Algebra 3 **Year 10 Foundation**

Key Knowledge/Prior Learning KS2/3 and Retrieval and Suggested Starters

- Collecting Like Terms
- Multiplication/ BIDMAS
- Substitution
- Solve linear equations.
- Plot coordinates in all four quadrants.

Retrieval and Suggested Starters

- Practicing the fluency of the above skills.
- Interleaving & problem-solving questions involving the above topics.

KS4 National Curriculum – what students will be practicing

- Multiply a single term over a bracket
- Take out common factors to find a single bracket.
- Simplify expressions involving sums, products and powers, including the laws of indices
- Expand two brackets.
- Factorise quadratic expressions of the form $x2+bx+c$, including the difference of two squares.
- Rearrange formulae to change the subject.
- Plot straight line graphs & quadratic graphs.
- Use y=mx+c & identify the gradient, the y-intercept & find the equation of the line.
- Identify parallel lines.
- Find the equation of the line through two given points or through one point with a given gradients.

Specific Ambitious Knowledge

- Identify & interpret roots, intercepts and turning points of quadratic graphs, graphically & algebraically.
- Solve quadratic equations algebraically by factorizing.
- Find approximate solutions, using a graph.
- Interleaving topics & problem-solving scenarios.

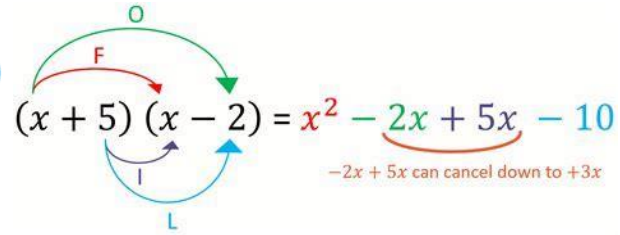
Key Vocabulary/Literacy Opportunities

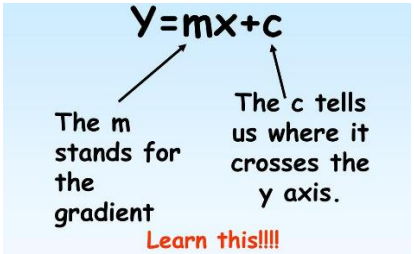
- Quadratic
- Expand
- Factorise
- Equation
- Gradient
- Intercept
- Expression

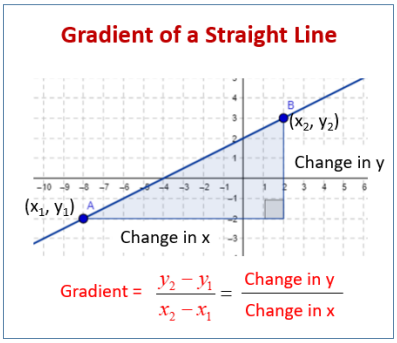
- Cubic
- Reciprocal
- Root
- Formulae

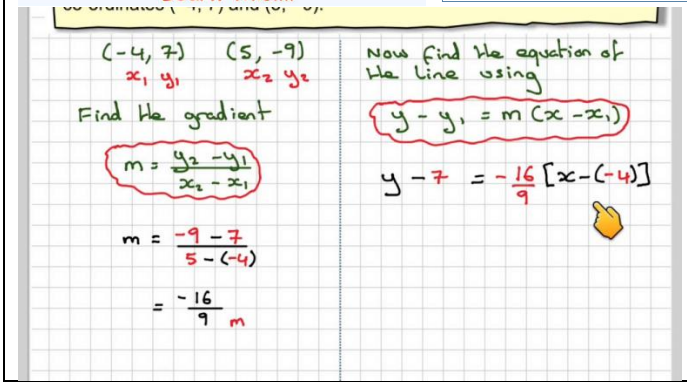
Key Formulae/Knowledge:

$$x^2 + 5x + 6 = (x + 2)(x + 3)$$









Cross Curricular Links

- Graphs are used in sciences/humanities.
- Algebra builds problem-solving skills that can be applied across many subjects.

Student' Thinking:

- Does it matter which method we use? (grid method, smiley face method for expanding for example).
- What does a negative gradient mean?
- Is there more than one answer to "factorise this expression"?

Projects/Enrichment/Investigations

Number Pyramids	Fibonacci Surprises	Quadratic Patterns
More Number Pyramids		
Perimeter Expressions		

Plus Minus	Finding Factors	2-digit Square
What's Possible?	Factorising with Multilink	Why 24?
Pair Products	Difference of Two Squares	Always Perfect
Multiplication Square	Square Number Surprises	Perfectly Square
Harmonic Triangle		

Parallel Lines

How Steep Is the Slope?	Diamond Collector	Perpendicular Lines	Doesn't Add Up
	Reflecting Lines	At Right Angles	
	Translating Lines	Surprising Transformations	

Curve Fitter

- Shared documents/Maths/Projects/Problem-solving card sorts.