



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 7 Support – Powers and Roots

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 calculate with powers and roots.</p>	<ul style="list-style-type: none"> • Students will know how to use integer powers of 2, 3, 4, 5. • Students will know how to calculate with an integer power of 2 by multiplying the number by itself and the result is called a square number. • Students will know how to calculate with an integer power of 3 by multiplying the number by itself twice and the result is called a cube number. • Students will know how to calculate square roots of numbers. • Students will know how to calculate cube roots of numbers. • Students will know the difference between the symbol of a square root and cube root. • Students will know that powers and their subsequent roots are inverse operations of one another 	<p>Indices – (Plural of index) or powers, are the small floating number that goes next to a number or letter</p> <p>Square – When you are asked to square a number you are being asked to multiply it by itself</p> <p>Square numbers – The result when you multiply a number by itself</p> <p>Cube – When you are asked to cube a number you are being asked to multiply it by itself three times!</p> <p>Cube Numbers – The result when you cube a number</p> <p>Square Root - This is the number that is multiplied by itself to get a square number!</p> <p>Cube Root - This is the number that is multiplied by itself three times to get a cube number</p>	<ul style="list-style-type: none"> • Students need to know how to multiply integers. 	<p>Mini-Assessment 2</p>
<p>To learn how to use the order of operations.</p>	<ul style="list-style-type: none"> • Students will know how to apply the order of operations using BIDMAS • Students will know that BIDMAS tells us the order of operations. They will know that the Division and Multiplication are done in the order of the question and that Addition and Subtraction are done last, in the order that they appear in the question. <p>They will not think that division comes before multiplication or addition comes before subtraction.</p>	<p>Indices – (Plural of index) or powers, are the small floating number that goes next to a number or letter</p>	<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. 	<p>Mini-Assessment 2</p>
<p>To learn how to use a calculator.</p>	<ul style="list-style-type: none"> • Students will know that a calculator uses the order of operations. • Students will know how to input fractions into the calculator. • Students will know how to convert fractions to decimals using the standard to decimal button. • Students will know how to calculate numbers with powers. • Students will know how to calculate the roots of numbers. • Students will know how to write the values from the calculator display. <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> • Students will know how to use a calculator to solve more complex problems involving a mixture of fractions, powers and root. 		<ul style="list-style-type: none"> • Students should already know how to use a calculator to add, subtract, multiply and divide 	<p>Mini-Assessment 2</p>
<p>To learn how to round to the nearest 10, 100 and 1000.</p>	<ul style="list-style-type: none"> • Students will know how to round to the nearest 10. • Students will know how to round to the nearest 100. • Students will know how to round to the nearest 1000. • Students will know to identify the number they are rounding to, look at the number to the right of it and decide whether to round up or down. • Students will know to round up if the digit to the right is 5-9. • Students will know to round down if the digit to the right is 0-4. • Students will know that to round up they must add one to the number they are rounding to. 	<p>Rounding – making a number simpler but keeping its value close to what it was. The result is less accurate, but easier to use</p>		<p>Mini-Assessment 2</p>

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	<ul style="list-style-type: none"> • Students will know that to round down they must not subtract one from the number they are rounding to. • Students will know that their rounded value will be similar to their original value – they can use this to check answers. 			
To learn how to round to the nearest decimal place.	<ul style="list-style-type: none"> • Students need to know how to round to the nearest 10, 100 and 1000. • Students will know how to round to the nearest whole number. • Students will know how to round to a given number of decimal places • Students will know that their rounded value will be similar to their original value – they can use this to check answers. 		<ul style="list-style-type: none"> • Students need to know how to round to the nearest 10/100/1000 	Mini-Assessment 2
To learn how to identify factors, multiples and prime numbers	<ul style="list-style-type: none"> • Students will know what factors are and be able to list all factors of a number systematically • Students will know what multiples are and be able to list multiples of a number systematically • Students will know at least the first 10 prime numbers and be able to identify prime numbers from a list. 	<p>Prime Number – In maths, prime numbers are whole numbers greater than 1, that have only two factors: 1 and the number itself.</p> <p>Multiple – A multiple is a number in the given number’s multiplication tables</p> <p>Factor – A factor is a number that divides into a given number without leaving a remainder</p>	<ul style="list-style-type: none"> • Students need a secure understanding of their multiplication tables 	Mini-Assessment 2
To learn how to find the Highest Common Factor and Lowest Common Multiple of two numbers	<ul style="list-style-type: none"> • Students will know how to find the lowest common multiple (LCM) and highest common factor (HCF) of two numbers by listing <p>Opportunity for challenge:</p> <ul style="list-style-type: none"> • Students will know how to find the LCM and HCF of three numbers by listing 	<p>Common – shared by, coming from, or done by two or more people, groups, or things.</p> <p>Highest Common Factor – the largest number that both or all of the numbers can be divided by</p> <p>Lowest Common Multiple – the smallest number that is in both numbers’ times tables</p>	<ul style="list-style-type: none"> • Students need to know how to list factors of a number. • Students need to know how to list multiples of a number. 	Mini-Assessment 2