

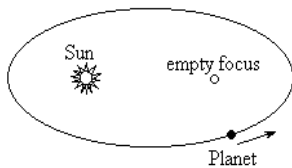


Taken at CSU
Sacramento



A Tunnel Vision

Greek scholar Menaechmus, tutor to Alexander the Great, was the first to discover the ellipse, recognizing that the ellipse is a conic section. Around the same time period, Euclid wrote about the relationship of circles and ellipses



to elementary astronomy. Appollonius is credited with naming the ellipse, as he was the first to develop theory based on conic

sections of a cone. Pappas provided the consideration of the focus, though the focus was not labeled as such at that time, he thrust forth the grounds for new application of the ellipse.

In 1602, Kepler applied these theories to astronomy, recognizing that planetary orbits follow elliptical paths around the sun. Halley, who is widely recognized for his work on the comet that now bears his name, recognized that the comet also follows an elliptical orbit around the sun. The equation used to determine the area of an ellipse is:

$$A = \pi ab$$

a represents the semi-major axis, or the distance from the either end point of the major axis to the center point.

b represents the semi-minor axis, or the distance from either end point of the minor axis to the center point.

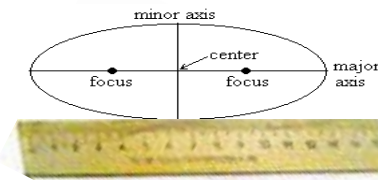
Problem: How do I find the area of an ellipse without having its measurements?

Needs: pencil, graph paper, measuring tape or another measurement method (see method 2 from Redwood problem), equation for Area of an ellipse, and a tape measure.

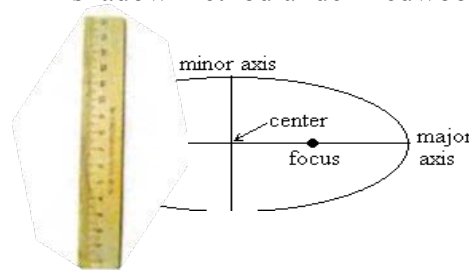
Note: this problem is best implemented with a partner or in a small group. Also, participants should have a basic understanding of the two dimensions Cartesian coordinate system.

Steps:

1. Measure the major axis (mj) .



2. Measure the minor axis (mn) using the shadow method under Redwood Trees



3. Divide the mj and mn by 2; the results are the lengths of the semi- mj and semi- mn axes.

$$a = \frac{mj}{2} \quad b = \frac{mn}{2}$$

4. Plug figures into the area of an ellipse equation.
5. Pi (π) multiplied by the semi-major and semi-minor axis lengths will produce the area of the ellipse.

Other applications could include the students drawing an ellipse, using other measuring methods, and using other equations that pertain to an ellipse such as perimeter and diameter.

