise and use relationships between operations, including inverse operations (e.g. cancellation to simplify calculations and expressions); use conventional notation for priority of operations, including brackets, powers, roots and reciprocals | | |
| | N4 - use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation theorem | | |
| | N6 - use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5; estimate powers and roots of any given positive number | | |
| | N14 - estimate answers; check calculations using approximation and estimation, including answers obtained using technology | | |
| | N15 - round numbers and measures to an appropriate degree of accuracy (e.g. to a specified number of decimal places or significant figures) | | |
| 5 Pi | S2 - interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pictograms for categorical data | | |
| | S4 - interpret, analyse and compare the distributions of data sets | | |

EVERYBODY READS... IN MATHS!

| KEY WORDS | Cube Number | Prime Factor | Correlation | 360° | Frequency |
|----------------------|---|--|---|------|-----------|
| PROBLEM OF THE CYCLE | $A + B + C = X$ and $A \times B \times C = X$ If A, B and C are positive whole numbers, how is this possible? | | | | |
| PRE-LEARNING | 5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> • Video 37: Compare Negative Numbers • Video 99: Square Numbers • Video 28: Prime Numbers • Video 426: Pictograms | 6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> • Video 425: Bar Charts and Vertical Graphs • Video 24: Order of Operations I | 7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> • Video 46: Ordering Decimals • Video 56: Rounding Decimals | | |
| CAREERS | <ul style="list-style-type: none"> • Fractions/Decimals/Percentages: These are useful in careers involving finance (e.g. accountants will often use FDP to calculate profit and loss). Retail workers will often use fractions and percentages in sales to work out new prices of items. Chefs/bakers may use them to work out how many quantities will be needed for different numbers of people. • Displaying/Analysing Data: In careers using finance, people will often display data in bar charts, line graphs etc. to see how, for examples, sales have increased/decreased over time. Psychologists make use of data analysis to assess the difference between two groups of participants in an experiment. • Negative Numbers: Careers linked to weather (e.g. climatologist) will use negative numbers to assess differences in temperatures over a period of time. | | | | |

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YEAR 7 CYCLE 2: EQUATIONS, EXPRESSION, FUNCTIONS & FORMULAE

| | Knowledge | Prior knowledge | End of topic |
|---------------|--|-----------------|--------------|
| 7 to 9 | Forming Expressions – I can form expressions from word descriptions and by using addition, subtraction, multiplication and division | | |
| | Substitution – I can substitute into more complex formulae (with fractions and powers) including those written in words | | |
| | Formulae – I can derive formulae from a description and use to solve problems | | |
| | Expressions & Brackets – I can expand expressions involving more than one bracket | | |
| | Factorisation – I can factorise an algebraic expression | | |
| | Fractions 2 – I can multiply and divide fractions including mixed and improper | | |
| 6 | Expressions & Brackets – I can use arithmetic operations with algebra and expand brackets with numbers and letters | | |
| | Substitution – I can substitute positive numbers into formulae written in words and letters | | |
| | Formulae – I can identify variables, formulae and functions and use letter symbols | | |
| | Fractions – I can convert between mixed / improper fractions and add and subtract fractions | | |
| | Decimals – I can round decimals to the nearest whole number and one decimal place and use to make estimates | | |
| | Decimal calculations - I can add, subtract, multiply and divide decimals | | |
| 5 | Functions – I can find outputs of simple functions using a function machine or written in words and use symbols to replace numbers | | |
| | Expressions – I can simplify simple algebraic expressions by collecting like terms | | |
| | Forming Expressions – I can form expressions from word descriptions and by using addition, subtraction and multiplication | | |
| | Formulae – I can write simple formulae using words and letter symbols | | |
| | Graphs – I can read information from real life graphs | | |
| | Co-ordinates – I can identify and plot co-ordinates on an axis with 4 quadrants | | |

LEARNING TOOLS

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|----------------------|------------------------------------|--|-----------------------------------|-----------------------------------|--|
| KEY CONCEPTS | Substitution | To substitute into formula, you replace each variable with a value | | | |
| | Expanding & Factorising | Expanding brackets enables us to write an expression in a different form; factorising is the reverse of this process | | | |
| KEY QUESTIONS | What is an axis? | What is the reverse of expanding? | Write an improper fraction below: | Give an example of an expression: | |
| KEY EQUATION | | Brackets, Indices, Division, Multiplication, Addition, Subtraction | | | |

