**Activity 4.2.4b Similarity and Circles**

1. Open the file ctcoregeomACT424.

a. Translate the circle with center *A* so that the center of its image is at point *C.*

b. Dilate the translated circle so that the new image has a radius equal to *CD*.

c. Describe the relationship between the two original circles.

d. In Unit 2 you proved that if two circles have the same radius, then they are congruent. If two circles do not have the same radius, they cannot be congruent, but they are \_\_\_\_\_\_\_\_\_\_\_.

1. Prove that circle 1 with center *P* and radius *r*1 is similar to circle 2 with center *Q* and radius *r*2.



Step 1. Translate circle1 by the vector from \_\_\_\_ to \_\_\_\_\_\_\_.

Step 2. Dilate the translated circle from center \_\_\_\_\_\_by the scale factor =$\frac{r\_{2}}{}$.

Step 3. The new circle will coincide with circle 2. Why?

Step 4. This shows that the circle 2 is the image of circle 1 under \_\_\_\_\_\_\_\_\_\_\_\_\_ followed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Since both of these are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ transformations, circle 2 must be \_\_\_\_\_\_\_\_\_\_\_\_\_ to circle 1.

1. Would you say that *any* two circles are similar? Explain.
2. Would you say that *any* two triangles are similar? Explain.
3. Are congruent circles also similar circles? Why or why not?
4. Recall that $π=\frac{C}{d}$ , where *C* is the circumference and *d* is the diameter of a circle. Explain why $π$ is the same for all circles.