

Mathematics: Number Grade Ladder

Year 7	Year 8	Year 9	Year 10 / 11
		9A*	9A* / 8A*
		<ul style="list-style-type: none"> • Use percentage to calculate the original quantity given the result of a proportional change. • Understand and use rational and irrational numbers. • Determine the bounds of intervals and measurements. • Understand and use direct and inverse proportion algebraically. 	<ul style="list-style-type: none"> • Understand and use set notation and Venn diagrams to describe sets and represent relationships between sets. • Find upper and lower bounds of the results of calculations which use data rounded to a specified accuracy. • Understand and use surds, including simplifying expressions and rationalising the denominator.
	9A*	8A*	8A / 7A
	<ul style="list-style-type: none"> • Calculate with fractions, using the four operations to solve problems. • They use percentage to calculate the original quantity given the result of a proportional change. • Express and calculate with numbers in standard index form, using integral powers of ten. • Understand and calculate with directed numbers in context. 	<ul style="list-style-type: none"> • Calculate with fractions, using the four operations to solve problems. • Express and calculate with numbers in standard index form, using integral powers of ten. • Understand and calculate with directed numbers in context. 	<ul style="list-style-type: none"> • Use exponential growth and decay in problems, such as depreciation or population change. • Calculate with simple and compound interest. • Calculate numbers in standard form, both small and large values.

9A*	8A*	8A / 7A	6B / 5B
<ul style="list-style-type: none"> ● Solve multiplication and division problems involving numbers of any size, using a calculator efficiently and appropriately. ● Make mental estimates by rounding to one significant figure. ● Express one number as a percentage of another. ● Understand and use repeated proportional change including the calculation of compound interest to a maximum of three iterations. 	<ul style="list-style-type: none"> ● Solve multiplication and division problems involving numbers of any size, using a calculator efficiently and appropriately. ● Make mental estimates by rounding to one significant figure. ● Express one number as a percentage of another. ● Understand and use repeated proportional change including the calculation of compound interest to a maximum of three iterations. 	<ul style="list-style-type: none"> ● Solve multiplication and division problems involving numbers of any size, using a calculator efficiently and appropriately. ● Make mental estimates by rounding to one significant figure. ● Express one number as a percentage of another. ● Understand and use repeated proportional change including the calculation of compound interest to a maximum of three iterations. 	<ul style="list-style-type: none"> ● Calculate using reverse percentages. ● Express one number as a percentage of another. ● Estimate values of calculations by rounding to one significant figure. ● Calculate with fractions, using the four operations to solve problems involving mixed numbers.
8A*	8A / 7A	6B / 5B	5C / 4C
<ul style="list-style-type: none"> ● Understand and calculate with numbers with up to three decimal places and approximate up to two decimal places as appropriate. ● Understand and use the equivalences between fractions, decimals and percentages ● Calculate using ratios and percentages in relevant contexts. ● Understand and use order of precedence in numerical calculations, including the use of 	<ul style="list-style-type: none"> ● Understand and calculate with numbers with up to three decimal places and approximate up to two decimal places as appropriate. ● Understand and use the equivalences between fractions, decimals and percentages ● Calculate using ratios and percentages in relevant contexts. ● Understand and use order of precedence in numerical calculations, including the use of 	<ul style="list-style-type: none"> ● Understand and calculate with numbers with up to three decimal places and approximate up to two decimal places as appropriate. ● Understand and use the equivalences between fractions, decimals and percentages ● Calculate using ratios and percentages in relevant contexts. ● Understand and use order of precedence in numerical calculations, including the use of 	<ul style="list-style-type: none"> ● Solve multiplication and division problems involving numbers, both with and without a calculator. ● Understand and calculate with numbers with up to three decimal places and approximate up to two decimal places as appropriate. ● Understand and use the equivalences between fractions, decimals and percentages, ● Calculate using ratios and percentages in relevant

brackets.	brackets.	brackets.	contexts. <ul style="list-style-type: none"> • Understand and use order of precedence in numerical calculations, including the use of brackets. • Calculate with speed and proportionality. • Distinguish rational and irrational numbers.
8A / 7A	6B / 5B	5C / 4C	3D
<ul style="list-style-type: none"> • Extend their understanding of place values, to multiply and divide numbers with up to two decimal places by powers of 10. • Use the four operations with decimals to two places, multiply and dividing by whole numbers only. • Add and subtract fractions. • Understand the relationship between simple fractions and percentages. • Apply inverse operations or estimation to check solutions. • Understand and use negative numbers in context. 	<ul style="list-style-type: none"> • Extend their understanding of place values, to multiply and divide numbers with up to two decimal places by powers of 10. • Use the four operations with decimals to two places, multiply and dividing by whole numbers only. • Add and subtract fractions. • Understand the relationship between simple fractions and percentages. • Apply inverse operations or estimation to check solutions. • Understand and use negative numbers in context. 	<ul style="list-style-type: none"> • Extend their understanding of place values, to multiply and divide numbers with up to two decimal places by powers of 10. • Use the four operations with decimals to two places, dividing by whole numbers only. • Add and subtract fractions. • Understand the relationship between simple fractions and percentages. • Apply inverse operations or estimation to check solutions. • Understand and use negative numbers in context. 	<ul style="list-style-type: none"> • Extend their understanding of place values, to multiply and divide numbers with up to two decimal places by powers of 10. • Use the four operations with decimals to two places. • Add and subtract fractions. • Understand the relationship between simple fractions and percentages. • Apply inverse operations or estimation to check solutions. • Understand and use negative numbers in context. • Calculate with factors and multiples.
6B / 5B	5C / 4C	3D	3E / 2E

