Name: KEY

Practice: Equations with 1 Solution, No Solution, or Infinite Solutions

Solve the equation, then say whether it has 1 solution, no solution, or infinite solutions. (If it has one solution, you need to say what the solution is!)

1) $4x - 8 = 2x + 12$

$+8 \quad +8$

$4x = 2x + 20$

$-2x \quad -2x$

$2x = 20$ → $x = 10$ (1 solution)

2) $5x + 3 = 5x + 4$

$-5x \quad -5x$

$3 = 4$

NO SOLUTION

3) $10y - 5 - 10y = -5$

$-5 = -5$

INFINITE SOLUTIONS

4) $10x + 2 = 7x + 2$

$-7x \quad -7x$

$3x + 2 = 2$

$-2 \quad -2$

$3x = 0$ → $x = 0$ (1 solution)

5) $-2x + 9 = 2x + 7$

$+2x \quad +2x$

$9 = 4x + 7$

$-7 \quad -7$

$\frac{2}{4} = \frac{4x}{4}$ → $0.5 = x$ (1 solution)

6) $7x + 14 - x = 2(3x + 7)$

$6x + 14 = 6x + 14$

INFINITE SOLUTIONS

7) $4x + 9 - x - 2 = 3x + 9$

$3x + 7 = 3x + 9$

$-3x \quad -3x$

$7 = 9$

NO SOLUTION

8) $\frac{1}{2}(8x - 6) = 3 - 4x$

$4x - 3 = 3 - 4x$

$+4x \quad +4x$

$8x - 3 = 3$

$+3 \quad +3$

$8x = 6$ → $x = \frac{3}{4}$ or 0.75 (1 solution)

9) Pick three problems: one that was one solution, one that was no solution, and one that was infinite solutions. Check your answer for each one. Check the one solution problem by plugging that number in. Check the no solution problem by plugging in TWO numbers (any ones you want!) and verifying that they both don't work. Check the infinite solutions problem by plugging in TWO numbers and verifying that they both do work.

① $4 \cdot 10 - 8 = 2 \cdot 10 + 12$

$40 - 8 = 20 + 12$

$32 = 32$ ✓

④ $10 \cdot 0 + 2 = 7 \cdot 0 + 2$

$2 = 2$ ✓

⑤ $-2(0.5) + 9 = 2(0.5) + 7$

$-1 + 9 = 1 + 7$

$8 = 8$ ✓

8) $\frac{1}{2}(8 \cdot \frac{3}{4} - 6) = 3 - 4(\frac{3}{4})$

$\frac{1}{2}(6 - 6) = 3 - 3$

$0 = 0$ ✓

② $5 \cdot 1 + 3 = 5 \cdot 1 + 4$

$8 = 9$ ✗

$5 \cdot 10 + 3 = 5 \cdot 10 + 4$

$53 = 54$ ✗

⑦ $4 \cdot 1 + 9 - 1 - 2 = 3 \cdot 1 + 9$

$4 + 9 - 3 = 3 + 9$

$10 = 12$ ✗

$4 \cdot 0 + 9 - 0 - 2 = 3 \cdot 0 + 9$

$7 = 9$ ✗

③ $10 \cdot 2 - 5 = 10 \cdot 2 = -5$

$20 - 5 - 20 = -5$

$15 - 20 = -5$

$-5 = -5$ ✓

$10 \cdot 1 - 5 - 10 \cdot 1 = -5$

$10 - 5 - 10 = -5$ ✓

6) $7 \cdot 1 + 14 - 1 = 2(3 \cdot 1 + 7)$

$21 - 1 = 2(10)$

$20 = 20$ ✓

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