

Steps for Solving Quadratics by Factoring	1)	MOVE ALL TERMS to the one side and set the equations EQUAL TO ZERO.
	2)	LOOK FOR GCF!!!
	3)	FACTOR!!!
	4)	CHANGE SIGNS OF FACTORS FOUND!!!

Examples:

1) $x^2 + 9x = 0$
 $x(x + 9) = 0$
 $x = 0$ $\frac{x+9}{-9} = 0$
 $x = -9$

2) $4x^2 - 8x = 0$
 $4x(x - 2) = 0$
 $\frac{4x}{4} = 0$ $\frac{x-2}{-2} = 0$
 $x = 0$ $x = 2$

3) $x^2 - 4 = 0$
 $(x + 2)(x - 2) = 0$
 Change signs
 $x = -2$ $x = 2$
 or
 $x = \pm 2$

4) $9x^2 - 25 = 0$ $\sqrt{9} = 3$ $\sqrt{25} = 5$
 Divide # by
 $(3x + 5)(3x - 5) = 0$
 Change sign
 $\frac{3x+5}{-5} = 0$
 $\frac{3x}{3} = \frac{-5}{3}$
 $x = \frac{-5}{3}$ $x = \frac{5}{3}$

5) $x^2 - 10x + 21 = 0$
 $(x - 3)(x - 7) = 0$
 $\frac{21}{-3} = -7$ Change signs
 $x = 3$ $x = 7$

6) $2x^2 - 2x - 24 = 0$
 $x(x^2 - x - 12) = 0$
 $(x - 4)(x + 3) = 0$
 $\frac{-12}{-4} = 3$ Change signs
 $x = 4$ $x = -3$

7) $3x^2 - 13x - 30 = 0$
 $\frac{-90}{5} = -18$ $\frac{-18}{-13} = -\frac{18}{13}$
 $\frac{5}{3}$ $\frac{-18}{3} = -6$
 Change signs
 $(x + \frac{5}{3})(x - 6) = 0$
 $x = -\frac{5}{3}$ $x = 6$

8) $6x^2 + 5x - 4 = 0$
 $\frac{-24}{-3} = 8$ $\frac{-24}{5} = -\frac{24}{5}$
 $\frac{-1}{2}$ $\frac{4}{3}$
 Change signs
 $x = \frac{1}{2}$ $x = -\frac{4}{3}$

<p>9)</p> $\begin{array}{r} 2x^2 = \cancel{5x} \\ -5x \quad -5x \\ \hline 2x^2 - 5x = 0 \\ x(2x - 5) = 0 \\ \div \# \text{ change sign} \end{array}$ $\boxed{x=0} \quad \boxed{x=\frac{5}{2}}$	<p>10)</p> $\begin{array}{r} 7x^2 + 8x = \cancel{x^2} \\ -x \quad -x \\ \hline 6x^2 + 8x = 0 \\ 2x(3x + 4) = 0 \\ \frac{2x=0}{2} \quad \frac{3x+4}{3} \end{array}$ $\boxed{x=0} \quad \boxed{x=-\frac{4}{3}}$
<p>11)</p> $\begin{array}{r} 2x^2 - 50 = \cancel{x^2} - 1 \\ -x^2 + 1 \quad -x^2 + 1 \\ \hline x^2 - 49 = 0 \\ (x+7)(x-7) = 0 \\ \boxed{x=-7} \quad \boxed{x=7} \\ \text{or} \\ \boxed{x=\pm 7} \end{array}$	<p>12)</p> $\begin{array}{r} 3x^2 = \cancel{81} - \cancel{x^2} \\ +x^2 - 81 = \cancel{x^2} + x^2 \\ \sqrt{4=2} \quad 4x^2 - 81 = 0 \quad \sqrt{81}=9 \\ (2x+9)(2x-9) = 0 \\ \boxed{x=-\frac{9}{2}} \quad \boxed{x=\frac{9}{2}} \\ \text{or} \\ \boxed{x=\pm \frac{9}{2}} \end{array}$
<p>13)</p> $\begin{array}{r} x^2 + 2x = \cancel{80} \\ -80 \quad -80 \\ \hline x^2 + 2x - 80 = 0 \\ \begin{array}{l} \cancel{-80} \\ -8 \quad 10 \end{array} \leftarrow \text{change signs} \\ \boxed{x=8} \quad \boxed{x=-10} \end{array}$	<p>14)</p> $\begin{array}{r} x^2 + 11x + 29 = \cancel{x+4} \\ -x \quad -4 \quad -x-4 \\ \hline x^2 + 10x + 25 = 0 \\ \begin{array}{l} \cancel{25} \\ 5 \quad 5 \\ 10 \end{array} \quad \boxed{x=-5} \quad \boxed{x=-5} \end{array}$
<p>15)</p> $\begin{array}{r} 2x^2 - 9x - 65 = \cancel{x^2} - \cancel{x} \\ -x^2 + x \quad -x^2 + x \\ \hline x^2 - 8x - 65 = 0 \\ \begin{array}{l} \cancel{-65} \\ -13 \quad 5 \\ -8 \end{array} \quad \boxed{x=13} \quad \boxed{x=-5} \end{array}$	<p>16)</p> $\begin{array}{r} 4x^2 + 41x + 98 = \cancel{2} - \cancel{3x} \\ + 3x \quad -2 \quad -2 + 3x \\ \hline 4x^2 + 44x + 96 = 0 \\ x(x^2 + 11x + 24) = 0 \\ \begin{array}{l} \cancel{24} \\ 3 \quad 8 \\ 11 \end{array} \quad \boxed{x=-3} \quad \boxed{x=-8} \end{array}$
<p>17)</p> $\begin{array}{r} 2x^2 = \cancel{x} + 21 \\ -x - 21 \quad -x - 21 \\ \hline 2x^2 - x - 21 = 0 \\ \begin{array}{l} \cancel{-42} \\ -7 \quad 6 \\ -1 \end{array} \quad \boxed{\frac{-7}{2}} \quad \frac{6}{2} = \boxed{3} \\ \boxed{x=\frac{7}{2}} \quad \boxed{x=-3} \end{array}$	<p>18)</p> $\begin{array}{r} 4x^2 - 11x = \cancel{x} + 9 \\ -x + 9 \quad -x + 9 \\ \hline 4x^2 - 12x + 9 = 0 \\ \begin{array}{l} \cancel{36} \\ -6 \quad -6 \\ -12 \end{array} \quad \frac{1}{4} = \boxed{\frac{-3}{2}} \quad \frac{1}{4} = \boxed{\frac{-3}{2}} \\ \boxed{x=\frac{3}{2}} \quad \boxed{x=\frac{3}{2}} \end{array}$