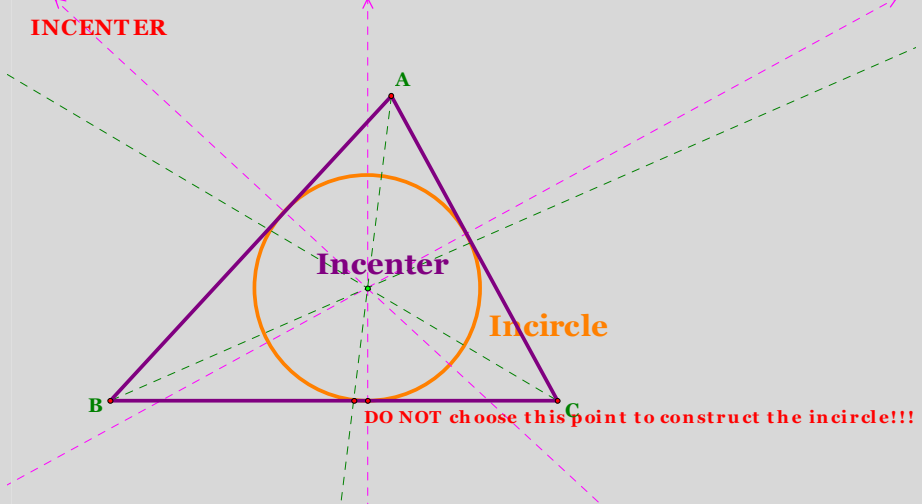
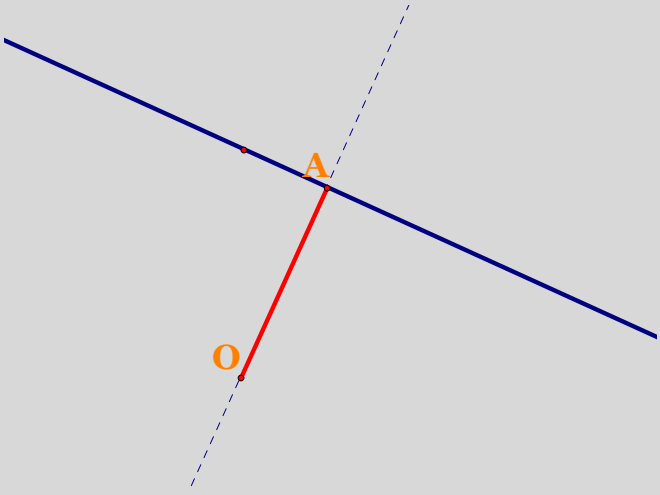


Review

1. Incircle / Incenter

<p><b>How To</b></p>	<p>a. Find an Incenter                  b. Construct a perpendicular line to a side of the triangle from the incenter                  c. Select the incenter and the intersecting point                  d. Construct a circle [Menu → Construct → Circle by Center + Point]</p>
<p><b>GSP</b></p>	
<p><b>Properties</b></p>	<ul style="list-style-type: none"> <li>▪ Same distance to each side [OR foot of the perpendicular line]</li> <li>▪ Center of incircle</li> </ul>
<p><b>References</b></p>	<ul style="list-style-type: none"> <li>▪ Distance between a line and a point (not on the line)                         <ul style="list-style-type: none"> <li>- A perpendicular to the line from the point is the closest distance.</li> </ul> </li> </ul>  <ul style="list-style-type: none"> <li>- <u>Proof</u>                      : All the points on the circle have same distance from the</li> </ul>

center & all other point on the line except A are outside of the circle. So, OA is the closest distance.

Animation [Incenter Ani.gsp](#)

2. Circumcircle / Circumcenter

How To

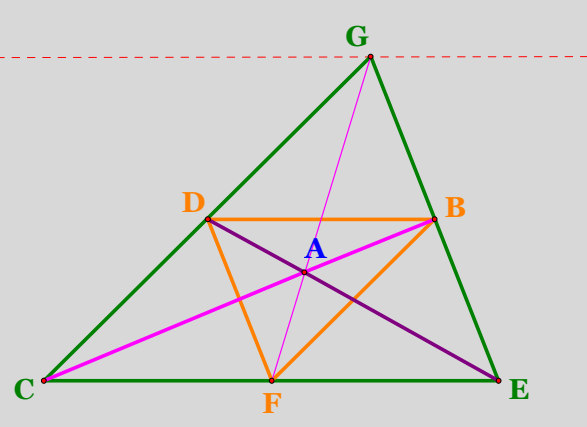
- Find circumcenter
- Select the circumcenter and one of the vertices

