| Subject | Year | Month | |
|---|---|---|---|
| **Mathematics** | 8 | March | Balcarras *From strength to strength* |

## Topic:

### SOLVING EQUATIONS
7 LESSONS

### Content (Intent)

#### Prior Learning

Y7 March:
- expression, term, equation (maybe variable, coefficient)
- rules of algebraic notation
- collecting like terms
- expanding brackets
- substitution (pos and neg)

Y7 April/May:
- Solving equations (incl use of brackets) with variable on ONE side

#### Future Learning

Y9 January:
- Inequalities

Y9 March:
- Simultaneous equations

Y10 October:
- Solving equations

#### Objectives

- Recap solving linear equations with **unknown on one side** (incl. negative number solution)
- Solve linear equations with unknown **on both sides**
  - ✓ the solution is a whole number
  - ✓ the solution is a fraction
  - ✓ the solution is a negative number
  - ✓ when the equation involves brackets

Apply solving equations to geometrical problems (perimeter, area, angles in a triangle, etc)

#### For teaching purposes

Possible questions:

- Show me an equation with a solution of - 8 (negative, fractional solution).

- What's the same, what's different: $2x + 7 = 25$, $3x + 7 = x + 25$, $x + 7 = 7 – x$, $4x + 14 = 50$ ?

- Convince me how you could use graphs to find solutions, or estimates, for equations.

Misconceptions
- May think that you have to have the unknown on the LEFT of the equal sign
- May think if $4x = 2$ then $x = 2$
- When solving: $2x – 8 = 4 – x$, some pupils may subtract '$x$' from both sides.
- When subtracting $x$'s from both sides, students may change the value of the constant too.

### Pedagogical notes (implementation)

- *Make sure that the variable x is always written curly, to avoid confusion with the multiplication symbol. (*On computer, use Times New Roman in Italic.)
- It is essential that pupils are secure with solving from Y7 (With variable on one side) before moving on.
- Could use the Bar Model for initial visualizing.
- *All pupils should solve equations by balancing:*

$$4x + 8 = 14 + x$$
$$-x \qquad -x$$
$$3x + 8 = 14$$
$$- 8 \qquad - 8$$
$$3x = 6$$
$$÷ 3 \qquad ÷ 3$$
$$x = 2$$

### How will understanding be assessed & recorded (Impact)

**8BAM11 Solving equations**
**End of term** Assessment in March
**End of Year** Assessment in June

### How can parents help at home?

**MathsWatch clips (Qualification KS3)**
A12, A19a, A19b, A24a

### Further reading/discussion

#### Reading / Enrichment

KM: Solving equations

KM: Stick on the Maths: Constructing and solving equations

NRICH: Think of Two Numbers

#### Literacy

Algebra, algebraic, algebraically, Unknown, Equation, Operation, Solve, Solution, Brackets, Symbol, Substitute, Graph, Point of intersection

**Notation**
Lower/ upper case should not change
2a is used rather than a2
Division is written as a fraction

#### Numeracy Links

#### Careers Links
Engineer
Accountant