

Quiz Today on paper ,but try this before quiz

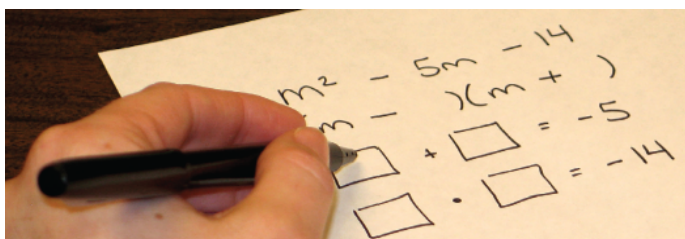
$$\begin{array}{rcl}
 (x+3)^2 & + & (x-5)^2 \\
 \text{---} & & \text{---} \\
 (x+3)(x+3) & + & (x-5)(x-5) \\
 \text{---} & & \text{---} \\
 x^2 + 3x + 3x + 9 & + & x^2 - 5x - 5x + 25 \\
 \text{---} & & \text{---} \\
 x^2 + 6x + 9 & + & x^2 - 10x + 25 \\
 \text{---} & & \text{---} \\
 2x^2 - 4x + 34
 \end{array}$$

Look at the numbers in the trinomial and the binomial.

?

$$v^2 + 12v + 20 = (v + 2)(v + 10)$$

20 is the product of 2 and 10.



?



Factoring and Multiplying Polynomials are inverse operations



$$| x^2 - 3x - 4$$

$$| y^4 + 11y^2 + 30$$

TRINOMIALS

$$| z^2 + 5zy + 6y^2$$

$$| m^2 - 8m + 16$$

# Simple Trinomials

- has three terms with the form...

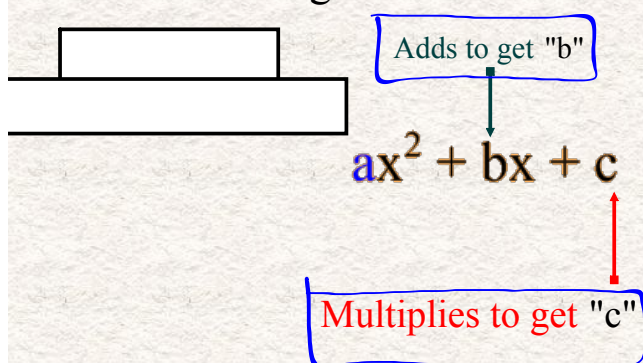
$$\underline{a}x^2 + bx + c$$

- a simple trinomial has an "a" value of 1.
- we use a method of inspection to factor them.

CHECK IT OUT!!!

## INSPECTION METHOD

- here's how it goes... "What two numbers?"



EXAMPLES...

