The Sutton Academy

Knowledge Rich Curriculum Plan

Year 7 Prime – Place Value and Calculations

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
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. **Opportunity for challenge:** • Students will know how to compare a mixture of negative numbers and decimals.	**Compare -** note the similarity or dissimilarity between. **Order –** the arrangement according to a particular sequence, pattern, or method. **Ascending –** smallest to largest **Descending** – largest to smallest **Inequality –** a symbol which makes a non-equal comparison between two numbers or other mathematical expressions e.g. >, <, ≥ and ≤	• Students can identify the place value of a number • Students need to know how to order integers.	**Steps to Success – Ordering Numbers** **Step 1:** Identify the first digit of each number and look at it's place value, the number with the greatest place value is biggest. **Step 2:** If the place value is the same, look at the size of the digit, If the digit is larger, then the number is larger. **Step 3:** If the value of the digits is the same, you go to the next digit to the right and compare the size of those digits. **Step 4:** Repeat until you have ordered all of the numbers	
To learn how to add and subtract negative numbers.	• Students will know how to add and subtract with negative numbers using a number line. E.g. $4-7$ or $-3+5$ • Students will know how to add and subtract with negative numbers using a number line. E.g. $4--7$ or $-3+-5$ • 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.	Use a spider diagram to show different words which mean to add. E.g. sum Use a spider diagram to show different words which mean to subtract. E.g. difference **Negative – less than zero**	• Students need to know how to order positive and negative numbers.	**Adding and Subtracting Numbers** Think of positive numbers as **hot** and negative numbers as **cold**. **Adding a negative number** is like adding cold air to a room — it makes the room colder. So, the number goes **down**. **Subtracting a negative number** is like removing cold air from a room — it makes the room warmer. So, the number goes **up**.	
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 need to know how to fill in and use a place value table.	**Steps to Success – Multiplying by Powers of 10** **Step 1:** Draw out a place value table like the one below to help you. **Step 2:** Align the digits of the number that you are multiplying by 10, 100 or 1000 etc. into the place value table **Step 3:** Work out how many times you need to shift the digits to the left: If you are multiplying by 10 shift all the digits 1 space to the left. If you are multiplying by 100 shift all the digits 2 spaces to	Boxes on steps don't work very well when pasted into powerpoint.

Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
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				the left. If you are multiplying by 1000 shift all the digits three spaces to the left and so on. **Step 4:** Once you have shifted all digits the appropriate number of times you can then write this new number as your final answer. **Steps to Success – Dividing by Powers of 10** **Step 1:** Draw out a place value table. **Step 2:** Align the digits of the number that you are multiplying by 10, 100 or 1000 etc. into the place value table **Step 3:** Work out how many times you need to shift the digits to the right: If you are dividing by 10 shift all the digits 1 space to the right. If you are dividing by 100 shift all the digits 2 spaces to the right. If you are dividing by 1000 shift all the digits three spaces to the right and so on. **Step 4:** Once you have shifted all digits the appropriate number of times you can then write this new number as your final answer.	
To learn how to multiply decimals.	• Students will know how to multiply decimals by integers. • Students will know how to multiply decimals by decimals. • Students will know how to solve real life problem involving the multiplication of decimals using the column method- money problems.	Use a spider diagram to show different words which mean to multiply. E.g. product	• Students need to know how to multiply and divide by powers of 10. • Students need to know how to multiply 2-digit and 3-digit integers by a 2-digit integer using column multiplication. ***IF STUDENTS STRUGGLE THIS IS WHERE THE PRIOR KNOWLEDGE CONSOLIDATION SLIDE IS ESSENTIAL!***	**Step 1:** Multiply each number by powers of ten to transform it from a decimal to an integer **Step 2:** Multiply the two integers using column multiplication **Step 3:** Adjust your answer by dividing by the powers of 10 that you multiplied by at the start (for example if you multiplied one number by 10 and the other by 100 you would need to divide by 1000 (10 x 100)	Multiplication vocab missing
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 a decimal. • Students will know that they will not need to make any extra adjustments to their answer as its equivalent to the original divide. • Students will know how to solve simple real-life problems involving the division of decimals.		• Students need to know how to divide 2-digit and 3-digit integers by a 1-digit integers using short division. • Students need to know how to divide 2-digit and 3-digit integers by 2-digit integers using short division. • Students need to know how to multiply by powers of 10. ***IF STUDENTS STRUGGLE THIS IS WHERE THE PRIOR KNOWLEDGE CONSOLIDATION SLIDE IS ESSENTIAL!***	**Step 1:** Write the question as a fraction **Step 2:** Multiply both the numerator and denominator by an appropriate power of ten to eliminate the decimal in the denominator but keep the fraction equivalent to the original question **Step 3:** Divide the numerator by the denominator using the bus stop method where necessary	Division vocab missing
To learn how to multiply and divide negative numbers.	• Students will know how to multiply a positive number to a negative number.		• Students need to know how to multiply and divide positive integers.		Could this be done with adding and subtract negatives?

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	• 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 multiplying and dividing of negative numbers. Avoid using terminology such as 2 negatives make a positive.				
To learn how to solve problems involving money.	• Students will know how to solve a mixture of simple money problems using addition, subtraction, multiplication and division without a calculator. • Students will know how to solve a mixture of simple money problems using addition, subtraction, multiplication and division with a calculator. • Students will know how to solve a mixture of more complex/multi-step money problems using addition, subtraction, multiplication and division.		• Students need to know how to add, subtract, multiply and divide with decimals. *IF STUDENTS STRUGGLE THIS IS WHERE THE PRIOR KNOWLEDGE CONSOLIDATION SLIDE IS ESSENTIAL!*	<u>Step to Success – Money Problems</u> **Step 1:** Read the question carefully. **Step 2:** Highlight any key words. **Step 3:** Select whether to add, subtract, multiply or divide. **Steps 4:** Calculate the answer, ensuring you have given the appropriate units.	Could we do an identifying key words task – where we select or match up things like sum and add etc.
Mini-Assessment 1					