YEAR 7 CYCLE 2: EQUATIONS, EXPRESSION, FUNCTIONS & FORMULAE

| | Skills | Prior Knowledge | End of topic |
|---------------------------------|--|-----------------|--------------|
| 7 to 9 Delta | N3 – I can recognise and use relationships between operations, including inverse operations and be able to use BIDMAS | | |
| | N4 – I can use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation | | |
| | N6 – I can use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5; estimate powers and roots of any given positive number | | |
| | N8 – I can calculate exactly with fractions, surds and multiples of π | | |
| | R3 – I can express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1 | | |
| 6 Theta | A1 – I can use and interpret algebraic manipulation | | |
| | A2 – I can substitute numerical values into formulae and expressions | | |
| | A3 – I can understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors | | |
| | A4 – I can simplify and manipulate algebraic expressions | | |
| | N1 – I can order positive and negative integers, decimals and fractions; use the symbols =, \neq , $<$, $>$, \leq , \geq | | |
| | N2 – I can apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative | | |
| 5 Pi | A6 – I know the difference between an equation and an identity | | |
| | A8 – I can work with coordinates in all four quadrants | | |
| | A9 – I can plot graphs of equations that correspond to straight-line graphs in the coordinate plane | | |

EVERYBODY READS... IN MATHS!

| KEY WORDS | Expression | Substitute | Co-ordinate | Multiple | Factorise |
|----------------------|---|--|--|----------|-----------|
| PROBLEM OF THE CYCLE | $5x$ $x + 5$ x^2 Which is bigger? | | | | |
| PRE-LEARNING | 5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> Video 156: Collecting Like Terms (1) Video 894: Interpreting Real-Life Graphs | 6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> Video 160: Expand a Single Bracket Video 780: Substitution (1) Video 56: Rounding Decimals | 7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> Video 780: Substitution (1) Video 160: Expand a Single Bracket Video 168: Factorising Simple Expressions Video 68: Multiplying Fractions | | |
| CAREERS | <ul style="list-style-type: none"> Graphs: Careers which involve finance will typically use graphs (e.g. stockbrokers will use graphs to identify trends in sales). Substitution: Researchers will often substitute values into given formulae, e.g. to work out the difference in given scores between two groups. Area and Perimeter: In conservation, farmers will often use area/perimeter to work out how much fencing they will need to build an enclosure. | | | | |

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YEAR 7 CYCLE 3: NUMBER SKILLS / PROBABILITY / ANGLES

| Knowledge | | Prior knowledge | End of topic |
|-----------------------|---|-----------------|--------------|
| 7 to 9 | Experimental Probability – I can estimate probability based & record data and make conclusions based on the results of an experiment | | |
| | Angles – I can work out unknown angles when two or more lines meet or cross at a point and work out unknown angles involving parallel lines | | |
| | Triangles – I can use properties of a triangle to work out unknown angles including special triangles (equilateral, isosceles) | | |
| | Quadrilaterals – I can describe the properties of quadrilaterals and solve angle problems involving quadrilaterals | | |
| | Polygons – I can work out the interior and exterior angles of a polygon | | |
| 6 | Fractions 2 - I can write one number as a fraction of another and convert between fractions and decimals | | |
| | Percentages - I understand percentage as ‘the number of parts per 100’ and work with equivalent percentages, fractions and decimals | | |
| | Percentages of Amounts – I can calculate a percentage of an amount and express one number as a percentage of another | | |
| | Probability calculations – I can calculate probability the probability of an event happening or not happening | | |
| 5 | Multiples – I can recognise multiples of 2,5,10,25 and work out multiples | | |
| | Calculating – I can multiply and divide 3-digit numbers by a single digit and solve problems involving multiplication and division | | |
| | Factors & Primes – I can find factors of numbers up to 100 and identify prime numbers using prime factor decomposition to find the HCF and LCM | | |
| | Fractions 1 - I can simplify, compare and order fractions & work with equivalent fractions | | |
| | Probability – I can use the language of probability and use the scale from 0 to 1 | | |

LEARNING TOOLS

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|-----------------------|--------------------|---|---|---|--|
| KEY CONCEPTS | Probability | The chance of an event happening and the same event not happening always adds up to 1 | | | |
| | Percentages | A percentage is ‘the number of parts per 100’ – this is a useful fact when converting between percentages and fractions | | | |
| KEY QUESTIONS? | What is a polygon? | What is the best way to order fractions? | What is the difference between a multiple and a factor? | What is a prime factor tree useful for identifying? | What information do we need to know about triangles? |
| KEY EQUATION | | Exterior Angle of a Polygon = $360 / n$ (When n is the number of sides) | | | |

