Name ______________________ Date ______________ Class______________

LESSON 5-1

Practice A

Using Transformations to Graph Quadratic Functions

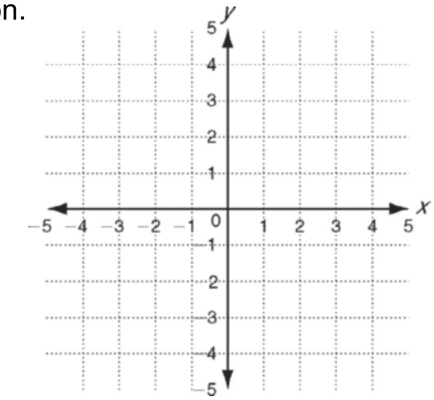
Graph the quadratic function by using a table.

1. $f(x) = x^2 - 3$

   a. Complete the table to find ordered pairs for the function.

   b. Plot the ordered pairs on the coordinate plane.

x	$f(x) = x^2 - 3$	$(x, f(x))$
–2	$f(-2) = (-2)^2 - 3$	(–2, 1)
–1		
0		
1		
2		



The quadratic parent function is $f(x) = x^2$. Its graph is a parabola with its vertex at the origin (0, 0). Describe each transformation from the parent function.

2. $g(x) = -x^2$

   ____

3. $h(x) = (x - 1)^2$

   ____

4. $g(x) = x^2 + 7$

   ____

5. $h(x) = \left(\frac{1}{3}x\right)^2$

   ____

6. $g(x) = (x + 3)^2$

   ____

7. $h(x) = 5x^2$

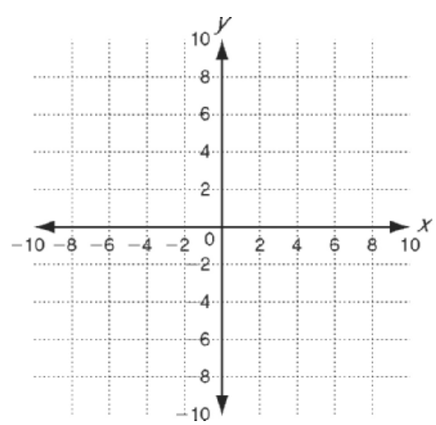
   ____

The vertex form of a quadratic function is $f(x) = a(x - h)^2 + k$.

8. a. The parent function $f(x) = x^2$ is translated 2 units left and 3 units up. Write the quadratic function in vertex form.

   ____

   b. Graph the translated function.



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Problem Solving

1. $\begin{cases} b = p + 1 \\ m = 3p \\ 6m + 5.5b + 9.5p = 236.5 \end{cases}$

2. $\left[\begin{array}{ccc|c} 0 & 1 & -1 & 1 \\ 1 & 0 & -3 & 0 \\ 6 & 5.5 & 9.5 & 236.5 \end{array}\right]$

3. $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 21 \\ 0 & 1 & 0 & 8 \\ 0 & 0 & 1 & 7 \end{array}\right]$

4. 21 mugs, 8 bowls, 7 plates
5. C
6. A

Reading Strategies

1. Possible answer: An augmented matrix shows the coefficients and the constants of the linear equations in the order they appear in the equations.
2. $\begin{cases} -5x + 10y = 3 \\ 2x - 4y = 1 \end{cases}$
3. Possible answer: Multiplying the equation by 3 gives an equation equivalent to the original equation. In the same way, multiplying one row of the augmented matrix by 3 gives a matrix equivalent to the original matrix.

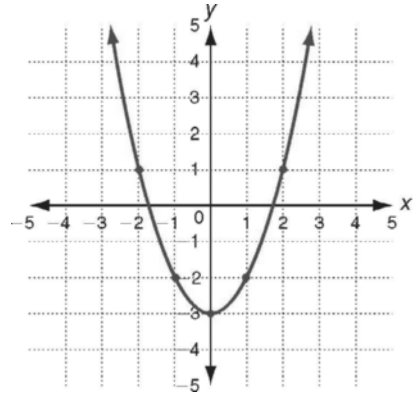
LESSON 5-1

Practice A

1. a.

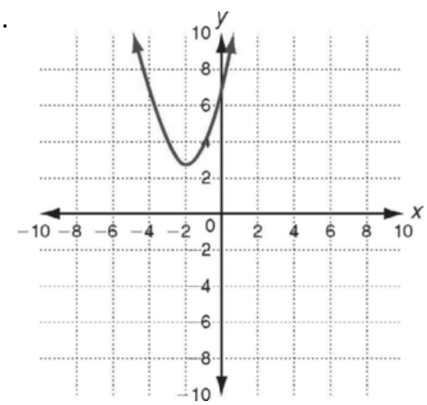
x	$f(x) = x^2 - 3$	$(x, f(x))$
–2	$f(-2) = (-2)^2 - 3$	(–2, 1)
–1	–2	(–1, –2)
0	–3	(0, –3)
1	–2	(1, –2)
2	1	(2, 1)

b.



2. Reflected across the x-axis
3. Translated 1 unit right
4. Translated 7 units up
5. Horizontal stretch by a factor of 3
6. Translated 3 units left
7. Vertical stretch by a factor of 5
8. a. $g(x) = (x + 2)^2 + 3$

b.



Practice B

1.

x	$f(x) = x^2 + 2x - 1$	$(x, f(x))$
–2	–1	(–2, –1)
–1	–2	(–1, –2)
0	–1	(0, –1)
1	2	(1, 2)
2	7	(2, 7)

2. Translated 2 units right, 2 units up
3. Reflected across the x-axis and horizontal compression by a factor of 3
4. Horizontal stretch by a factor of 2

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