

Algebra

Lesson 1: Solving an equation with a variable on both sides.

Aim: Solving an equation with a variable on both sides.

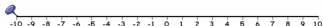
Resources:

- Solving an equation with a variable on both sides PowerPoint
- Matching task PowerPoint (print the slides out and cut up in advance, one copy for each student/group)
- Solving an equation with a variable on both sides worksheet

Teacher-led session (10 minutes)

Using the first slide of the Solving an equation PowerPoint, explain solving an equation with a variable on both sides

Solving an equation with a variable on both sides of the equals.



$$2x + 1 = 4x - 7$$

$$3x + 6 = 7x - 2$$

$$6x - 1 = 2x - 1$$

Group activity (20 - 25 minutes)

Print out and cut up a copy of the Matching task PowerPoint for each student/group in advance. Students are to find each question and then the relevant steps that proceed with determining the value of x . Use the first two slides of the PowerPoint as an illustration.

$$2x + 4 = 3x - 1$$

$$-2x \quad -2x$$

$$4 = 1x - 1$$

$$+1 \quad +1$$

$$5 = 1x$$

$$4x + 4 = 3x + 6$$

$$-3x \quad -3x$$

$$1x + 4 = 6$$

$$-4 \quad -4$$

$$1x = 2$$

Teacher-led session (10 minutes)

Return to the main PowerPoint and use slide 2 to explain solving equations with a negative variable on one side.

Solving an equation with a variable on both sides of the equals.



$$3x - 1 = 9 - 2x$$

$$3x \quad -1 \quad = \quad 9 \quad -2x$$

$$4x - 2 = 13 - x$$

$$4x \quad -2 \quad = \quad 13 \quad -x$$

Worksheets (15 minutes)

Students work through the worksheet

Plenary Session

1. Either teacher led or individuals/partners/groups work on the two questions on slide 3 of the main PowerPoint.

1

Which equation has a different solution to the other two?

$$4x + 3 = 5x - 4 \quad 4x + 1 = 6x - 9 \quad 3x - 4 = 2x + 3$$

2

$$2x + 3 \quad 3x - 2 \quad 19$$

Find the values of x for which the expressions are shown in their correct order, i.e. smallest to largest.

2. On slide 4 click on each space to reveal the question. Using **mini-whiteboards** students work through the question to determine the value of x .

$2x + 4 = 3x - 1$	2	$4 - 2x = 3x - 1$
$6 - 3x = 5x - 2$	$x + 7 = 5x - 1$	$3x + 1 = x - 4$
$4 - x = x - 1$	$4 + 2x = x - 6$	$5 - 2x = x + 2$
$5 + 2x = 12 - 5x$	$4x + 1 = x + 1$	$7 - x = x - 1$