



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 9 Support – Place Value and Calculations

Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
<p>To learn how to read and interpret the place value of digits within a number.</p>	<ul style="list-style-type: none"> • 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. 	<p>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</p>	<ul style="list-style-type: none"> • Students should already know how to read and write numbers of any size in words and digits. 	<p>Mini-Assessment 1</p>
<p>To learn how to compare and order numbers.</p>	<ul style="list-style-type: none"> • 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 $<$, $>$, $=$, \neq to compare small and large integer numbers. • Students will know how to use the symbols $<$, $>$, $=$, \neq to compare positive and negative numbers. • Students will know how to use the symbols $<$, $>$, $=$, \neq to compare decimals. • Students will know how to compare a mixture of negative numbers and decimals. 	<p>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. $>$, $<$, \geq and \leq</p>	<ul style="list-style-type: none"> • Students need to know how to identify the value of a digit within both large and small integers and decimals. 	<p>Mini-Assessment 1</p>
<p>To learn how to add and subtract decimals.</p>	<ul style="list-style-type: none"> • 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. 	<p>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</p>	<ul style="list-style-type: none"> • Students should already know how to add and subtract integers 	<p>Mini-Assessment 1</p>
<p>To learn how to add and subtract negative numbers.</p>	<ul style="list-style-type: none"> • 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. <p>Avoid using terminology such as 2 negatives make a positive.</p>	<p>Negative – Less than zero</p>	<ul style="list-style-type: none"> • Students need to know how to order positive and negative numbers. • Students need to know how to add and subtract positive integers. 	<p>Mini-Assessment 1</p>

Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
To learn how to multiply and divide negative numbers.	<ul style="list-style-type: none"> • 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. <p>Avoid using terminology such as 2 negatives make a positive.</p>		<ul style="list-style-type: none"> • Students need to know how to multiply and divide positive integers. 	
To learn how to multiply and divide by powers of 10.	<ul style="list-style-type: none"> • 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. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> • Students will know how to multiply 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}). 		<ul style="list-style-type: none"> • Students need to know how to fill in and use a place value table. 	Mini-Assessment 1
To learn how to multiply integers.	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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. 		<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Students need to know how to multiply integers. 	Mini-Assessment 1

Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
To learn how to divide with decimals.	<ul style="list-style-type: none"> • 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 		<ul style="list-style-type: none"> • 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