Triangle Centers

Create: Copy/Paste/Open the file: *GR6 Day 3 Activity.gsp*

Construct: Construct ΔABC. Construct the Circumcenter of ΔABC and label it *Circumcenter*.

Hide: Hide all lines and points in the sketch used in constructing the circumcenter **except** for those of ΔABC and the circumcenter. To hide objects in Sketchpad, select everything to that is to be hidden and then choose **Hide** from the **Display** menu.

Measure: Measure all three angles of ΔABC. To measure an angle, select each side of the angle to be measured and choose **Angle** from the **Measure** menu.

Repeat: Repeat the above steps to construct the Incenter, Orthocenter, and Centroid for ΔABC. Label each point with its respective name.

Investigate:

A. Drag the vertices of ΔABC to form three different types of triangles: Acute, Right, and Obtuse. For each type of triangle, observe which of the centers are inside the triangle, on the triangle or are outside of the triangle. *Tip: use the angle measures of ΔABC to help you verify that you have obtained each type of triangle.*

B. Make a conjecture about the location of each of the centers for each type of triangle.   On your handout you will record evidence of your findings. For each type of triangle, draw and label a sketch of ΔABC and include each of the centers in your picture. Also, on your handout, identify each center and its location in relation to the triangle as: Inside, Outside, or On.

C. Drag the vertices of ΔABC until all the centers are collinear. Make a conjecture about the type of triangle that ΔABC is. Record the evidence of your findings on your handout by drawing and labeling a picture and explaining your conclusion. Cite any measurements that you made in Sketchpad to support your conclusion.

D. Drag the vertices of ΔABC until all the centers are at the same spot in your sketch. Make a conjecture about the type of triangle that ΔABC is. Record the evidence of your findings on your handout by drawing and labeling a picture and explaining your conclusion. Cite any measurements that you made in Sketchpad to support your conclusion.

Name: _notes._

Date: _____

Acute Triangle – A triangle with all three **angles acute**.

Draw your picture here:
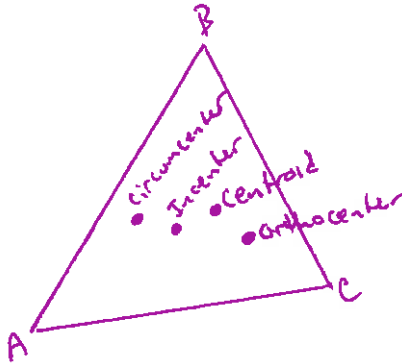
Center	Location
Circumcenter	Inside
Incenter	Inside
Orthocenter	Inside
Centroid	Inside.

Right Triangle – A triangle with one **angle right**.

Draw your picture here:
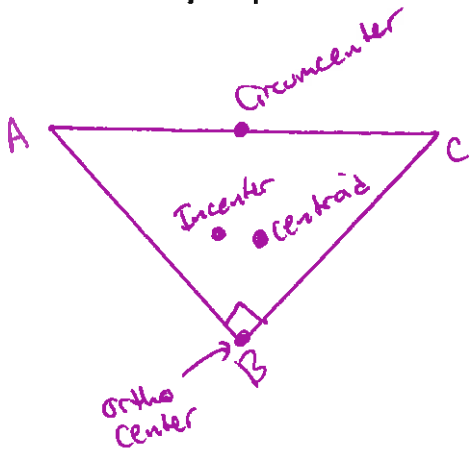
Center	Location
Circumcenter	On
Incenter	Inside
Orthocenter	On
Centroid	Inside.

Obtuse Triangle – A triangle with one **angle obtuse**.

Draw your picture here:
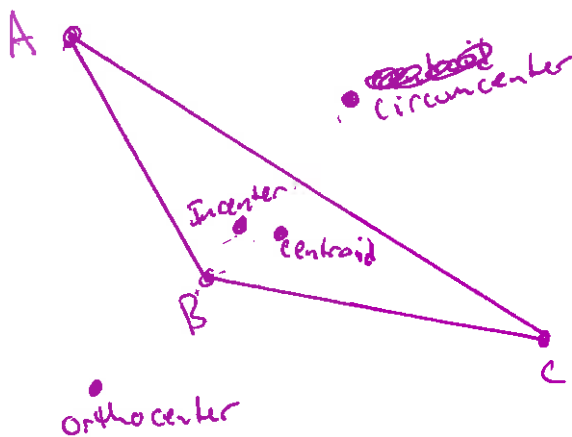
Center	Location
Circumcenter	Outside
Incenter	Inside
Orthocenter	Outside
Centroid.	Inside.

What happens when all 4 centers are Collinear? (Include drawings, measurements, and explanations of your reasoning).

the triangle turns into an Isosceles △.

B

· Circumcenter

· Centroid

· Incenter

· Orthocenter

A   C
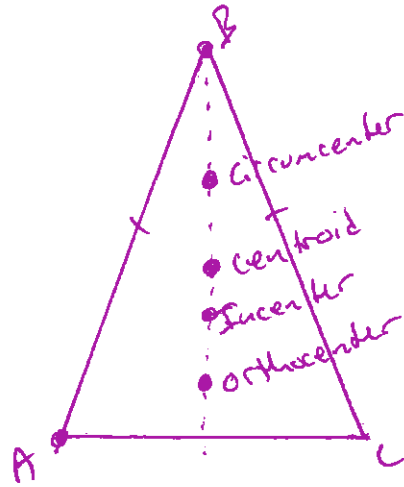
What happens when all 4 centers are at the same spot? ? (Include drawings, measurements, and explanations of your reasoning).

the triangle becomes equilateral.

B

all 4 centers are at the same spot.

A   C