

## Multi-Step Equations

Solve each equation.

1)  $-20 = -4x - 6x$

 $\{2\}$ 

2)  $6 = 1 - 2n + 5$

 $\{0\}$ 

3)  $8x - 2 = -9 + 7x$

 $\{-7\}$ 

4)  $a + 5 = -5a + 5$

 $\{0\}$ 

5)  $4m - 4 = 4m$

No solution.

6)  $p - 1 = 5p + 3p - 8$

 $\{1\}$ 

7)  $5p - 14 = 8p + 4$

 $\{-6\}$ 

8)  $p - 4 = -9 + p$

No solution.

9)  $-8 = -(x + 4)$

 $\{4\}$ 

10)  $12 = -4(-6x - 3)$

 $\{0\}$ 

11)  $14 = -(p - 8)$

 $\{-6\}$ 

12)  $-(7 - 4x) = 9$

 $\{4\}$ 

13)  $-18 - 6k = 6(1 + 3k)$

 $\{-1\}$ 

14)  $5n + 34 = -2(1 - 7n)$

 $\{4\}$ 

15)  $2(4x - 3) - 8 = 4 + 2x$

 $\{3\}$ 

16)  $3n - 5 = -8(6 + 5n)$

 $\{-1\}$ 

17)  $-(1 + 7x) - 6(-7 - x) = 36$

 $\{5\}$ 

18)  $-3(4x + 3) + 4(6x + 1) = 43$

 $\{4\}$ 

19)  $24a - 22 = -4(1 - 6a)$

No solution.

20)  $-5(1 - 5x) + 5(-8x - 2) = -4x - 8x$

 $\{-5\}$

Solve the following equations by any method:

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|--|---|
| <p>1. <math>2x^2 + 3x = 6</math></p> $2x^2 + 3x - 6 = 0$ $x = \frac{-3 \pm \sqrt{9 - 4(2)(-6)}}{4}$ $x = \frac{-3 \pm \sqrt{57}}{4} \quad \{1.14, -2.64\}$ $\left\{ \frac{-2 + \sqrt{57}}{4}, \frac{-3 - \sqrt{57}}{4} \right\}$ | <p>2. <math>8x^2 - 6x + 1 = 0</math></p> $8x^2 - 4x - 2x + 1 = 0$ $4x(2x-1) - 1(2x-1) = 0$ $(2x-1)(4x-1) = 0$ $2x-1=0 \quad 4x-1=0$ $x = \frac{1}{2} \quad x = \frac{1}{4}$ $\left\{ \frac{1}{4}, \frac{1}{2} \right\}$                               |
| <p>3. <math>2x^2 + 7x - 15 = 0</math></p> $2x^2 + 10x - 3x - 15 = 0$ $2x(x+5) - 3(x+5) = 0$ $(2x-3)(x+5) = 0$ $x = \frac{3}{2} \quad x = -5$ $\{-5, \frac{3}{2}\}$   | <p>4. <math>2x^2 - 32 = 0</math></p> $2x^2 = 32$ $x^2 = 16$ $x = \pm 4$ $\{\pm 4\}$   |
| <p>5. <math>10x^2 = 8x</math></p> $10x^2 - 8x = 0$ $2x(5x - 4) = 0$ $x = 0 \quad x = \frac{4}{5}$ $\{0, \frac{4}{5}\}$   | <p>6. <math>5 = -2x + x^2</math></p> $x^2 - 2x - 5 = 0$ $x = \frac{2 \pm \sqrt{4 - 4(1)(-5)}}{2}$ $x = \frac{2 \pm \sqrt{4 + 20}}{2} \quad \{3.45, -1.45\}$ $x = \frac{2 \pm \sqrt{24}}{2} = \frac{2 \pm 2\sqrt{6}}{2} = \{+\sqrt{6}, 1 - \sqrt{6}\}$ |
| <p>7. <math>3x^2 - 192 = 0</math></p> $\frac{3x^2}{3} = \frac{192}{3}$ $\sqrt{x^2} = \sqrt{64}$ $x = \pm 8$ $\{\pm 8\}$  | <p>8. <math>3x^2 - 2x = 8</math></p> $3x^2 - 2x - 8 = 0$ $3x^2 - 6x + 4x - 8 = 0$ $3x(x-2) + 4(x-2) = 0$ $(x-2)(3x+4) = 0$ $x = 2 \quad x = -\frac{4}{3}$ $\{-\frac{4}{3}, 2\}$   |