The Sutton Academy

Knowledge Rich Curriculum Plan

Year 10 Foundation + – Percentages

Lesson	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success:	Feedback
To learn how to solve problems involving percentages using a calculator.	• Students will know how to express a percentage of amounts, increases or decreases as a multiplier. • Students will know how to find a percentage of an amount by a percentage using a calculator and a multiplier. • Students will know how to increase an amount by a percentage using a calculator and a multiplier. • Students will know how to decrease an amount by a percentage using a calculator and a multiplier. • Students will know how to solve more complex worded problems involving fractions and percentages using a calculator. • Students will know how to express one number as a percentage of another, giving an integer answer with and without a calculator. • Students will know how to express one number as a percentage of another, giving a decimal answer with and without a calculator. • Students will know how to solve worded/real-life problems by expressing one number as a percentage of another.	**Multiplier** – a value in which another term is multiplied	• Students need to know how to convert percentages to decimals. • Students need to know how to express one number as a fraction of another.	**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- Increase an amount using a calculator** **Step 1:** Add your percentage to 100% to find the actual 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 bigger than the original number. **Steps to Success- Increase an amount using a calculator** **Step 1:** Subtract your percentage from 100% to find the actual 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. **Steps to success- Expressing a number as a percentage of another number** **Step 1:** Write the given number as a fraction of the total. **Step 2:** 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 3. **Step 3:** Divide the numerator by the denominator using short division if necessary. This will give you a decimal. **Step 4:** Convert the decimal into a percentage by multiplying it by 100.	
To learn how to calculate percentage change.	• Students will know how to calculate the value of a profit or loss and use it to determine percentage profit or loss. • Students will know that $percentage\ profit = \frac{profit}{expense} \times 100$ • Students will know that $percentage\ loss = \frac{loss}{expense} \times 100$ • Students will know how to calculate percentage change with and without a calculator. **Opportunity for challenge:** • Students will know how to solve real-life problems involving percentage change.	**Profit –** a financial gain, the difference between the amount earned and the amount spent in buying, operating or producing something **Expense –** the cost incurred in or required for something	• Students will need to know how express one number as a percentage of another.	**Steps to Success- Percentage Change** Both profit and loss can follow the same formula: **Step 1:** Identify the change by subtracting the smaller amount from the greater amount. **Step 2:** Identify the original cost or expense. **Step 3:** Substitute into the following formula: $$Percentage\ change = \frac{change}{original\ cost\ or\ expense} \times 100$$	

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To learn how to solve problems involving reverse percentages.	• Students will know how to find the original amount given the final amount after a percentage increase or decrease (reverse percentages). • Students will know how to find the original amount using reverse percentages with and without a calculator. • Students will know how to recognise when they need to use reverse percentages. **Opportunity for challenge:** • Students will know how to solve real-life problems using reverse percentages including VAT.	**VAT – Value Added Tax** – a tax that is applied to the purchase price of certain goods, services and other taxable supplies that are bought and sold within the UK. Standard VAT is 20%.	• Students need to know how to solve basic proportion problems.	**Steps to Success - Reverse percentages** **Step 1:** There are 3 types of reverse percentage questions. Firstly, identify whether is an increased percentage, a decreased percentage or the same percentage. **Step 2:** • If the original amount has been reduced by a percentage subtract the percentage from 100%. • If the original amount has been increased by a percentage add the percentage to 100%. • If the original amount is equal to the percentage change then go to step 3. **Step 3:** Write this percentage equal to the new amount given in the question. **Step 4:** Divide to find 1%. **Step 5:** Multiply the answer by 100 to find 100%. **Step 6:** Check that the answer looks right. You can also check by calculating the increase/decrease with your answer.	
To learn how to calculate simple interest.	• Students will know the difference between simple interest and compound interest. • Students will be able to calculate simple interest without a calculator. • Students will be able to calculate simple interest using a calculator. • Students will know how to solve problems involving simple interest.	**Cultural Capital -Simple Interest Vs Compound Interest** **Interest -** a fee paid for borrowing money or an amount earned by saving money in a bank account that pays it **Annum –** year	• Students need to know how to find the percentage of an amount. • Students need to know how to convert a percentage into a multiplier.	**Steps to success- Simple Interest** **Step 1:** Begin calculating the percentage of the original amount. **Step 2:** Multiply this amount by the number of years the interest has been applied for. **Step 3:** Check what the question wants: • If you need to find only how much interest was gained, you have your answer. • If you need to find the total after the interest is applied, add the amount gained from simple interest to the original amount.	
To learn how to calculate with compound interest and depreciation.	• Students will know how to calculate the compound interest of an amount. • Students will know how to calculate the compound depreciation of an amount. • Students will know how to calculate compound interest or depreciation of an amount using a calculator. **Opportunity for challenge:** • Students will know how to calculate the number of years needed to find a certain total value or interest. • Students will know how to solve a problem involving compound interest or depreciation	**Compound Interest –** the interest on a loan or deposit that accrues on both the initial value and the accumulated interest from previous periods. **Depreciation –** a decrease in the value **Accumulated –** built up over time **Accrued –** received **Initial –** starting/original amount	• Students need to know how to convert a percentage into a multiplier.	**Steps to Success – Compound interest** **Step 1:** Add the percentage to 100% and divide by 100 to find the multiplier. **Step 2:** Calculate the compound interest by filling in the calculation: $Original\ amount \times multiplier^n$ Where n is the number of years the money is invested for **Steps to Success – Compound depreciation** **Step 1:** Subtract the percentage from 100% to find the percentage multiplier. **Step 2:** Calculate the compound interest by filling in the calculation: $Original\ amount \times multiplier^n$ Where n is the period of time.	
Exam Preparation 4					