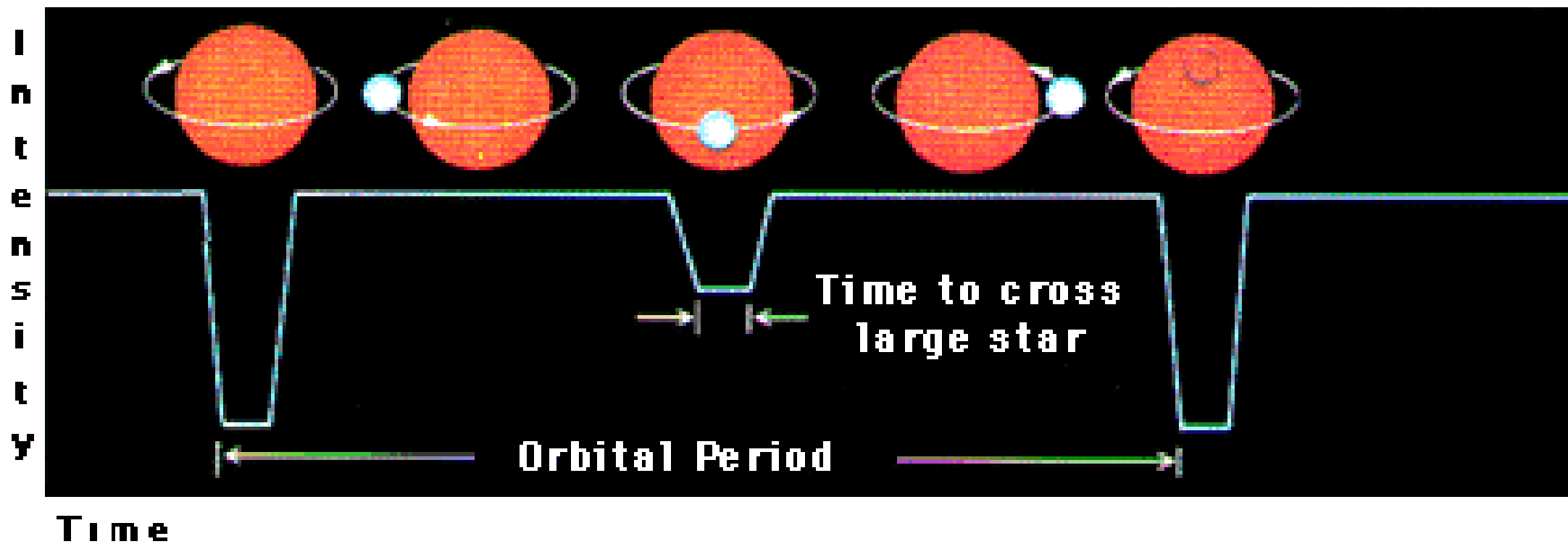


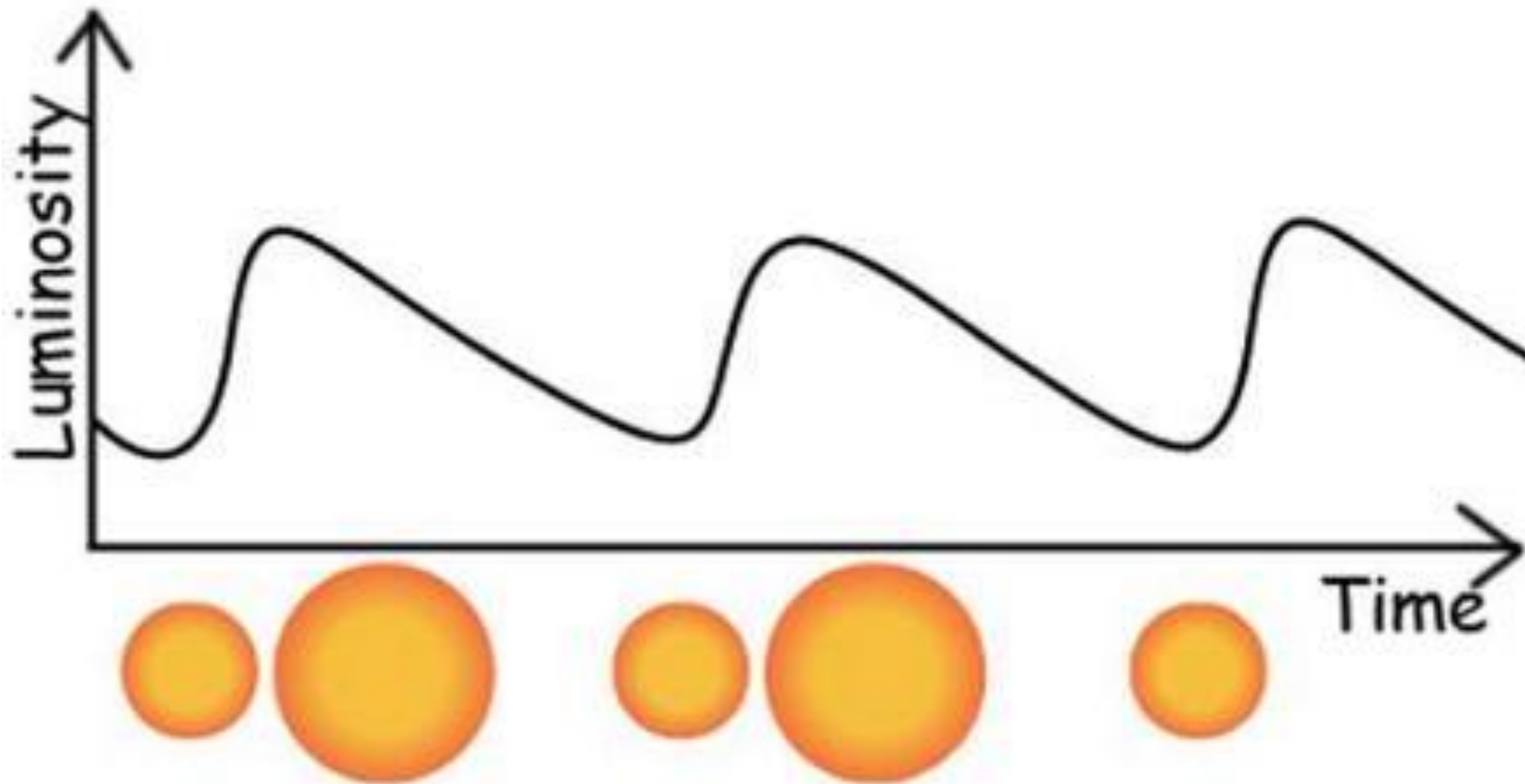
# Variable Stars

Week 20

# The light curve of a binary star



# The light curve of a Cepheid variable



The Cepheid variable cycle:

- Smallest point of the cycle is the dimmest
- The star heats up and expands
- As it expands it cools
- Gravitational forces pull it back smaller

## The Cepheid variable cycle:

- The time period of the cycle is related to the luminosity of the star
- So by measuring the time of the cycle we know the star's luminosity

The Cepheid variable cycle:

- So we can work out its absolute magnitude.
- And then find the distance to it.

$$m - M = -5 \log \left( \frac{d}{10} \right)$$