Knowledge Rich Curriculum Plan

Year 9 Prime – Fractions and Percentages

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
To learn how to add and subtract fractions.	• Students will know how to add fractions with different denominators. • Students will know how to subtract fractions with different denominators. • Students will know how to add mixed numbers. • Students will know how to subtract mixed numbers. • Students will know to write their answers in the simplest form when possible. • Students will know solve real-life problems involving adding and subtracting fractions.	**Improper Fraction –** a fraction where the numerator is larger than the denominator **Mixed Number –** a number consisting of an integer and a proper fraction. **Fraction –** a way of representing the parts of a whole or collection of objects. Fractions have a numerator and denominator. **Denominator –** the bottom number in a fraction **Numerator –** the top number in a fraction **Simplify –** make something simpler or easier to manage	• Students will know how to add and subtract fractions with the same denominator. • Students need to know how to simplify fractions. • Students need to know how to convert between improper fractions and mixed numbers. • Students need to know how to find equivalent fractions.	Mini-Assessment 2
To learn how to multiply and divide fractions.	• Students will know how to multiply fractions by multiplying the numerators and multiplying the denominators. • Students will know how to multiply integers by fractions. • Students will know how to multiply mixed numbers. • Students will know how to divide fractions by multiplying the first fraction with the reciprocal of the second fraction. • Students will know how to divide integers by fractions. • Students will know how to divide fractions by integers. • Students will know how to divide mixed numbers. • Students will know to write their answers in the simplest form when possible. • Students will know solve real-life problems involving multiplying and dividing fractions.		• Students need to know how to simplify fractions. • Students need to know how to convert between improper fractions and mixed numbers.	Mini-Assessment 2
To learn how to find the fraction of a quantity and calculate with fractions on a calculator.	• Students will know that to find the fraction of a quantity by dividing the quantity by the denominator and then multiplying the result by the numerator. • Students will know how to find the fraction of a quantity using simple fractions with numerators of 1. eg. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ • Students will know how to find the fraction of a quantity using fractions with numerators of more than 1. eg. $\frac{2}{3}$, $\frac{3}{4}$, $\frac{7}{10}$ • Students will know how to compare fractions of different quantities. • Students will know how to solve real-life problems using fractions of quantities. • Students will know how to use a calculator to simplify fractions. • Students will know that a calculator will always give a fractional answer in its simplest form. • Students will know how to convert improper fractions to mixed numbers using a calculator. • Students will know how to convert mixed numbers to improper fractions using a calculator. • Students will know how to use a calculator to add fractions. • Students will know how to use a calculator to subtract fractions. • Students will know how to use a calculator to multiply fractions. • Students will know how to use a calculator to find a fraction of a quantity. • Students will know how to complete calculations with mixed numbers on a calculator.	**Denominator –** the bottom number in a fraction **Numerator –** the top number in a fraction	• Students need to know how to multiply and divide integers. • Students need to know how to input fractions into a calculator.	Mini-Assessment 2

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
To learn how to convert between fractions, decimals and percentages.	• Students will know that a percentage is an amount in each hundred that is used to show a proportion in relation to a whole. • Students will know that a percentage is represented by %. • Students will know that to convert a fraction to a decimal you divide the numerator by the denominator. • Students will know how to convert fractions to decimals with fractions such as $\frac{6}{25}$, $\frac{7}{10}$ and $\frac{3}{8}$. • Students will know how to convert fractions to percentages by using the fact that percentage are per hundred. • Students will know how to convert fractions to percentage with fractions such as $\frac{6}{25}$, $\frac{7}{10}$ and $\frac{3}{8}$. • Students will know that the conversions of $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$. • Students will know that to convert a decimal to a percentage you multiply it by 100. • Students will know how to convert decimals to percentages using decimals such as 0.45, 0.03 and 1.5. • Students will know that to convert a decimal to a fraction by multiplying by a power of 10 to get an integer value for the numerator and then using the same power of 10 as the value for the denominator. • Students will know how to convert decimals to fractions with decimals such as 0.45, 0.017 and 1.5. • Students will know how to convert decimals to fractions writing their fractions in their simplest form. • Students will know how to convert percentages by using the fact that percentage are per hundred. • Students will know how to convert a percentage to a decimal we divide the percentage by 100. • Students will know how to convert percentages to decimals with percentages such as 34%, 127% and 42.3%. • Students will know that to convert a percentage to a fraction we write it over 100 as all percentages are out of 100. • Students will know how to convert percentages to fractions using percentages such as 34%, 127% and 15.6%. • Students will know how to convert percentages to fractions writing their fractions in their simplest form. • Students will know how to convert between fractions, decimals and percentages in real-life problems.	**Convert** – change a value or expression from one form to another **Percentage** – a rate, number, or 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 and divide by powers of 10. • Students need to know how to find equivalent fractions. • Students need to know how to divide integers. • Students need to know how to multiply a fraction by integer.	Mini-Assessment 2

