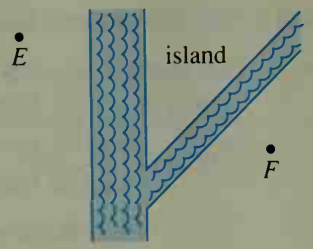
★ **5.** Two bridges are to be built over the river forks shown. Find where they should be built if the total distance from E to F via the island, including the distances across the bridges, is to be minimum. What do you notice about the three non-bridge portions of your path?



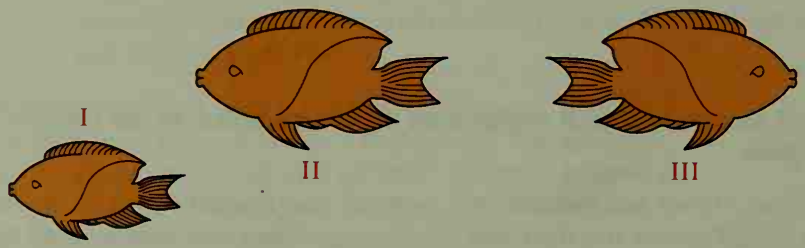
Find the shortest distance from the given point to the line whose equation is given.

6. $N(0, 10)$; $y = \frac{1}{3}x$ **7.** $O(0, 0)$; $y = 2x + 5$ ★ **8.** $P(2, -1)$; $y = \frac{2}{3}x + 2$

Dilations and Similarity (Chapter 7)

Objective: Understand the close relationship between dilation transformations and the similar figures they produce. (Requires understanding of Lessons 13-6, 13-7, and 14-1 through 14-5.)

If a transformation maps a figure to a similar figure, it is called a similarity mapping. Every similarity mapping can be broken into two components: (1) a dilation and (2) a congruence mapping.

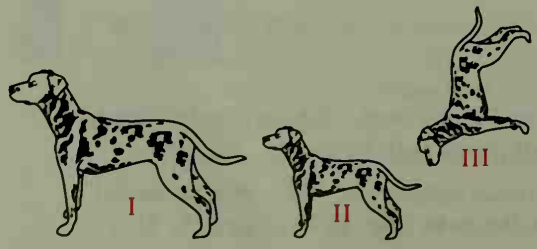


In the figure, a dilation maps fish I to the similar fish II, and a reflection maps fish II to a congruent fish III. If you perform these two mappings consecutively, the result is a similarity mapping that maps fish I to fish III.

Exercises

Give the scale factor for the dilation that maps figure I to figure II, and tell what kind of congruence mapping maps figure II to figure III.

1.



2.