

What questions do you have on your "Solving Quadratics by Factoring" worksheet?

(20) $49x^2 - 36 = 0$

$49x^2$
 \wedge
 $7x \cdot 7x$

$(7x - 6)(7x + 6) = 0$

$x = -\frac{6}{7}, \frac{6}{7}$

36
 \wedge
 $6 \cdot 6$

(14) $7n^2 - 6n = 0$

$n(7n - 6) = 0$
 $n = 0 \quad 7n - 6 = 0$

$n = 0, \frac{6}{7}$

(16) $5x^2 - 36x + 7 = 0$

$(5x^2 - 35x) - (1x + 7) = 0$

$(5x)(x - 7) - 1(x - 7) = 0$

$(x - 7)(5x - 1) = 0$

$x = 7, \frac{1}{5}$

~~$a \cdot c$
 $5 \cdot 7$
 35
 $-35 \quad -1$
 -36
 b~~

$x^2 - 4$
 $(x - 2)(x + 2)$

$7x - 6 = 0$
 $+6 \quad +6$
 $\frac{7x}{7} = \frac{6}{7}$
 $x = \frac{6}{7}$

$7x + 6 = 0$
 $-6 \quad -6$
 $\frac{7x}{7} = \frac{-6}{7}$
 $x = -\frac{6}{7}$

To complete the square, your quadratic must be in **Standard**

Form, $ax^2 + bx + c = 0$. Here are your steps when $a = 1$:

(1) move c to the right side of the equals sign.

(2) add $(b/2)^2$ to both sides

(3) factor the left side of the equals sign and move c back to the left.

~You will end up in **Vertex Form**, $f(x) = a(x-h)^2+k$, with your vertex at (h,k) .

From your worksheet.

Solve each equation by completing the square.

$$1) \quad p^2 + 20p - 1 = 0$$

$$\begin{array}{r} p^2 + 20p - 1 = 0 \\ \quad \quad \quad +1 \quad +1 \\ \hline p^2 + 20p + 100 = 1 + 100 \\ p^2 + 20p + 100 = 101 \\ (p + 10)^2 = 101 \\ (p + 10)^2 - 101 = 0 \end{array}$$

$$\left(\frac{20}{2}\right)^2 = 100$$

$$a(x-h)^2 + k$$

$$7) \quad x^2 - 14x - 34 = 5$$

$$\begin{array}{r} x^2 - 14x - 34 = 5 \\ \quad \quad \quad +34 \quad +34 \\ \hline x^2 - 14x + 49 = 39 + 49 \\ x^2 - 14x + 49 = 88 \\ (x - 7)^2 = 88 \\ (x - 7)^2 - 88 = 0 \end{array}$$

$$\left(\frac{-14}{2}\right)^2 = (-7)^2 = 49$$

To complete the square, your quadratic must be in **Standard**

Form, $ax^2 + bx + c = 0$. There are only a couple of things that change when $a \neq 1$.

~You must factor a out of ~~every term.~~

the first 2 terms after moving c to the right.

~When you add $(b/2)^2$ to both sides, you must multiply the right side by the a you factored out.

Solve each equation by completing the square.

$$9) \quad 2m^2 - 8m - 10 = 0$$

$$2m^2 - 8m = 10$$

$$2(m^2 - 4m + 4) = 10 + 8$$

$$2(m-2)^2 = 18$$

$$2(m-2)^2 - 18 = 0$$

$$\left(\frac{b}{2}\right)^2$$

$$\left(\frac{-4}{2}\right)^2 = (-2)^2$$

$$= 4$$

$$13) \quad 5r^2 - 20r - 73 = -9$$

$$\frac{\quad +73 \quad +73}{5r^2 - 20r = 64}$$

$$5(r^2 - 4r + 4) = 64 + 20$$

$$5(r-2)^2 = 84$$

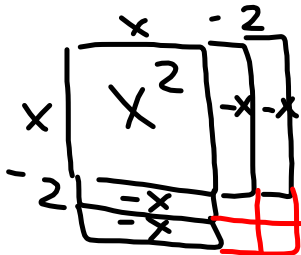
$$5(r-2)^2 - 84 = 0$$

$$\left(\frac{-4}{2}\right)^2 = (-2)^2$$

$$= 4$$

$$\begin{array}{c} 4 \\ -2 \times -2 \\ -4 \end{array}$$

$$5(r-2)(r-2)$$



Homework

Solving Quadratics by Completing the Square WKS