



Problem 1 – Properties of Cyclic Quadrilaterals

A cyclic quadrilateral is a quadrilateral inscribed in a circle. Open the *Cabri™ Jr.* application by pressing $\boxed{\text{apps}}$ and selecting **Cabri Jr.** Open the file *CYCLIC1* by pressing $\boxed{\text{v}}$, selecting **Open...**, and selecting the file. The file *CYCLIC1* shows a 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	$\angle Q$	$\angle U$	$\angle A$	$\angle D$
1				
2				
3				
4				

2. What do you notice about the opposite angles of a cyclic quadrilateral?
3. Open the file *CYCLIC2*. This file shows quadrilateral *QUAD* and the measures of angles *Q*, *U*, *A*, and *D*. Drag point *Q* to two points inside and two points outside the circle and collect data in the table below.

Position	$\angle Q$	$\angle U$	$\angle A$	$\angle D$
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.



Running Circles Around Quads

Student Activity

Name _____

Class _____

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 – Properties of Angles

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

12. Open the file *CYCLIC3*. This file 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	$\angle Q$	$\angle U$	$\angle A$	$\angle D$	$\angle DQA$	$\angle DUA$
1						
2						
3						
4						

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