Name: Period: Date:

Math Lab: Criss-cross Factoring

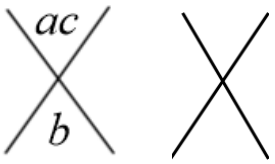
Recall that to change a quadratic expression from intercept form to standard form, you use repeated distribution (FOIL). The process of "undoing" distribution is called **factoring**. To change a quadratic expression from **standard form** $y = x^2 + bx + c$ to **intercept form** $y = (x - p)(x - q)$, you can use the Criss-cross Method to factor when the leading coefficient is 1.

EXAMPLE: Factor $y = x^2 - 21x - 72$ to rewrite it in intercept form, identify key features, and sketch the graph.

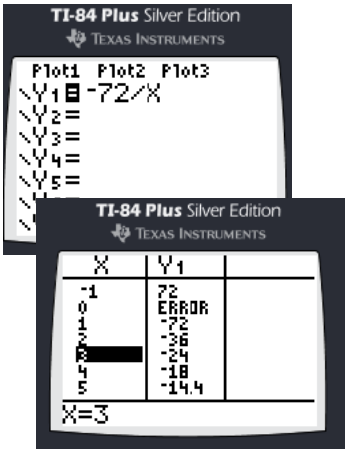
Step 1: Identify the a, b, and c from standard form and fill in the criss-cross.

$y = x^2 - 21x - 72$

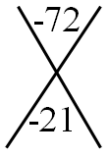
$a=$ $b=$ $c=$



Step 2: Find two integers that multiply to equal the top number and add to equal the bottom number.



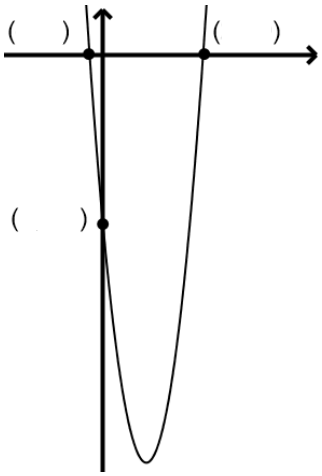
Step 3: Write the integers in the empty spaces.



Step 4: Use the side values to rewrite the quadratic function in intercept form.

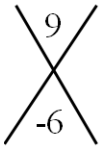
$y = (x - p)(x - q)$

Step 5: Use standard form and intercept form to find the coordinates of the y-intercept and x-intercepts on the graph.



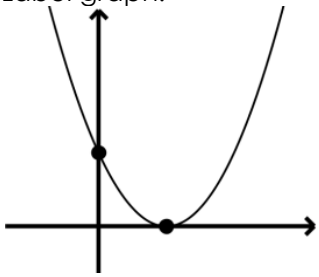
Factor to rewrite the quadratic in intercept form and label the coordinates of the points on the graph.

1. $y = x^2 - 6x + 9$

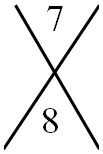


Intercept form:

Label graph:

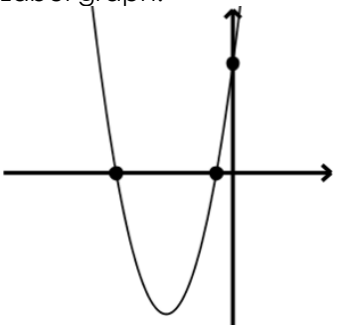


2. $y = x^2 + 8x + 7$

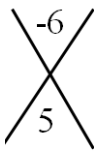


Intercept form:

Label graph:

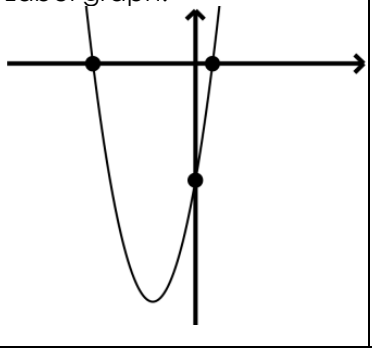


3. $y = x^2 + 5x - 6$

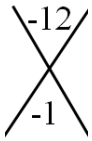


Intercept form:

Label graph:

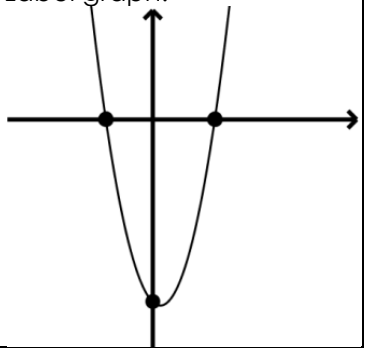


4. $y = x^2 - x - 12$

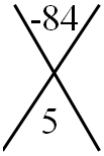
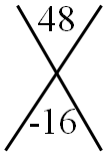


Intercept form:

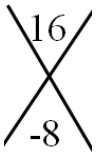
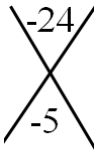
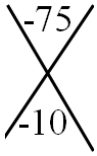
Label graph:



Factor to rewrite the quadratic in intercept form and find the characteristics of the graph.

5. $y = x^2 + 5x - 84$	6. $y = x^2 + 20x + 51$	7. $y = x^2 - 14x - 15$	8. $y = x^2 - 16x + 48$
			
Intercept form:	Intercept form:	Intercept form:	Intercept form:
y-int: (0,_____)	y-int: (0,_____)	y-int: (0,_____)	y-int: (0,_____)
x-int: (_____,0) and (_____,0)	x-int: (_____,0) and (_____,0)	x-int: (_____,0) and (_____,0)	x-int: (_____,0) and (_____,0)

Use the given information to write the quadratic in standard form, then factor to rewrite in intercept form.

9.	10.	11.	12.
			
Standard form:	Standard form:	Standard form:	Standard form:
Intercept form:	Intercept form:	Intercept form:	Intercept form:

Factor to rewrite the quadratic in intercept form and find the characteristics of the graph.

13. $y = x^2 - 4x - 21$	14. $y = x^2 + 10x + 25$	15. $y = x^2 - 16x - 36$	16. $y = x^2 + 2x - 35$
Intercept form:	Intercept form:	Intercept form:	Intercept form:
y-int: (0,_____)	y-int: (0,_____)	y-int: (0,_____)	y-int: (0,_____)
x-int: (_____,0) and (_____,0)	x-int: (_____,0) and (_____,0)	x-int: (_____,0) and (_____,0)	x-int: (_____,0) and (_____,0)