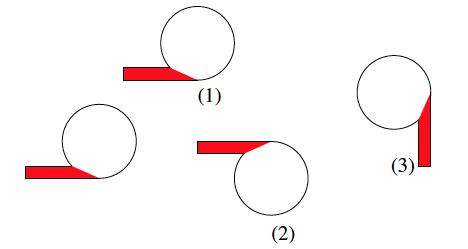
Lesson 1: Why Move Things Around?

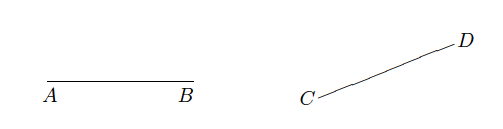
Classwork

Exploratory Challenge

1. Describe, intuitively, what kind of transformation will be required to move the figure on the left to each of the figures (1)–(3) on the right. To help with this exercise, use a transparency to copy the figure on the left. Note: Begin by moving the left figure to each of the locations in (1), (2), and (3).



1. Given two segments and , which could be very far apart, how can we find out if they have the same length without measuring them individually? Do you think they have the same length? How do you check? In other words, why do you think we need to move things around on the plane?



Lesson Summary

A **transformation** of the plane, to be denoted by , is a rule that assigns to each point of the plane one and only one (unique) point which will be denoted by .

* So, by definition, the symbol denotes a specific single point.
* The symbol shows clearly that moves to.
* The point will be called the image of by .
* We also say maps to *.*

If given any two points and , the distance between the images and is the same as the distance between the original points and , then the transformation preserves distance, or is distance-preserving.

* A **distance-preserving** transformation is called a rigid motion (or an isometry), and the name suggests that it *moves* the points of the plane around in a *rigid* fashion.

Problem Set

1. Using as much of the new vocabulary as you can, try to describe what you see in the diagram below.
2. Describe, intuitively, what kind of transformation will be required to move Figure A on the left to its image on the right.

Figure A

Image of A