

# Wednesday, January 9, 2019

- Warm-up

- Multiply the following binomials:

$$(x - 8)(x + 1)$$

$$x^2 + \underline{1x} - \underline{8x} - 8$$

$$x^2 - \underline{7x} - 8$$

$$(x - 3)(x - 6)$$

$$x^2 - \underline{6x} - \underline{3x} + 18$$

$$x^2 - \underline{9x} + 18$$

middle term = sum

- Factoring polynomials

**Objectives:**

**Content:** I will factor trinomials with an a value of 1.

**Social:** I will demonstrate my work to the group as well as the class.

**Language:** I will write my factoring process clearly for myself and others.

# Factoring $\rightarrow$ Working Backwards

trinomial

If I had a trinomial:  $x^2 + 5x + 6$

and factored it to:  $(x + m)(x + n)$

$$\rightarrow (x+3)(x+2)$$

$$(x+2)(x+3)$$

last term

what do I know about the product of  $m$  &  $n$ ?

$$m \cdot n = 6$$

what are my options?

$$\begin{array}{cc} 3 & \neq 2 \\ 1 & \neq 6 \end{array}$$

what do I know about the sum of  $m$  &  $n$ ?

$$m + n = 5$$

middle term

what are my options?

$$3 \neq 2$$

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# Try some

$$x^2 + 7x + 12 \rightarrow \begin{matrix} 6+2 \\ 4+3 \\ 12+1 \end{matrix}$$

$(x+4)(x+3)$

$$y^2 + 9y + 18 \quad (y+6)(y+3)$$

factor it to:  $(x + m)(x + n)$

what do I know about the product of m & n?

what are my options?

what do I know about the sum of m & n?

what are my options?

$$m^2 + 10m + 21 \rightarrow \begin{matrix} 7+3 \\ 1+21 \end{matrix}$$

$$(m+7)(m+3)$$

$$(m+3)(m+7)$$

$$x^2 + 8x + 12 \quad (x+2)(x+6)$$

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What if I had this trinomial:  $x^2 - 6x + 8$

and factored it to:  $(x + m)(x + n)$

$$(x-4)(x-2)$$

what do I know about the product of  $m$  &  $n$ ?

$$\begin{aligned} 1 \neq 8 &\rightarrow -1 \neq -8 \\ 4 \neq 2 &\rightarrow -4 \neq -2 \end{aligned}$$

what are my options?

what do I know about the sum of  $m$  &  $n$ ?

$$= -6$$

what are my options?

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# Try some more

$$x^2 - 4x + 3$$

Handwritten annotations: A blue circle around  $-4x$  and a red circle around  $+3$ . A blue arrow points from the  $+$  sign to the right. A red arrow points from the  $+$  sign to the right. A blue circle around  $-1 \times -3$  with a red arrow pointing to it from the  $+$  sign.

$$(x-1)(x-3)$$
$$(x-3)(x-1)$$

$$x^2 - 6x + 5$$

Handwritten annotation:  $(x-5)(x-1)$

factor it to:  $(x + m)(x + n)$

what do I know about the product of  $m$  &  $n$ ?

what are my options?

what do I know about the sum of  $m$  &  $n$ ?

what are my options?

$$m^2 - 7m + 10$$

$$(m-2)(m-5)$$

$$y^2 - 14y + 24$$

Handwritten annotation:  $(y-2)(y-12)$

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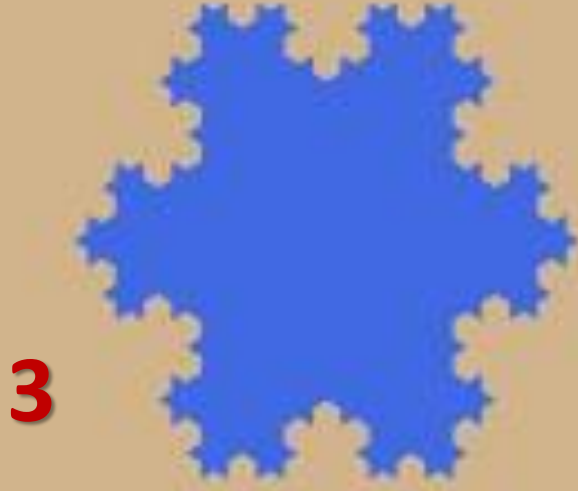
# Brain Break



Which one doesn't belong?



