Name _____ Date _____ Class _____

LESSON 12-4

Practice A

Graphing Reflections

Give the coordinates of the vertices of each figure after the given reflection.

1. Reflect line segment *FG* across the *x*-axis.

_____

2. Reflect line segment *FG* across the *y*-axis.

_____

3. Reflect triangle *XYZ* across the *x*-axis.

_____

_____

4. Reflect triangle *XYZ* across the *y*-axis.

_____

_____

5. Reflect triangle *ABC* across the *x*-axis.

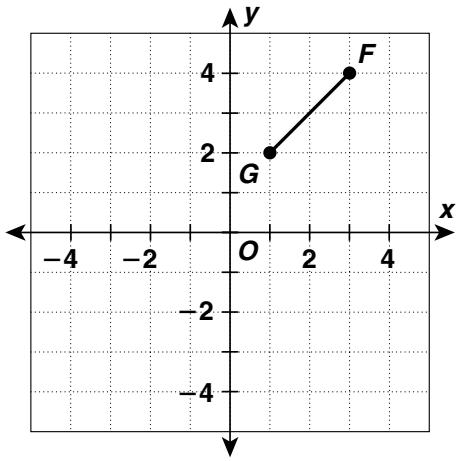
_____

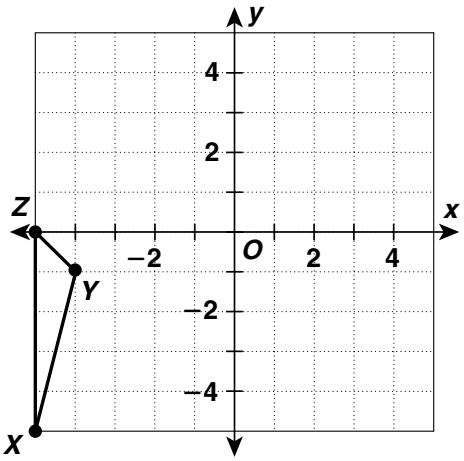
_____

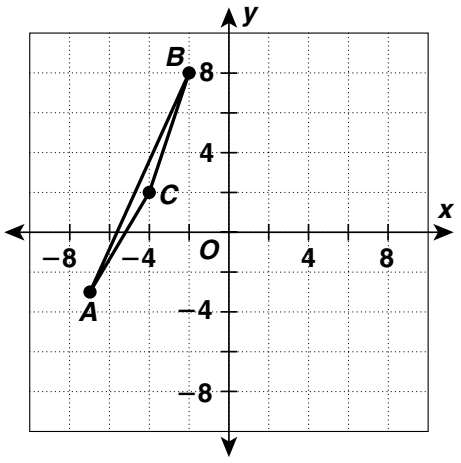
6. Reflect triangle *ABC* across the *y*-axis.

_____

_____





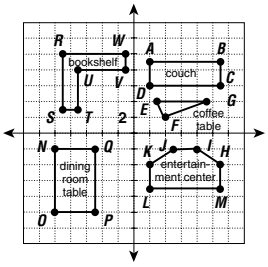


LESSON 12-3

Problem Solving

Graphing Translations

Use the room floor plan to answer each question. Each square on the floor plan equals two feet.



1. If you move the couch 2 feet up and 1 foot left, what will be the coordinates of each corner of the couch after the translation?

   A′(1, 11); *B*′(10, 11); *C*′(10, 8); *D*′(1, 8);

2. If you move the dining room table 1 foot down and 4 feet right, what will be the coordinates of each corner of the table after the translation?

   N′(−6, −3); *O*′(−6, −11); *P*′(−1, −11); *Q*′(−1, −3);

3. You move the coffee table so that its translated vertices are *E*′(5, 2), *F*′(6, 0), and *G*′(11, 2). Describe the translation of the coffee table.

   It was moved 2 feet right and 2 feet down.

4. You move the book shelf so that its translated vertices are *R*′(−6, 10), *S*′(−6, 3), *T*′(−4, 3), *U*′(−4, 8), *V*′(2, 8), and *W*′(2, 10). Describe the translation of the coffee table.

