The Sutton Academy

Knowledge Rich Curriculum Plan

Year 10 Foundation – Calculations

Lesson Objective	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
To learn how to add and subtract decimals	• Students will know how to add and subtract decimals using column addition and subtraction • Students will know that addition and subtraction are inverse operations of one another • Students will know how to add and subtract decimals using column addition and subtraction • Students will know how to solve real life problems, including money problems using column addition and subtraction	**Decimal –** a number whose whole number part and the fractional part is separated by a decimal point **Integer –** a whole number **Sum –** The result of adding two or more numbers	• Students need to know how to add and subtract using the column method. • Students will need to understand place value.	Exam Prep 1
To learn how to calculate with negatives	• Students will know how to add and subtract positive integers to/from a positive or negative integer • Students will know how to add and subtract negative integers to/from a positive or negative integer • Students will know how to multiply positive and negative integers • Students will know how to divide positive and negative integers • Students will know how to square and cube positive and negative integers • Students will know how to solve real life problems involving calculating with negatives	**Negative –** Less than zero **Product** – in maths, a product is the result of multiplication	• Students need to know how to order negative and positive integers	Exam Prep 1
To learn how to multiply using column multiplication	• Students will know how to multiply integers using the column method • Students will know how to solve more complex multi-step and/or worded problems involving multiplication with integers • Students will know how to solve real life problems involving the multiplication of integers using the column method	**Integer –** a whole number	• Students will need to know how to add using column addition	Exam Prep 1
To learn how to multiply decimals	• Students will know how to multiply decimals. They will know that to do this they need to multiply the decimals by powers of ten to achieve integers which they can then multiply more easily using column multiplication. They will know that they then divide by an appropriate power of 10 at the end to achieve the accurate answer. • Students will know how to solve worded problems involving multiplication of decimals		• Students will know how to multiply and divide by 10, 100, 1000 etc. • Students need to know how to multiply integers using the column method.	Exam Prep 1
To learn how to divide using short and long division	• Students will know how to divide integers by integers using short division where the answer is a decimal (they will not use remainders) • Students will know how to divide integers by integers using long division • Students will know how to solve more complex multi-step and worded problems involving division	Divide – the act or process of separating or sharing	• Students should already know how to divide an integer by another integer that is <10 using the bus stop method	Exam Prep 1

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To learn how to divide with decimals.	• Students will know how to divide a decimal by an integer using short division. • Students will know how to divide a decimal by an integer using long division. • Students will know how to divide a decimal by a decimal by firstly multiplying both numbers by a matching power of 10. • Students will know that the power of 10 needs to at least make that the decimal you are dividing by an integer value. • Students will know how to divide their resulting values to produce an overall answer to the problem without needing to make any extra adjustments. • Students will know how to solve multi-step problems involving division of decimals	Divide – the act or process of separating or sharing	• Students need to know how to divide integers using short division. • Students need to know how to multiply by powers of 10.	Exam Prep 1
To learn how to calculate with indices and roots	• Students will know how to calculate real roots of numbers (square root, cube root etc.) • Students will know that powers and their subsequent roots are inverse operations of one another • Students will understand why we can only find certain roots for negative numbers •	**Index** – An index, or a power, is the small floating number that goes next to a number or letter **Square** – When you are asked to square a number you are being asked to multiply it by itself Square numbers – The result when you multiply a number by itself **Cube** – When you are asked to cube a number you are being asked to multiply it by itself three times! **Cube Numbers** – The result when you cube a number **Index Form** – A way of writing a long calculation more quickly using powers **Square Root** - This is the number that is multiplied by itself to get a square number! **Cube Root** - This is the number that is multiplied by itself three times to get a cube number!	• Students should already know how to square and cube numbers	Exam Prep 1
To learn how to apply the index laws	• Students will know how to use the basic index laws for multiplication, division and brackets with integer bases where the powers are both positive and/or negative Students will know how to find the value of a calculation involving the index laws • Students will know how to interpret the power of 0 • Students will know how to evaluate negative powers. They will know that a negative power means that you find the reciprocal.	**Reciprocal** – The reciprocal of a number is 1 divided by the number	• Students will need to know how to find powers and roots • Students will need to know how to calculate with negative numbers	Exam Prep 1
To learn how to use the order of operations to calculations	• Students will know how to know and identify different aspects of BIDMAS. • Students will know how to use BIDMAS to solve a calculation. • Students will know how to use BIDMAS to solve calculations involving indices. • Students will know how to use BIDMAS to solve calculations involving several steps. • Students will know that division and multiplication are interchange operations. • Students will know that when a calculation has only addition and subtract involved that they must calculate from left to right.	**Index (plural indices)** – An index, or a power, is the small floating number that goes next to a number or letter Inverse – opposite	• Students need to know how to calculate powers and roots of integer numbers. • Students need to know how to add, subtract, multiply and divide integer numbers.	

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	• Students will know how to place brackets in a calculation to obtain a certain answer.			