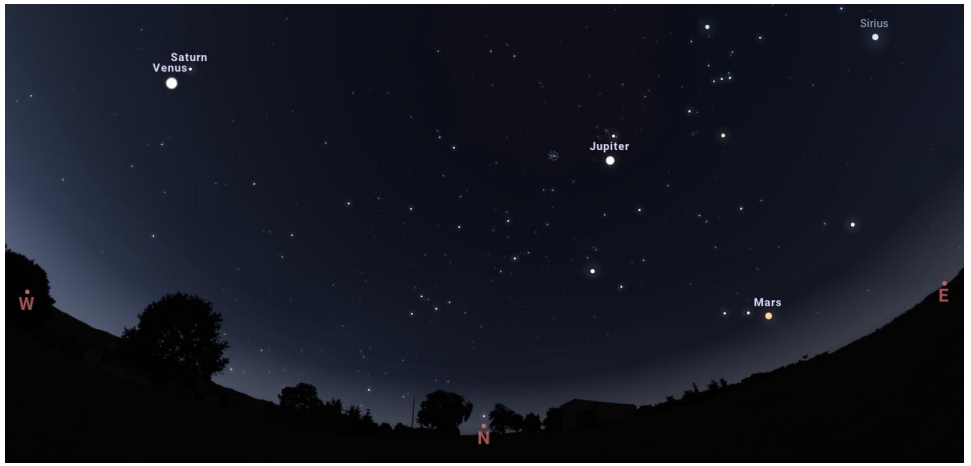
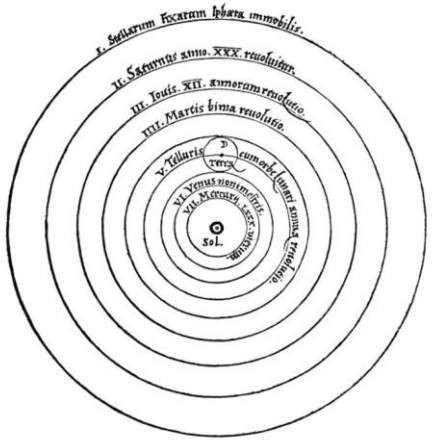
Question

- How does observing the planets establish that Mercury's and Venus' orbits are located inside the orbit of Earth?





Question

- The stars move steadily from east to west during the course of a night.
  - Why?

