Name _____

Class _____

Problem 1 – Properties of Parallelograms

A cyclic quadrilateral is a quadrilateral inscribed in a circle. Page 1.3 shows cyclic quadrilateral *QUAD* and the measures of angles *Q*, *U*, *A*, and *D*.

1. Drag point *Q* to four different positions and collect data in the table below

Position	∠Q	∠U	∠A	∠D
1				
2				
3				
4				

2. What do you notice about the opposite angles of a cyclic quadrilateral?

3. Redefine (**MENU > Actions > Redefine**) point *Q* (on page 1.3) to be a point not on the circle. Drag point *Q* to two points inside and two points outside the circle and collect data in the table below.

Position	∠Q	∠U	∠A	∠D
1				
2				
3				
4				

4. What do you notice about the opposite angles of a quadrilateral that is not necessarily cyclic?

Answer the following questions with *always*, *sometimes*, or *never*. Use what you know about the opposite angles of special quadrilaterals (parallelogram, rectangle, kite, trapezoid, etc.) and what you know about the opposite angles of cyclic quadrilaterals.

5. A kite is _____ a cyclic quadrilateral.

6. A trapezoid is _____ a cyclic quadrilateral.

7. An isosceles trapezoid is _____ a cyclic quadrilateral.

8. A parallelogram is _____ a cyclic quadrilateral.

9. A rectangle is _____ a cyclic quadrilateral.

10. A square is _____ a cyclic quadrilateral.

11. A rhombus is _____ a cyclic quadrilateral.

Problem 2 – Extension

For this problem, we will look at the angle properties created by the diagonals of cyclic quadrilaterals.

12. Page 2.2 shows the measures of angles *Q*, *U*, *A*, *D*, *DQA*, and *DUA*. Move point *D* between *Q* and *A* to four different points and collect data in the table below.

Position	∠*Q*	∠*U*	∠*A*	∠*D*	∠*DQA*	∠*DUA*
1						
2						
3						
4						

13. What do you notice about the measure of angles *DQA* and *DUA*?