Instructions: Today we are going to discover what happens when you draw three angle bisectors of a triangle. We are going to use the Geometer Sketchpad software on the computers in the computer lab. Please proceed at this time to the computer lab. Log in to your computer and double click on the Geometer Sketchpad icon. Wait for me to tell you to continue.

Follow these steps:

1. Click on the straightedge tool in Geometer’s Sketchpad. It looks like this: 

2. Next, click anywhere on the screen. A red dot will appear. Move the pointer to a spot on the screen where you want your line segment to end. When you have the pointer where you want your line segment to end, click again. You will end up with a line segment that looks similar to this:

3. Select the arrow tool. It looks like this: 

   Now, move the mouse arrow over top of one of the endpoints. It will be highlighted with a blue color. It will look something like this:
4. Click on the endpoint and move the mouse arrow to the spot where you want the second side of your triangle to end. Click the mouse again and your new line segment will appear. It should look something like this:

![Triangle example](image)

5. Now, connect the two remaining dots by clicking on one, dragging the mouse to the other one, and clicking again. It should look similar to this:

![Triangle with connections](image)

Congratulations! You just made a triangle!

6. Before we make angle bisectors, we need to label our angles. In order to do this, we need to first click on the Arrow Tool. It looks like this:

![Arrow Tool](image)

7. After you have clicked on the Arrow Tool, you need to use the mouse arrow to click on all three points. Do this one at a time. You can tell that they are all highlighted when they all turn pink. It should look like this:

![Highlighted points](image)
8. When all three points are highlights, click on the Display menu at the top. It will pull down and you will then click on the “Show Labels” button. It looks like this.

The triangle should look similar to this, meaning that you should see a triangle on your screen. Any size triangle will work.

![Diagram of a triangle with points labeled B, A, and C.]

9. To make a bisector for angle A, we need to highlight all three points in a specific order. So, make sure that the Arrow Tool is still in use, then click anywhere on the screen that isn’t part of the picture. This way, there is nothing highlighted. Now, click first on point B, then click on point A, and lastly click on point C.

10. While all angles are highlighted, click on the Construct menu. It will pull down and you will then click on the “Angle Bisector” button. This looks like:

The picture will look similar to this:

![Diagram showing the construction of an angle bisector.]
11. Do the same for the other two angles. You will get a picture similar to this:

![Diagram of bisectors for one angle.]

12. Lastly, using the Arrow Selector Tool, click on the interesting point of all three bisectors. Your final result should look like this:

![Diagram of bisectors for two angles.]

This point is called the **Incenter** of the triangle. You may label this as point P using the same method that we used to label all of the other points.
Yay! You’re done! Save your Geometer Sketchpad assignment, but please don’t exit out of it. You will need it to complete the questions on the next page.

Questions:

1. Using the Arrow Selector Tool, click on point A and drag it around. Do the same to points B and C. What happens to the triangle when you move the angles?

2. What happens to the incenter of the triangle when you move the angles around?

3. What do you think the incenter of a triangle might be used for? You can open Internet Explorer and do a Google search of “incenter of a triangle” to learn more about what it is and what it is used for. Write out any new information that you find.