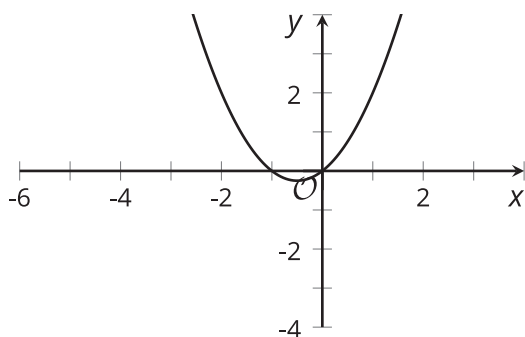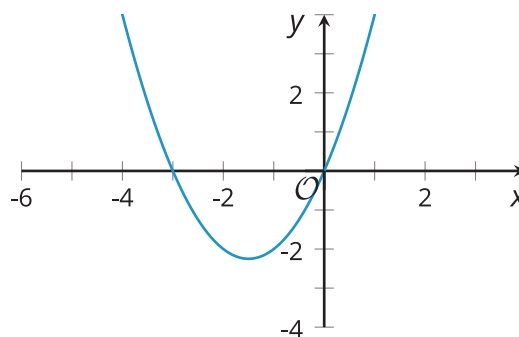# Lesson 13 Practice Problems

1. Here are four graphs. Match each graph with the quadratic equation that it represents.
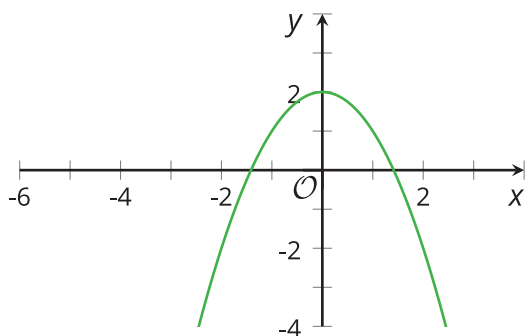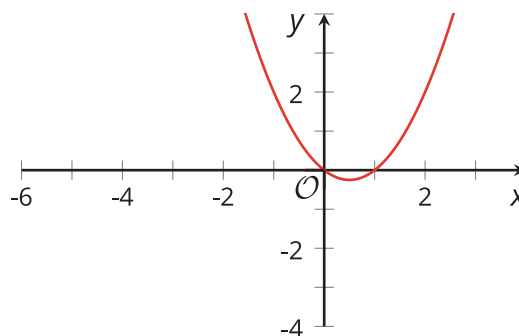
Graph A

Graph B

Graph C

Graph D

A. Graph A

B. Graph B

C. Graph C

D. Graph D

1. $y = x^2 + x$

2. $y = -x^2 + 2$

3. $y = x^2 - x$

4. $y = x^2 + 3x$

2. Complete the table without graphing the equations.

equation	x-intercepts	x-coordinate of the vertex
$y = x^2 + 12x$		
$y = x^2 - 3x$		
$y = \text{-}x^2 + 16x$		
$y = \text{-}x^2 - 24x$		

3. Here is a graph that represents $y = x^2$.

    a. Describe what would happen to the graph if the original equation were changed to $y = x^2 - 6x$. Predict the x- and y-intercepts of the graph and the quadrant where the vertex is located.
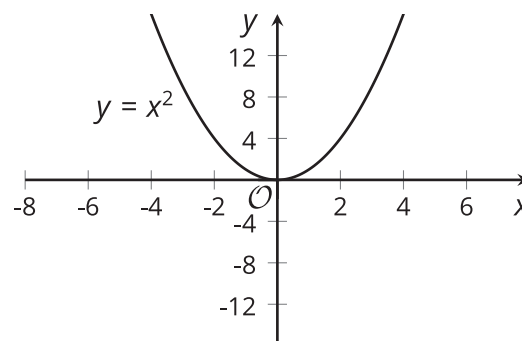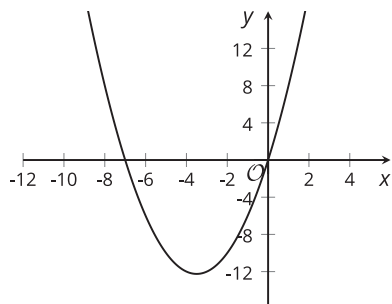

    b. Sketch the graph of the equation $y = x^2 - 6x$ on the same coordinate plane as $y = x^2$.
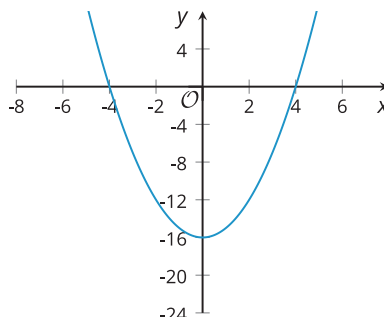
4. Select **all** equations whose graph opens upward.

    A. $y = \text{-}x^2 + 9x$

    B. $y = 10x - 5x^2$

    C. $y = (2x - 1)^2$

    D. $y = (1 - x)(2 + x)$

    E. $y = x^2 - 8x - 7$

5. *Technology required*. Write an equation for a function that can be represented by each given graph. Then, use graphing technology to check each equation you wrote.
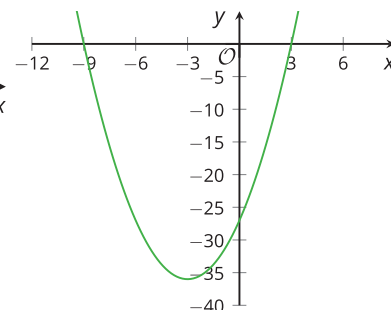
Graph 1

Graph 2

Graph 3

6. Match each quadratic expression that is written as a product with an equivalent expression that is expanded.

   A. $(x + 3)(x + 4)$

   B. $(x + 3)(x + 7)$

   C. $(3x + 4)(x + 3)$

   D. $(x + 7)(3x + 1)$

   1. $x^2 + 10x + 21$

   2. $3x^2 + 13x + 12$

   3. $3x^2 + 22x + 7$

   4. $x^2 + 7x + 12$

(From Unit 6, Lesson 8.)

7. When buying a home, many mortgage companies require a down payment of 20% of the price of the house. What is the down payment on a $125,000 home?

(From Unit 5, Lesson 14.)

8. A bank loans $4,000 to a customer at a $9\frac{1}{2}\%$ annual interest rate.

   Write an expression to represent how much the customer will owe, in dollars, after 5 years without payment.

(From Unit 5, Lesson 15.)