

Cumulative Practice-For each equation below, solve and then describe the solution type as either one solution, no solution, or infinite solution.

$\begin{array}{r} 4x + 1 = 4x - 1 \\ -4x \quad -4x \\ \hline 1 = -1 \end{array}$ <p>Never True so, No solution \emptyset</p>	$\begin{array}{r} 2(2x - 6) = 4x - 6 \\ 4x - 12 = 4x - 6 \\ -4x \quad -4x \\ \hline -12 = -6 \end{array}$ <p>Never true so, No solution \emptyset</p>	$\begin{array}{r} 4x + 1 = 2x \\ -4x \quad -4x \\ \hline 1 = -2x \\ -\frac{1}{2} = x \end{array}$ <p>One solution, $x = -\frac{1}{2}$</p>
$\begin{array}{r} 6x - 10 = 2(3x - 5) \\ 6x - 10 = 6x - 10 \\ -6x \quad -6x \\ \hline -10 = -10 \end{array}$ <p>Always true so, infinite solutions or ∞</p>	$\begin{array}{r} 2x - 5 = 6 \\ +5 \quad +5 \\ \hline 2x = 11 \\ \frac{2x}{2} = \frac{11}{2} \\ x = 11/2 \end{array}$ <p>one solution, $x = \frac{11}{2}$ * a fraction is still a solution!</p>	$\begin{array}{r} 9x + 12 = 3(x - 4) \\ 9x + 12 = 3x - 12 \\ -3x \quad -3x \\ \hline 6x + 12 = -12 \\ -12 \quad -12 \\ \hline 6x = -24 \\ \frac{6x}{6} = \frac{-24}{6} \\ x = -4 \end{array}$ <p>one solution</p>
$\begin{array}{r} 6x - 10 = 3x + 5 + 3(x - 5) \\ 6x - 10 = 3x + 5 + 3x - 15 \\ 6x - 10 = 6x - 10 \\ -6x \quad -6x \\ \hline -10 = -10 \end{array}$ <p>Always true so, infinite solutions ∞</p>	$\begin{array}{r} 8x - 8 = 6x - 5 + 2(x - 2) \\ 8x - 8 = 6x - 5 + 2x - 4 \\ 8x - 8 = 8x - 9 \\ -8x \quad -8x \\ \hline -8 = -9 \end{array}$ <p>Never true so, no solution \emptyset</p>	$\begin{array}{r} 10(x - 2) + 15 = 8x + 7 \\ 10x - 20 + 15 = 8x + 7 \\ 10x - 5 = 8x + 7 \\ -8x \quad -8x \\ \hline 2x - 5 = 7 \\ +5 \quad +5 \\ \hline 2x = 12 \\ \frac{2x}{2} = \frac{12}{2} \\ x = 6 \end{array}$ <p>one solution</p>
$\begin{array}{r} 5(4x - 2) + 9 = 2(8x + 7) + 1 \\ 20x - 10 + 9 = 16x + 14 + 1 \\ 20x - 1 = 16x + 15 \\ -16x \quad -16x \\ \hline 4x - 1 = 15 \\ +1 \quad +1 \\ \hline 4x = 16 \\ \frac{4x}{4} = \frac{16}{4} \quad x = 4 \end{array}$ <p>one solution</p>	$\begin{array}{r} 12x + 9 - 4x = 3x - 7 - x + 30 \\ 8x + 9 = 2x + 23 \\ -2x \quad -2x \\ \hline 6x + 9 = 23 \\ -9 \quad -9 \\ \hline 6x = 14 \\ \frac{6x}{6} = \frac{14}{6} \\ x = 14/6 \text{ or } 7/3 \end{array}$ <p>one solution</p>	$\begin{array}{r} 3(3x + 4) - 2x - 5 - 7x = 20 \\ 9x + 12 - 2x - 5 - 7x = 20 \\ 0 \\ 12 - 5 = 20 \\ 7 = 20 \end{array}$ <p>Never true! No solution \emptyset</p>