The Sutton Academy

Knowledge Rich Curriculum Plan

Year 7 Core – Percentages

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
To learn how to convert from fractions to decimal and percentages.	• Students will know how to convert fractions to decimals with fractions such as $\frac{21}{100}$, $\frac{3}{10}$ and $\frac{7}{50}$. • Students will know how to convert fractions to percentage with fractions such as $\frac{21}{100}$ and $\frac{3}{50}$. • Students will know that the conversions of $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$.	**Convert –** change a value or expression from one form to another **Percentage** – an amount in each hundred. **Fraction –** a way of representing the parts of a whole or collection of objects. Fractions have a numerator and denominator. **Decimal –** a number whose whole number part and the fractional part is separated by a decimal point	• Students need to know how to divide by powers of 10. • Students need to know how to find equivalent fractions.	**Steps to Success – Converting fractions to decimals** **Step 1:** When possible find an equivalent fraction with a denominator of 100 or 10. If this is not possible then go straight to step 2. **Step 2:** Divide the numerator by the denominator using short division if necessary. **Steps to Success – Converting fractions to percentages** **Step 1:** When possible find an equivalent fraction with a denominator of 100 – you can then write your percentage straight away as all percentages are out of 100. If this is not possible then go straight to step 2. **Step 2:** Divide the numerator by the denominator using short division if necessary. This will give you a decimal. **Step 3:** Convert the decimal into a percentage by multiplying it by 100.	
To learn how to convert from decimals to percentages and fractions.	• Students will know how to convert decimals to percentages using decimals such as 0.8, 0.45 and 0.03. • Students will know how to convert decimals to fractions with decimals such as 0.8, 0.45 and 0.03. • Students will know how to convert decimals to fractions writing their fractions in their simplest form.		• Students need to know how to multiply by powers of 10.	**Steps to Success – Converting decimals to fractions** **Step 1:** Multiply the decimal by powers of 10 to gain an integer value. **Step 2:** Place the power of 10 used as the denominator. **Steps to Success – Converting decimals to percentages** **Step 1:** All percentage are out of 100. So, multiply the decimal by 100 to turn it into a percentage.	
To learn how to convert from percentage to fractions and decimals.	• Students will know how to convert percentages to decimals with percentages such as 80%, 34%, 7% and 42.3%. • Students will know how to convert percentages to fractions using percentages such as 80%, 34% and 7%. • Students will know how to convert percentages to fractions writing their fractions in their simplest form.		• Students need to know how to divide by powers of 10.	**Steps to Success – Converting percentages to decimals** **Step 1:** All percentages are out of 100. So, divide the percentage by 100 to turn it into a decimal. **Steps to Success – Converting percentages to fractions** **Step 1:** All percentage are out of a hundred. So, rewrite the percentage as a fraction. **Step 2:** You may need to multiply the numerator and denominator by powers of 10 to ensure the numerator is an integer. **Step 3:** Check to see if the question asks for the fraction in its simplest form. If so, simplify the fraction.	
To learn how to express one number as a percentage of another.	• Students will know how to express one number as a percentage of another by expressing it as a fraction and multiplying by 100, giving an integer answer. • Students will know how to use a calculator to express one percentage as a percentage of another. **Opportunity for challenge:** • Students will know how to solve problems by expressing one number as a percentage of another.		• Students need to know how to express one number as a fraction of another.	**Steps to Success – Expressing a given number as a Percentage (Non-Calculator)** **Step 1** – Express the numbers in the question as a fraction, the denominator of the fraction is the larger of the two numbers. **Step 2 –** If possible simplify the fraction or alternatively convert the fraction to a decimal to do this use the bus stop method. **Step 3 –** To convert the decimal multiply it by 100. To convert the fraction to a percentage make the denominator over 100. **Steps to Success – Express a given number as a Percentage using a calculator**	

