## Unit 7 Lesson 5: Triangles in Circles

### 1 One Perpendicular Bisector (Warm up)

#### Student Task Statement

The image shows a triangle.



1. Construct the perpendicular bisector of segment $AB$.
2. Imagine a point $D$ placed anywhere on the perpendicular bisector you constructed. How would the distance from $D$ to $A$ compare to the distance from $D$ to $B$? Explain your reasoning.

#### Activity Synthesis



### 2 Three Perpendicular Bisectors

#### Student Task Statement

1. Construct the perpendicular bisector of segment $BC$ from the earlier activity. Label the point where the 2 perpendicular bisectors intersect as $P$.
2. Use a colored pencil to draw segments $PA,PB,$ and $PC$. How do the lengths of these segments compare? Explain your reasoning.
3. Imagine the perpendicular bisector of segment $AC$. Will it pass through point $P$? Explain your reasoning.
4. Construct the perpendicular bisector of segment $AC$.
5. Construct a circle centered at $P$ with radius $PA$.
6. Why does the circle also pass through points $B$ and $C$?

#### Activity Synthesis



### 3 Wandering Centers

#### Student Task Statement

Each student in your group should choose 1 triangle. It’s okay for 2 students to choose the same triangle as long as all 3 are chosen by at least 1 student.

1. Construct the circumscribed circle of your triangle.
2. After you finish, compare your results. What do you notice about the location of the **circumcenter** in each triangle?







#### Activity Synthesis







#### Images for Activity Synthesis





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