YEAR 7 CYCLE 3: NUMBER SKILLS / PROBABILITY / ANGLES

| | Skills | Prior Knowledge | End of topic |
|---------------------|---|-----------------|--------------|
| 7 to 9 Delta | G3 - 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 use the sum of angles in a triangle | | |
| | G4 - apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles | | |
| | G6 - apply angle facts, triangle congruence and properties of quadrilaterals and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs | | |
| 6 Theta | N8 - calculate exactly with fractions | | |
| | N10 - work interchangeably with decimals and their corresponding fractions | | |
| | N11 - identify and work with fractions in ratio problems | | |
| | N12 - interpret fractions and percentages | | |
| | R3 - express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1 | | |
| | P3 - use appropriate language and the 0-1 probability scale | | |
| 5 Pi | P4 - understand that the probabilities of an exhaustive set of outcomes sum to one; and that the probabilities of an exhaustive set of mutually exclusive events sum to one | | |
| | N2 - apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative | | |
| | N3 - recognise and use relationships between operations, including inverse operations and be able to use BIDMAS | | |
| | N4 - use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation | | |

EVERYBODY READS... IN MATHS!

| KEY WORDS | Exterior | Percent | Multiple | Factor | Polygon |
|----------------------|---|---|---|--------|---------|
| PROBLEM OF THE CYCLE | Even x Odd = Even Can this ever be true? | | | | |
| PRE-LEARNING | 5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> Video 27: Factors of a Number Video 33: Multiples of a Number Video 28: Prime Numbers Video 705: Metric and Imperial Conversions | 6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> Video 59: Generate Equivalent Fractions Video 84: Finding Percentages of Amount (1) Video 351: Probability of Single Events (1) | 7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> Video 73: Convert Fractions to Decimals Video 812: Angles Around a Point (1) Video 485: Angles in a Triangle (1) Video 560: Interior Angles in Quadrilaterals | | |
| CAREERS | <ul style="list-style-type: none"> Calculating with Money: Many jobs in finance will involve working with money making this a useful skill to learn, e.g. accountants calculate money when preparing financial statements. Percentage of Amount: Biologists, for example, will use this when calculating for instance, the mass change during osmosis. Probability: Statisticians will use this, for example, to calculate how likely it is that a certain amount of the population will contract a specific disease. | | | | |

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YEAR 7 CYCLE 4: ALGEBRA / RATIO & PROPORTION / ANGLES

| Knowledge | | Prior knowledge | End of topic |
|-----------------------|--|-----------------|--------------|
| 7 to 9 | Solving Equations – I can write and solve simple equations involving one or two steps | | |
| | Forming Equations – I can form equations from angles / shape problems and solve | | |
| | Solving Equations 2 – I can solve equations with brackets | | |
| | Solving Equations 3 – I can solve equations with unknowns on both sides | | |
| | Solving Equations 4 – I can solve equations involving x^2 and x^3 | | |
| | Equations and Shapes – Use equations to solve geometrical problems | | |
| | Equations and Word problems – Use equations to solve real-life problems | | |
| 6 | Direct Proportion - I can use direct proportion in simple contexts and solving problems and use the unitary method to solve word problems | | |
| | Ratio - I can use ratio notation and simplify a ratio (including 3 part ratios) | | |
| | Using Ratios – I can divide a quantity into two parts in a ratio given in numbers and words and apply this to worded problems | | |
| | Proportion & Fractions - I can use fractions to describe and compare proportions | | |
| | Proportion & Percentages - I can use percentages to describe and compare simple proportions | | |
| 5 | Measuring Angles – I can recognise acute, obtuse and reflex angles and measure them | | |
| | Drawing & Estimating Angles – I can estimate and draw acute, obtuse and reflex angles | | |
| | Putting Angles Together – Find missing angles on a straight line. | | |
| | Putting Angles Together 2 – Find missing angles around a point | | |
| | Metric – I can order metric measurements and convert between different units of measure | | |

| LEARNING TOOLS | | | | | |
|----------------------|---|---------|---|----------|------------|
| KEY QUESTIONS | What is a fraction? Can you give examples? | | Where would you see percentages in real life? | | |
| KEY EQUATIONS | 0.5 = $\frac{1}{2}$ = 50% | | 1metre = 100cm = 1000mm | | |
| KEY WORDS | Unitary | Percent | Imperial | Interest | Estimation |
| PROBLEM OF THE CYCLE | Which two-digit whole number increases by 20% when you switch its digits? | | | | |

