



LEARNING JOURNEY

MATHS

Indices and surds

What patterns emerge when we explore powers of 2, 3, 4, 5 and 10?

How can we use notation and calculators to explore square, cube and other roots?

What are surds and how do they help us to work with Pythagoras' Theorem efficiently?

Can surds be simplified?



Expressions

How are surds added and subtracted?

How are expressions involving multiplying and dividing indices simplified?

What changes when a power is raised to a power?

What do negative and fractional indices mean?

How do the laws of indices help us to calculate with standard form efficiently?

Polynomials - expanding

What happens we expand brackets with powers?

What's the produce of binomials?

Is there an efficient way of expanding two brackets?

When does expanding lead to a difference of two squares?

What happens when the binomials involve surds?

Polynomials - factorising

What are the factors of an algebraic expression; factorising with one bracket.

What are the factors of a (monic) quadratic expression?

What are the factors of a (non-monic) quadratic expression?

What can we find out about expressions involving a perfect square?

How do we complete the square?



Expressions and indices are fundamental concepts in mathematics that hold immense importance in various fields. Understanding expressions, such as algebraic equations and formulas, is crucial for problem-solving, modelling real-world situations, and advanced calculations. In professions like engineering, architecture, and physics, knowledge of expressions is vital for designing structures, predicting outcomes, and optimising systems. Indices, also known as exponents, play a pivotal role in simplifying complex calculations and representing large numbers compactly. Professions like computer science, cryptography, and data analysis heavily rely on indices to process and secure information efficiently. Mastery of these concepts opens doors to careers in STEM fields, finance, economics, research, and technology, where mathematical skills are in high demand.

WE ARE HERE



Key:
Crossover
Higher



VOCABULARY

☐ Index

☐ Surd

☐ Quadratic

☐ Factorise

☐ Root



READY
RESPECTFUL
RESPONSIBLE

THE
RIGHT
WAY

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