

## 4.2 Worksheet

### Intermediate Algebra

Name Key

**Learning Target:** I can translate quadratic equations from factored and vertex form INTO standard form.

Level 1  
Multiply

$$1. \quad 3x(x-4)$$

$$\begin{array}{r} 3x(x) \quad 3x(-4) \\ \hline 3x^2 - 12x \end{array}$$

$$2. \quad -2x^2(4x^3 + 3x - 2)$$

$$\begin{array}{r} -2x^2(4x^3) \quad -2x^2(3x) \quad -2x^2(-2) \\ \hline -8x^5 - 6x^3 + 4x^2 \end{array}$$

$$3. \quad (2x+1)(x-3)$$

$$\begin{array}{r} 2x(x) \quad 2x(-3) \\ \hline 2x^2 - 6x + x - 3 \\ \hline 2x^2 - 5x - 3 \end{array}$$

Write each equation in standard form.

$$5. \quad y = (x+4)(x+1)$$

$$\begin{array}{cccc} x(+)\quad x(1) & 4(x) & 4(1) \\ x^2 + x + 4x + 4 \\ \hline y = x^2 + 5x + 4 \end{array}$$

$$6. \quad y = -2(x-2)(x+6)$$

$$\begin{array}{cccc} -2[x(+)\quad x(6) & -2(+)\quad -2(6)] \\ -2[x^2 + 6x - 2x - 12] \\ -2[x^2 + 4x - 12] \\ \hline y = -2x^2 - 8x + 24 \end{array}$$

$$7. \quad y = (x-4)^2$$

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

$$y = x^2 - 8x + 16$$

$$y = (4x-7)(4x-7)$$

$$y = 16x^2 - 56x + 49$$

$$9. \quad y = 4(x-2)^2 + 4$$

$$\begin{array}{l} y = 4[(x-2)(x-2)] + 4 \\ y = 4(x^2 - 4x + 4) \\ y = 4x^2 - 16x + 16 + 4 \\ \hline y = 4x^2 - 16x + 20 \end{array}$$

$$10. \quad y = -(x-6)^2 - 12$$

$$\begin{array}{l} y = -1[(x-6)(x-6)] - 12 \\ y = -1[x^2 - 12x + 36] - 12 \\ y = -x^2 + 12x - 36 - 12 \\ y = -x^2 + 12x - 48 \end{array}$$

Find the x-intercepts of each function.

$$11. \quad y = (2x+12)(x-3)$$

$$\begin{array}{l} y = 2x^2 - 6x + 12x - 36 \\ y = 2x^2 + 6x - 36 \end{array}$$

$$0 = (2x+12)(x-3)$$

$$\begin{array}{l} 2x+12=0 \quad x-3=0 \\ 2x=-12 \quad +3+3 \\ \hline x=-6 \quad x=3 \\ (-6, 0) \quad (3, 0) \end{array}$$

$$12. \quad y = (4x+16)(3x-1)$$

$$\begin{array}{l} y = 12x^2 - 4x + 48x - 16 \\ y = 12x^2 + 44x - 16 \end{array}$$

$$0 = (4x+16)(3x-1)$$

$$\begin{array}{l} 4x+16=0 \quad 3x-1=0 \\ 4x=-16 \quad 3x=1 \\ \hline x=-4 \quad x=\frac{1}{3} \\ x=\frac{1}{3} \end{array}$$

Given the following x-intercepts, write a quadratic function in standard form.

$$13. \quad (4, 0) \quad (-6, 0)$$

$$\begin{array}{l} x=4 \quad x=-6 \\ x-4=0 \quad x+6=0 \end{array}$$

$$\begin{array}{l} y = (x-4)(x+6) \\ y = x^2 + 2x - 24 \end{array}$$

$$14. \quad (-2, 0) \quad (-10, 0)$$

$$\begin{array}{l} x=-2 \quad x=-10 \\ x+2=0 \quad x+10=0 \end{array}$$

$$\begin{array}{l} y = (x+2)(x+10) \\ y = x^2 + 12x + 20 \end{array}$$

$$\begin{array}{l} (-4, 0) \quad (\frac{1}{3}, 0) \\ \text{or} \\ (.333, 0) \end{array}$$