

Year 7 Spring Term Solving Linear Equations

A. Keywords:

Solve – find the value of the unknown in an equation.

Factorise – put an expression back into brackets (the reverse of expanding brackets).

Substitute – put a number in place of a letter in an expression.

Simultaneous equation – two equations, with two variables, that are solved together.

Linear – An equation with no terms containing powers of x^2 or higher.

Quadratic – equations with a highest power of x^2

Inverse operation – the operation that reverses the effect of another operation (i.e. addition and subtraction are inverse operations of each other).

Building knowledge:

Simplifying expressions (adding/subtracting)

- Can only simplify like terms.
- Be sure to include the sign before the term

e.g. $2a + 3b - a + 4b = a + 7b$

$$2a - a = a \quad + 3b + 4b = +7b$$

Expanding brackets:

- Expanding means remove brackets
- Use the claw

e.g. $3(5a - 2) = (3 \times 5a) - (3 \times 2)$
 $= 15a - 6$

Content

To solve an equation you find the value of the unknown by isolating it on one side by performing inverse operations. Remember that solutions can be integers, decimals, fractions and negative numbers.

1) Solve $f - 5 = -1$

Add 5 to both sides $+5 \quad +5$

$$\underline{f = 4}$$

2) Solve $4y + 1 = 9$

Subtract 1 $-1 \quad -1$

$$4y = 8$$

Divide by 4 $\div 4 \quad \div 4$

$$\underline{y = 2}$$

3) Solve

Expand bracket

Subtract 3

Divide by 12

$$3(4m + 1) = 15$$

$$12m + 3 = 15$$

$$-3 \quad -3$$

$$12m = 12$$

$$\div 12 \quad \div 12$$

$$\underline{m = 1}$$

4) Solve

Subtract 3e

Add 1

Divide by 2

$$5e - 1 = 3e + 6$$

$$-3e \quad -3e$$

$$2e - 1 = 6$$

$$+1 \quad +1$$

$$2e = 7$$

$$\div 2 \quad \div 2$$

$$\underline{e = 3.5}$$