

Quadratic Relations: Factoring

When we want to factor the equation $y = x^2 + bx + c$, we need to find two numbers, r and s , that _____ to the middle number (b), and _____ to the last number (c).

1. Complete the table:

Multiply to	Add to	Possible answers, circle the correct one
20	9	
21	-10	
6	5	
6	-7	
2	3	
28	-11	
-15	2	

2. Write each equation in factored form:

a) $y = x^2 + 5x + 6$

multiplies to _____

adds to _____

b) $y = x^2 + 7x + 6$

multiplies to _____

adds to _____

c) $y = x^2 - 8x + 12$

multiplies to _____

adds to _____

d) $y = x^2 + 4x - 5$

multiplies to _____

adds to _____

e) $y = x^2 - 7x + 12$

multiplies to _____

adds to _____

f) $y = x^2 - 2x - 15$

multiplies to _____

adds to _____

Given the standard form of the quadratic relation, identify the value of the sum and product needed to factor. Express the relation in factored form, identify the x-intercepts and y-intercept, and use these results to make a sketch of each parabola.

	Standard Form	Product and Sum	Pair of Numbers	Factored Form	x-intercepts	y-intercept
A	$y = x^2 + 6x + 5$	$r \times s = 5$ $r + s = 6$	$r = 1,$ $s = 5$	$y = (x+1)(x+5)$	-1 and -5	5
B	$y = x^2 - 4x - 5$	$r \times s = -5$ $r + s = -4$				
C	$y = x^2 + 4x - 5$	$r \times s = -5$ $r + s = 4$				
D	$y = x^2 - 6x + 5$	$r \times s = 5$ $r + s = -6$				
E	$y = x^2 + 7x + 6$	$r \times s = 6$ $r + s = 7$				
F	$y = x^2 - 6x + 9$	$r \times s =$ $r + s =$				
G	$y = x^2 - x - 6$	$r \times s =$ $r + s =$				
H	$y = x^2 + 13x + 12$	$r \times s =$ $r + s =$				
I	$y = x^2 - 4x - 12$	$r \times s =$ $r + s =$				
J	$y = x^2 + x - 12$	$r \times s =$ $r + s =$				

Sketch of the relation

