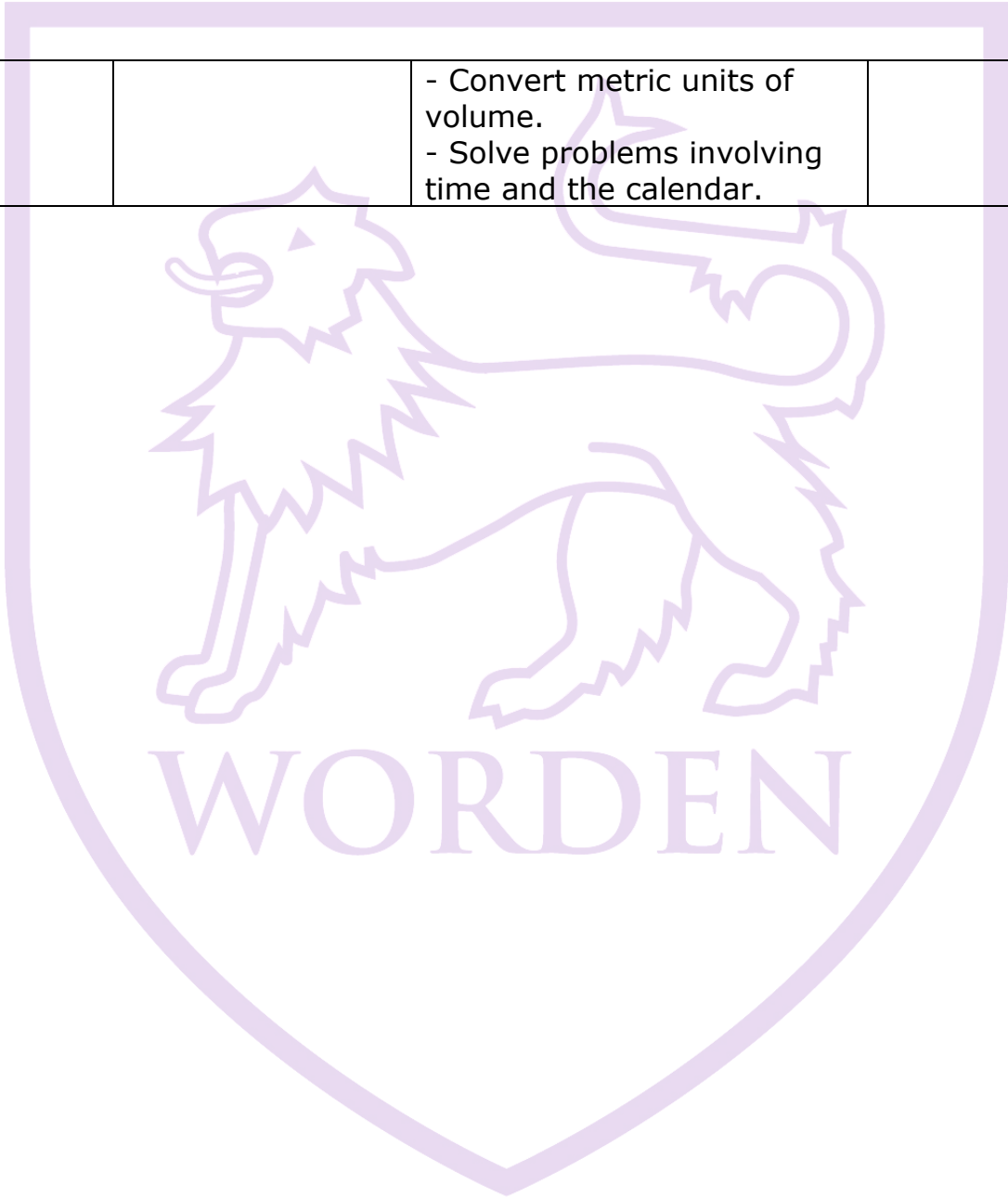**Subject: Maths**

Year: 8

Y8 Autumn HT 1	Y8 Autumn HT 2	Y8 Spring HT 1	Y8 Spring HT 2	Y8 Summer HT 1	Y8 Summer HT 2
Unit 1: Ratio and Scale - Understand the meaning and representation of ratio. - Understand and use ratio notation. - Solve problems involving ratios of the form 1 : n(or n: 1). - Solve proportional problems involving the ratio m: n. - Divide a value into a given ratio. - Express ratios in their simplest integer form. - Express ratios in the form 1 : n.	Unit 4: Working in the Cartesian plane - Work with co-ordinates in all four quadrants. - Identify and draw lines that are parallel to the axes. - Recognise and use the line $y=x$. - Recognise and use lines of the form $y=kx$. - Link $y=kx$ to direct proportion problems. - Explore the gradient of the line $y=kx$. - Recognise and use lines of the form $y=x+a$. - Explore graphs with negative	Unit 7: Brackets, equations and inequalities - Form algebraic expressions. - Use directed number with algebra. - Multiply out a single bracket. - Factorise into a single bracket. - Expand multiple single brackets and simplify - Expand a pair of binomials. - Solve equations, including with brackets. - Form and solve equations with brackets.	Unit 10: Fractions and percentages - Convert fluently between key fractions, decimals and percentages. - Calculate key fractions, decimals and percentages of an amount without a calculator. - Calculate fractions, decimals and percentages of an amount using calculator methods. - Convert between decimals and percentages greater than 100%. - Percentage decrease with a multiplier. - Calculate percentage increase and decrease using a multiplier. - Express one number as a fraction or a percentage of another without a calculator.	Unit 13: Angles in parallel lines and polygons - Understand and use basic angles rules and notation. - Investigate angles between parallel lines and the transversal. - Identify and calculate with alternate and corresponding angles. - Identify and calculate with co-interior, alternate and corresponding angles. - Solve complex problems with parallel line angles. - Construct triangles and special quadrilaterals.	Unit 16: The data handling cycle - Set up a statistical enquiry. - Design and criticise questionnaires. - Draw and interpret pictograms, bar charts and vertical line charts. - Draw and interpret multiple bar charts. - Draw and interpret pie charts. - Draw and interpret line graphs.

