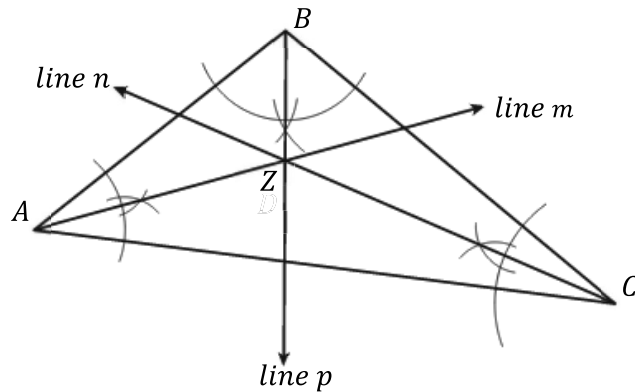


Section 7 – Topic 7
Inscribed and Circumscribed Circles of Triangles

Consider the figure below.



What observations can you make about line m ?

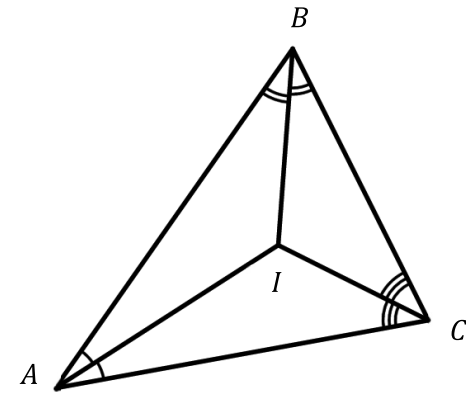
What observations can you make about line n ?

What observations can you make about line p ?

Point Z is called the _____ of the triangle. It is a point of concurrency formed by the intersection of the three angle bisectors.

Let's Practice!

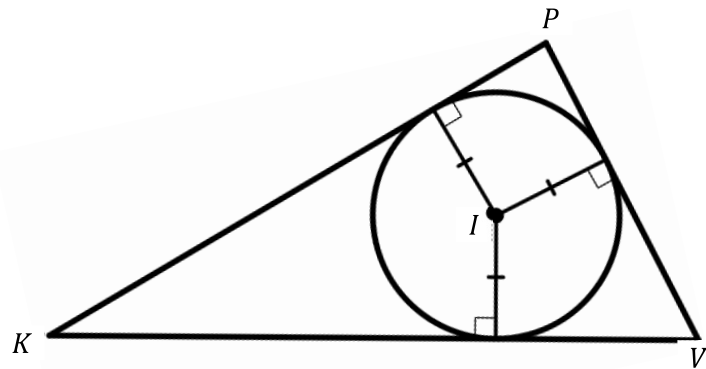
- Let $\triangle ABC$ be an arbitrary triangle with angle bisectors \overline{AI} , \overline{BI} , and \overline{CI} .



Prove that the three angle bisectors of the internal angles of a triangle are concurrent.

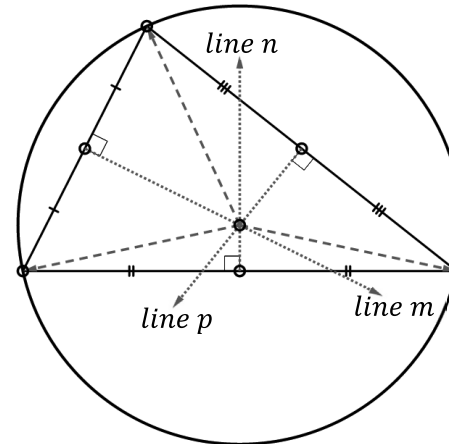
Try It!

2. Consider the figure below.



- a. What observations can you make about the circle inside the triangle?
- b. Complete the following statement. Point I is the _____ of both the triangle and the circle, and it is equidistant to the _____ of the triangle.

Consider the figure below.



What observations can you make about the circle around the triangle?

What observations can you make about lines m , n and p ?

Complete the following statements.

- A circle that is circumscribed about a triangle is called a _____.
- The center of the circle is the point of concurrency of the perpendicular bisectors of the triangle and is called the _____. It is also equidistant to the _____ of the triangle.

Let's Practice!

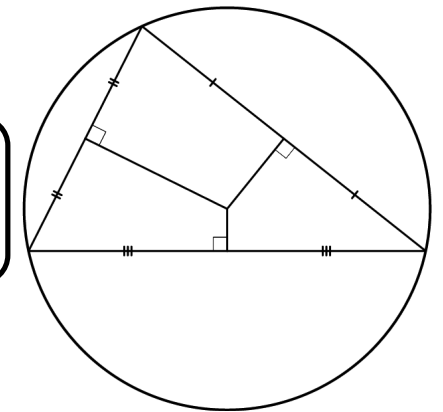
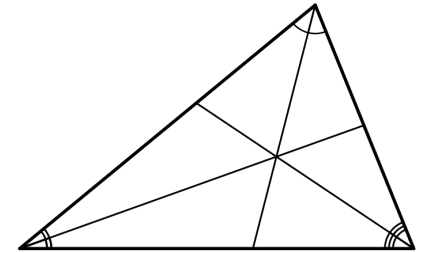
3. What is the location of the circumcenter of a right triangle?
4. Where is the circumcenter of an obtuse triangle?

Try It!

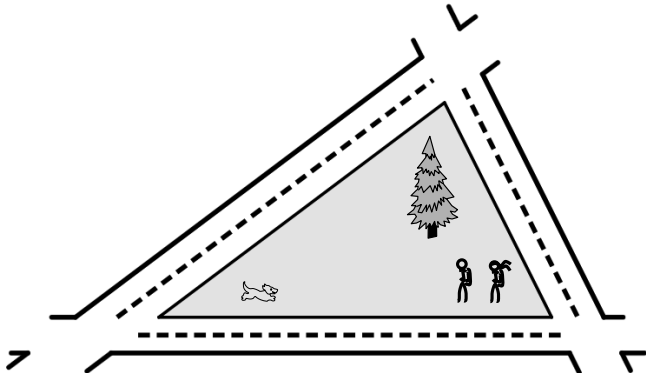
5. Tina is making part of a wind chime with a flat wooden triangular piece of wood. A wire that is anchored at a point equidistant from the sides of the triangle suspends the piece of wood. Where is the anchor point located?

BEAT THE TEST!

1. Which of the points of concurrency is illustrated in each of the diagrams below? Write your answers in the box provided beside each figure.



2. Three straight roads create the boundaries of a park as shown below.



A developer wants to build sidewalks that are perpendicular bisectors of each road and plant a maple tree where all three sidewalks meet inside the park,

Part A: At what point should the developer plant the maple tree?

Part B: How can we prove that the three sidewalks are concurrent?