The Sutton Academy

Knowledge Rich Curriculum Plan

Year 8 Core – Place Value and Calculations

Lesson/Learning Sequence	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 read and interpret the place value of digits within a number.	• Students will know how to identify the value of a digit within both large and small integers and decimals. • Students will know how to list all three-digit numbers that can be made from three positive integers. • Students will know how to fill in a place value table with a range of integers and decimals.	**Place Value** – the value of a digit depending on its position within a number **Integer –** a whole number **Decimal –** a number whose whole number part and the fractional part is separated by a decimal point	• Students should already know how to read and write numbers of any size in words and digits.	Mini-Assessment 1
To learn how to compare and order numbers.	• Students will know how to order positive and negative integers including in real life contexts. • Students will know how to order decimals. They will know that to order decimals we must compare each digit within the number individually, starting with the highest value digit. • Students will know how to use the symbols <, >, =, ≠ to compare small and large integer numbers. • Students will know how to use the symbols <, >, =, ≠ to compare positive and negative numbers. • Students will know how to use the symbols <, >, =, ≠ to compare decimals. • Students will know how to compare a mixture of negative numbers and decimals.	**Compare -** estimate, measure, or note the similarity or dissimilarity between. **Order –** the arrangement of people or things in relation to each other according to a particular sequence, pattern, or method. **Ascending –** going up **Descending** – going down **Inequality –** a symbol which makes a non-equal comparison between two numbers or other mathematical expressions e.g. >, <, ≥ and ≤	• Students need to know how to identify the value of a digit within both large and small integers and decimals.	Mini-Assessment 1
To learn how to add and subtract decimals.	• Students will know how to add decimals using column addition. • Students will know how to subtract decimals using column subtraction. • Students will know how to solve real life problems involving the addition and subtraction of decimals e.g. money problems.	**Decimal –** a number whose whole number part and the fractional part is separated by a decimal point **Sum –** The result of adding two or more numbers	• Students should already know how to add and subtract integers	Mini-Assessment 1
To learn how to add and subtract negative numbers.	• Students will know how to add and subtract with negative numbers using a number line. • Students will know how to solve real life problems involving adding and subtracting negative numbers. Avoid using terminology such as 2 negatives make a positive.	**Negative –** Less than zero	• Students need to know how to order positive and negative numbers. • Students need to know how to add and subtract positive integers.	Mini-Assessment 1

Lesson/Learning Sequence	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 multiply and divide negative numbers.	• Students will know how to multiply a positive number to a negative number. • Students will know how to multiply two negative numbers together. • Students will know how to divide when one number is positive and one is negative. • Students will know how to divide when both numbers are negative. Avoid using terminology such as 2 negatives make a positive.		• Students need to know how to multiply and divide positive integers.	
To learn how to multiply and divide by powers of 10.	• Students will know how to multiply integers by 10, 100 and 1000. • Students will know how to divide integers by 10, 100 and 1000. • Students will know how to multiply decimals by 10, 100 and 1000. • Students will know how to divide decimals by 10, 100 and 1000. **Opportunity for challenge:** • Students will know how to multiple and divide by 10^2 and 10^3. • Students will know how to multiply and divide by 0.1, 0.01 and 0.001 ($10^{-1}, 10^{-2}, 10^{-3}$).		• Students need to know how to fill in and use a place value table.	Mini-Assessment 1
To learn how to multiply integers.	• Students will know how to multiply integers using the column method. • Students will know how to solve real life problems involving the multiplication of integers using the column method. • Students will know how to solve more complex multi-step and/or worded problems involving multiplication with integers.	**Integer –** a whole number	• Students need to know how to identify the value of a digit within both large and small integers. • Students need to know how to align numbers according to place value. • Students need to know how to multiply single digit integers. • Students need to know how to add integers using column addition.	Mini-Assessment 1
To learn how to multiply decimals.	• Students will know how to multiply decimals by firstly multiplying the decimals by a power of 10 to produce integer values. • Students will know how to multiply their new integer values using the column method. • Students will know how to lastly divide by the same powers of 10 as used in their first step to produce their decimal product. • Students will know how to solve real life problem involving the multiplication of decimals using the column method- money problems. • Students will know how to solve multi-step problems involving multiplication of decimals.		• Students need to know how to multiply and divide by powers of 10. • Students need to know how to multiply numbers using column multiplication.	Mini-Assessment 1
To learn how to divide integers.	• Students will know that multiplication and division are inverse operations of one another. • Students will know how to divide integers by other integers using short division. • Students will know how to use short division to produce a decimal answer – they will not express these answers using remainders. • Students will know how to divide integers by other integers using long division. • Students will know how to solve more complex multi-step and/or worded problems involving division with integers.	**Integer –** a whole number	• Students need to know how to multiply integers.	Mini-Assessment 1

Lesson/Learning Sequence	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 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		• Students need to know how to divide integers using short division. • Students need to know how to multiply by powers of 10.	Mini-Assessment 1