Solving Math 9 Equations Part 3

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Mathematics 9
Equation Solving
Solving Math 9 Equations Part 3

Last day we continued to look at solving multi-step equations. Today we will be looking at solving multi-step equations with fractions.

Solve and check the following equations.

A. Equation Type #4 (Multi-Step)

1) $4m + 6 = 2m + 14$
   $-2m \qquad -2m$

$2m + 6 = 14$
$ -6 \quad -6$

$\dfrac{2m}{2} = \dfrac{8}{2}$

$\boxed{m = 4}$

Check

$4m + 6 = 2m + 14$
$4(4) + 6 = 2(4) + 14$
$16 + 6 = 8 + 14$
$22 = 22 \checkmark$

2) $6x + 4 = 2x + 6$
   $-2x \qquad -2x$

$4x + 4 = 6$
$ -4 \quad -4$

$\dfrac{4x}{4} = \dfrac{2}{4}$

$\boxed{x = \dfrac{1}{2}}$

Check

$6x + 4 = 2x + 6$
$6\left(\dfrac{1}{2}\right) + 4 = 2\left(\dfrac{1}{2}\right) + 6$
$3 + 4 = 1 + 6$
$7 = 7 \checkmark$

B. Equation Type #4 (Multi-Step with Fractions)

1) $\frac{1}{2}x + 4 = \frac{1}{4}x - 6$

$4\left(\frac{1}{2}x + 4\right) = \left(\frac{1}{4}x - 6\right)4$

$\quad 2x + 16 = x - 24$
$-x \qquad\qquad -x$

$\quad x + 16 = -24$
$\qquad -16 \quad -16$

$$\boxed{x = -40}$$

Check

$\frac{1}{2}x + 4 = \frac{1}{4}x - 6$

$\frac{1}{2}(-40) + 4 = \frac{1}{4}(-40) - 6$

$-20 + 4 = -10 - 6$

$-16 = -16 \checkmark$

2) $\frac{1}{2}a + \frac{2}{3} = a + \frac{1}{3}$

$6\left(\frac{1}{2}a + \frac{2}{3}\right) = \left(a + \frac{1}{3}\right)6$

$\quad 3a + 4 = 6a + 2$
$-6a \qquad\quad -6a$

$\quad -3a + 4 = 2$
$\qquad\;\; -4 \quad -4$

$\quad \dfrac{-3a}{-3} = \dfrac{-2}{-3}$

$$\boxed{a = \frac{2}{3}}$$

Check

$\frac{1}{2}a + \frac{2}{3} = a + \frac{1}{3}$

$\frac{1}{2}\left(\frac{2}{3}\right) + \frac{2}{3} = \left(\frac{2}{3}\right) + \frac{1}{3}$

$\frac{1}{3} + \frac{2}{3} = \frac{2}{3} + \frac{1}{3}$

$\frac{3}{3} = \frac{3}{3}$

$1 = 1 \checkmark$

Assignment: Solving Math 9 Equations Part 3 Assignment

Solving Math 9 Equations Part 3 Assignment

Solve and check the following equations.

	Check
1. $-\dfrac{2}{3}x = -\dfrac{1}{2}$	
2. $-14 = -6 - 2m$	Check
3. $5y + 2 = 2y - 7$	Check

4. $m + 1 = \dfrac{1}{2}m + 4$

Check

5. $2y + 1 = 2$

Check

6. $2n - 7 = 3n - 6$

Check

7. $\dfrac{1}{5}m + 3 = \dfrac{2}{5}m + 1$

Check

8. $4y = 6y + 4$

Check

9. $\dfrac{1}{3}n + \dfrac{1}{6} = \dfrac{1}{3}$

Check

10. $6m + 2 = 4m - 8$	Check
11. $\dfrac{1}{2} - y = -\dfrac{7}{2}$	Check
12. $2n + 1 = 3n + 7$	Check

13. $\dfrac{1}{4}m - 5 = \dfrac{1}{2}m - 7$

Check

14. $-\dfrac{3}{10} = \dfrac{3}{5}x$

Check

15. $\dfrac{1}{3}a + 4 = a + 10$

Check

Answers

1) $x = \dfrac{3}{4}$

2) $m = 4$

3) $y = -3$

4) $m = 6$

5) $y = \dfrac{1}{2}$

6) $n = -1$

7) $m = 10$

8) $y = -2$

9) $n = \dfrac{1}{2}$

10) $m = -5$

11) $y = 4$

12) $n = -6$

13) $m = 8$

14) $x = -\dfrac{1}{2}$

15) $a = -9$