Which one doesn't belong?

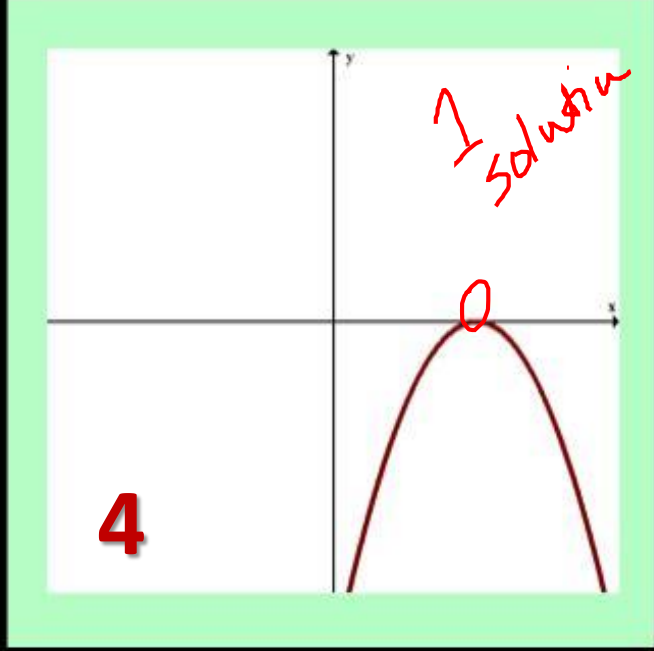
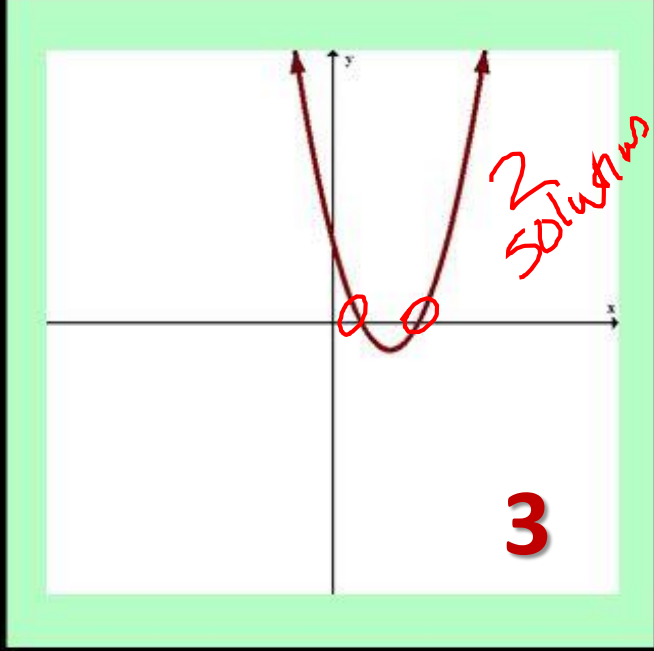
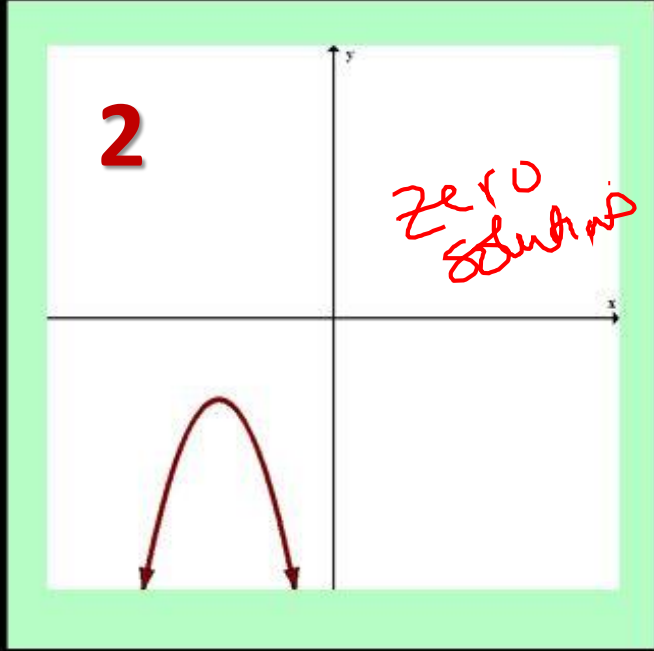
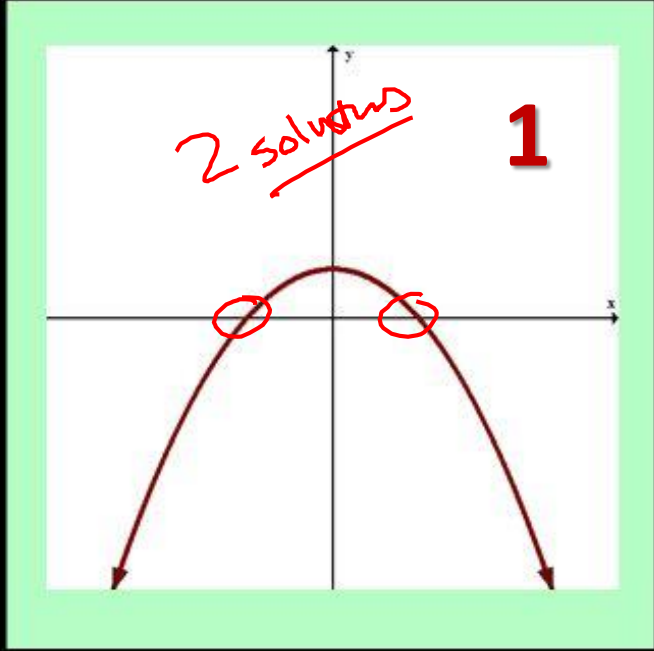