   It was moved 3 feet right.

Circle the letter of the correct answer.

5. You move the entertainment center 4 feet down and 1 foot left. Which of the following are **not** coordinates for one of the vertices of the translated entertainment center?

   A (1, −8) **C** (4, −6)
   B (10, −11) **D** (12, −8)

6. The coordinates of each corner of the couch after a translation are *A*′(3, 4), *B*′(12, 4), *C*′(12, 1), and *D*′(3, 1). Which of the following describes this translation of the couch?

   F down 5 feet, left 1 foot
   G up 1 foot, left 5 feet
   H down 5 feet, right 1 foot
   J up 1 foot, right 5 feet

LESSON 12-3

Puzzles, Twisters & Teasers

Look Sharp!

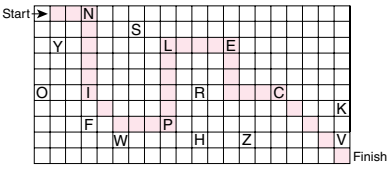
Solve the two problems below. Use your answers to navigate the maze. As you follow the directions through the maze, collect letters. Unscramble the letters to solve the riddle.

1. A point was translated 3 units down and 5 units to the left. Its new coordinates are (−1, −1). What were the original coordinates (*x*, *y*)? (4, 2)

2. A second point was translated 4 units down and 6 units to the left. It also arrived at (−1, −1). What were the original coordinates (*t*, *r*) of this point? (5, 3)

Now follow the maze directions using your values for *x*, *y*, *t*, and *r*.

1. Begin at "Start." Move *r* spaces to the right.
2. Move *t* spaces down.
3. Move *y* spaces diagonally down and to the right.
4. Move *r* spaces right.
5. Move *t* spaces up.
6. Move *x* spaces right.
7. Move *r* spaces down.
8. Move *r* spaces right.
9. Move *x* spaces diagonally down and to the right.



Now unscramble the letters that your path through the maze touched.
(Clue: This is something you use every day!)

What is the best state for finding school supplies?

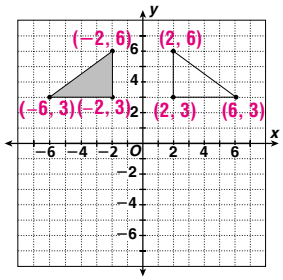
P E N C I L - V A N I A

LESSON 12-4

Exploration Recording Sheet

Graphing Reflections

The graph shows a *reflection* of the *red* triangle across the *y*-axis.



1. Label the coordinates of the vertices of each triangle.
2. Are the two triangles congruent? Yes
3. Examine the reflection and the coordinates of its vertices.
   a. How are the coordinates different from the original coordinates? opposite *x*-coordinates
   b. How are the coordinates similar to the original coordinates? same *y*-coordinates

Think and Discuss

4. **Explain** how to find the coordinates of the vertices of the reflected triangle by using the coordinates of the vertices of the original triangle.

   Possible answer: Change the value of the *x*-coordinate to its opposite and keep the same *y*-coordinate.

5. **Explain** how to reflect the red triangle across the *x*-axis.

   Possible answer: Change the value of the *y*-coordinate to its opposite and keep the same *x*-coordinate.

LESSON 12-4

Practice A

Graphing Reflections

Give the coordinates of the vertices of each figure after the given reflection.

1. Reflect line segment *FG* across the *x*-axis.

   F′(3, −4); *G*′(1, −2)

2. Reflect line segment *FG* across the *y*-axis.

   F′(−3, 4); *G*′(−1, 2)

3. Reflect triangle *XYZ* across the *x*-axis.

   X′(−5, 5); *Y*′(−4, 1); *Z*′(−5, 0)

4. Reflect triangle *XYZ* across the *y*-axis.

   X′(5, −5); *Y*′(4, −1); *Z*′(5, 0)

5. Reflect triangle *ABC* across the *x*-axis.

   A′(−7, 3); *B*′(−2, −8); *C*′(−4, −2)

6. Reflect triangle *ABC* across the *y*-axis.

   A′(7, −3); *B*′(2, 8); *C*′(4, 2)