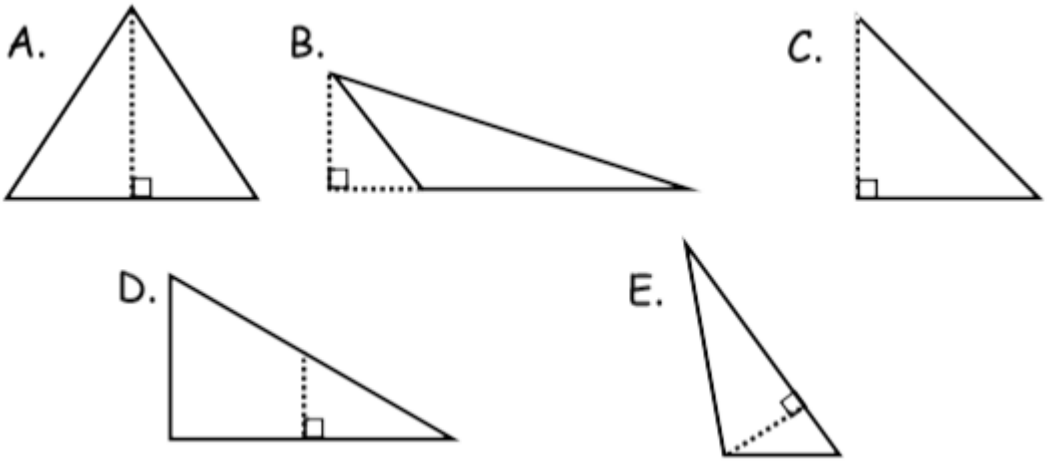
Geometry CC – Mr. Valentino Name: _____

Unit 3 Lesson 3: Orthocenter and Incenter Date: _____ Period: _____

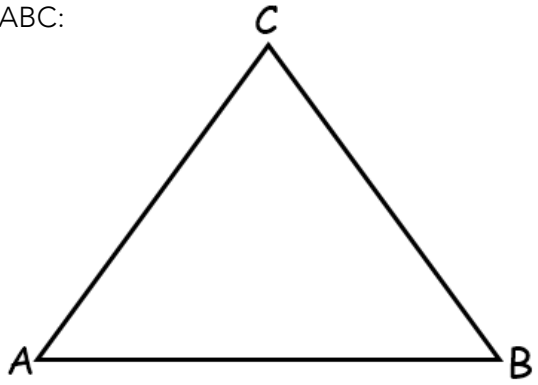
Aim: What is the orthocenter and incenter of a triangle?

Do Now: Which diagram(s) show an altitude? (Circle all that apply)



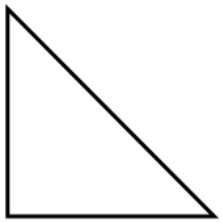
Orthocenter –

Sketch the orthocenter of ΔABC:

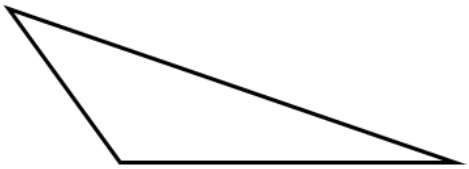


Do you think the orthocenter will always be inside the triangle?

Right Triangle



Obtuse Triangle



Summarizing Orthocenter Locations:

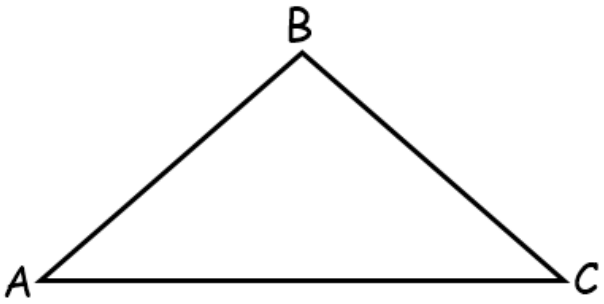
Acute –

Right –

Obtuse –

Incenter –

Sketch the incenter of ΔABC by drawing 3 angle bisectors.



Practice Problems! Here we go.

Give the name the point of concurrency for each of the following.

1. Angle Bisectors of a Triangle _____

2. Medians of a Triangle _____

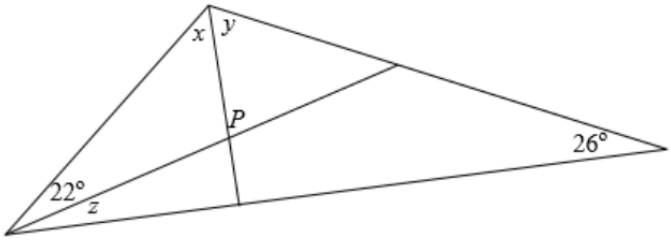
3. Altitudes of a Triangle _____

4. **Complete the following chart. Write if the point of concurrency is *inside*, outside, or on the triangle.**

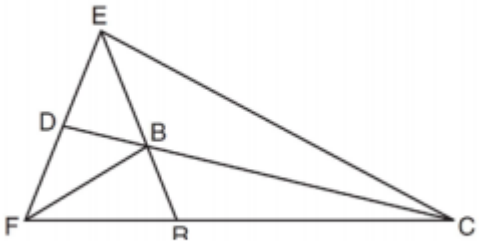
	Acute Δ	Obtuse Δ	Right Δ
Incenter			
Centroid			
Orthocenter			

5.

In the triangle below, point P is the incenter. Find the measures of angles x, y, and z.

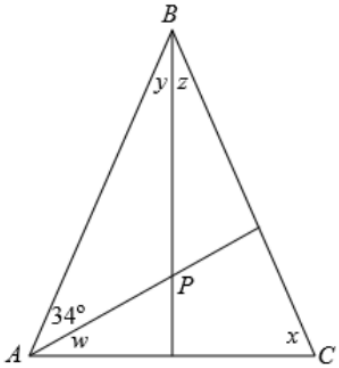


6. In the diagram below, point B is the incenter of ΔFEC, and $\overline{EBR}$, $\overline{CBD}$, and $\overline{FB}$ are drawn.



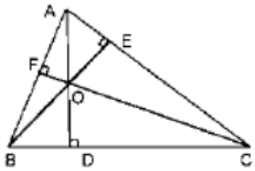
If $m\angle FEC = 84$ and $m\angle ECF = 28$, determine and state $m\angle BRC$.

7. In isosceles ΔABC, $\angle BAC \cong \angle BCA$. If P is the triangle's incenter, find the measures of angles w, x, y, and z.

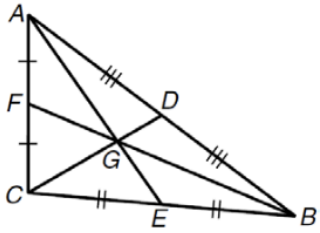


8. Determine if each figure below displays a centroid, orthocenter, or incenter:

a)



b)



c)