<ul style="list-style-type: none"> • Understand and use numbers with up to two decimal places in relevant contexts. • Mentally add and subtract two digit numbers. • Use a range of mental, written and calculator methods involving the four operations when solving problems. • Recognise approximate proportions of a whole and use simple fractions. • Understand that addition and subtraction are inverse operations and use this to check their results when solving problems. 	<ul style="list-style-type: none"> • Understand and use numbers with up to two decimal places in relevant contexts. • Mentally add and subtract two digit numbers. • Use a range of mental, written and calculator methods involving the four operations when solving problems. • Recognise approximate proportions of a whole and use simple fractions. • Understand that addition and subtraction are inverse operations and use this to check their results when solving problems. 	<ul style="list-style-type: none"> • Understand and use numbers with up to two decimal places in relevant contexts. • Mentally add and subtract two digit numbers. • Use a range of mental, written and calculator methods involving the four operations when solving problems. • Recognise approximate proportions of a whole and use simple fractions. • Understand that addition and subtraction are inverse operations and use this to check their results when solving problems. 	<ul style="list-style-type: none"> • Understand and use numbers with up to two decimal places in relevant contexts. • Mentally add and subtract two digit numbers. • Use a range of mental, written and calculator methods involving the four operations when solving problems. • Recognise approximate proportions of a whole and use simple fractions. • Understand that addition and subtraction are inverse operations and use this to check their results when solving problems.
5C / 4C	3D	3E / 2E	2F / 1F
<ul style="list-style-type: none"> • Read, write and order whole numbers up to at least 1000 and use the knowledge that the position of the digit indicates its value. • Approximate to the nearest 10 or 100. • Use mental recall of number facts up to 20 and of the majority of multiplication tables up to 12 x 12 in solving problems. 	<ul style="list-style-type: none"> • Read, write and order whole numbers up to at least 1000 and use the knowledge that the position of the digit indicates its value. • Approximate to the nearest 10, 100 or 1000. • Use mental recall of number facts up to 20 and of the majority of multiplication tables up to 12 x 12 in solving problems. 	<ul style="list-style-type: none"> • Read, write and order whole numbers up to at least 1000 and use the knowledge that the position of the digit indicates its value. • Approximate to the nearest 10, 100 or 1000. • Use mental recall of number facts up to 20 and of the majority of multiplication tables up to 12 x 12 in solving problems. 	<ul style="list-style-type: none"> • Read, write and order whole numbers up to at least 1000 and use the knowledge that the position of the digit indicates its value. • Approximate to the nearest power of 10. • Use mental recall of number facts up to 20 and of the majority of multiplication tables up to 12 x 12 in solving problems.

<ul style="list-style-type: none"> ● Add and subtract money expressed in conventional notation up to \$10. ● Solve problems involving addition, subtraction and multiplication (up to 1000) and simple division in practical situations. ● Recognise and understand simple fractions which arise naturally, and their notation. 	<ul style="list-style-type: none"> ● Add and subtract money expressed in conventional notation up to \$10. ● Solve problems involving addition, subtraction and multiplication (up to 1000) and those that involve division in practical situations. ● Recognise and understand simple fractions which arise naturally, and their notation. 	<ul style="list-style-type: none"> ● Add and subtract money expressed in conventional notation up to \$10. ● Solve problems involving addition, subtraction and multiplication and those that involve division in practical situations. ● Recognise and understand simple fractions which arise naturally, and their notation. 	<ul style="list-style-type: none"> ● Add and subtract money expressed in conventional notation up to \$10. ● Solve problems involving addition, subtraction and multiplication and those that involve division in practical situations. ● Recognise and understand simple fractions which arise naturally, and their notation.
3D	3E / 2E		2G / 1G
<ul style="list-style-type: none"> ● Read, write and order whole numbers up to at least 100 and begin to show some understanding of place value. ● Have good recall of number facts to 10 and add and subtract up to at least 20, using these skills to solve problems. 	<ul style="list-style-type: none"> ● Read, write and order whole numbers up to at least 100 and show some understanding of place value. ● Have good recall of number facts to 10 and add and subtract up to at least 20, using these skills to solve problems, including those that involve money. 		<ul style="list-style-type: none"> ● Read, write and order whole numbers up to at least 1000 and show some understanding of place value. ● Have good recall of number facts to 10 and add and subtract up to at least 100, using these skills to solve problems, including those that involve money.
3E / 2E			U
<ul style="list-style-type: none"> ● Count, read, write and order whole numbers up to at least 10. ● Add and subtract up to 10 using real objects and solve simple problems. 		Learners lack the basic foundations in order to calculate and solve problems involving numbers.	