



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 8 Prime – 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 compare and order numbers.</p>	<ul style="list-style-type: none"> • Students will know how to solve real life problems that involve comparing positive and negative integers • Students 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>Integer – a whole number Decimal – a number whose whole number part and the fractional part is separated by a decimal point 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 Negative – Less than zero 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 should already know how to order positive and negative integers 	<p>Mini-Assessment 1</p>
<p>To learn how to calculate with 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 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. • Students will know how to solve real life problems involving negative numbers. <p>Avoid using terminology such as 2 negatives make a positive. Make sure students understand why.</p>	<p>Negative – Less than zero Sum – The result of adding two or more numbers</p>	<ul style="list-style-type: none"> • Students need to know how to add and subtract positive integers using the column method • Students need to know how to multiply and divide positive integers. 	<p>Mini-Assessment 1</p>
<p>To learn how to multiply decimals.</p>	<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. 	<p>Decimal – a number whose whole number part and the fractional part is separated by a decimal point Integer – a whole number</p>	<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. 	<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 divide integers.	<ul style="list-style-type: none"> • 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 multiplication and division with integers. 		<ul style="list-style-type: none"> • Students should already know how to divide integers using short division 	Mini-Assessment 1
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 multiplication and 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
To learn how to use numerical index laws.	<ul style="list-style-type: none"> • Students will know how to use the basic index law for multiplication with an integer base. • Students will know how to use the basic index law for division with an integer base. • Students will know how to use the basic index law for brackets with an integer base. • Students will know how to interpret the power of 0. • Students will know how to use the basic index laws involving negative powers. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> • Students will know how to use a mixture of the index laws within the same problem. <p>Show students how it works rather than just using tricks.</p>	Indices – (Plural of index) or powers, are the small floating number that goes next to a number or letter	<ul style="list-style-type: none"> • Students need to know how to calculate with integer powers – particularly squares and cubes. 	Mini-Assessment 1
To learn how to use the order of operations.	<ul style="list-style-type: none"> • 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 interchangeable operations. • Students will know that when a calculation has only addition and subtract involved that they must calculate from left to right. • Students will know how to place brackets in a calculation to obtain a certain answer. <p>They will not think that division comes before multiplication or addition comes before subtraction.</p> <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> • Students will know how to solve BIDMAS problems involving negative numbers. 	Indices – (Plural of index) or powers, are the small floating number that goes next to a number or letter	<ul style="list-style-type: none"> • 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. • Students need to know how to calculate with negatives 	Mini-Assessment 1