

## Solving Linear Equations

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1. If a fraction occurs in the equation, multiply each term of the equation by the lowest common denominator.
2. Remove all parentheses by using the distributive law.
3. Combine like terms (add or subtract the coefficients) on each side of the equal sign.
4. If the variable occurs on both sides of the equation, add the additive inverse of the smaller one to both sides of the equation to obtain the variable term on one side of the equation.
5. Remove the constant term that is on the same side of the equation as the variable term by adding the constant term's additive inverse to both sides of the equation.
6. Divide both sides of the equation by the coefficient of the variable term.
7. Check the solution by substituting the value into the original equation.

Solve the following equations.

1.  $5(x + 1) - (x - 18) = -5(x - 1)$

2.  $\frac{1}{3}x - \frac{1}{9} = 4 - \frac{2}{3}$

3.  $\frac{1}{8}x - 1 = \frac{1}{3}x + \frac{1}{4}$

4.  $\frac{1}{9}(a + 18) + \frac{1}{3}(2a + 3) = a + 3$

5.  $0.30(30) + 0.15x = 0.2(30 + x)$

6.  $\frac{x+7}{2} - \frac{1}{3} = \frac{1}{2} - \frac{x+9}{9}$

7.  $\frac{1}{5}(15 - 10a) - 3 = \frac{1}{3}(30 + 6a) + 2$

8.  $5(6 - 3x) = 15(2 - x)$

9.  $0.03(m + 7) = 0.02(5 - m) + 0.03$

10.  $12 - \frac{a-2}{3} = \frac{a}{6}$

Answers:      1.  $x = -2$     2.  $x = 10\frac{1}{3}$     3.  $x = -6$     4.  $a = 0$     5.  $x = 60$   
6.  $x = -6$     7.  $a = -3$     8. all real numbers    9.  $x = -1\frac{3}{5}$     10.  $a = 25\frac{1}{3}$