Lesson 7.8- SWBAT solve quadratic equations by completing the square.

Kick off-
Solve each of the following by factoring:

1) $x^2 - x = 12$

$-12 \quad -12$

$x^2 - x - 12 = 0$

MP: $-12x^2$

$(x^2 - 4x)(3x - 12) = 0$

$x(x-4) \quad 3(x-4) = 0$

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

$x = -3 \quad x = 4$

2) $x^2 = 100$

$-100 \quad -100$

$x^2 - 100 = 0$

$(x-10)(x+10) = 0$

$x - 10 = 0 \qquad x + 10 = 0$

$+10 \ +10 \qquad -10 \ -10$

$\boxed{x = 10} \qquad \boxed{x = -10}$

Solve each of the following by quadratic formula:

3) $4x^2 + 4x - 8 = 1$

$-1 \quad -1$

$4x^2 + 4x - 9$

$a = 4$
$b = 4$
$c = -9$

4) $x^2 - 4x - 14 = -2$

$+2 \quad +2$

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

$a = 1$
$b = -4$
$c = -12$

$\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\dfrac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-12)}}{2(1)} =$

$\dfrac{4 \pm \sqrt{64}}{2} =$

$\dfrac{4 \pm 8}{2} =$

$\dfrac{4+8}{2} = \dfrac{12}{2} = \boxed{6} \qquad \dfrac{4-8}{2} = \dfrac{-4}{2} = \boxed{-2}$

Solve by completing the square: $x^2 - 4x - 14 = -2$

$+14 \quad +14$

$x^2 - 4x = 12$

$X^2 - 4X + 4 = 12 + 4$

$(x-2)(x-2) = 16$

$\sqrt{(x-2)^2} = \sqrt{16}$

$x - 2 = \pm 4$

$X - 2 = +4 \qquad X - 2 = -4$

$+2 \ +2 \qquad +2 \ +2$

$\boxed{X = 6} \qquad \boxed{X = -2}$

• $ax^2 + bx = c$

• $\left(\dfrac{1}{2}b\right)^2$ add to both sides

$(-2)^2 = 4$

• factor

Solve each of the following by completing the square:

1) $x^2 - 5x = -11 + 7x$

2) $x^2 - 5x = -14x$

---

3) $x^2 = -6x - 8$

4) $k^2 - 12k + 23 = 0$

---

5) $r^2 - 4r - 91 = 7$

6) $x^2 + 26 = 10x + 8$

1