

Solving Equations that are one solution, no solution + infinitely many solutions

$$9y + 3y - 10 = 3(3y + y)$$

$$12y - 10 = 3(4y)$$

$$\begin{array}{r} 12y - 10 = 12y \\ -12y \quad -12y \end{array}$$

$$-10 \neq 0 \quad \text{NO}$$

Solution

* if you get an answer of NO SOLUTION

put a slash through the equal sign (NOT equal to)

$$6x = 4(x+5)$$

$$\begin{array}{r} 6x = 4x + 20 \\ -4x \quad -4x \end{array}$$

$$\frac{2x}{2} = \frac{20}{2}$$

$$x = 10 \quad \text{one solution}$$

$$14 - 1(2a + 15) = -2a + 9$$

$$\textcircled{14} - 2a \textcircled{-15} = -2a + 9$$

$$-2a - 1 = -2a + 9$$

$$\begin{array}{r} -2a - 1 = -2a + 9 \quad \text{OR} \quad -2a - 1 = -2a + 9 \\ +2a \quad +2a \quad \quad \quad +1 \quad \quad +1 \end{array}$$

$$-1 \neq 9$$

NO
Solution

$$\begin{array}{r} -2a = -2a + 10 \\ +2a \quad +2a \end{array}$$

$0 \neq 10$
NO Solution

$$2(4x-9) = 9x-18 -x$$

$$\begin{array}{r} 8x-18 = 8x-18 \\ -8x \quad -8x \end{array}$$

$$-18 = -18$$

Infinitely many solutions

* If you notice once you simplified that the coefficient on the variable is the same then move that term → that way you don't make this mistake →

$$\begin{array}{r} 8x-18 = 8x-18 \\ +18 \quad +18 \end{array}$$

$$\frac{8x}{8} = \frac{8x}{8}$$

$$x = x$$

this is incorrect