## Unit 7 Lesson 4: Quadrilaterals in Circles

### 1 Connecting the Dots (Warm up)

#### Student Task Statement

For each quadrilateral, use a compass to see if you can draw a circle that passes through all 4 of the quadrilateral’s vertices.

A



B



C



### 2 Inscribed Angles and Circumscribed Circles

#### Student Task Statement

1. The images show 3 quadrilaterals with **circumscribed** circles.
* A
* 
* B
* 
* C
* 
* For each one, highlight the arc from $S$ to $Q$ passing through $P$. Then, find the measures of:
	1. the arc you highlighted
	2. the other arc from $S$ to $Q$
	3. angle $SPQ$
1. Here is another quadrilateral with a circumscribed circle. What is the value of $α+β$? Explain or show your reasoning.
* 

#### Activity Synthesis

A



B



C



### 3 Construction Ahead

#### Student Task Statement

Quadrilateral $ABCD$ is a **cyclic quadrilateral**.



1. Draw diagonal $BD$. How will this diagonal relate to the circumscribed circle? Explain your reasoning.
2. Construct the center of the circumscribed circle for quadrilateral $ABCD$. Label this point $O$. Explain why your method worked.
3. Construct the circumscribed circle for quadrilateral $ABCD$.
4. Could we follow this procedure to construct a circumscribed circle for *any* cyclic quadrilaterals? Explain your reasoning.

#### Activity Synthesis



#### Images for Activity Synthesis





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