Steve Torrence, CC BY 3.0, via Wikimedia Commons

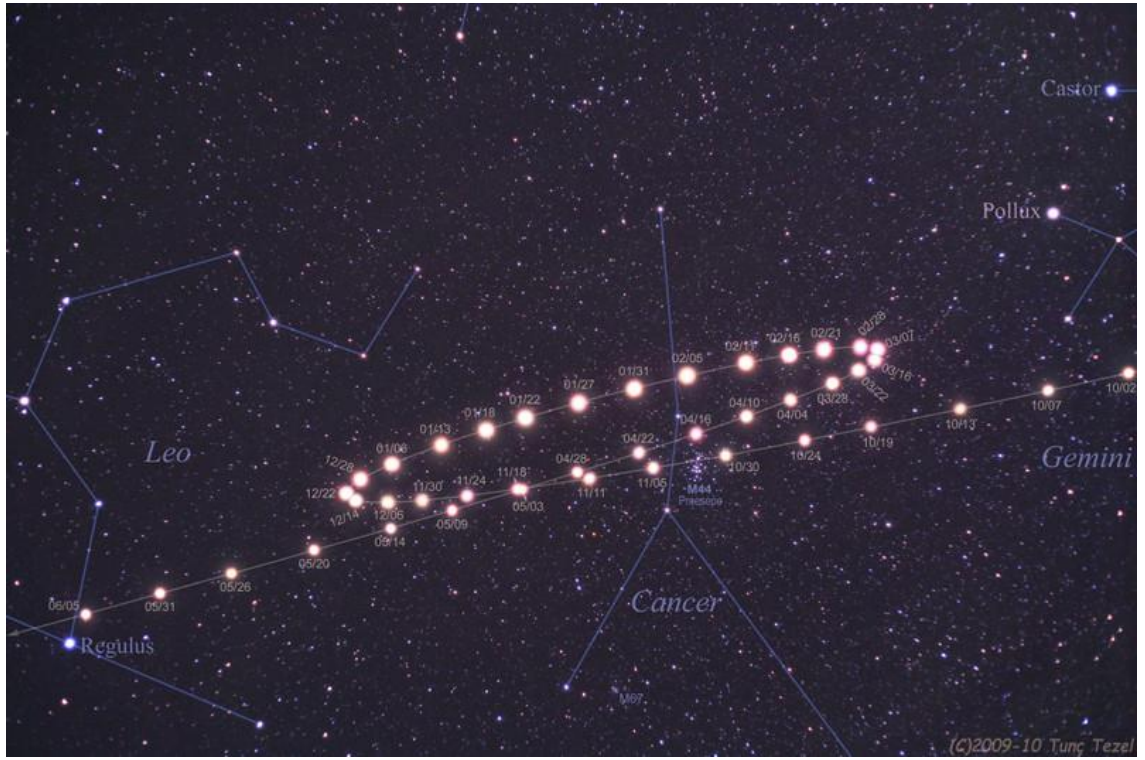
Question

- The stars in the evening sky move steadily from east to west during the course of a year.
  - Why?

Steve Torrence, CC BY 3.0, via Wikimedia Commons

Question

- Does the brightness of Mars change?



Question

- In Ptolemy's model, the epicycle's center moves fastest when it is _____ Earth.
  a) closest to
  b) furthest from

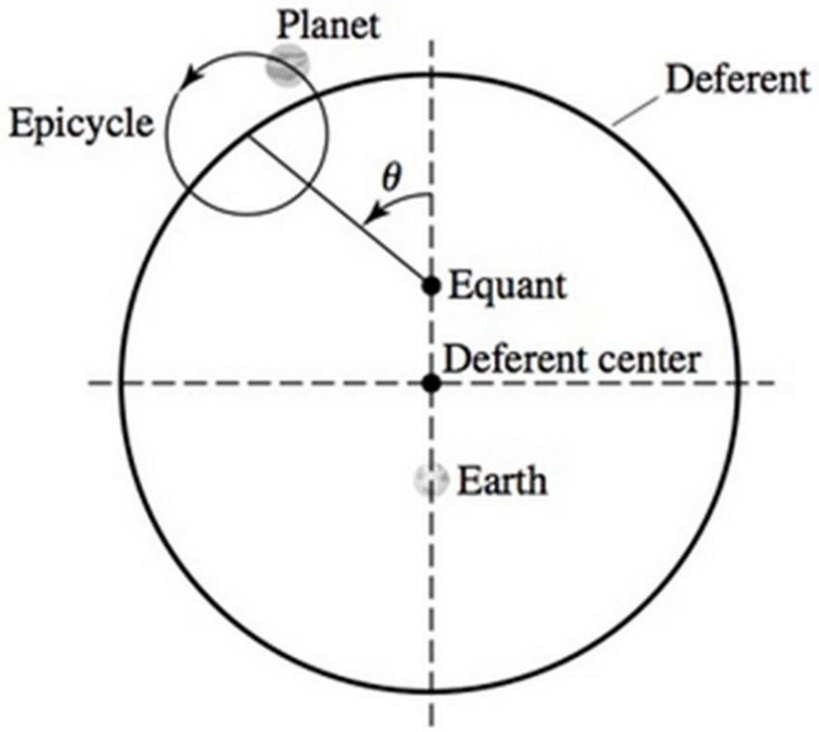
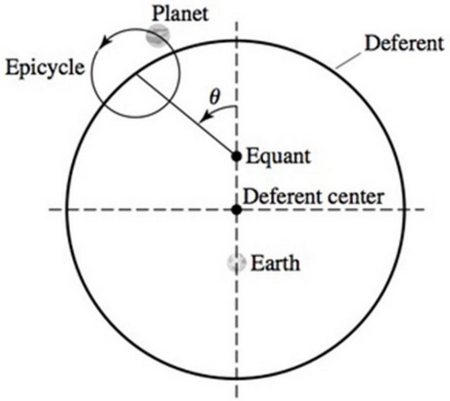


FIGURE 3 The Ptolemaic model of planetary motion.

Question

- Are there similarities between Ptolemy's model and Kepler's laws of planetary motion?



