

SOLVING QUADRATICS BY FACTORING

Day 2 - Slip & Slide

★ **IMPORTANT:** If you can factor out 'a' by GCF, DO NOT use Slip & Slide!

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| <p>Example 1: $3x^2 + 9x - 12 = 0$</p> $\frac{3}{3}(x^2 + 3x - 4) = 0$ $\frac{3}{3}(x+4)(x-1) = 0$ $x+4=0 \quad x-1=0$ $x=-4 \quad x=1$ <p>$x = \{-4, 1\}$</p> | <p>Example 2: $5x^2 - 20x - 60 = 0$</p> $\frac{5}{5}(x^2 - 4x - 12) = 0$ $x^2 - 4x - 12 = 0$ $(x-6)(x+2) = 0$ $x-6=0 \quad x+2=0$ $x=6 \quad x=-2$ <p>$x = \{6, -2\}$</p> |
| <p>Example 3: $2x^2 + 3x - 5 = 0$ -10</p> $2x^2 + 5x - 2x - 5 = 0$ $x(2x+5) - 1(x+5) = 0$ $(2x+5)(x-1) = 0$ $2x+5=0 \quad x-1=0$ $2x=-5 \quad x=1$ $x=-2.5 \quad x=1$ <p>$x = \{-2.5, 1\}$</p> | <p>Example 4: $8x^2 - 22x + 5 = 0$ 40</p> $8x^2 - 20x - 2x + 5 = 0$ $4x(2x-5) - 1(2x-5) = 0$ $(2x-5)(4x-1) = 0$ $2x-5=0 \quad 4x-1=0$ $2x=5 \quad 4x=1$ $x=2.5 \quad x=0.25$ <p>$x = \{2.5, 0.25\}$</p> |

Now you try!

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| <p>1. $2x^2 + 10x + 8 = 0$</p> $\frac{2}{2}(x^2 + 5x + 4) = 0$ $x^2 + 5x + 4 = 0$ $(x+4)(x+1) = 0$ <p>$x = \{-4, -1\}$</p> | <p>2. $4x^2 - 24x - 28 = 0$</p> $\frac{4}{4}(x^2 - 6x - 7) = 0$ $x^2 - 6x - 7 = 0$ $(x-7)(x+1) = 0$ <p>$x = \{-1, 7\}$</p> |
| <p>3. $3x^2 + 13x - 10 = 0$ -30</p> $3x^2 + 15x - 2x - 10 = 0$ $3x(x+5) - 2(x+5) = 0$ $(x+5)(3x-2) = 0$ $3x-2=0$ $\frac{3x}{3} = \frac{2}{3}$ $x = \frac{2}{3}$ <p>$x = \{-5, \frac{2}{3}\}$</p> | <p>4. $5x^2 - 8x + 3 = 0$ 15</p> $5x^2 - 5x - 3x + 3 = 0$ $5x(x-1) - 3(x-1) = 0$ $(x-1)(5x-3) = 0$ $5x-3=0$ $\frac{5x}{5} = \frac{3}{5}$ $x = \frac{3}{5}$ <p>$x = \{\frac{3}{5}, 1\}$</p> |

