In this lab exercise you will construct a demonstration of *Ceva's Theorem*, which is described in problem 36 of Chapter 4. Because this is the third assignment, the directions below will include less detail except when using a new tool.

<div align="center">GeoGebra Construction</div>

(1) Open a new GeoGebra window. Go to the View menu and turn off the axes, so the drawing pad is blank. I'd also recommend going to the Options menu, choose Labeling, and select "New Points Only" to avoid having GeoGebra display a label for every single line segment you create.

(2) Choose the *Polygon* tool to create $\triangle ABC$.

(3) Use the *Point* tool to add D, E and F on the sides opposite A, B and C, respectively. When you click on the segment GeoGebra may ask you to select whether the point should be forced to stay on the edge of the triangle or on the segment; either choice is fine, although the segment makes more sense.

(4) Create line segments $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$.

(5) Ceva's Theorem involves the lengths of these points to the endpoints of their segments. GeoGebra will automatically calculate these lengths if we name the segments. To make life easier, you can use the Input field to give the segments meaningful names. Type `af = Segment[A,F]` in the input field, followed by similar commands for `fb, bd, dc, ce` and `ea`.

(6) In Ceva's Theorem we're interested in the product of three ratios:
$$\frac{|\overline{AF}|}{|\overline{FB}|} \cdot \frac{|\overline{BD}|}{|\overline{DC}|} \cdot \frac{|\overline{CE}|}{|\overline{EA}|}$$
To add this calculation to your picture, choose the *Text* tool (under the picture with $a = 2$) and click in the upper left hand corner of your picture to add text. The text tool allows you to add both text which always stays the same and values which change according to your picture. In the resulting popup window, type the following (exactly!):

<div align="center">`"Product of ratios = " + (af/fb) * (bd/dc) * (ce/ea)`</div>

Click on Apply. If all goes well, the text (and a number representing the result of the arithmetic) will appear where you clicked with the Text tool. If no, go back and double check your definitions of `af` through `ea` and try again.

(7) If your construction is correct, the product of the ratios should equal one if and only if the three line segments inside the triangle are concurrent. If not, go back and double check your work.

To receive credit for this assignment, save your file as `lastname-5335-lab3.ggb` and email it to me at <rogness@math.umn.edu> as an attachment by Tuesday, 11/25/08. The subject line should be the same as your filename. In the body of the email, you must *briefly* answer the following question:

- How can you use Ceva's Theorem to prove that the medians of a triangle are concurrent?