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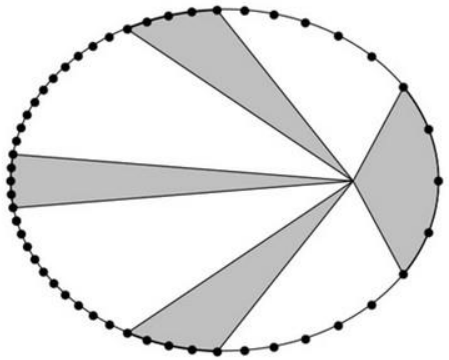
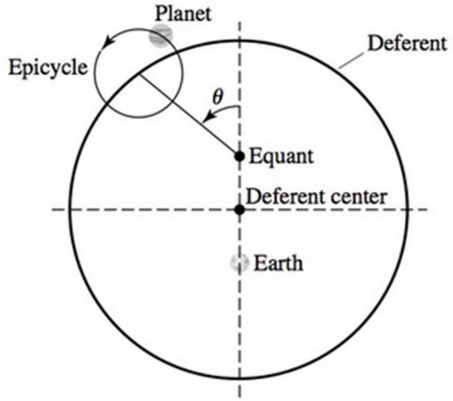


FIGURE 2 Kepler's second law states that the area swept out by a line between a planet and the focus of an ellipse is always the same for a given time interval, regardless of the planet's position in its orbit. The dots are evenly spaced in time.

Question

- Ptolemy's model
  - A planet moves around the epicycle's center.
  - The epicycle's center moves around Earth, fastest when it is closest to Earth.
- Kepler's laws of planetary motion
  - A planet moves around the Sun.
  - Earth moves around the Sun, fastest when it is closest to the Sun.
- Are there similarities between Ptolemy's model and Kepler's laws of planetary motion?



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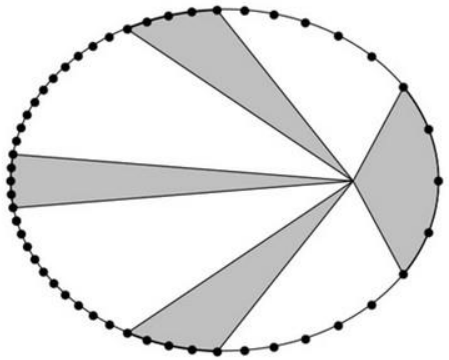

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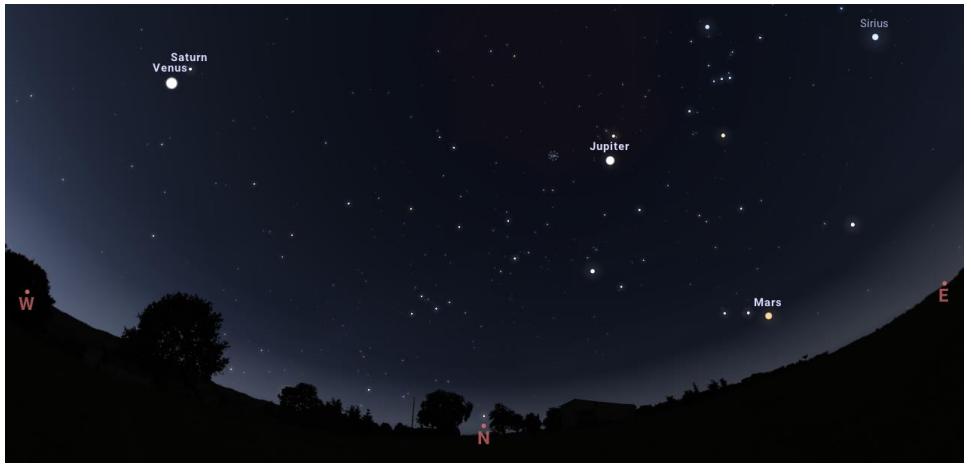

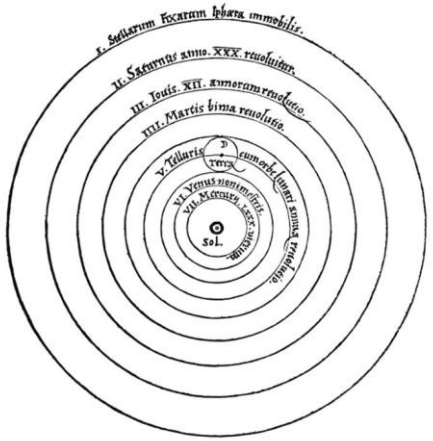

Question

- Which angle is the angular distance between the Sun and an inferior planet (e.g. Mercury) in the sky?

