

$$6 = -s + 77$$

Given the above equation, what is the value of $1 + 5(77 - s)$?

- a) -739
- b) -29
- c) 31
- d) 741

$$6 = -s + 77$$

$$-71 = -s$$

$$71 = s$$

$$1 + 5(77 - s)$$

PEMDAS

$$1 + 5(6)$$

$$1 + 30$$

$$31$$

Completing the

Square

WHY?

This method allows us to use the square root method to solve quadratics that cannot be rewritten as $ax^2 = c$

HOW?

$$x^2 + bx + c = 0$$

Rearrange your equation so it looks like:

$$x^2 + bx + \square = c + \square$$

If $a \neq 1$, divide every term by a

In the squares, write $\left(\frac{b}{2}\right)^2$

Now, you can rewrite the left side as $\left(x + \frac{b}{2}\right)^2$

Take the square root of each side. Don't forget the \pm

Solve for x .

EXAMPLE:

Solve by completing the square.

$$x^2 - 12x + 5 = 0$$

$$x^2 - 12x + \boxed{36} = -5 + \boxed{36}$$

$$\sqrt{(x-6)^2} = \sqrt{31}$$

$$x - 6 = \pm\sqrt{31}$$

$$x = 6 \pm\sqrt{31}$$

For homework, complete the follow sheet.

Solve Quadratics by Completing the Square

Date _____ Period _____

Solve each equation by completing the square.

1) $n^2 + 14n + 33 = 0$

2) $n^2 + 6n - 58 = 0$

$$n^2 + 6n + \boxed{9} = 58 + \boxed{9}$$

$$(n+3)^2 = 67$$

$$n+3 = \pm\sqrt{67}$$

$$n = -3 \pm \sqrt{67}$$

3) $a^2 - 12a - 89 = 0$

4) $x^2 + 8x - 84 = 0$

5) $x^2 - 10x - 37 = 0$

6) $m^2 + 8m + 11 = 0$

7) $n^2 - 6n - 30 = -3$

8) $x^2 - 4x - 54 = -9$

$$\boxed{-\frac{4}{2}}$$

$$x^2 - 4x + \boxed{4} = 45 + \boxed{4}$$

$$(x-2)^2 = 49$$

$$x-2 = \pm 7$$

$$x = 2 \pm 7$$

$$2+7=9$$

$$2-7=-5$$

$$x = \{5, -9\}$$

9) $a^2 + 2a - 83 = -7$

10) $m^2 + 16m - 32 = -3$

11) $x^2 = 14x + 32$

12) $n^2 - 38 = -4n$