Today's Plan:

Learning Target (standard): I will solve quadratic equations using the square root property.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

NAME _____   #110
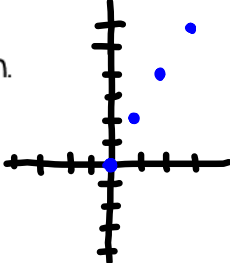
$y = 2x - 3$ $m = 2$

BELL RINGER

$Iy: (0, -3)$

1.) Solve for y. $2y = 4x - 6$

Label the slope & y-intercept. What is the slope of a

parallel line? A perpendicular line? $m_{/\!/} = 2$ $m_{\perp} = -\frac{1}{2}$

2.) Simplify $3(x - 1) + 5$

$3x - 3 + 5$ $3x + 2$

3.) Is the table linear or nonlinear function? Explain.

x	0	1	2	3
y	0	2	4	6

18) $x^2 - 7x + 6 = 3 - x^2$
$+x^2$ -3 $-3 + x^2$

$2x^2 - 7x + 3 = 0$

6
$-6 + -1 = -7$

$2x^2 - 6x - x + 3 = 0$

$2x(x-3) - 1(x-3) = 0$

$(x-3)(2x-1) = 0$

$x - 3 = 0$ $2x - 1 = 0$

$x = 3$ $\dfrac{2x}{2} = \dfrac{1}{2}$

$x = 3, \dfrac{1}{2}$ $x = \dfrac{1}{2}$

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19) $4x^2 + 15x + 12 = 3 - 2x^2$
$2x^2$ -3 $-3 + 2x$

$6x^2 + 15x + 9 = 0$

$3(2x^2 + 5x + 3) = 0$

6
$3 + 2 = 5$

$2x^2 + 3x + 2x + 3 = 0$

$x(2x+3) + 1(2x+3) = 0$

$3(2x+3)(x+1) = 0$

$3 \neq 0$ $2x + 3 = 0$ $x + 1 = 0$

$\dfrac{2x}{2} = \dfrac{-3}{2}$ $x = -1$

$x = -\dfrac{3}{2}$ $x = -\dfrac{3}{2}, -1$

Solve by factoring.

$$x^2 + 2x - 15 = 0$$

$$x^2 + 5x - 3x - 15 = 0$$

15
5 − 3 = 2

$$x(x+5) - 3(x+5) = 0$$

$$(x+5)(x-3) = 0$$

$$x+5 = 0 \qquad x-3 = 0$$

$$x = -5 \qquad x = 3$$

$$\boxed{x = -5, 3}$$

Solve by factoring.

$$8x^2 + 10x + 3 = 0$$

24
6 + 4 = 10

$$8x^2 + 6x + 4x + 3 = 0$$

$$2x(4x+3) + 1(4x+3) = 0$$

$$(4x+3)(2x+1) = 0$$

$$4x+3 = 0 \qquad 2x+1 = 0$$

$$4x = -3 \qquad 2x = -1$$

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

$$\boxed{x = -\frac{3}{4}, -\frac{1}{2}}$$

Solve by factoring.

$$7x^2 - 14x - 64 = -8$$

$$7x^2 - 14x - 56 = 0$$

$$7(x^2 - 2x - 8) = 0$$

$$x^2 + 2x - 4x - 8 = 0$$

$$x(x+2) - 4(x+2) = 0$$

$$7(x+2)(x-4) = 0$$

$$8$$
$$2 - 4 = -2$$

$$x + 2 = 0 \qquad x - 4 = 0$$

$$7 \neq 0 \quad x = -2 \qquad x = 4$$

$$\boxed{x = -2, 4}$$

Solve by factoring.

$$x^2 = 16$$

$$x^2 - 16 = 0$$

$$(x+4)(x-4) = 0$$

$$x + 4 = 0 \qquad x - 4 = 0$$

$$x = -4 \qquad x = 4$$

$$\boxed{x = -4, 4}$$

Solve by factoring.

$$x^2 + x = 12$$

$$x^2 + x - 12 = 0$$

$$x^2 + 4x - 3x - 12 = 0$$

$$x(x+4) - 3(x+4) = 0$$

$$(x+4)(x-3) = 0$$

$$x + 4 = 0 \qquad x - 3 = 0$$

$$x = -4 \qquad\quad x = 3$$

$$\boxed{x = -4, 3}$$

$$12$$
$$4 - 3 = 1$$

Solve by factoring.

$$3x^2 - 20x = -12$$

$$3x^2 - 20x + 12 = 0$$

$$3x^2 - 18x - 2x + 12 = 0$$

$$3x(x-6) - 2(x-6) = 0$$

$$(x-6)(3x-2) = 0$$

$$x - 6 = 0 \qquad 3x - 2 = 0$$

$$x = 6 \qquad\quad 3x = 2$$

$$x = \frac{2}{3}$$

$$\boxed{x = 6, \frac{2}{3}}$$

$$36$$
$$-18 + -2 = -20$$

Solve by factoring.

$$x^2 - 15x + 56 = 0$$

56
$-7 + -8 = -15$

$$x^2 - 7x - 8x + 56 = 0$$

$$x(x-7) - 8(x-7) = 0$$

$$(x-7)(x-8) = 0$$

$$x-7 = 0 \quad x-8 = 0$$

$$x = 7 \qquad x = 8$$

$$x = 7, 8$$

Square Root Property: "Special Case"

- quadratic equation must be in the form of a "square" equals a constant

- solve by taking the square root of both sides

- when you "physically" take a square root, you will have two possible solutions - a positive and a negative one

$$r^2 - 16 = 0$$

$$(r+4)(r-4) = 0$$

$$r+4 = 0 \quad r-4 = 0$$

$$r = -4 \qquad r = 4$$

$$r = -4, 4$$

$$r^2 - 16 = 0$$

$$\sqrt{r^2} = \pm\sqrt{16}$$

$$r = 4, -4$$

Solve by taking square roots:

$$x^2 - 25 = 0$$

$$\sqrt{x^2} \overset{+}{=} \sqrt{25}$$

$$x = 5, -5$$

Solve by taking square roots:

$$x^2 - 4 = 12$$

$$+4 \qquad +4$$

$$\sqrt{x^2} \overset{+}{=} \sqrt{16}$$

$$x = 4, -4$$

Solve by taking square roots:

$$3x^2 - 2 = 25$$
$$ +2 \quad +2$$

$$\frac{3x^2}{3} = \frac{27}{3}$$

$$\sqrt{x^2} = \pm\sqrt{9}$$

$$x = 3, -3$$

Solve by taking square roots:

$$4x^2 - 4 = 45$$
$$ +4 \quad +4$$

$$\frac{4x^2}{4} = \frac{49}{4}$$

$$\sqrt{x^2} = \pm\sqrt{\frac{49}{4}}$$

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

Solve by taking square roots:

$$3x^2 + 6 = 19$$

$$-6 \quad -6$$

$$\frac{3x^2}{3} = \frac{13}{3}$$

$$\sqrt{x^2} = \pm\sqrt{\frac{13}{3}}$$

$$X = 2.082, -2.082$$

Assignment:

Solving Equations with Square Roots

#1-16