Which one doesn't belong?

$3x$ <b>1</b>	$-3$ <b>2</b>
$-3x^2$ <b>3</b>	$-5x$ <b>4</b>

Which one doesn't belong?



What if I had this trinomial:  $x^2 - 7x - 8$   
and factored it to:  $(x + m)(x + n)$

*★ pay attention to signs!*

$$(x - 8)(x + 1)$$

**what do I know about the product of m & n?**  $(x + 1)(x - 8)$   
*multiply to give -8*

**what are my options?**  $+4 \neq -2$   $-4 \neq +2$   
 $+8 \neq -1$   $-8 \neq +1$

**what do I know about the sum of m & n?**

$$-7$$

**what are my options?**

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# Try some more

$$\begin{array}{l} x^2 - 4x - 32 \\ (x+4)(x-8) \end{array}$$

+ 1 - 32  
+ 2 - 16  
+ 4 - 8  
+ 8 - 4  
+ 16 - 2  
+ 32 - 1

$$\begin{array}{l} x^2 - 5x - 6 \\ (x-6)(x+1) \end{array}$$

factor it to:  $(x + m)(x + n)$

what do I know about the product of m & n?

what are my options?

what do I know about the sum of m & n?

what are my options?

$$\begin{array}{l} m^2 + 6m - 72 \\ (m-6)(m+12) \end{array}$$
$$\begin{array}{l} y^2 + 2y - 15 \\ (y-3)(y+5) \end{array}$$

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# Practice



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