Circles worksheet 2

Angle *ABC* intercepts arc *AC*. Drag point *D* to various locations outside the circle, on the circle, inside the circle, and at the center *O*.

1. Place point *D* on the circle so that ∠*ADC* intercepts the same arc as ∠*ABC*.
   a. What do you notice about the measures of ∠*ABC* and ∠*ADC*?

   b. What happens to the angles if you move point *A* or point *C*?

2. Place point *D* at the center of the circle. Move point *A* and point *C* so that ∠*ADC* intercepts the same arc as ∠*ABC*.
   a. What is the relationship between the measures of inscribed ∠*ABC* and central ∠*ADC*?

   b. What happens to the angles if you move point *A* or point *C*?

3. Leona said, “Since a central angle can never measure more than 180°, I know an inscribed angle can never measure more than 90°.” Do you agree or disagree? Why?

4. Place point *D* on the circle so that *ABCD* is a quadrilateral.
   a. What do you notice about the sum of the measures of ∠*ABC* and ∠*ADC*? Check with a classmate to compare.

   b. What do you notice about the sum of the measures of the angles if you move point *A* or point *C*?

   c. What do you notice about arcs *ABC* and *ADC*?

d. How does the relationship between arcs *ABC* and *ADC* explain the sum of the measures of inscribed $\angle ABC$ and $\angle ADC$?