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| <p>5. $3x^2 + 14x + 15 = 0$ 45</p> <p>$3x^2 + 9x + 5x + 15 = 0$ $3x(x+3) + 5(x+3) = 0$ $(x+3)(3x+5) = 0$</p> <p>$x+3=0$ $3x+5=0$ $\frac{-3-3}{-3-3}$ $\frac{-5-5}{-5-5}$ $x=-3$ $x=-\frac{5}{3}$</p> <p>$x = \{-3, -\frac{5}{3}\}$</p> | <p>6. $2x^2 + 13x - 7 = 0$ -14</p> <p>$2x^2 + 14x - 1x - 7 = 0$ $2x(x+7) - 1(x+7) = 0$ $(x+7)(2x-1) = 0$</p> <p>$x+7=0$ $2x-1=0$ $\frac{-7-7}{-7-7}$ $\frac{+1+1}{+1+1}$ $x=-7$ $\frac{2x=1}{\frac{2}{2}}$ $x=\frac{1}{2}$</p> <p>$x = \{-7, \frac{1}{2}\}$</p> |
| <p>7. $5x^2 - 21x + 4 = 0$ 20</p> <p>$5x^2 - 20x - 1x + 4 = 0$ $5x(x-4) - 1(x-4) = 0$ $(x-4)(5x-1) = 0$</p> <p>$x-4=0$ $5x-1=0$ $\frac{+4+4}{+4+4}$ $\frac{+1+1}{+1+1}$ $x=4$ $\frac{5x=1}{\frac{5}{5}}$ $x=\frac{1}{5}$</p> <p>$x = \{\frac{1}{5}, 4\}$</p> | <p>8. $6x^2 + 5x + 1 = 0$ 6</p> <p>$6x^2 + 3x + 2x + 1 = 0$ $3x(2x+1) + 1(2x+1) = 0$ $(2x+1)(3x+1) = 0$</p> <p>$2x+1=0$ $3x+1=0$ $\frac{-1-1}{-1-1}$ $\frac{-1-1}{-1-1}$ $\frac{2x=-1}{\frac{2}{2}}$ $\frac{3x=-1}{\frac{3}{3}}$ $x=-\frac{1}{2}$ $x=-\frac{1}{3}$</p> <p>$x = \{-\frac{1}{2}, -\frac{1}{3}\}$</p> |
| <p>9. $4x^2 - 8x - 5 = 0$ -20</p> <p>$4x^2 - 10x + 2x - 5 = 0$ $2x(2x-5) + 1(2x-5) = 0$ $(2x-5)(2x+1) = 0$</p> <p>$2x-5=0$ $2x+1=0$ $\frac{+5+5}{+5+5}$ $\frac{-1-1}{-1-1}$ $\frac{2x=5}{\frac{2}{2}}$ $\frac{2x=-1}{\frac{2}{2}}$ $x=\frac{5}{2}$ $x=-\frac{1}{2}$</p> <p>$x = \{-\frac{1}{2}, \frac{5}{2}\}$</p> | <p>10. $4x^2 + 12x + 9 = 0$ 36</p> <p>$4x^2 + 6x + 6x + 9 = 0$ $2x(2x+3) + 3(2x+3) = 0$ $(2x+3)(2x+3) = 0$</p> <p>$2x+3=0$ $\frac{-3-3}{-3-3}$ $\frac{2x=-7}{\frac{2}{2}}$ $x=-\frac{3}{2}$</p> <p>$x = -\frac{3}{2}$</p> |
| <p>11. $3x^2 + 7x = -2$ 6</p> <p>$3x^2 + 7x + 2 = 0$ $3x^2 + 6x + 1x + 2 = 0$ $3x(x+2) + 1(x+2) = 0$ $(x+2)(3x+1) = 0$</p> <p>$x+2=0$ $3x+1=0$ $\frac{-2-2}{-2-2}$ $\frac{-1-1}{-1-1}$ $x=-2$ $\frac{3x=-1}{\frac{3}{3}}$ $x=-\frac{1}{3}$</p> <p>$x = \{-2, -\frac{1}{3}\}$</p> | <p>12. $8x^2 + 3 = 10x$ 24</p> <p>$8x^2 - 10x + 3 = 0$ $8x^2 - 6x - 4x + 3 = 0$ $2x(4x-3) - 1(4x-3) = 0$ $(4x-3)(2x-1) = 0$</p> <p>$4x-3=0$ $2x-1=0$ $\frac{+3+3}{+3+3}$ $\frac{+1+1}{+1+1}$ $\frac{4x=2}{\frac{4}{4}}$ $\frac{2x=1}{\frac{2}{2}}$ $x=\frac{2}{4}$ $x=\frac{1}{2}$</p> <p>$x = \{\frac{1}{2}, \frac{3}{4}\}$</p> |
| <p>13. $12x^2 + 32x = -5$ 60</p> <p>$12x^2 + 32x + 5 = 0$ $12x^2 + 30x + 2x + 5 = 0$ $6x(2x+5) + 1(2x+5) = 0$ $(2x+5)(6x+1) = 0$</p> <p>$2x+5=0$ $6x+1=0$ $\frac{-5-5}{-5-5}$ $\frac{-1-1}{-1-1}$ $\frac{2x=-5}{\frac{2}{2}}$ $\frac{6x=-1}{\frac{6}{6}}$ $x=-\frac{5}{2}$ $x=-\frac{1}{6}$</p> <p>$x = \{-\frac{5}{2}, -\frac{1}{6}\}$</p> | <p>14. $5x^2 + 7x = x^2 + 2$ -8</p> <p>$4x^2 + 7x - 2 = 0$ $4x^2 + 8x - 1x - 2 = 0$ $4x(x+2) - 1(x+2) = 0$ $(x+2)(4x-1) = 0$</p> <p>$x+2=0$ $4x-1=0$ $\frac{-2-2}{-2-2}$ $\frac{+1+1}{+1+1}$ $x=-2$ $\frac{4x=1}{\frac{4}{4}}$ $x=\frac{1}{4}$</p> <p>$x = \{-2, \frac{1}{4}\}$</p> |