YEAR 7 CYCLE 4: RATIO & PROPORTION / DECIMALS

| | | Skills | Prior knowledge | End of topic |
|---------------------------------|---|--|---|--------------|
| 7 to 9 Delta | N3 - recognise and use relationships between operations, including inverse operations and be able to use BIDMAS | | | |
| | N4 - use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples | | | |
| | N6 - use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5; estimate powers and roots of any given positive number | | | |
| | N12 - interpret fractions and percentages as operators | | | |
| | N14 - estimate answers; check calculations using approximation and estimation | | | |
| | R9 - interpret percentages and percentage changes as a fraction or a decimal; express one quantity as a percentage of another; compare two quantities using percentages; work with percentages greater than 100%; solve problems involving percentage change, including percentage increase/decrease and original value problems, and simple interest including in financial mathematics | | | |
| 6 Theta | R3 - express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1 | | | |
| | R4 - use ratio notation, including reduction to simplest form | | | |
| | R5 - divide a given quantity into two parts in a given <u>part:part</u> or <u>part:whole</u> ratio; express the division of a quantity into two parts as a ratio; apply ratio to real contexts and problems | | | |
| 5 Pi | N13 - use standard units of mass, length, time, money and other measures using decimal quantities where appropriate | | | |
| | N15 - round numbers and measures to an appropriate degree of accuracy (e.g. to a specified number of decimal places or significant figures) | | | |
| | G14 - use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.) | | | |
| PRE-LEARNING | 7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> • 176: Forming Equations • 177: Solving Equations Using Inverse Operations | 6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> • 328: Compare Quantities Using Ratios • 330: Write ratios as fractions/proportions | 5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> • 455: Types of Angles • 691: Metric Units of Measure | |
| CAREERS | <ul style="list-style-type: none"> • Drawing/measuring angles: In engineering, surveying and architecture, protractors are regularly used. • Solving linear equations: When running a business, people will regularly use linear equations, e.g. to make purchases. In financial analysis professions, e.g. accountancy, people often use linear equations to balance accounts. • Ratios/Fractions/Percentages: In the catering industry, for example, chefs/bakers may use these to work out the quantity of ingredients when cooking/baking. | | | |

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YEAR 7 CYCLE 5: ANGLES / SHAPE / EQUATIONS

| Knowledge | | Prior knowledge | End of topic |
|---------------|---|-----------------|--------------|
| 7 to 9 | Solving Equations – I can write and solve simple equations involving one or two steps | | |
| | Forming Equations – I can form equations from angles / shape problems and solve | | |
| | Solving Equations 2 – I can solve equations with brackets | | |
| | Solving Equations 3 – I can solve equations with unknowns on both sides | | |
| | Solving Equations 4 – I can solve equations involving x^2 and x^3 | | |
| | Ratio – I can share a quantity in 2 or more parts in a given ratio and apply to word problems involving direct and inverse proportion | | |
| 6 | Lines, Angles & Triangles – I can describe and label lines, angles and triangles and identify symmetry in 2D shapes and know the properties of triangles | | |
| | Angles – I can use a protractor to measure, draw and estimate the size of angles and solve problems involving angles | | |
| | Drawing Triangles - I can use a ruler and protractor to draw triangles accurately and solve problems involving angles and triangles | | |
| | Calculating Angles – I can use the rules for: angles on a straight line, angles around a point and vertically opposite angles and solve problems | | |
| | Angles in Polygons – I can use the rules for the sum of angles in a triangle and quadrilateral and calculate exterior and interior angles of a polygon | | |
| 5 | Measuring Angles – I can recognise acute, obtuse and reflex angles and measure them | | |
| | Drawing Angles – I can estimate and draw acute and obtuse angles | | |
| | Symmetry – I can identify and describe line and rotational symmetry | | |
| | Perimeter – I can find the perimeter of squares, rectangles and regular polygons and solve problems | | |
| | Area – I can use metric units to measure area and calculate the area of squares, triangles, parallelograms and trapezia | | |

