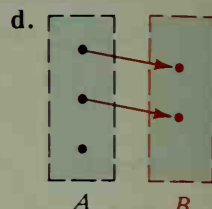
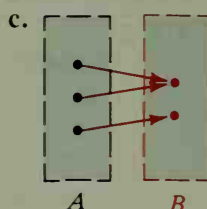
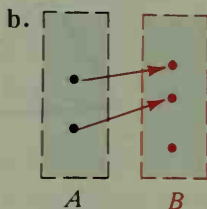
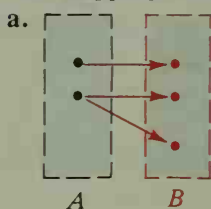


Classroom Exercises

1. Explain why each of the correspondences pictured below is not a one-to-one mapping from set A to set B .



2. a. If $f: x \rightarrow |x|$, find the images of -3 , 6 , and -6 .

b. Is f a one-to-one function? Explain.

3. a. If mapping $M: (x, y) \rightarrow (2x, 2y)$, find the images of P and Q in the diagram.

b. Is M a transformation?

c. Does M appear to be an isometry?

d. Decide whether M maps the midpoint of \overline{PQ} to the midpoint of $\overline{P'Q'}$.

4. a. If $g(x) = 2x - 1$, find $g(8)$ and $g(-8)$.

b. Find the image of 5 .

c. Find the preimage of 7 .

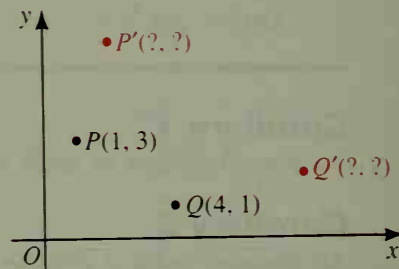
5. Use the transformation $T: (x, y) \rightarrow (x + 1, y + 2)$ in this exercise.

a. Plot the following points and their images on the chalkboard: $A(0, 0)$, $B(3, 4)$, $C(5, 1)$, and $D(-1, -3)$.

b. Find AB , $A'B'$, CD , and $C'D'$.

c. Does this transformation appear to be an isometry?

d. What is the preimage of $(0, 0)$? of $(4, 5)$?



Exercises 6–8 refer to the globe shown on page 571.

6. What is the image of point N ?
7. Is the distance between N and P on the globe the same as the corresponding distance on the polar map?
8. Does the polar map preserve or distort distances?
9. Explain how Corollary 1 follows from Theorem 14-1.
10. Explain how Corollary 2 follows from Theorem 14-1.

Written Exercises

- A
1. If function $f: x \rightarrow 5x - 7$, find the image of 8 and the preimage of 13 .
 2. If function $g: x \rightarrow 8 - 3x$, find the image of 5 and the preimage of 0 .
 3. If $f(x) = x^2 + 1$, find $f(3)$ and $f(-3)$. Is f a one-to-one function?
 4. If $h(x) = 6x + 1$, find $h(\frac{1}{2})$. Is h a one-to-one function?