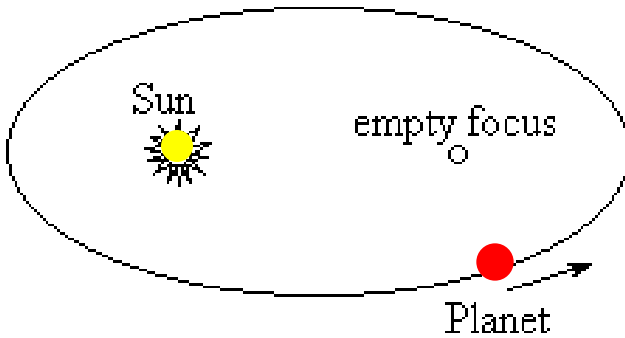
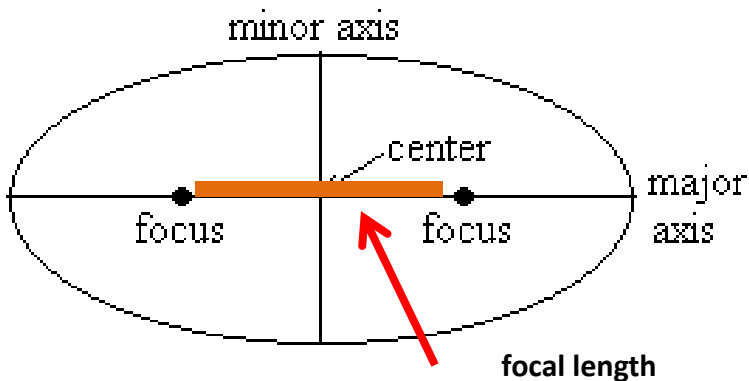


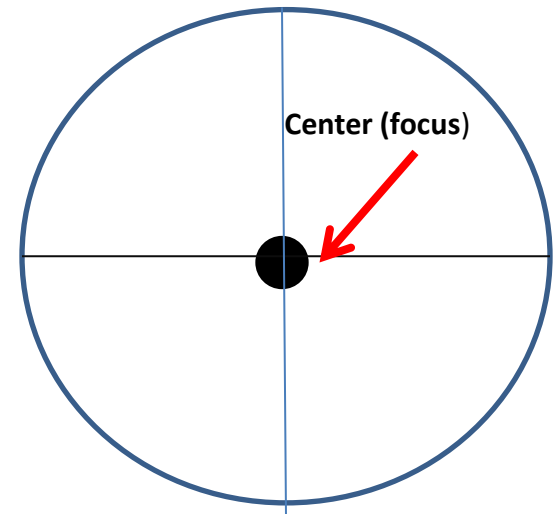
Why do circles have zero eccentricity?



The center of an ellipse is split between two foci. Kepler's first law is that planets orbit on ellipses with the sun at one focus and then a secondary empty focus



BUT there is only one focus in a circle, therefore the focal length is zero



Ellipses are a class of mathematical shapes. The circle is the special case of the ellipse that happens when the two foci (and the center) are co-incident. The number that characterizes how flat the ellipse looks is called the eccentricity, denoted by the letter e . The eccentricity e can be calculated by taking the center-to-focus distance and dividing it by the semi-major axis distance. The limiting cases are the circle ($e=0$) and a line segment line ($e=1$). Below is a picture of what ellipses of differing eccentricities look like.