LEARNING TOOLS

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| KEY CONCEPTS | Area | The space inside of a 2D shape – you need to learn the properties of the different shapes and learn the formulae | | | |
| | Angle | An angle is formed when two lines meet and is measure in degrees | | | |
| KEY QUESTIONS | What are we looking for when asked to solve? | What is the perimeter? | A polygon is any 2D shape formed with straight lines | What is symmetry? | |
| KEY EQUATION | | Area of a Triangle = $\frac{1}{2}$ (Base x Perpendicular Height) | | | |

YEAR 7 CYCLE 5: ANGLES / SHAPE / EQUATIONS

| | <h2>Skills</h2> | Prior Knowledge | End of topic |
|---------------------------------|---|--------------------|--------------|
| 7 to 9 Delta | A1 - use and interpret algebraic manipulation, including: <ul style="list-style-type: none"> • ab in place of $a \times b$ • $3y$ in place of $y + y + y$ and $3 \times y$ • a^2 in place of $a \times a$, a^3 in place of $a \times a \times a$, a^2b in place of $a \times a \times b$ • a/b in place of $a \div b$ • coefficients written as fractions rather than as decimals • brackets | | |
| | A2 - substitute numerical values into formulae and expressions | | |
| | A3 - understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors | | |
| | A4 - simplify and manipulate algebraic expressions by: <ul style="list-style-type: none"> • collecting like terms • multiplying a single term over a bracket | | |
| | A5 - use standard mathematical formulae; rearrange formulae to change the subject | | |
| | A7 - where appropriate, interpret simple expressions as functions with inputs and outputs; interpret the reverse process as the 'inverse function' | | |
| 6 Theta | G1 - use notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries | | |
| | G3 - apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; derive and use the sum of angles in a triangle (e.g. use the angle sum in any polygon, and know properties of regular polygons) | | |
| | G4 - apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles | | |
| 5 Pi | G14 - use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.) | | |
| | G16 - know and apply formulae to calculate: area of triangles, parallelograms, trapezia | | |
| | G17 - calculate: perimeters of 2D shapes, including circles; areas of circles | | |

EVERYBODY READS... IN MATHS!

| KEY WORDS | Perpendicular | Variable | Reflex | Centimetre | Isosceles |
|----------------------|---|--|--|------------|-----------|
| PROBLEM OF THE CYCLE | $9 \square 9 \square 9 \square 9 = 100$ Can you make this true using $+$, $-$, \div and \times ? | | | | |
| PRE-LEARNING | 5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> • Video 60: Equivalent fractions • Video 65: Add/subtract fractions with same denominator • Video 66: Add/subtract fractions with different denominators • Video 827: Lines of symmetry • Video 548: Perimeter • Video 553: Area (counting squares) • Video 554: Area (Rectangles) | 6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> • Video 460: Measuring Angles (1) • Video 561: Interior Angles in Polygons (1) • Video 919: Arithmetic Sequences (1) • Video 198: Linear Sequences (nth term) | 7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> • Video 553: Area (counting squares) • Video 554: Area (Rectangles) • Video 829: 3D Shapes (1) • Video 332: Sharing into a Given Ratio | | |
| CAREERS | <ul style="list-style-type: none"> • Angles: Used in the fields of astronomy (e.g. to measure the size of an object in the sky), architecture (e.g. to assure symmetry and balance when designing a building). • Surface Area: Used in painting/decorating (e.g. to work out how much paint will be required to paint an entire room) | | | | |

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| NAME | | TEACHER | | | | |
| My GCSE Target Grade is | | End of Cycle Teacher Assessment Please circle | | | | |
| | | SAE | AE | E | BE | SBE |
| End of unit assessment type | | Your end of topic assessment will be a written exam. | | | | |