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
				Step 1 – Type the fraction into the calculator and convert to decimal form. **Step 2 –** Multiply the answer by 100.	
To learn how to calculate percentages of amounts.	• Students will know how to calculate simple percentages of amounts without a calculator. E.g. 50%, 10% and 1% • Students will know how to calculate simple scaled percentage of amounts such as 5%, 20% 25% and 75%. • Students will know how to calculate **any** percentage of an amount. **Opportunity for challenge:** • Students will know how to solve simple real-life problems by finding the percentage of an amount.		• Students need to know how to divide integers using short division. • Students need to know how to find 50%, 25%, 75%, 20%, 10%, 5% and 1% of a given amount.	**Steps to success- Percentages of amounts (without a calculator)** **Step 1:** Recall that percent means out of one hundred, so, when calculating a percentage of amount divide the amount by whatever you would divide 100 by to get to the given percentage. E.g. for 10% divide by 10, for 25% divide by 4, for 50% divide by 2 etc. If you can reach your percentage in one step, then you are finished. **Step 2:** If the question requires you to find a percentage which isn't easily worked out, such as 45% or 68%, you will need to work out a smaller percentage from step 1, and work your way towards the desired number. For example, 45% can be reached by finding 10% and 5%, and multiplying the 10% by 4 to get 40% and adding on the 5%.	
To learn how to increase or decrease an amount by a percentage	• Students will know that percentage increase is calculated by finding the percentage of the amount and adding it onto the original amount. • Students will know that percentage decrease is calculated by finding the percentage of the amount and subtracting it from the original amount.	Increase – gets bigger Decrease – gets smaller Use a spider diagram to show different words which mean to increase. E.g. interest Use a spider diagram to show different words which mean to decrease. E.g. reduce	• Students need to know how to find a percentage of an amount.	**How do we calculate Percentage Increase and Decrease without a Calculator?** **Step 1 -** Calculate the percentage of the amount **Step 2** – Increasing/Decreasing an amount by a Percentage When a question asks you to increase an amount by a given percentage, you add the percentage of the amount found onto the original value in the question. The answers should be larger than the original value in the question. When a question asks you to decrease an amount by a given percentage, you subtract the percentage of the amount found from the original value in the question. The answer should be smaller than your original value.	
To learn how to calculate percentages of amounts using a calculator.	• Students will know how to express one number as a percentage of another using a calculator. • Students will know how to use a calculator to convert between fractions, decimals and percentages. • Students will know how to find multipliers; basic/increase/decrease. • Students will know how to find the percentage of an amount using a calculator. • Students will know how to increase an amount by a percentage using a calculator. • Students will know how to decrease an amount by a percentage using a calculator.	Multiplier – a value in which another term is multiplied	• Students need to know how to convert between fractions, decimals and percentages. • Students need to know how to increase and decrease an amount using percentages.	**Steps to Success- Percentage of amount using a calculator** **Step 1:** Calculate the multiplier by converting the percentage into a decimal. **Step 2:** Multiply the multiplier by the amount given in the question. **Steps to Success – Finding a Multiplier** • To find a basic multiplier divide the percentage by 100. e.g. 50% = 50/100 = 0.5 • To find an increase multiplier add the percentage to 100 and then divide by 100 • To find a decrease multiplier subtract from 100 and then divide by 100	

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
				Steps to Success- Increase/decrease an amount using a calculator **Step 1:** If decrease subtract your percentage from 100% to find the actual percentage you need to find. If an increase add the percentage to 100% to find the percentage you need to find. **Step 2:** Calculate the multiplier by converting the percentage into a decimal. **Step 3:** Multiply the multiplier by the amount given in the question. **Step 4:** Check your answer makes sense. It should be smaller than the original number for decrease/ larger than the original amount for increase.	
To consolidate understanding of percentages.	• Students will know how to convert between FDP • Students will know how to express one number as a percentage of another. • Students will know how to calculate percentages of amounts. • Students will know how to calculate percentage increase and decrease.		• Students need to know how to convert FDP • Students need to know how to find multipliers.		
Mini-Assessment 4					