

The Circumcenter – Fascinating!

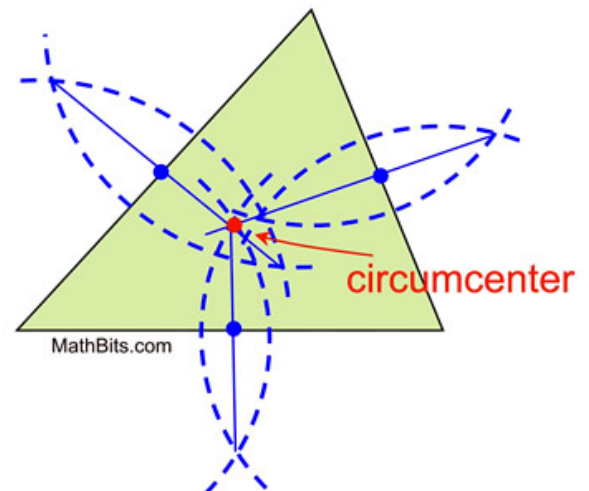
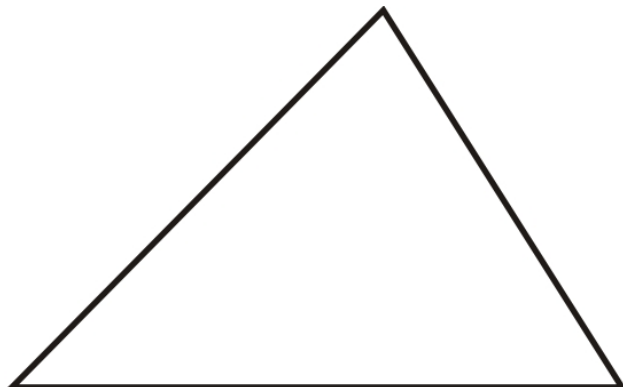
Today we will investigate our 4th and final type of center of a triangle. The circumcenter! Remember:

Definition: A **point of concurrency** is the point where three or more lines intersect.

The **circumcenter** is the point of concurrent perpendicular bisectors. Recall what a **perpendicular bisector** looks like. Also, recall that we know how to **construct** a perpendicular bisector given any line segment. It is **crucial** to remember that a perpendicular bisector creates a perpendicular to the given line segment and it cuts that same line segment in half (**bisect**). Construct a perpendicular bisector on the line segment below:



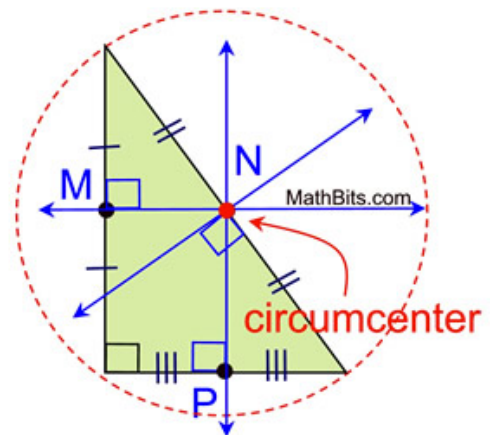
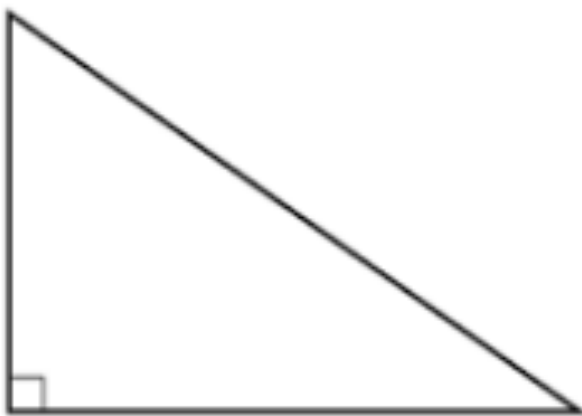
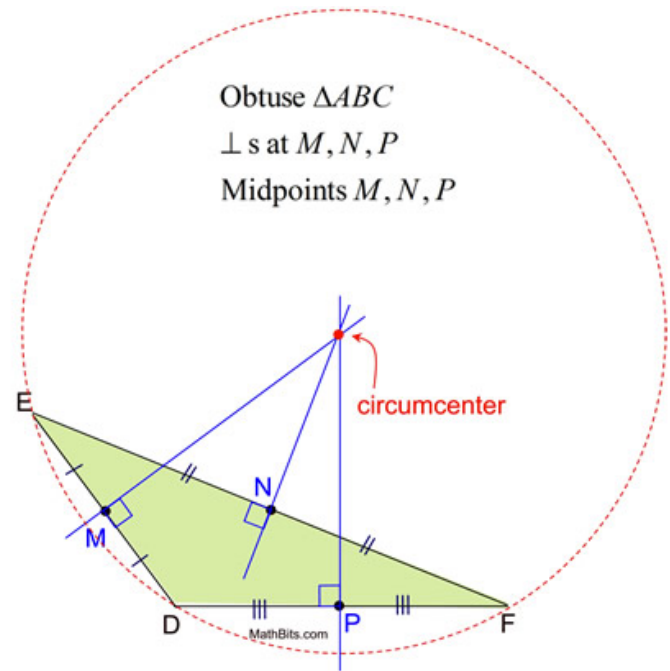
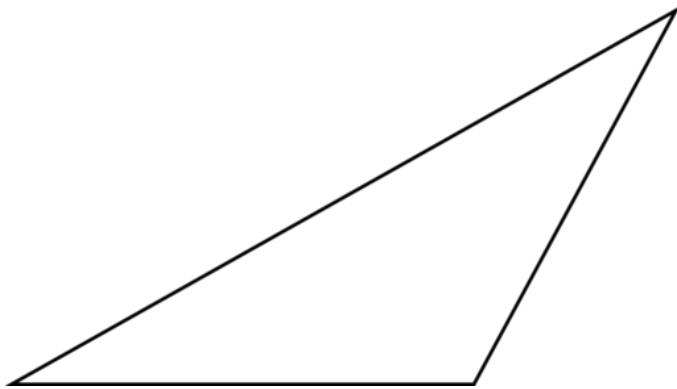
1. Now! Locate the circumcenter through construction for the triangle below. Reference the image for assistance.



As you can see: The **perpendicular bisectors of the sides of a triangle** are concurrent (they intersect in one common point). The point of concurrency of the perpendicular bisectors of the sides is called the **circumcenter** of the triangle. The point of concurrency is *not necessarily inside the triangle*. It may actually be **in** the triangle, **on** the triangle, or **outside** of the triangle.

Notice that the perpendicular bisectors of the sides of the triangles do not necessarily pass through the vertices of the triangles.

2. Locate each circumcenter through construction on the below triangles (use the pictures for help):



Question! Do you notice anything about the circles that have been constructed on the images to the right?