

NAME \_\_\_\_\_

## BELL RINGER

1.) Evaluate  $\left(\frac{b}{2}\right)^2$  when  $b = 11$ .

2.) Multiply  $(5 - 6i)(2 + 3i)$

3.) Solve  $5x - 3x + 2 = -19$

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NAME ANSWER KEY

## BELL RINGER

1.) Evaluate  $\left(\frac{b}{2}\right)^2$  when  $b = 11$ .  $\frac{121}{4}$

2.) Multiply  $(5 - 6i)(2 + 3i)$   $28 + 3i$

3.) Solve  $5x - 3x + 2 = -19$   $x = -\frac{21}{2}$

Special thanks to:



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## Solving Quadratic Equations by Completing the Square

HSA-REI.4

NAME \_\_\_\_\_

Quadratic equations can be solved by completing the square.

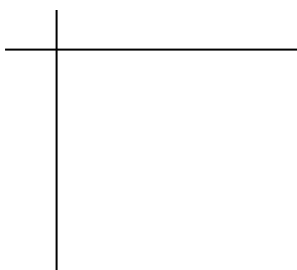
The area of a square is the product of multiplication of two equal length sides.

$$3 \begin{array}{|c|} \hline 3 \\ \hline \end{array} A = (3)(3) = 3^2 = 9$$

Similarly, a perfect square trinomial is the product of two of the same binomials multiplied together.

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

We can represent this visually using Algebra tiles.



Notice how the multiplication of  $(x + 2)(x + 2)$  results in a square product. We can rewrite  $(x + 2)(x + 2)$  as  $(x + 2)^2$  which will allow us to solve quadratic equations using square roots.

Not all quadratic equations are perfect square trinomials so we will need to complete the square occasionally to use this solving technique. Complete the table using algebra tiles. What patterns do you notice?

Expression	Value of $c$ needed to complete the square	Expression written as a binomial squared
$x^2 + 2x + c$		
$x^2 + 6x + c$		
$x^2 - 8x + c$		

## Solving Quadratic Equations by Completing the Square

HSA-REI.4

NAME **ANSWER KEY**

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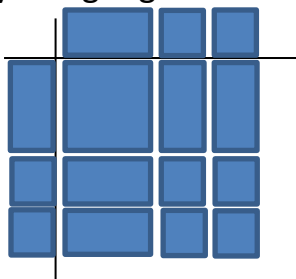
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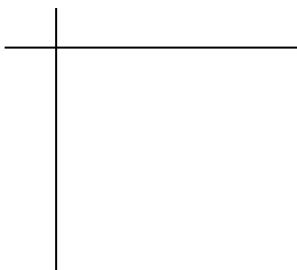
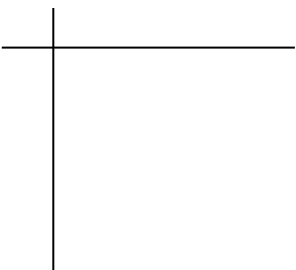
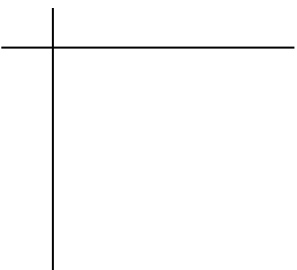
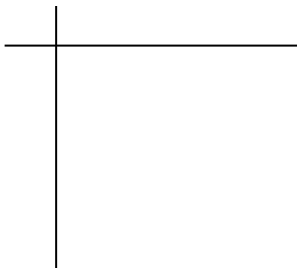
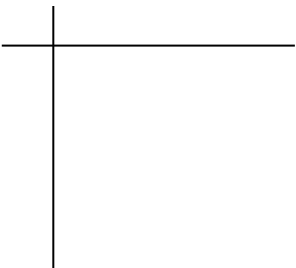
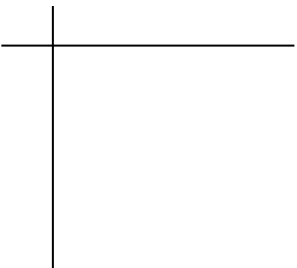
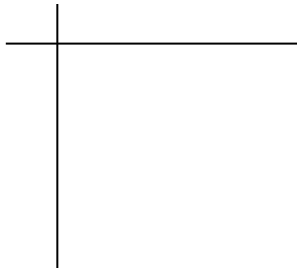
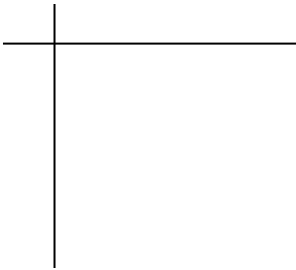
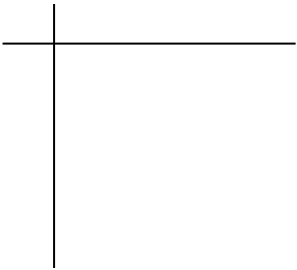
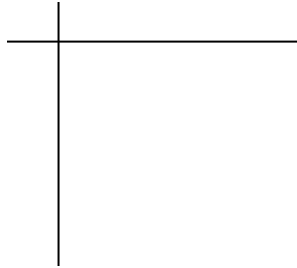
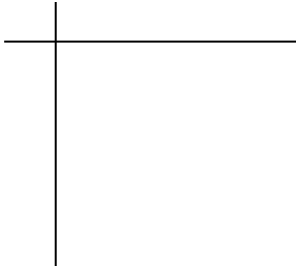
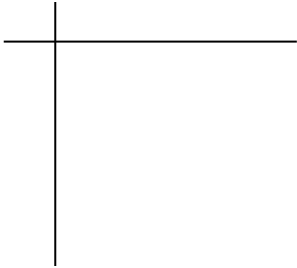
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Expression	Value of $c$ needed to complete the square	Expression written as a binomial squared
$x^2 + 2x + c$	1	$(x + 1)^2$
$x^2 + 6x + c$	9	$(x + 3)^2$
$x^2 - 8x + c$	16	$(x - 4)^2$

# Algebra Tile Drawing Paper

NAME \_\_\_\_\_



Score: \_\_\_\_/\_\_\_\_

## EXIT SLIP

NAME \_\_\_\_\_

**STANDARD:** HSA-REI.4

**OBJECTIVE:** Students will be able to solve quadratic equations by completing the square.

Solve the quadratic equation  $x^2 - 6x = 11$  by completing the square.

X =

On a scale from 1-5, 5 being the greatest, how well do you understand this standard? Circle your number below.

1 2 3 4 5

Score: \_\_\_\_/\_\_\_\_

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Solve the quadratic equation  $x^2 - 6x = 11$  by completing the square.

$$x = 3 \pm 2\sqrt{5}$$

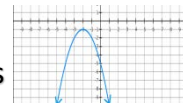
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1 2 3 4 5

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Find the value of  $c$  that makes the expression a perfect square trinomial. Then write the expression as the square of a binomial.

$$a^2 - 12a + c$$

$$y^2 + 8y + c$$

$$x^2 + 10x + c$$

$$d^2 - 2d + c$$

$$e^2 + 4e + c$$

You Do Problems: Solve using completing the square.

$$a^2 - 12a = 10$$

$$y^2 + 8y - 2 = 0$$

$$2x^2 + 20x = 6$$