Lesson 7.1- SWBAT solve quadratic equations by factoring.

Kick off- Factor each of the following:

1) $8x^2 - 48x$

$8x(x-6)$

2) $x^2 + 13x + 42$

MP= $42x^2$ $(x^2+6x+7x+42)$

$6x \quad 7x$ $X(x+6) +7(x+6)$

$(x+7)(x+6)$

An equation in the form $ax^2 + bx + c = 0$ is a **quadratic equation**.

Standard form is $ax^2 + bx' + c = 0$ with the **polynomial in descending order** and **equal to zero**

To solve or to find the roots of a quadratic equations we must factor!!

Factoring Expressions VS. Factoring Equations

Factoring Expressions:	Factoring Equations:
$\dfrac{x^2-x}{x}\ \dfrac{}{x}$	$\dfrac{x^2-x}{x}\ \dfrac{=0}{x}$
$x(x-1)$	$x(x-1)=0$
	$\boxed{x=0}$ $x-1=0$
no equal sign	$\dfrac{+1\ +1}{\boxed{x=1}}$

Factoring Expressions:

1) factor

Put into Solving a Quadratic Equation:
1) Standard form = zero
2) factor
3) to set each factor equal to zero
4) Solve

Solve each equation:

1) $x^2 + 4x - 5 = 0$

MP: $-5x^2$ $(x^2-1x)(-5x-5)=0$

$x(x-1)\ 5(x-1)=0$

$\hat{}$ $-1)=0$

2) $4y^2 - 1 = 0$

$(2y+1)(2y-1)=0$

3) $x^2 - 9x = 0$

$x(x-9)=0$

$x=0$ $x-9=0$

$\dfrac{+9\ +9}{\boxed{x=9}}$

4) $a^2 - 8a = -16$

$\dfrac{+16\ \ +16}{}$

$a^2-8a+16=0$

$(a^2-4a-4a+16)=0$

$16a^2$

$\hat{}$

$-4a-4a$

$a(a-4)-4(a-4)=0$

$(a-4)(a-4)=0$

$a-4=0$ $a-4=0$

$\dfrac{+4\ +4}{\boxed{a=4}}$ $\dfrac{+4\ +4}{\boxed{a=4}}$

Directions: Find the roots of each equation.

5) $y^2 - 28 = 3y$

$\dfrac{-3y\ \ -3y}{}$

$y^2 - 3y - 28 = 0$

6) $b^2 - 4b = 32$

$\dfrac{-32\ \ -32}{}$

$b^2 - 4b - 32 = 0$

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7) $3a^2 - 12a = 0$

8) $-2v^2 - v + 12 = -3v^2 + 6v$

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9) $28n^2 = -96 - 184n$ 10) $5x^2 - 27x + 10 = 0$

11) $x^2 + 6x + 9 = 0$ 12) $2x^2 - 3x = 20$