Simultaneous equations: special cases

Exit ticket ANSWERS Name _____

1. How many solutions do $y = 4x - 1$ and $y = 4x + 3$ have? Give a reason.

None: the same gradient, different y intercepts

2. How many solutions do $y = 2x + 5$ and $y = 5 - 2x$ have? If there is one, find it.

One: x = 0, y = 5

3. How many solutions do $2y = 6x - 4$ and $y = 3x - 2$ have? Show how you know.

Infinitely many: (1) is y = 3x – 2, the same line

The Maths Habit

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NEXT LESSON

1 **How many solutions do $y = 4x - 1$ and $y = 4x + 3$ have? Give a reason.**

None: the same gradient, different y intercepts

TESTS Parallel lines: the same gradient, different y intercepts

LOOK FOR
- *infinitely many* the same gradient read as the same line: compare the y intercepts too
- *one* lines with the same gradient never cross once

FIX IT

How many solutions do $y = 3 - 5x$ and $y = -5x + 1$ have? Give a reason.

None: gradient −5 both, intercepts 3 and 1

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2 **How many solutions do $y = 2x + 5$ and $y = 5 - 2x$ have? If there is one, find it.**

One: x = 0, y = 5

TESTS Different gradients: one solution, read off where both cross the y axis

LOOK FOR
- *infinitely many* the same y intercept read as the same line: the gradients 2 and −2 differ
- *none* the gradients 2 and −2 read as the same

FIX IT

How many solutions do $y = 3x - 4$ and $y = x - 4$ have? If there is one, find it.

One: x = 0, y = −4

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3 **How many solutions do $2y = 6x - 4$ and $y = 3x - 2$ have? Show how you know.**

Infinitely many: (1) is y = 3x − 2, the same line

TESTS Rearranging into y = mx + c first, then comparing

LOOK FOR
- *no solution* the equations look different, but (1) divided by 2 is $y = 3x - 2$
- *one* 6 read as the gradient of (1): divide by 2 first, so it is 3

FIX IT

How many solutions do $3y = 12x + 6$ and $y = 4x + 1$ have? Show how you know.

None: (1) is y = 4x + 2, parallel