1)  $x^2 + 13x - 48$

Biggest factor has 106x +  
neg must be diff. sign

multiply

-48

-1, 48

-2, 24

-3, 16

-4, 12

-6, 8

-8, 6

-12, 4

-16, 3

-24, 2

-32, 1

-48, 1

-64, 1

-80, 1

-96, 1

-112, 1

-128, 1

-144, 1

-160, 1

-176, 1

-192, 1

-208, 1

-224, 1

-240, 1

-256, 1

-272, 1

-288, 1

-304, 1

-320, 1

-336, 1

-352, 1

-368, 1

-384, 1

-400, 1

-416, 1

-432, 1

-448, 1

-464, 1

-480, 1

-496, 1

-512, 1

-528, 1

-544, 1

-560, 1

-576, 1

-592, 1

-608, 1

-624, 1

-640, 1

-656, 1

-672, 1

-688, 1

-704, 1

-720, 1

-736, 1

-752, 1

-768, 1

-784, 1

-800, 1

-816, 1

-832, 1

-848, 1

-864, 1

-880, 1

-896, 1

-912, 1

-928, 1

-944, 1

-960, 1

-976, 1

-992, 1

-1008, 1

-1024, 1

-1040, 1

-1056, 1

-1072, 1

-1088, 1

-1104, 1

-1120, 1

-1136, 1

-1152, 1

-1168, 1

-1184, 1

-1200, 1

-1216, 1

-1232, 1

-1248, 1

-1264, 1

-1280, 1

-1296, 1

-1312, 1

-1328, 1

-1344, 1

-1360, 1

-1376, 1

-1392, 1

-1408, 1

-1424, 1

-1440, 1

-1456, 1

-1472, 1

-1488, 1

-1504, 1

-1520, 1

-1536, 1

-1552, 1

-1568, 1

-1584, 1

-1600, 1

-1616, 1

-1632, 1

-1648, 1

-1664, 1

-1680, 1

-1696, 1

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-1792, 1

-1808, 1

-1824, 1

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-1856, 1

-1872, 1

-1888, 1

-1904, 1

-1920, 1

-1936, 1

-1952, 1

-1968, 1

-1984, 1

-2000, 1

-2016, 1

-2032, 1

-2048, 1

-2064, 1

-2080, 1

-2096, 1

-2112, 1

-2128, 1

-2144, 1

-2160, 1

-2176, 1

-2192, 1

-2208, 1

-2224, 1

-2240, 1

-2256, 1

-2272, 1

-2288, 1

-2304, 1

-2320, 1

-2336, 1

-2352, 1

-2368, 1

-2384, 1

-2400, 1

-2416, 1

-2432, 1

-2448, 1

-2464, 1

-2480, 1

-2496, 1

-2512, 1

-2528, 1

-2544, 1

-2560, 1

-2576, 1

-2592, 1

-2608, 1

-2624, 1

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-2672, 1

-2688, 1

-2704, 1

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-2880, 1

-2896, 1

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-3056, 1

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-3712, 1

-3728, 1

-3744, 1

-3760, 1

-3776, 1

-3792, 1

-3808, 1

-3824, 1

-3840, 1

-3856, 1

-3872, 1

-3888, 1

-3904, 1

-3920, 1

# Work



## 1. $x^2 + 1x - 6$

Find two numbers  
that

multiply  
to give -6.

-1, +6  
-2, +3

neg  
signs  
are different  
→ one + factor  
→ one - factor

add:  
to give 1


+ 1  
so  
largest +  
factor  
is +

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

How does this compare  
to the factoring of four  
term polynomials?????

$$x^2 + 1x - 6$$

$$x^2 - 2x + 3x - 6$$

  
factor of 6

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

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

$$x^2 + 4x - 21$$

$$(x+7)(x-3)$$

mult  
-21  
-1, 21  
-3, 7

add  
4





Another way to look at it:

$$1. \quad x^2 + 1x - 6$$

What numbers multiply to give -6?

list factors of 6:

$$1 \times 6$$

$$2 \times 3$$

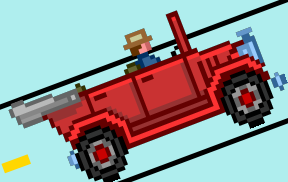
What pair of factors could add together to get 1?

-1 + -6	-1 + +6	+1 + -6	1 + 6
-2 + -3	-2 + 3	2 + -3	2 + 3

too much work

See next page for rules!!!!!!!

# Rules of the road...



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

Sign of the  
biggest number.  
(neg)

Signs are  
the same.  
both  $\oplus$

or  
both  $\ominus$

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

Sign of the  
biggest number.

Signs are  
different.

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

*Sign of the biggest number.*

*Signs are the same.*

$\begin{array}{r} -1, -6 \\ -2, -3 \end{array}$

$(x-2)(x-3)$

So must be

1 6

2 3

only pair  
that works

$(x-2)(x-3)$  are your factors

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

*Sign of the biggest number.*

*Signs are different.*

$\boxed{-1, +6}$   
 $\boxed{-2, +3}$

So must be

$$\begin{array}{cc} -1 & +6 \\ \text{only pair} & \\ & \text{that works} \end{array}$$

$$\begin{array}{cc} -2 & +3 \end{array}$$

$(x-1)(x+6)$  are your factors

Factor Each of the following. Quiz Thursday  
(Finish For homework)

1. $x^2 - 14x + 45$ $-1, 45$ $-3, 15$ $-5, 9$	$(x-5)(x-9)$	2. $x^2 + 17x + 60$ $1, 60$ $2, 30$ $3, 20$ $4, 15$ $5, 12$	$(x+5)(x+12)$
3. $x^2 - 18x + 80$	$(x-10)(x-8)$	4. $x^2 - 10x + 16$	$(x-2)(x-8)$
5. $x^2 - 6x + 9$		6. $x^2 - 7x + 6$	
7. $x^2 + 20x + 99$		8. $x^2 + 3x - 18$	
9. $x^2 - 3x - 88$		10. $x^2 - 16x + 48$	
11. $x^2 + 11x + 30$		12. $x^2 - 14x + 33$	
13. $x^2 + x - 30$		14. $x^2 - 3x - 70$	
15. $x^2 + 8x - 9$		16. $x^2 - 16x + 55$	
17. $x^2 + 6x - 72$		18. $x^2 + 5x - 50$	
19. $x^2 + 10x + 24$		20. $x^2 + 6x - 16$	