YEAR 7 CYCLE 6: SEQUENCES / SHAPE / TRANSFORMATIONS

| Knowledge | | Prior knowledge | End of topic |
|------------------|--|-----------------|--------------|
| 7 to 9 | Nth Term - I can work out and use expressions for the nth term in an arithmetic sequence | | |
| | Geometric Sequences – I can recognise geometric sequences and work out terms using the term to term rule | | |
| | Area – I can calculate the area of triangles, parallelograms and trapezia including with compound shapes | | |
| | Perimeter – I can calculate the perimeter of 2D shapes and use to solve problems | | |
| | 3D Shapes – I can identify the nets of different 3D shapes and know the properties | | |
| | Surface Area & Volume – I can calculate the surface area and volume of a cube and cuboid and convert between different units | | |
| 6 | Sequences - I can identify the term to term rule and generate sequences from patterns | | |
| | Nth Term - I can continue and describe special sequences (such as Fibonacci) and find the nth term of a sequence using algebra | | |
| | Co-Ordinates – I can read and plot co-ordinates in 4 quadrants and recognise shapes drawn on co-ordinate grids and calculate the midpoint of a line segment | | |
| | Straight Line Graphs – I can recognise, name and plot straight line graphs (including horizontal and vertical lines and $y=x$ / $y=-x$) | | |
| | Transformations: Reflection – I can describe a reflection on a co-ordinate grid | | |
| 5 | Transformations: Translation – I can translate 2D shapes | | |
| | Transformations: Rotation – I can draw and describe rotations | | |
| | Transformations: Reflection – I can carry out a reflection in a mirror line and on an axis | | |
| | Fractions – I can order fractions and use fractions to describe parts of shapes | | |
| | Equivalent Fractions – I can use equivalent fractions and simplify fractions by cancelling | | |
| | Fractions Calculations – I can calculate simple fractions of quantities | | |

LEARNING TOOLS

| | | | | | |
|----------------------|-----------------------|---|---|---------------------------------|--|
| KEY CONCEPTS | Sequence | A sequence is a string of terms that follow a pattern | | | |
| | Transformation | A process by which a figure is changed into another | | | |
| KEY QUESTIONS | What is a fraction? | What is the difference between area and volume? | What information do we need to describe a rotation? | How do we plot a straight line? | |
| KEY EQUATION | | $Y = MX + C$ (where m is the gradient and c is the y intercept) | | | |

YEAR 7 CYCLE 6: SEQUENCES / SHAPE / TRANSFORMATIONS

| | Skills | Prior knowledge | End of topic |
|---------------|---|-----------------|--------------|
| 7 to 9 | A10 - identify and interpret gradients and intercepts of linear functions graphically | | |
| | A25 - deduce expressions to calculate the nth term of linear sequence | | |
| | N13 - use standard units of mass, length, time, money and other measures | | |
| | R1 - change freely between related standard units (e.g. time, length, area, volume/capacity, mass) | | |
| | G1 - use conventional terms and notation: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries | | |
| | G12 - identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres | | |
| | G13 - construct and interpret plans and elevations of 3D shapes | | |
| | G14 - use standard units of measure (length, area, volume/capacity, mass, time, money) | | |
| | G16 - know and apply formulae to calculate: area of triangles, parallelograms, trapezia; volume of cuboids | | |
| 6 | A8 - work with coordinates in all four quadrants | | |
| | A9 - plot graphs of equations that correspond to straight-line graphs in the coordinate plane; use the form $y = mx + c$ | | |
| | A23 - generate terms of a sequence from either a term-to-term or a position-to-term rule | | |
| | A24 - recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci type sequences | | |
| | G7 - identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation | | |
| | G19 - apply the concepts of congruence and similarity | | |
| 5 | N1 – order positive & negative integers & fractions; use the symbols =, ≠, <, >, ≤, ≥ | | |
| | N2 - apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative | | |
| | N11 - identify and work with fractions in ratio problems | | |
| | G7 - identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation | | |

EVERYBODY READS... IN MATHS!

| KEY WORDS | Rotation | Reflection | Vertex | Plan View | Symmetry |
|----------------------|--|---|--|-----------|----------|
| PROBLEM OF THE CYCLE | Work out without a calculator: $\sqrt{9999 \times 9999 + 19999} = ?$ | | | | |
| PRE-LEARNING | 5 Pi HegartyMaths Videos: <ul style="list-style-type: none"> Video 637 – Translations (1) Video 648 – Rotations (1) | 6 Theta HegartyMaths Videos: <ul style="list-style-type: none"> Video 205 – Drawing Line Graphs from Co-ordinates Video 637 – Translations (1) | 7 to 9 Delta HegartyMaths Videos: <ul style="list-style-type: none"> Video 198 – Linear Sequences (nth term) Video 206 – Straight Line Graphs | | |
| CAREERS | <ul style="list-style-type: none"> Graphs: In finance, people use graphs, for example, to work out currency exchange. Sequences: In conservation, students can use sequences to see how the perimeter of the fence would change by adding a panel to each side. Patterns: In textiles/fashion, people often use patterns when designing clothing. | | | | |