

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

- Simplifying algebraic expressions.
- Expanding Brackets
- Substitution

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

- Solve two linear simultaneous equations in two variables by elimination.
- Find approximate solutions using a graph.
- Form simultaneous equations & interpret the solution.

Specific Ambitious Knowledge

- Including equations that need rearranging.
- Interleaving of topics to solve problems.

Key Vocabulary/Literacy Opportunities

- Simultaneous
- Equations
- Elimination
- Approximate
- Substitution

Key Formulae/Knowledge:

Simultaneous Equations

Learning Objective:

Solve a pair of Equations Simultaneously using a method of Elimination

Solve these pairs of equations simultaneously

$$\begin{array}{l} \text{a) } *x + y = 4 \\ \quad 2x - y = 5 \\ \hline 3x + 0y = 9 \\ 3x = 9 \quad x = 3 \\ 3 + y = 4 \quad y = 1 \end{array}$$

$$\begin{array}{l} \text{c) } *2x + y = 6 \quad *2 \\ \quad 3x + 2y = 10 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 2y - 2y = 0 \\ 4x + 2y = 12 \\ - 3x + 2y = 10 \\ \hline x + 0y = 2 \\ x = 2 \end{array}$$

$$\begin{array}{l} \text{b) } 2x + y = 9 \\ \quad -x + y = 7 \\ \hline x + 0y = 2 \\ 2 + y = 7 \end{array}$$

$$\begin{array}{l} \text{d) } x + 3y = 9 \\ \quad 2x - y = 4 \end{array}$$

Use the elimination method to solve the given simultaneous equations

$$\begin{array}{r}
 5x + y = 20 \quad (\times 5) \\
 \textcircled{*} 4x + 5y = 37 \quad \textcircled{*} \\
 \hline
 25x + 5y = 100 \\
 - 4x + 5y = 37 \\
 \hline
 21x = 63 \\
 (\div 21) \quad x = 3 \quad (\div 21)
 \end{array}$$

substitute $x = 3$
into
 $5x + y = 20$
 $5(3) + y = 20$
 $15 + y = 20$
 $(-15) \quad y = 5 \quad (-15)$

$\therefore x = 3, y = 5$

Cross Curricular Links

- Links to other areas of the Maths curriculum.
- Problem-solving skills linked to other subjects.

Student' Thinking:

- How do we make one variable equal in each equation?
- Does it matter which variable we make equal?
- How do we decide whether to add or subtract?

Projects/Enrichment/Investigations

[Pick's Theorem](#)
[Training Schedule](#)

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