

10.7 Using factors to
Solve $y = ax^2 + bx + c$

Vertex form
Intercept form
(factored form),
Expanding to Standard form

Find two numbers that add together
 $m+n = b$

Find two numbers that multiply
together
 $m \times n = c$

where m, n are the solutions
the factor $x^2 + bx + c$

$$x^2 + 12x + 35$$

$m+n = b$
 $7 + 5 = 12$
 $m \times n = c$
 $7 \times 5 = 35$

→ $(x+7)(x+5)$

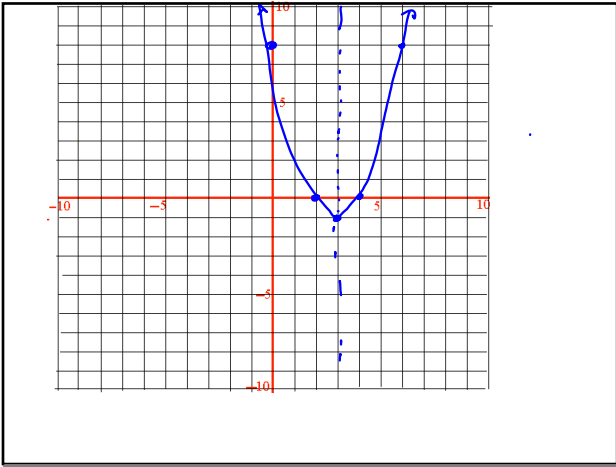
$$x^2 - 2x - 48$$

$m+n = b$
 $-8 + 6 = -2$
 $m \times n = c$
 $-8 \times 6 = -48$

$(x-8)(x+6)$

$y = x^2 - bx + c$
(line of symmetry
 $x = -\frac{b}{2a}$
Vertex $(-\frac{b}{2a}, f(-\frac{b}{2a}))$
Y-Int c
X-int $(x+m)(x+n)$
 $x = -m, -n$

$a=1 \quad b=-6 \quad c=8$
 $y = x^2 - 6x + 8$
 $x = -\frac{-6}{2(1)} = 3$
 $y = 9 - 18 + 8 \quad (3, -1)$
y-int $(0, 8)$
 $y = (x-4)(x-2)$
 $0 = x-4 \quad 0 = x-2$
 $4, 2$



Can we factor
Can we find m, n
 $m+n = b$
 $m \times n = c$