

## Applications (Answers)

1. a. AC corresponds to EF  
BC corresponds to DF  
BA corresponds to DE  
  
b.  $\angle ABC$  corresponds to  $\angle EDF$   
 $\angle BAC$  corresponds to  $\angle DEF$   
 $\angle ACB$  corresponds to  $\angle EFD$
2. Variations 1 and 3 are similar to the original figures.
3. The length of the sides in variation 2 is twice the length of the sides in variation 1. The corresponding angles are congruent.
4. The second variation of each figure is distorted to where it makes a short, fat figure because the x-coordinate was multiplied but not the y-coordinate. The fourth variation of each figure is distorted to where it makes a tall, skinny figure because the y-coordinate was multiplied but not the x-coordinate. The first and third variations are similar to the original figure because both the x- and y-coordinates were multiplied by the same amount.

*Definition:* Geometric figures are similar if the sides are in proportion to each other and if the corresponding angles are congruent.

5. 15, 21, 28
6. a. The distance from Beijing to Shanghai is 2.6 cm or approximately 1,170 km.  
b. The distance from Tianjin to Guangzhou is 4.2 cm or approximately 1,890 km.
7. The definition for a rectangle is a quadrilateral with two pair of parallel sides and four right angles. A square is a special type of rectangle that has two pair of parallel sides *which are all congruent* and that has four right angles.