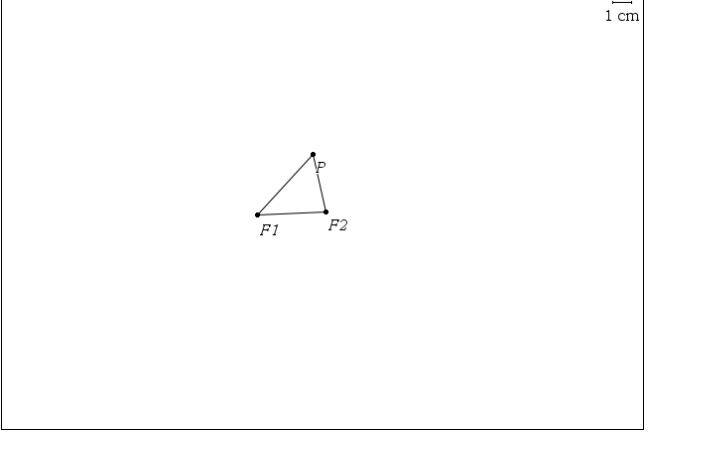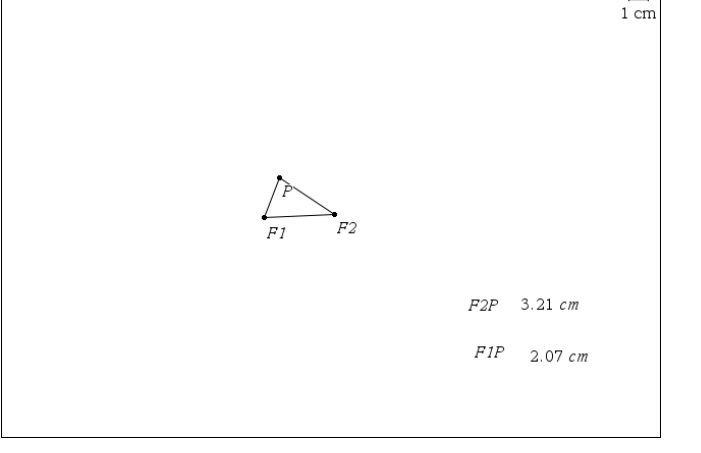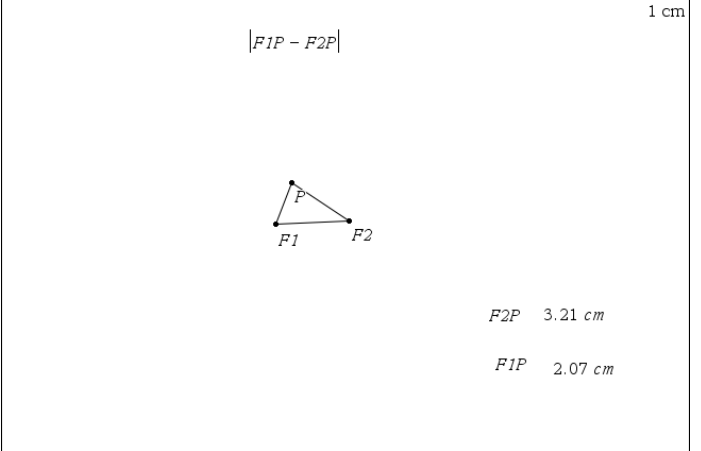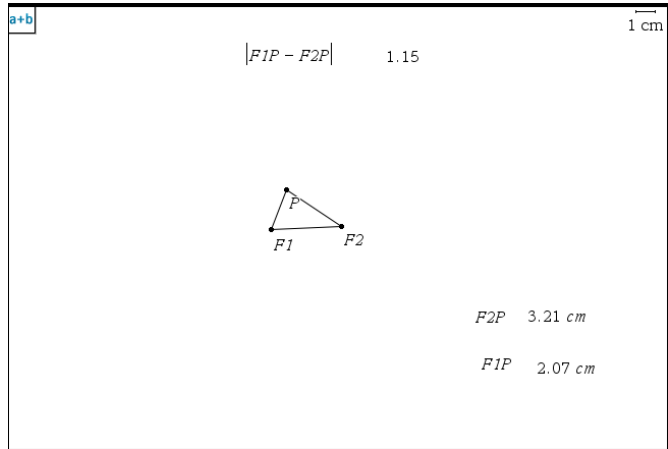# Loci: Keeping Constant

Paul Fracaro

Joliet Township High School
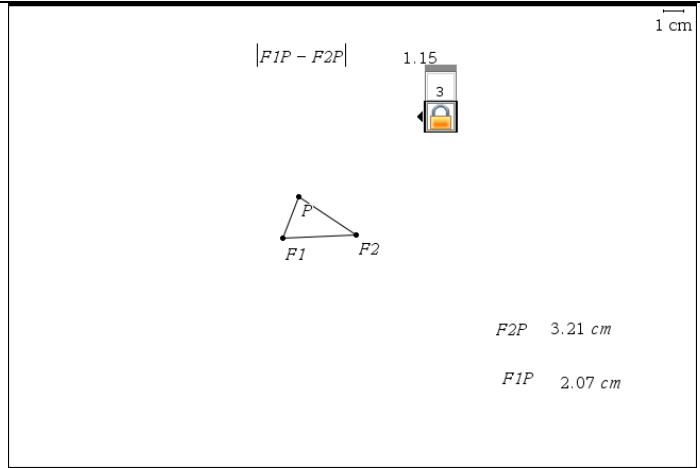
Joliet, Illinois

Start a plane geometry view on the TI-Nspire. Construct a triangle but use the line segment tool to complete the construction. Shrink the size of the line segments and label each endpoint F1, F2, and P respectively.	1 cm P F1 F2
Measure the length of the line segments F1 to P and F2 to P and place the measurement values off to the lower right side of the screen. Label these measurements respectively so each measurement is identified.	1 cm P F1 F2 F2P 3.21 *cm* F1P 2.07 *cm*
Set up a textbox with the following mathematical expression: Absolute value of $\left\vert F1P - F2P \right\vert$	1 cm $\left\vert F1P - F2P \right\vert$ P F1 F2 F2P 3.21 *cm* F1P 2.07 *cm*

Press menu and select action and then calculate. Use the calculate tool to calculate the expression typed on the screen. Point to each line segment measurement respectively when prompted to do so.	$\|F1P - F2P\|$ 1.15 P F1 F2 F2P 3.21 cm F1P 2.07 cm 1 cm
Right click the value of the calculated expression and select attributes. Lock the value of the calculated expression and then press ESC.	$\|F1P - F2P\|$ 1.15 3 P F1 F2 F2P 3.21 cm F1P 2.07 cm 1 cm
Select point P for geometry trace and the then grab point P and move it up and down slowly. Be sure to move point P to each side close to F1 and F2 respectively as you trace point P's movement going up and down on the screen.	$\|F1P - F2P\|$ 1.15 P F1 F2 F2P 6.04 cm F1P 7.18 cm 1 cm