## Unit 7 Lesson 3: Tangent Lines

### 1 Swim to Shore (Warm up)

#### Student Task Statement

Line $ℓ$ represents a straight part of the shoreline at a beach. Suppose you are in the ocean at point $C$ and you want to get to the shore as fast as possible. Assume there is no current. Segments $CJ$ and $CD$ represent 2 possible paths.



Diego says, “No matter where we put point $D$, the Pythagorean Theorem tells us that segment $CJ$ is shorter than segment $CD$. So, segment $CJ$ represents the shortest path to shore.”

Do you agree with Diego? Explain your reasoning.

#### Activity Synthesis



### 2 A Particular Perpendicular

#### Images for Launch



#### Student Task Statement



1. Draw a radius in the circle. Mark the point where the radius intersects the circle and label it $A$.
2. Construct a line perpendicular to the radius that goes through point $A$. Label this line $n$.
3. Line $n$ intersects the circle in exactly 1 point, $A$. Why is it impossible for line $n$ to intersect the circle in more than 1 point?
4. What kind of line, then, is $n$?

#### Activity Synthesis





### 3 Another Angle

#### Images for Launch



#### Student Task Statement

The image shows an angle whose rays are **tangent** to a circle.



1. Mark the approximate points of tangency.
2. Draw the 2 radii that intersect these points of tangency. Label the measure of the central angle that is formed $w$.
3. What is the value of $w+z$? Explain or show your reasoning.

#### Images for Activity Synthesis





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