

6

Solve linear and simple polynomial equations by trial and improvement methods.

Solve simple inequalities on a number line.

Solve equations such as $x^2 + x = 5$, using calculator.

List the values of n where n is a whole number such that $-10 < 2n \leq 20$.

7

Use the rules of indices for positive integer values.

Understand and use a wider range of formulae and functions.

Solve a wider range of polynomial equations by trial and improvement methods.

Solve a wider range of linear inequalities.

Solve simultaneous linear equations.

Simplify expressions such as: $2x^2 + 3x^2$, $2x^2 \times 3x^3$, $(3x^2)^3$, and $4a(3a$

Use the formula $T = 2\pi \sqrt{\frac{l}{g}}$ to calculate variable given the other.

Solve $x^3 + x = 20$ by such a method.

Solve $3n + 4 < 17$.

8

Manipulate simple algebraic expressions.

Use the rules of indices for negative and fractional values.

Find common factors such as $a^2x + ax^2 = ax(a + x)$.

Transform formulae such as $V = IR$, $v = u + at$.

Multiply out two brackets $(ax + b)(cx + d)$.

Use $x^0 = 1$,

$$y^{-3} = \frac{1}{y^3}, \quad \frac{x^2}{x^3} = \frac{1}{x} = x^{-1}$$

9

Express general laws in symbolic form.

Work with direct proportion – OHM's law; inverse proportion – BOYLE's law; or inverse square law.

10

Manipulate a range of algebraic expressions as needed in a variety of contexts.

Rearrange $x^2 + 3x - 2 = 0$ to give the iterative formula

$$x_{n+1} = \frac{2}{(x_n + 3)}.$$

Simplify

$$\frac{1}{x+2} + \frac{1}{x-3}$$

Show that

$$x^2 - 6x + 10 = (x - 3)^2 + 1 \geq 1.$$