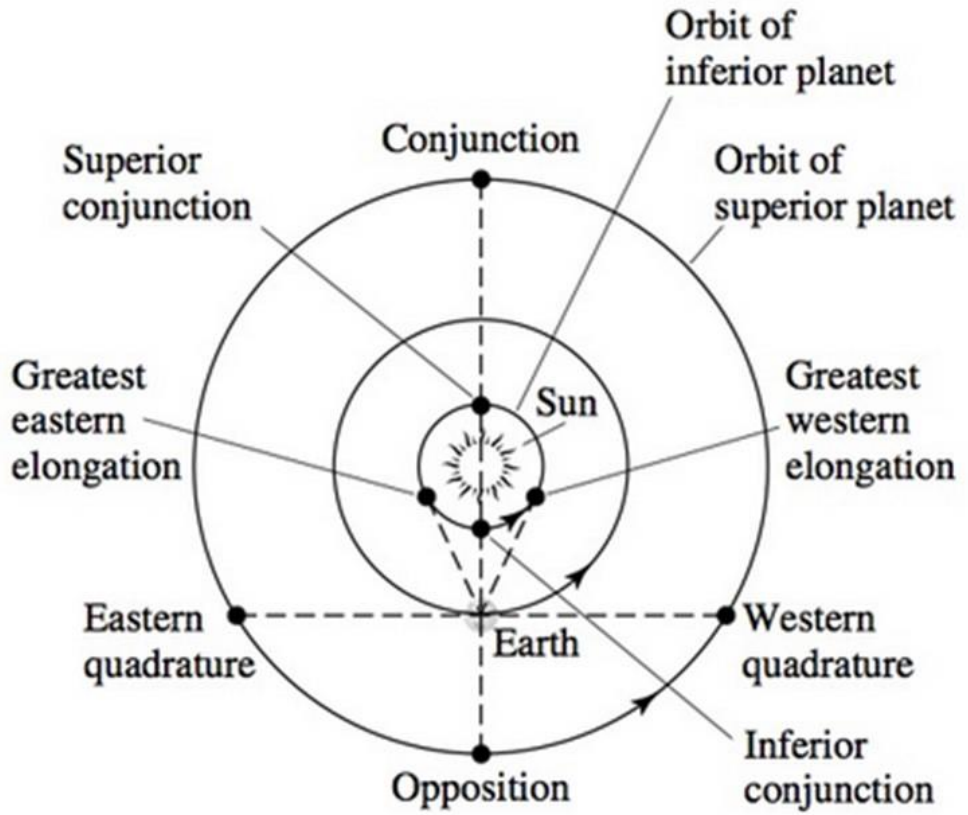

FIGURE 5 Orbital configurations of the planets.

Question

- The Copernican model had the ability to establish the order of the inferior planets from the Sun.
- An inferior planet with a smaller greatest elongation is _____ the Sun.
  a) closer to
  b) further from

