

Advanced Algebra  
Conics: Ellipses – Activity

*Materials Required:* Paper, Ruler, Pencil  
*Technology Required:* Computer With Internet Access

This lesson *demonstrates* the definition of an **Ellipse**.

An **Ellipse** is the set of all points where the sum of the distance from each point to each of two fixed points, called the *foci*, is constant.

1. Use the figure below (or copy it onto another piece of paper, the dimensions are not important).



Measure the distance from F1 to P1 and the distance from F2 to P1. Find another point, P2, such that the SUM of the distance from P2 to F1 and from P2 to F2 is the same as the SUM of the first 2 distances. (This may take a few minutes.) Can you find a 3rd and 4th point with the same total distances? This is sometimes easier if you use a piece of string and two thumbtacks. How can string and thumbtacks help? If you could find a hundred points with the same total distance to F1 and F2 what shape would you get?

2. Go to the Advanced Algebra and Trigonometry web site. Choose the Conics Unit and then choose the Ellipse Lesson. There are two links to movie files that show you how an ellipse was generated using geometry software. In each of these movies, how did the creator make sure that the sum of the distances to the foci is always constant?