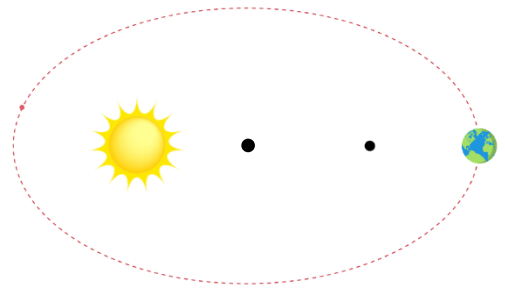


CONCEPT: Kepler's Laws

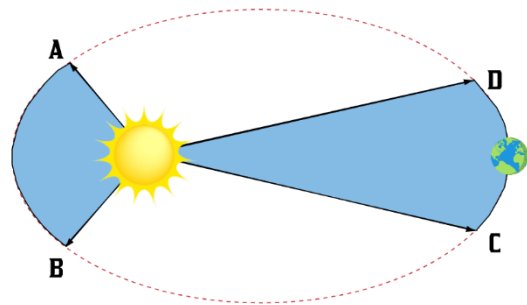
- Kepler noticed all orbits (stars, planets, satellites) obeyed three laws:

1) **Kepler's First Law:** All orbits (even circular) are _____ with the Sun at one focus.

- No planet or physical object at center or other focus.
- Eccentricity $\rightarrow$ # between 0 and 1, how _____ the orbit is.
 - Near 0 is very (circular/elliptical)
 - Near 1 is very (circular/elliptical)



2) **Kepler's Second Law:** In an orbit, equal areas of the orbit are swept out in equal times.



3) **Kepler's Third Law:** The square of the period " T " is proportional to the cube of the radius " r " of the orbit.

- For 2 satellites orbiting mass M , the ratio _____ is constant.

