Name:	Date:	Period:

4.1 Notes: *Solving Quadratic Equations by Factoring review*

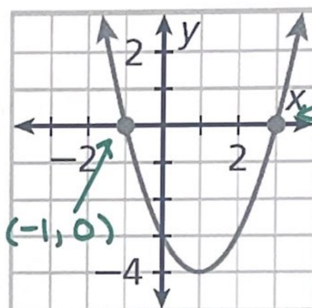
Methods for solving quadratic equations

- graphing
- Factoring and zero product property
- Taking the Square root (Only when there is no x term)
- Quadratic Formula
- Completing the Square

The **solutions** are often called the roots or zeros.

They are the x values of the x - intercepts (if REAL NUMBERS).

The solution to the equation $0 = x^2 - 2x - 3$ can be seen in the graph. $x =$ -1, 3



$y = x^2 - 2x - 3$

Steps to solve by Factoring.

1. Set the equation equal to 0.
2. Factor.
3. Use zero product property.
   Set each factor equal to zero and solve for x.
4. Write your solution $x = \{\quad\}$

Ex 1

$x^2 - 10x + 21 = 0$

21 factors
1 21
3 7

2 $(x-3)(x-7)=0$

3 $x-3=0$ $\quad x-7=0$
$x=3$ $\quad x=7$

4 $x=\{3, 7\}$

Ex 2

$2x^2 = x + 21$

$2x^2 - x - 21 = 0$ 1

-42, 6, -7, -1

1 42
2 21
3 14
6 -7

2 Factor

$2x^2 - 7x + 6x - 21$

$x(2x-7) + 3(2x-7)$

$(x+3)(2x-7)=0$ 3

$x+3=0$ $\quad 2x-7=0$
$x=-3$ $\quad 2x=7$
$x=\frac{7}{2}$

$x=\{-3, \frac{7}{2}\}$ 4

Ex 3	Ex 4
$4x^2 = 8x$ $4x^2 - 8x = 0$ ① $4x(x-2) = 0$ ② GCF $4x = 0 \quad (x-2) = 0$ ③ $x = 0 \quad x = 2$ $x = \{0, 2\}$ ④	$9x^2 - 5x = 0$ $x(9x-5) = 0$ ② $x = 0 \quad 9x - 5 = 0$ ③ $9x = 5$ $x = \frac{5}{9}$ $x = \{0, \frac{5}{9}\}$ ④

4.2 Notes: *Simplifying Radicals*

Warm-Up	List the first 13 perfect squares:
	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169
	Simplify: a. $\sqrt{49}$ → $\sqrt{7\cdot 7}$ → 7 b. $2\sqrt{144}$ → $2\sqrt{12\cdot 12}$ → $2\cdot 12$ → 24 c. $\sqrt{\frac{1}{81}} = \frac{\sqrt{1}}{\sqrt{81}}$ → $\frac{1}{9}$

Simplify non-perfect square radicals	
$\sqrt{2}\cdot\sqrt{3} = \sqrt{6}$ multiplying radicals	1. Separate the radical into the product of 2 radicals. One of the radical factors is a perfect square. Try and determine the largest perfect square. 2. Simplify the perfect square radical. The remaining radical should remain if it can not be simplified further.

Ex 1	Ex 2
$\sqrt{12}$ $\sqrt{4}\cdot\sqrt{3}$ $2\sqrt{3}$	$9\sqrt{45}$ $9\cdot\sqrt{5}\sqrt{9}$ $9\cdot\sqrt{5}\cdot 3$ → $27\sqrt{5}$

Ex 3	Ex 3
$5\sqrt{72}$ $5\cdot\sqrt{36}\sqrt{2}$ $5\cdot 6\sqrt{2}$ $30\sqrt{2}$ $5\sqrt{9}\cdot\sqrt{8}$ $5\cdot 3\sqrt{8}$ $5\cdot 3\sqrt{4}\cdot\sqrt{2}$ $5\cdot 3\cdot 2\sqrt{2}$ $30\sqrt{2}$	$-\sqrt{250}$ $-1\cdot\sqrt{25}\sqrt{10}$ $-1\cdot 5\cdot\sqrt{10}$ $-5\sqrt{10}$