GSP

Properties	<ul style="list-style-type: none"> <li>Same distance from each of vertex</li> </ul>
Animation	<a href="#">Circumcenter Ani.gsp</a>

**Measure Length & Area**

**1. Centroid**

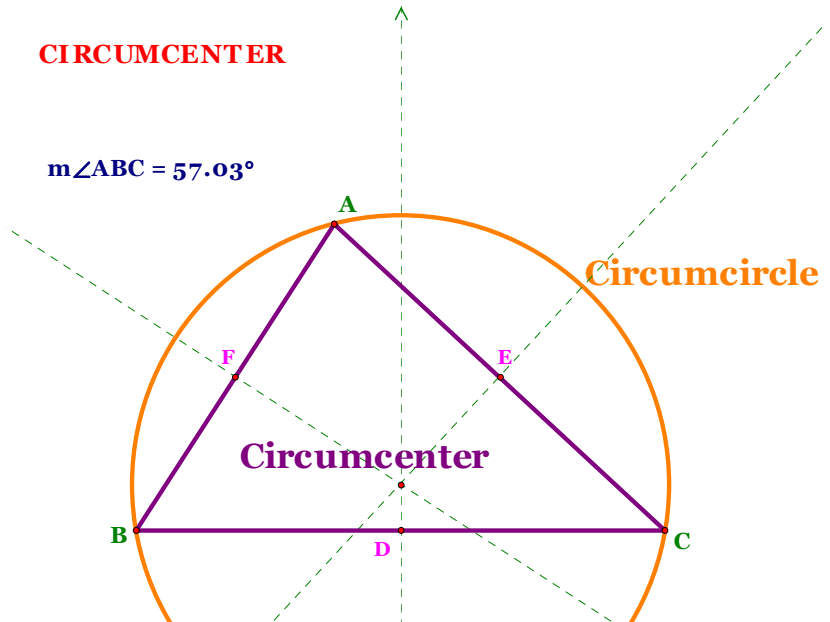
Definition	Intersection of three medians
How To	<ul style="list-style-type: none"> <li>Measure             <ol style="list-style-type: none"> <li>Select a segment you want to measure</li> <li>Go to “MEASURE” and click “DISTANCE”</li> </ol> </li> <li>Calculate             <ol style="list-style-type: none"> <li>Go to “MEASURE” and click “CALCULATE”</li> <li>Click ‘mAB / mAC’ and ‘=’ (→ You have to measure AB and AC first to do this!!!)</li> </ol> </li> <li>Area             <ol style="list-style-type: none"> <li>Select the vertices of triangle that you want to measure</li> <li>Go to “CONSTRUCT” and click “INTERIOR”</li> <li>Select the interior that you want to measure</li> <li>Go to “MEASURE” and click “AREA”</li> </ol> </li> </ul>
GSP	<ul style="list-style-type: none"> <li>Measure Length &amp; Calculate (Ratio)             <ul style="list-style-type: none"> <li><math>m \overline{AB} = 3.09 \text{ cm}</math></li> <li><math>m \overline{CA} = 6.19 \text{ cm}</math></li> <li><math>\frac{m \overline{CA}}{m \overline{AB}} = 2.00</math></li> <li><math>m \overline{AE} = 4.87 \text{ cm}</math></li> <li><math>m \overline{AD} = 2.44 \text{ cm}</math></li> <li><math>\frac{m \overline{AE}}{m \overline{AD}} = 2.00</math></li> </ul> </li> <li>Measure Area</li> </ul> 

