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**Knowledge Rich Curriculum Plan**

Year 11 Higher+ Number



| **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 simplify surd expressions and expand brackets with surds** | * Students will know how to multiply and divide surds
* Students will know how to add and subtract surds by simplifying them so that the root is the same number
* Students will know that we can only ‘collect’ surds where the root is the same
* Students will know how to expand single brackets with surds, including where simplification of surds is required
 | **Surd –**the irrational root of an integer.**Rationalise –** to make rational**Rational Number –** a number that can be expressed as a fraction**Irrational Number –** Numbers which, when written in decimal form, would go on forever.**Denominator –** the bottom number in a fraction | * Students will need to know how to simplify surds
* Students will need to know how to expand brackets with algebra
 | Exam Prep 1 |
| **To learn how to expand double brackets with surds and rationalise denominators** | * Students will know how to expand and simplify double brackets with surds including where resulting surds need simplifying. They will know how to do this where the numerator is an integer, single surd or an expression involving surds and/or integers
* Students will know how to rationalise the denominator when a single surd is in the denominator
 |  | * Students will need to know how to simplify surds
* Students will need to know how to expand double brackets with algebra
 | Exam Prep 1 |
| **To learn how to rationalise the denominator** | * Students will know how to rationalise the denominator when the denominator has two parts separated by a + or a - e.g. $\frac{5}{\sqrt{2}+1}$ or $\frac{\sqrt{2}+3}{\sqrt{3}-1}$ etc.
* Students will know how to solve more complex, multi-step, exam style problems involving surds
 |  | * Students will need to know how to expand double brackets with surds
 | Exam Prep 1 |
| **To learn how to calculate percentage change, profit and loss** | * Students will know how to calculate percentage change, percentage profit and percentage loss both with an without a calculator (as appropriate)
* Students will know that $percentage change=\frac{change}{original}×100$
* Students will know that $percentage profit=\frac{profit}{expense}×100$
* Students will know that $percentage profit=\frac{loss}{expense}×100$
 | **Profit –** a financial gain, the difference between the amount earned and the amount spent in buying, operating, or producing something | * Students will need to know how to increase and decrease an amount by a percentage
* Students will need to know how to calculate percentages of amounts
 | Exam Prep 1 |
| **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 write a ratio in the form 1:n
 | Exam Prep 1 |
| **To learn how to solve problems involving compound interest and depreciation** | * Students will know how to calculate a repeated percentage change including compound interest and depreciation
* Students will know how to determine the number of years interest has been accrued for given the starting and end value
* Students will know how to work out the interest rate when compound interest has been accrued for a given number of years, given the starting and end amounts
 | **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
* Students will need to know how to solve linear equations using inverse operations
 | Exam Prep 1 |