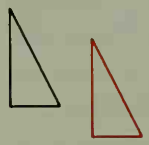
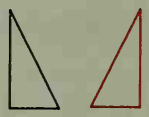
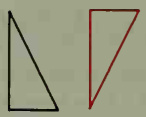
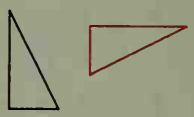
# Chapter Test

**State whether the transformation mapping the black triangle to the red triangle is a reflection, a translation, a glide reflection, or a rotation.**

1. 

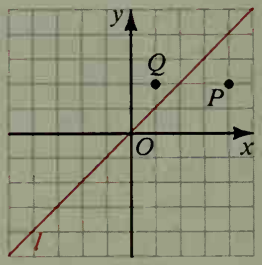
2. 

3. 

4. 

5. If $f(x) = \frac{1}{2}x + 3$, find the image and preimage of 4.

**Give the coordinates of the image of point $P$ under the transformation specified.**




6. $R_l$
7. $\mathcal{R}_{O,\,-90}$
8. $D_{O,\,\frac{1}{2}}$
9. $H_O \circ R_x$
10. $\mathcal{R}_{O,\,90} \circ \mathcal{R}_{O,\,90}$
11. $D_{Q,\,\frac{1}{3}}$
12. $R_l \circ D_{Q,\,-2}$
13. $R_l \circ (R_y \circ R_x)$

**Give the inverse of each transformation.**

14. $H_O$
15. $R_x$
16. $D_{O,\,-2}$

**$T$ is the translation mapping (4, 1) to (6, 2). Find the coordinates of the image of the origin under each mapping.**

17. $T$
18. $T^3$
19. $T^{-1}$

**Classify each statement as true or false.**

20. All regular polygons have rotational symmetry.
21. 180° rotational symmetry is the same as point symmetry.
22. All regular $n$-gons have exactly $n$ symmetry lines.
23. A figure that has two intersecting lines of symmetry must have rotational symmetry.

24. **a.** Is a half-turn a transformation? Is it an isometry?
    **b.** Name three properties that are invariant under a half-turn.
25. A line has slope 2. What is the slope of the image of the line under a:
    **a.** reflection in the $x$-axis?
    **b.** reflection in the line $y = x$?
    **c.** dilation $D_{O,\,3}$?