	<p> <math>m \overline{AB} = 3.09 \text{ cm}</math>  <math>m \overline{CA} = 6.19 \text{ cm}</math>  <math>\frac{m \overline{CA}}{m \overline{AB}} = 2.00</math>  <math>m \overline{AE} = 4.87 \text{ cm}</math>  <math>m \overline{AD} = 2.44 \text{ cm}</math>  <math>\frac{m \overline{AE}}{m \overline{AD}} = 2.00</math> </p> <p> <math>\text{Area } \triangle BAE = 5.91 \text{ cm}^2</math>  <math>\text{Area } \triangle DAC = 5.91 \text{ cm}^2</math>  <math>\text{Area } \triangle AFC = 5.91 \text{ cm}^2</math> </p>
Properties	<ul style="list-style-type: none"> <li>Centroid separates median into 2:1</li> <li>Center of mass (= balance point)</li> <li>All the small triangles have same area</li> <li>Median triangle has same centroid as original triangle</li> </ul>
Animation	<p><a href="#">Centroid Measure Ani.gsp</a></p>

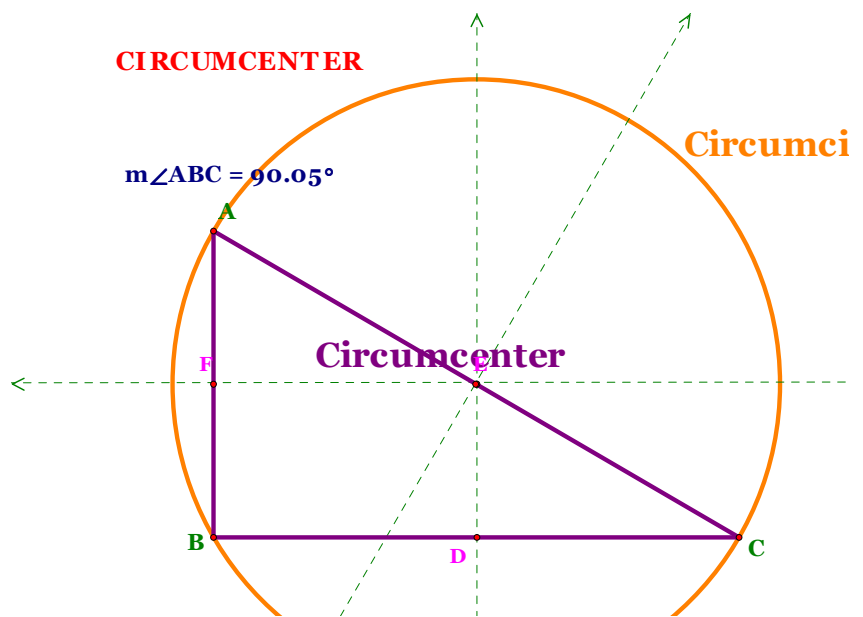
## 2. Circumcenter

Definition	<p>Intersection of three perpendicular bisectors</p>
Position	<p>a. Obtuse triangle – outside</p>

b. Acute triangle – inside



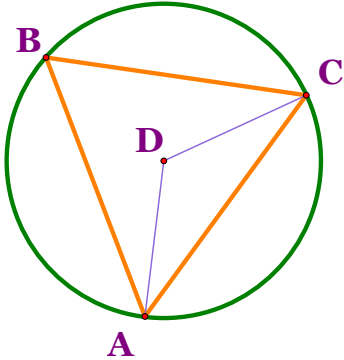
c. Right triangle – on the triangle



\*Sorry... I wasnot make exact 90 degree with my laptop... ^^;

Animation [Circumcenter Ani.gsp](#)

### 3. Measure Arc

How to	<ul style="list-style-type: none"><li>▪ Measure angle of triangle : If you want to measure angle ABC,<ol style="list-style-type: none"><li>a. Select the vertices A, B, and C in order</li><li>b. Go to “MEASURE” and click “ANGLE”</li></ol></li><li>▪ Measure arc angle : If you want to measure arc angle of arc AC,<ol style="list-style-type: none"><li>a. Select the circle</li><li>b. Select two end point of the arc, A and C</li><li>c. Go to “MEASURE” and click “ARC ANGLE”</li></ol></li></ul> <p style="text-align: center;">OR</p> <ol style="list-style-type: none"><li>a. Select points A, D, and C in order</li><li>b. Go to “MEASURE” and click “ANGLE”</li></ol>
GSP	<p><math>m\angle ABC = 60.82^\circ</math> <math>m \widehat{CA} \text{ on } \odot DE = 121.64^\circ</math> <math>m\angle ADC = 121.64^\circ</math></p> 
Animation	<a href="#">Circumcenter Ani.gsp</a>