- Compare ratios and related fractions. - Understand π as the ratio between diameter and circumference. - Understand gradient of a line as a ratio Unit 2: <u>Multiplicative Change</u> -Solve problems involving direct proportion. - Explore conversion graphs. -Convert between currencies. - Explore direct proportion graphs. - Explore relationships between similar shapes. - Understand scale factors as multiplicative representations.	gradient ($y=-kx$, $y=a-x$, $x+y=a$). - Link graphs to linear sequences. - Plot graphs of the form $y=mx+c$. - Explore non-linear graphs. - Find the midpoint of a line segment. Unit 5: <u>Representing data</u> - Draw and interpret scatter graphs. - Understand and describe linear correlation. - Draw and use line of best fit. - Identify non-linear relationships. - Identify different types of data. - Read and interpret ungrouped frequency tables. - Read and interpret grouped frequency tables.	- Understand and solve simple inequalities. - Form and solve inequalities. - Solve equations and inequalities with unknowns on both sides. - Form and solve equations and inequalities with unknowns on both sides. - Identify and use formulae, expressions, identities and equations. Unit 8: <u>Sequences</u> - Generate sequences given a rule in words. - Generate sequences given a simple algebraic rule. - Generate sequences given a complex algebraic rule.	- Express one number as a fraction or a percentage of another using calculator methods. - Work with percentage change. - Choose appropriate methods to solve percentage problems. - Find the original amount given the percentage less than 100%. - Find the original amount given the percentage greater than 100%. - Choose appropriate methods to solve complex percentage problems. Unit 11: <u>Standard index form</u> - Investigate positive powers of 10. - Work with numbers greater than 1 in standard form. - Investigate negative powers of 10. - Work with numbers between 0 and 1 in standard form. - Compare and order numbers in standard form.	- Investigate the properties of special quadrilaterals. - Identify and calculate with sides and angles in special quadrilaterals. - Understand and use the properties of diagonals of quadrilaterals. - Understand and use the sum of exterior angles of any polygon. - Calculate and use the sum of the interior angles in any polygon. - Calculate missing interior angles in regular polygons. - Prove simple geometric facts. - Construct an angle bisector. - Construct a perpendicular bisector of a line segment. Unit 14: <u>Area of trapezia and circles</u>	- Choose the most appropriate diagram for given set of data. - Represent and interpret grouped quantitative data. - Find and interpret the range, - Compare distributions using charts. - Identify misleading graphs. Unit 17: <u>Measures of location</u> - Understand and use the mean, median and mode. - Choose the most appropriate average.

- Draw and interpret scale diagrams. - Interpret maps using scale factors and ratios. Unit 3: Multiplying & Dividing Fractions -Represent multiplication of fractions. - Multiply a fraction by an integer. - Find the product of a pair of unit fractions. - Find the product of a pair of any fractions. - Divide an integer by a fraction. - Divide a fraction by a unit fraction - Understand and use the reciprocal. - Divide any pair of fractions.	- Represent grouped discrete data. - Represent continuous data grouped into equal classes. - Represent data in two-way tables. Unit 6: Tables & Probability - Construct sample spaces for 1 or more events. - Find probabilities from a sample space. - Find probabilities from two-way tables. - Find probabilities from Venn diagrams. - Use the product rule for finding the total number of possible outcomes.	- Find the rule for the nth term of a linear sequence. Unit 9: Indices - Adding and subtracting expressions with indices. - Simplifying algebraic expressions by multiplying indices. - Simplifying algebraic expressions by dividing indices. -Using the addition law for indices. -Using the addition and subtraction law for indices. - Exploring powers of powers.	- Mentally calculate with numbers in standard form. - Add and subtract numbers in standard form. - Multiply and divide numbers in standard form. - Use a calculator to work with numbers in standard form. - Understand and use negative indices. - Understand and use fractional indices. Unit 12: Number sense - Round numbers to powers of 10, and 1 significant figure. - Round numbers to a given number of decimal places. - Estimate the answer to a calculation. - Understand and use error interval notation. - Calculate using the order of operations. - Calculate with money. - Covert metric measures of length. - Convert metric units of weight and capacity. - Convert metric units of area.	- Calculate the area of triangles, rectangles and parallelograms. - Calculate the area of a trapezium. - Investigate the area of a circle - Calculate the area of a circle and parts of a circle without a calculator. - Calculate the area of a circle and parts of a circle with a calculator. - Calculate the perimeter and area of compound shapes. Unit 15: Line symmetry and reflection - Recognise line symmetry. - Reflect a shape in a horizontal or vertical line. - Reflect a shape in a diagonal line.	- Find the mean from an ungrouped frequency table. - Find the mean from a grouped frequency table. - Identify outliers. - Compare distributions using averages and the range.

			- Convert metric units of volume. - Solve problems involving time and the calendar.		