Knowledge Rich Curriculum Plan

Year 10 Intermediate – Fractions, Decimals and Percentages

Lesson Objective	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 fractions of amounts	• Students will know how to find a fraction of a quantity or measurement, by dividing by the denominator and multiplying by the numerator, including in context. • Students will know how to solve worded problems involving fractions of amounts	**Denominator –** the bottom number in a fraction **Numerator –** the top number in a fraction **Improper Fraction –** a fraction where the numerator is larger than the denominator **Mixed Number –** a number consisting of an integer and a proper fraction. **Equivalent –** equal in value, amount, function, meaning, etc. **Simplify –** make something simpler or easier to manage **Convert –** change a value or expression from one form to another	• Students will need to know how to divide using the bus stop method	
To learn how to add and subtract fractions	• Students will know how to add and subtract fractions with the same denominator • Students will know how to add and subtract proper fractions, improper fractions and mixed numbers with different denominators. Students will know how to simplify their answers and write them as mixed numbers where necessary. They will understand the importance of converting mixed numbers to improper fractions before calculating. • Students will know how to solve worded problems involving adding and subtracting fractions and mixed numbers		• Students need to know how to simplify fractions • Students need to know how to convert improper fractions to mixed numbers and vice versa • Students need to know how to find equivalent fractions	
To learn how to multiply and divide fractions	• Students will know how to multiply fractions and mixed numbers. They will know how to simplify their answers and write them as mixed numbers where necessary • Students will know how to divide fractions and mixed numbers. They will know how to simplify their answers and write them as mixed numbers where necessary. They will understand the importance of converting mixed numbers to improper fractions before calculating. • Students will know how to multiply a fraction by a whole number or a whole number by a fraction • Students will know how to divide a fraction by a whole number or a whole number by a fraction		• Students will need to know how to simplify fractions • Students will need to know how to convert improper fractions to mixed numbers and vice versa	
To learn how to convert between fractions, decimals and percentages.	• Students will know that to convert a fraction to a decimal you divide the numerator by the denominator. • Students will know that to convert a decimal to a percentage you multiply it by 100. • Students will know that to convert a decimal to a fraction, place the decimal number over its place value; simplify if needed. • Students will know that to convert a decimal to a percentage you multiply it by 100. • Students will know that to convert a decimal to a fraction, place the decimal number over its place value; simplify if needed.	**Percentage –** a rate, number, or amount in each hundred.	• Students will need to know how to divide integers using the bus stop method. • Students will need to know how to find equivalent fractions, particularly ones with 100 as the denominator	

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To learn how to convert between recurring decimals and fractions	• 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 will need to know how to multiply by powers of 10 • Students will need to know how to subtract using column subtraction • Students will need to know how to write a fraction in its simplest form.	
To learn how to convert between fractions, decimals and percentages.	• Students will know that a percentage is a fraction in hundredths • Students will know that to convert a percentage to a decimal we divide the percentage by 100 • Students will know that to convert a percentage to a fraction we write it over 100 and then simplify the fraction		•	
To learn how to calculate percentages of amounts without a calculator.	• Students will know how to calculate any percentage of an amount without a calculator. • Students will know how to solve worded problems involving percentages of amounts including comparisons of two quantities using percentages.		• Students will need to know how to divide by 100, 10 and 2	
To learn how to increase and decrease by a percentage	• Students will know how to increase and decrease an amount of measurement by a percentage without a calculator • Students will know how to solve worded problems involving increasing and decreasing by a percentage • Students will be able to calculate simple interest	**Increase** – a rise in the size, amount, or degree of something **Decrease** – a drop in the size, amount, or degree of something **Interest** - a fee paid for borrowing money or other assets or an amount earned by saving money in a bank account that pays it **Annum** – year	• Students will need to know how to calculate percentages of amounts	
To learn how to solve problems involving percentages using a calculator	• Students will know how to calculate a percentage of a quantity or measurement with a calculator - they will know how to locate and use the percentage button • Students will know how to increase and decrease an amount of measurement by a percentage with a calculator • Students will know how to solve more complex worded problems involving fractions and percentages using a calculator • Students will be able to calculate simple interest		• Students will need to know how to find fractions and percentages of amounts	
To learn how to express one amount as a percentage of another and calculate percentage change	• Students will know how to express a given number as a percentage of another number by first writing as a fraction and then converting to a percentage. Students will know how to do this both with and without a calculator. • Students will know how to calculate percentage change		• Students will need to know how to convert a fraction into a percentage both with and without a calculator	

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To learn how to calculate percentage profit and loss	• 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 $percentage\ loss = \frac{loss}{expense} \times 100$	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 to calculate how much profit or loss has been incurred	
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), including VAT both with and without a calculator (as appropriate)	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 will need to know how to multiply by 100	
To learn how to calculate with compound interest and depreciation.	• Students will know how to calculate compound interest and depreciation. • Students will know how to solve problems involving compound interest and 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 will need to know how to increase by a percentage • Students will need to know how to convert percentages into decimals	