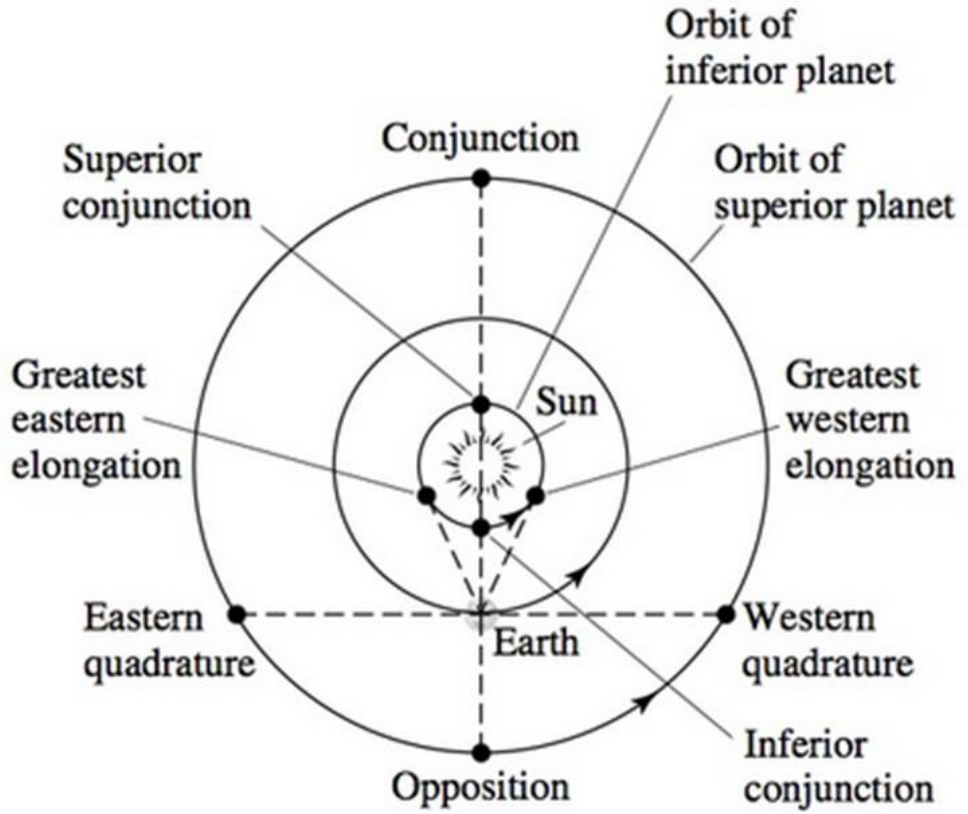

FIGURE 5 Orbital configurations of the planets.

Question

- The Copernican model had the ability to establish the relative distances of the inferior planets from the Sun.
- Mercury has a greatest elongation of 28°. Can you calculate Mercury's distance relative to Earth's distance from the Sun?

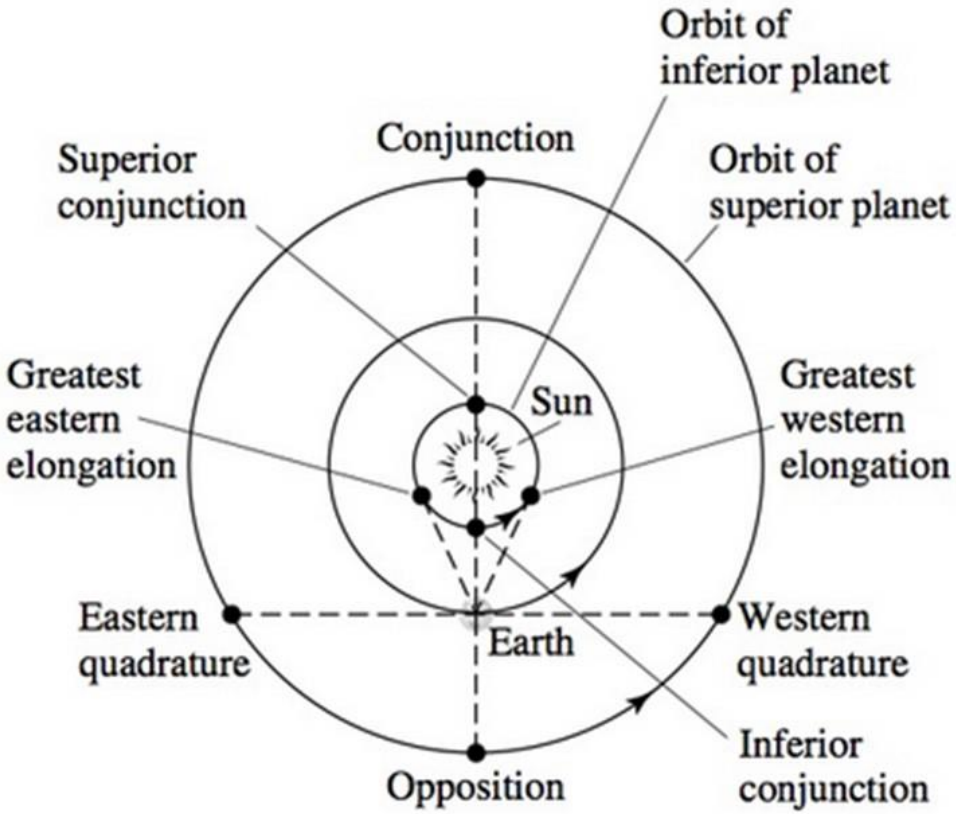

FIGURE 5 Orbital configurations of the planets.

Question

- Was the increased brightness of the planets during their retrograde phases also explained through the Copernican model?