

Year 11 Foundation Autumn Term 1

Block 1 – Week 1 and 2

Equations and Formulae

- Solve linear equations, including unknowns on both sides and in denominators
- Represent and solve inequalities, including single and double inequalities
- Construct equations and inequalities to solve problems

Unlock vocabulary

Equation	A maths statement showing that two expressions are equal.
Unknown	A value we do not know yet, usually represented by a letter such as x .
Solve	Find the value of the unknown that makes an equation true.
Inverse Operation	An operation that undoes another operation, such as addition and subtraction.
Inequality	A statement showing that one value is greater than or less than another.
Construct	Create an equation or inequality from given information.

Sparx Independent Learning

Solving equations with one step	U755
Solving equations with two or more steps	U325
Solving equations with the unknown on both sides	U870
Solving equations with the unknown in the denominator	U505
Reading and drawing inequalities on number lines	U509
Solving single inequalities	U759
Solving inequalities with the unknown on both sides	U738
Solving double inequalities	U145
Constructing and solving inequalities	U337

Block 2 – Week 3 and 4

Simultaneous Equations

- Understanding what a pair of simultaneous equations are
- Be able to solve simultaneous equations by elimination when coefficients are the same
- Solve a pair of simultaneous equations where 1 or 2 equations need adjusting.

Unlock vocabulary

Simultaneous equations	Two equations that are solved together to find values that satisfy both.
Manipulate	Change an equation while keeping it equivalent.
Elimination	Solving simultaneous equations by removing one of the unknowns.
Coefficient	The number multiplying a letter, such as 3 in $3x$.
Adjust	Multiply an equation so that one of the unknowns can be eliminated.
Equivalent	Having the same value, even though it may be written differently.

Example 3: Solve these simultaneous equations:

$$\begin{aligned}
 3x + 5y &= 36 & \dots (1) \\
 4x + 2y &= 20 & \dots (2)
 \end{aligned}$$

$$\begin{aligned}
 6x + 10y &= 72 & \dots 2 \times (1) \\
 20x + 10y &= 100 & \dots 5 \times (2)
 \end{aligned}$$

$$\begin{aligned}
 -14x &= -28 \\
 x &= -28 \div -14 \\
 x &= 2
 \end{aligned}$$

$$\begin{aligned}
 3 \times 2 + 5y &= 36 & \dots (1) \\
 6 + 5y &= 36 \\
 5y &= 30 \\
 y &= 30 \div 5 \\
 y &= 6
 \end{aligned}$$

First we label the equations (1) and (2)

Now we will make the numbers in front of y the same in both equations.

To do this, first we multiply every term in equation (1) by 2, (because this is the number in front of the y in equation 2).

Next we multiply every term in equation (2) by 5, (because this is the number in front of the y in equation 1).

Now we SUBTRACT corresponding terms to eliminate y .

Then divide both sides by -14 .

Now substitute for $x = 2$ into (1).

Take 6 from both sides

Divide both sides by 5 to give y .

Sparx Independent Learning

Solving simultaneous equations using elimination	U760
Constructing and solving linear simultaneous equations	U137

Mathematics Overview

Block 3 – Week 5 and 6

Sequences and Proof

- Describe and continue arithmetic and geometric sequences
- Determine the n th term of a linear sequence
- Use the n th term rule to generate terms of a sequence

Unlock vocabulary

Linear sequence	A sequence with a constant difference between consecutive terms.
Term	A number in a sequence.
Term-to-term rule	A rule that tells you how to get from one term to the next.
Arithmetic sequence	A sequence where the same amount is added or subtracted each time.
Geometric sequence	A sequence where each term is multiplied or divided by the same amount.
Common difference	The amount added or subtracted between terms in an arithmetic sequence.
nth term	A rule used to find any term in a sequence from its position.

1) 6, 10, 14, 18, 22 The sequence increases by 4, so the n th term starts with $4n$

Now compare the sequence to the 4 times table

6, 10, 14, 18, 22 Each term is 2 bigger than the 4 times table
 $\uparrow +2 \uparrow +2 \uparrow +2 \uparrow +2$
 4, 8, 12, 16, 20 So the n th term is $4n + 2$

Sparx Independent Learning

Substituting into position-to-term rules	U530
Position-to-term rules for arithmetic sequences	U498