

# Chapter Review

1. If isometry  $S$  maps  $A$  to  $A'$  and  $B$  to  $B'$ , then  $\overline{AB} \stackrel{?}{=} \overline{A'B'}$ . 14-1
2. If  $f(x) = 3x$ , find the image and preimage of 6.
3. a. If  $S: (x, y) \rightarrow (2x, y - 2)$ , find the image and preimage of  $(3, 3)$ .  
b. Is  $S$  an isometry?
4. Find the image of  $(-7, 5)$  when reflected in (a) the  $x$ -axis, (b) the  $y$ -axis, and (c) the line  $y = x$ . 14-2
5. Draw the line  $y = 2x + 1$  and its image under reflection in the  $y$ -axis.
6. a. If translation  $T: (5, 5) \rightarrow (7, 1)$ , then  $T: (x, y) \rightarrow (\underline{\quad}, \underline{\quad})$  14-3  
b. Is distance invariant under  $T$ ?  
c. Is angle measure invariant under  $T$ ?  
d. Is area invariant under  $T$ ?
7. Find the image of  $(7, -2)$  under the glide reflection that moves all points 5 units to the right and then reflects all points in the  $x$ -axis.
8. Plot the points  $A(3, 2)$ ,  $B(-1, 1)$ , and  $C(1, -3)$ . Label the origin  $O$ . Draw  $\triangle ABC$  and its images under (a)  $\mathcal{R}_{O, 90}$  and (b)  $H_O$ . 14-4
9. Which of the given rotations are equal to  $\mathcal{R}_{O, 140}$ ?  
a.  $\mathcal{R}_{O, 500}$                       b.  $\mathcal{R}_{O, -140}$                       c.  $\mathcal{R}_{O, -220}$
10. If  $O$  is the origin then the dilation  $D_{O, 2}: (3, -2) \rightarrow (\underline{\quad}, \underline{\quad})$ . 14-5
11. Find the image of  $(3, 1)$  under a dilation with center  $(0, 4)$  and scale factor  $\frac{1}{3}$ .
12. Find the image of  $(3, 1)$  under the following transformations: 14-6  
a.  $R_x \circ R_y$                       b.  $R_y \circ H_O$                       c.  $R_x \circ \mathcal{R}_{O, -90}$

**Complete.**

13. If  $T: (x, y) \rightarrow (x - 1, y + 6)$ , then  $T^{-1}: (x, y) \rightarrow (\underline{\quad}, \underline{\quad})$ . 14-7
14. The inverse of  $D_{O, 4}$  is  $D_{\quad, \quad}$ .
15.  $R_j \circ R_j = \underline{\quad}$                       16.  $\mathcal{R}_{O, 75} \circ \mathcal{R}_{O, \quad} = I$
17. Does a scalene triangle have line symmetry? 14-8
18. Does a rectangle have point symmetry?
19. Does a regular octagon have  $90^\circ$  rotational symmetry?
20. Name a figure that has  $72^\circ$  rotational symmetry.