Write an algebraic rule to describe each transformation of figure A to figure A’. Then describe the transformation.

1. __________________________________________  _____________________________________
2. __________________________________________  _____________________________________

Use the given rule to graph the image of each figure. Then describe the transformation.

3. \((x, y) \rightarrow (x, -y)\)  
   ![Graph of (x, y) → (x, -y)]
4. \((x, y) \rightarrow (-x, -y)\)  
   ![Graph of (x, y) → (-x, -y)]

Solve.

5. Triangle \(ABC\) has vertices \(A(2, -1), B(0, 0),\) and \(C(-1, 4)\). State a rule for an algebraic transformation where vertex \(B\) will not be at the origin.
   _______________________________________________________________________________

6. Triangle \(LMN\) has \(L\) at \((1, -1)\) and \(M\) at \((2, 3)\). Triangle \(L'M'N'\) has \(L'\) at \((-1, -1)\), \(M'\) is at \((3, -2)\), and \(N'\) is at \((-3, 0)\). What are the coordinates of vertex \(N'\)? Describe the transformation.
   _______________________________________________________________________________
Practice and Problem Solving: C
1. $(x, y) \rightarrow (x + 2, y)$; translation right 2 units
2. $(x, y) \rightarrow (-y, x)$; rotation $90^\circ$ counterclockwise
3. reflection over the $x$-axis
4. rotation of $180^\circ$

5. Possible answer: $(x, y) \rightarrow (x + 2, y)$
6. $(0, -3)$; rotation of $90^\circ$ clockwise

Practice and Problem Solving: D
1. $(x, y) \rightarrow (-x, -y)$; rotation $180^\circ$ clockwise OR counterclockwise
2. $(x, y) \rightarrow (x, y+5)$; translation up 5 units
3. $(x, y) \rightarrow (-x, y)$; reflection over the $y$-axis
4. $(x, y) \rightarrow (y, -x)$; rotation $90^\circ$ clockwise
5. $(-4, 4)$
6. $(-1, 4)$
7. $(-2, 1)$

Reteach
1. reflection over the $y$-axis
2. $90^\circ$ rotation counterclockwise
3. translation up 4 units
4. $180^\circ$ rotation
5. reflection over the $x$-axis

Reading Strategies
1. translation up 2 units
2. $90^\circ$ rotation clockwise
3. $180^\circ$ rotation
4. reflection over the $y$-axis

Success for English Learners
1. reflection or rotation
2. translation
3. rotation
4. rotation $90^\circ$ clockwise
5. translation right 2 units
6. reflection over $x$-axis

LESSON 9-5

Practice and Problem Solving: A/B
1. rotation $90^\circ$ counterclockwise
2. translation right 4 units
3. $(x, y) \rightarrow (-y, x)$; $(x, y) \rightarrow (x + 4, y)$