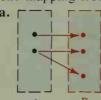
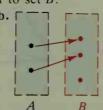
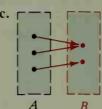
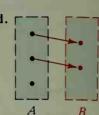
Classroom Exercises

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

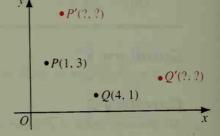








- 2. a. If $f:x \to |x|$, find the images of -3, 6, and -6.
 - b. Is f a one-to-one function? Explain.
- 3. a. If mapping $M:(x, y) \to (2x, 2y)$, find the images of P and Q in the diagram.
 - **b.** Is *M* a transformation?
 - **c.** Does *M* appear to be an isometry?
 - **d.** Decide whether M maps 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 $f:x \to 5x 7$, find the image of 8 and the preimage of 13.
 - 2. If function $g:x \to 8 3x$, 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?