

1. Complete each of the following statements using the word bank below to help you. Words may be used once, more than once, or not at all.

a. The name of the point of concurrency for the angle bisectors of a triangle is called a(n) incenter.

b. The incenter of a triangle is equidistant from the sides of the triangle.

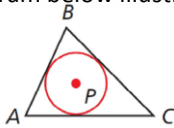
c. To circumscribe a circle about a triangle, you use the circumcenter.

d. To inscribe a circle about a triangle, you use the incenter.

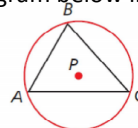
e. The name of the point of concurrency for the perpendicular bisectors of a triangle is called a(n) circumcenter.

f. The circumcenter of a triangle is equidistant from the vertices of the triangle.

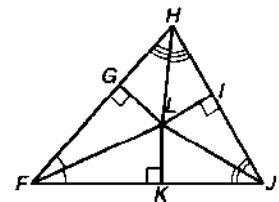
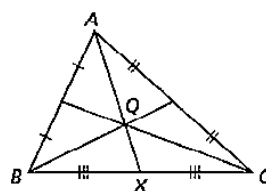
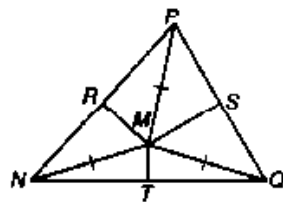
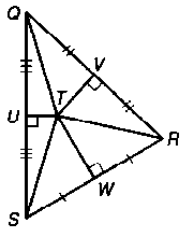
g. The diagram below illustrates a(n) incenter.



h. The diagram below illustrates a(n) circumcenter.



2. Classify the point of concurrency represented in each picture as either a circumcenter, incenter, or centroid.



a. Circumcenter: because the perpendicular bisectors were drawn in. Then the point of concurrency was connected to each vertex. This is how the radius is found for the circle that will be circumscribed about the triangle.

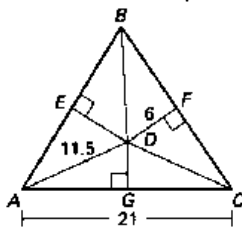
b. Circumcenter: because the distance to each vertex is the same. That means that point M is the center of the circle that could be circumscribed about the triangle.

c. Centroid: because the medians of each side of the triangle are drawn in. I can tell because the midpoint is connected to the opposite vertex.

d. Incenter: because the angle bisectors were drawn in. Then the perpendicular segments from the point of concurrency were found. This is how the radius is determined for the circle that will be inscribed in the triangle.

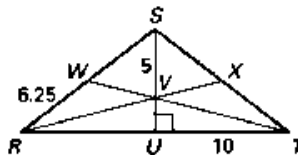
3. Identify each measure using the information given.

a. The perpendicular bisectors of $\triangle ABC$ are concurrent at point D.



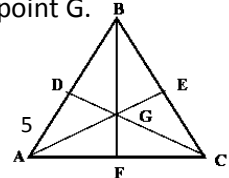
What is the measure of \overline{BD} ? 11.5
Point D is the circumcenter. The distance from point D to each vertex is the same.

b. Point V is the centroid of $\triangle RST$.




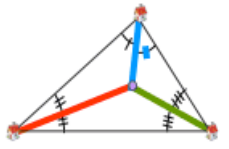
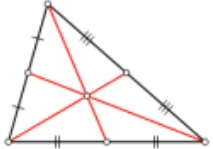
What is the measure of \overline{VU} ? 2.5
The centroid divides the median of each side into two segments that are at a ratio of 2:1. Since the longer part of the median from the centroid to the vertex is 5, I know the shorter part is half that length: 2.5.

c. The medians of $\triangle ABC$ are concurrent at point G.

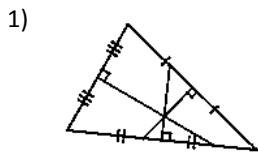


What is the measure of \overline{GC} ? 10
Again this is the centroid so the segments have that 2:1 ratio. This time I am given the shorter length so I doubled it to find the other portion of the segment.

Additional Practice:

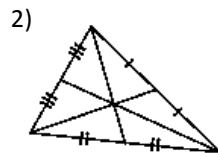
Center	Definition	Fact #1	Fact #2
<p>Circumcenter</p> 	<p>The point of concurrency of the _____ _____</p>	<p>Equidistant from _____ _____</p>	<p>The point of concurrency is the center of _____</p>
<p>Incenter</p> 	<p>The point of concurrency of the _____ _____</p>	<p>Equidistant from _____ _____</p>	<p>The point of concurrency is the center of _____</p>
<p>Centroid</p> 	<p>The point of concurrency of the _____ _____</p>	<p>Separates the _____ into segments with a ratio of _____</p>	<p>The point of concurrency is the center of _____</p>

For each triangle below, tell what point of concurrency is shown and what constructions formed that point.



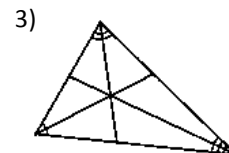
Point: _____

Formed by: _____



Point: _____

Formed by: _____



Point: _____

Formed by: _____

4) Point G is the centroid of triangle ABC. $m\overline{AD} = 8$, $m\overline{AG} = 10$, and $m\overline{CD} = 18$. Find the length of each segment.

\overline{BD} _____

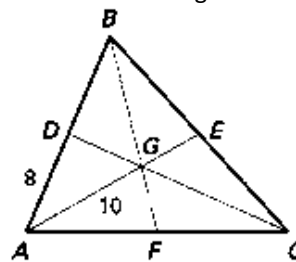
\overline{AE} _____

\overline{AB} _____

\overline{CG} _____

\overline{EG} _____

\overline{DG} _____



5) The perpendicular bisectors are shown as dashed segments in the triangle below. Point G is the circumcenter of the triangle. Find each of the indicated measures.

AG _____

BD _____

CF _____

AB _____

CE _____

AC _____

