

## Spring Half Term 1 – Algebraic Techniques

### Block 1 – Weeks 1 to 4

#### Brackets, equations and inequalities

- Expand, and factorise into, single brackets
- Form and use expressions, formulae and identities
- Form and solve equations and inequalities with and without brackets
- Distinguish between equations, expressions, formulae and identities

### Block 2 – Week 5

#### Sequences

- Generate sequences using more complex rules, e.g. with brackets and squared terms, both in words and algebraically

### Block 3 – Week 6

#### Indices

- Form expressions using indices
- Understand and use the addition and subtraction rules

#### Notes/Links/Interleaving

- Revisit the use of directed number
- Solve equations set in the context of earlier contexts – shapes, angles, probability, ratio etc.

#### Additional Higher Content

- Expand a pair of binomials
- Solve equations and inequalities with unknowns on both sides
- Find the rule for the  $n^{\text{th}}$  term of a linear sequence
- Explore powers of powers

### How do these topics benefit students in their real lives? What is the Cultural Capital offer?

Students will build their reasoning and logical thinking skills. Habit skills used include the ability to think flexibly, communicating with clarity, applying past knowledge of basic Algebra skills such as algebraic notation.

The knowledge of Algebra will enable students to access careers in STEM such as Computer Programming, Data based jobs using Excel and similar programs and anything where Mathematical modelling is required.

#### Fluency (substantive knowledge)

- Form algebraic expressions
- Use directed number with algebra
- Multiply/factorise a single bracket
- Expand multiple single brackets and simplify
- Expand a pair of binomials
- Understand and solve simple inequalities

- Generate sequences given a rule in words

- Adding/subtracting expressions with indices
- Multiply/divide expressions with indices
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#### Reasoning (disciplinary knowledge)

- Solve equations, including with brackets
- Solve equations and inequalities with unknowns on both sides
- Identify and use formulae, expressions, identities and equations

- Generate sequences given a simple/complex algebraic rule

- Use the addition and subtraction law for indices

#### Problem Solving (disciplinary knowledge)

- Form and solve equations with brackets
- Form and solve inequalities
- Form and solve equations and inequalities with unknowns on both sides

- Find the rule for the  $n^{\text{th}}$  term of a linear sequence

- Exploring powers of powers