Subject	Year	Month
Mathematics	7	April

Topic:

SOLVING EQUATIONS — 4 LESSONS

Content (Intent)

Prior Learning

KEY STAGE 2:

- Filling the gap ; missing number problems
- Order of operations

PREVIOUS UNIT

- Know the basic rules of algebraic notation
- Expanding brackets
- Substitution

Future Learning

Y8

- Solving Equations- unknowns on both sides
- Linear Graphs

Y9

- Circles- finding the radius
- Solving inequalities
- Linear simultaneous Equations

Y10

- Solving Quadratics and Quadratic inequalities

Objectives

- Given a function, establish outputs from given inputs and inputs from given outputs
- Solve one-step equations when the solution is a positive integer or fraction
- Solve two-step equations when the solution is a positive integer or fraction
- Solve multi-step equations including the use of brackets when the solution is a positive integer or fraction

Only discuss equations with variable on ONE SIDE. In year 8 they will continue with variables on both

Use the opportunity to look back at angle facts and apply algebra.

For teaching purposes

POSSIBLE QUESTIONS

- Show me an equations with solution 14. And another
- Jenny and Lenny are solving: 3(x – 2) = 51. Who is correct? Explain

Jenny's solution			***Lenny's solution***		
3(x – 2)	*=*	*15*	*3(x – 2)*	*=*	*15*
÷ 3		*÷ 3*	*Multiplying*	*out*	*brackets*
x - 2	*=*	*5*	*3x - 6*	*=*	*15*
÷ 2		*÷ 2*	*+2*		*+2*
x	*=*	*7*	*3x*	*=*	*21*
			÷ 3		*÷ 3*
			x =	*=*	*7*

POSSIBLE MISCONCEPTIONS

- may think that equations always need to be presented in the form $ax + b = c$ rather than c = ax + b.
- may think that the solution is always positive and/or a whole number.
- may get the use the inverse operations in the wrong order

Pedagogical notes (implementation)

In order to visualize the concept at the start you could use the bar model, or the scales in balance model.

x	*x*	*8*
23		

E.g *2x + 8 = 23* using the Bar Model.

x	*x*
15	

applying INVERSE operations in REVERSE order (keep balancing)

2x + 8	*=*	*23*
- 8		*- 8*
2x	*=*	*15*
÷ 2		*2*
x	*=*	*7.5 (or $^{15}/_{2}$)*

EVERY DIVISION CAN BE WRITTEN AS A FRACTION. → An answer could be left as a fraction. (It's better than nothing)

How will understanding be assessed & recorded (Impact)

End of Year Assessment in June/July

BAM task – Solving equations

How can parents help at home?

Maths Watch clips (Qualification KS3)

A12, A17

Further reading/discussion

Reading / Enrichment

NCETM: The Bar Model
NCETM: Algebra,
NCETM: Glossary
KM: Spiders and snakes.

NRICH: Inspector Remorse

NRICH: Quince, quonce, quance

NRICH: Weighing the baby

Literacy

Algebra, algebraic, algebraically
Mapping diagram, Input, Output
Unknown
Equation
Operation
Solve
Solution
Brackets
Symbol
Substitute

Numeracy Links

Careers Links

Aerospace Engineer
Civil Engineer
Economist
Research Scientist