Mathematics 9
Equation Solving
Solving Math 9 Equations Part 6

We have now covered all of the six major types of equations. To make questions even more difficult we can add in fractions.

How to Solve Complex Equations

1. Get rid of all brackets first using Distributive Property.
2. Get rid of all fractions by multiplying the entire equation by the common denominator.
3. Combine any like terms on each side of the equation.
4. Use basic equation solving rules to solve for the variable.
5. Remember to use BEDMAS rules when doing the check.

A. Solve and check the following equations.

1) $\frac{1}{2}(x+12)=14$

$$2\left[\frac{1}{2}x + 6 = 14\right]$$

$$x + 12 = 28$$
$$-12 \quad -12$$

$$\boxed{x = 16}$$

Check

$$\frac{1}{2}(x + 12) = 14$$

$$\frac{1}{2}((16) + 12) = 14$$

$$\frac{1}{2}(28) = 14$$

$$14 = 14 ✓$$

2) $\frac{1}{3}(2y+7) = -\frac{1}{2}(y+7)$

$6\left[\frac{2}{3}y + \frac{7}{3} = -\frac{1}{2}y - \frac{7}{2}\right]$

$4y + 14 = -3y - 21$
$+3y \qquad\qquad +3y$

$7y + 14 = -21$
$\quad\; -14 \quad\; -14$

$\dfrac{7y}{7} = -\dfrac{35}{7}$

$\boxed{y = -5}$

$\frac{1}{3}(2y+7) = -\frac{1}{2}(y+7)$

$\frac{1}{3}(2(-5)+7) = -\frac{1}{2}((-5)+7)$

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

$-1 = -1 \checkmark$

3) $2m + \frac{1}{2}(4m+2) - 4 = 3 + \frac{1}{4}(m-8) + 11$

$4\left[2m + 2m + 1 - 4 = 3 + \frac{1}{4}m - 2 + 11\right]$

$\boxed{8m} + \boxed{8m} + \boxed{4} - \boxed{16} = \boxed{12} + m - \boxed{8} + \boxed{44}$

$16m - 12 = m + 48$
$-m \qquad\qquad -m$

$15m - 12 = 48$
$\quad\;\; +12 \quad +12$

$\dfrac{15m}{15} = \dfrac{60}{15}$

$\boxed{m = 4}$

Check

$2m + \frac{1}{2}(4m+2) - 4 = 3 + \frac{1}{4}(m-8) + 11$

$2(4) + \frac{1}{2}(4(4)+2) - 4 = 3 + \frac{1}{4}((4)-8) + 11$

$2(4) + \frac{1}{2}(18) - 4 = 3 + \frac{1}{4}(-4) + 11$

$8 + 9 - 4 = 3 - 1 + 11$

$13 = 13 \checkmark$

Assignment: Solving Math 9 Equations Part 6 Assignment

Solving Math 9 Equations Part 6 Assignment

Solve and check the following equations.

1. $2(x-5)=-16$	Check
2. $-\dfrac{1}{2}m-6=2$	Check
3. $6y-4=5$	Check

4. $5(m+1) = -2(m+8)$	Check
5. $4y-6 = 8y-8$	Check
6. $3-(a-1) = 5+2(a+4)$	Check

7. $-\dfrac{1}{5}(m+17)=-3$

Check

8. $2y-8=3y-18$

Check

9. $\dfrac{1}{6}=\dfrac{1}{4}-\dfrac{1}{3}n$

Check

10. $1+6m+1=-6+4m-2$

Check

11. $\dfrac{1}{2}(y-1)=\dfrac{1}{4}(y-3)-2$

Check

12. $\dfrac{2}{5}(m+10)=2m-4$

Check

13. $3x+\dfrac{1}{3}(x-3)-7=\dfrac{1}{2}(2x-2)+7$

Check

Answers

1) $x = -3$ 2) $m = -16$

3) $y = \dfrac{3}{2}$ 4) $m = -3$

5) $y = \dfrac{1}{2}$ 6) $a = -3$

7) $m = -2$ 8) $y = 10$

9) $n = \dfrac{1}{4}$ 10) $m = -5$

11) $y = -9$ 12) $m = 5$

13) $x = 6$