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
To learn how to convert between recurring decimals and fractions.	• Students will know that recurring decimals are irrational decimal number that repeat periodically. • Students will know how to convert fractions to recurring decimals using division. • Students will know how to convert recurring decimals to fractions using the algebraic method.		• Students need to know how to convert between fractions and decimals. • Students need to know how to simplify fractions.	Mini-Assessment 2
To learn how to increase or decrease an amount using percentages.	• Students will know how to calculate any percentage of an amount. • Students will know how to find the percentage of an amount using real-life problems. • Students will know that increasing an amount by a percentage will cause the amount to get bigger. • Students will know that decreasing an amount by a percentage will cause the amount to get smaller. • 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. • Students will know how to increase or decrease an amount using percentages in real-life problems. • Students will know that value added tax, or VAT, is the tax you have to pay when you buy goods or services. • Students will know that the standard rate of VAT in the UK is 20%. • Students will know how to calculate VAT.	Percentage – a rate, number, or amount in each hundred. Increase – a rise in the size, amount, or degree of something Decrease – a drop in the size, amount, or degree of something	• Students need to know how to find 50%, 25%, 10%, 5% and 1% of a given amount.	Mini-Assessment 2
To learn how to calculate percentages of amounts using a calculator.	• Students will know how to use a calculator to express one percentage as a percentage of another. • Students will know how to use a calculator to convert fractions to percentages and decimals. • Students will know how to use a calculator to convert decimals to percentages and fractions. • Students will know how to use a calculator to convert percentages to decimals and fractions. • Students will know how to find the percentage of an amount using a calculator. • Students will know how to solve problems involving the percentage of an amount using a calculator. • Students will know how to express a percentage increase or decrease using a multiplier. • Students will know how to increase an amount by a percentage using a calculator using a multiplier. • Students will know how to decrease an amount by a percentage using a calculator using a multiplier. • Students will know how to solve increase and decrease problems using a calculator.		• 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.	Mini-Assessment 2

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
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.	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 need to know how to calculate how much profit or loss has been incurred. • Students need to know how to convert fractions into percentages. • Students need to know how to multiply fractions by integers.	Mini-Assessment 2
To learn how to use 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. • Students will know how to find the original amount given the value of the percentage change. **Opportunity for challenge:** • Students will know how to solve multi-step reverse percentage problems.		• Students need to know how to multiply and divide integers.	
To learn how to calculate simple and compound interest.	• Students will know the difference between simple of compound interest. • Students will know that interest is an amount money that is added or occurred over time. • Students will know how to find simple interest by finding the value of the increase, multiplying by the amount of years and adding it to the original amount. • Students will know how to calculate simple interest with and without a calculator. • Students will know how to solve problems involving simple interest. • 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 solve a problem involving compound interest or depreciation.	Cultural Capital -Simple Interest Vs Compound Interest Interest - a fee paid for borrowing money or other assets or an amount earned by saving money in a bank account that pays it 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 increase amounts using percentages. • Students need to know how to use a calculator to find percentages.	Mini-Assessment 2
To learn how to solve problems involving compound interest and depreciation.	• Students will know how to find the compound interest when the interest changes between different years. • Students will know how to solve a problem involving a mixture of compound interest and depreciation. • Students will know how to compare the outcome of using simple interest and compound interest. • Students will know how to solve a problem involving compound interest or depreciation.	Interest - a fee paid for borrowing money or other assets or an amount earned by saving money in a bank account that pays it Compound Interest – the interest on a loan or deposit that accrues on both the initial principal and the accumulated interest from previous periods. Depreciation – a decrease in the value Accumulated – built up over time Accrued – received Initial – starting/original amount Annum – year	• Students need to know how to find simple interest. • Students need to know how to find compound interest and depreciation.	Mini-Assessment 2