

Planetary Orbit Simulator – Posttest

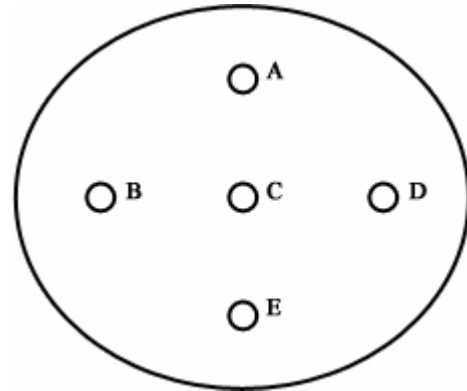
Answer the following questions.

Question 1: Which of the following is not part of Kepler's contribution to planetary orbits?

- a) shapes of the orbit
- b) speeds of planets in their orbit
- c) orbital period
- d) gravity

Question 2: Which point or points in the figure to the right is a focus of the ellipse?

- a) A, E
- b) C
- c) B, D
- d) B, C, D
- e) A, C, E

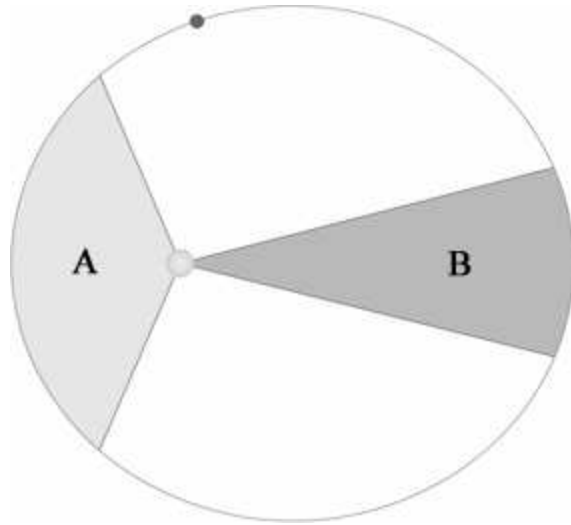


Question 3: In an orbit, the planet is almost always

- a) moving directly away from the sun.
- b) moving directly towards the sun.
- c) neither moving away nor towards the sun.
- d) moving in a random direction.

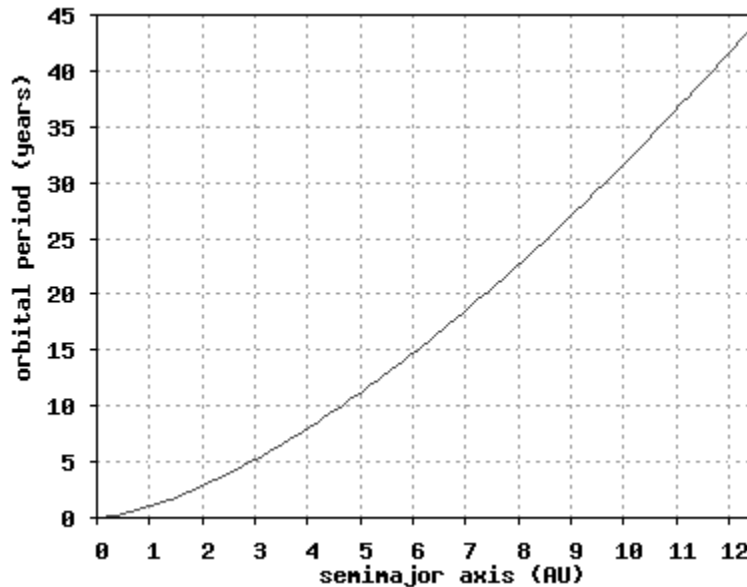
Question 4: The speed of a planet in orbit is

- a) constant.
- b) always speeding up, but barely noticeable.
- c) always slowing down, but barely noticeable.
- d) sometimes speeding up and sometimes slowing down.



Question 5: The areas in regions A and B are equal in size. Which of the following statements are true?

- a) The orbital path length subtended by region A is longer than that given by region B. Therefore it will take the planet longer to move through region A.
- b) The planet will cover the distances subtended by regions A and B in equal amounts of time because the planet moves faster through region A than region B.
- c) The planet will take longer to move through region B because it is moving slower in region B than it is in region A.



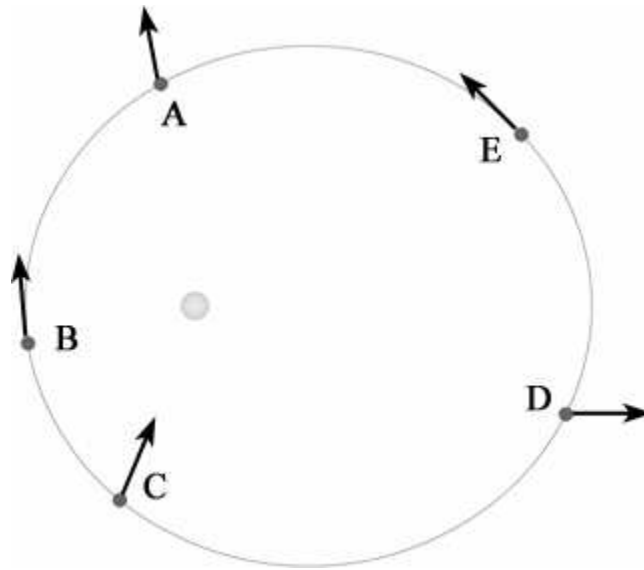
Question 6: If a planet has an orbital radius four times earth's, what will its period be?

- a) half as large
- b) the same

- c) four times as much
- d) eight times as much
- e) none of the above

Question 7: Which of the orbital distances below correspond to an eccentricity of 0.1?

- a) 0.5 AU
- b) 1 AU
- c) 4 AU
- d) 13.6 AU
- e) all of the choices are physically possible



Question 8: If the arrows depicted in the picture represent acceleration, which planet or planets is shown correctly? (Planets can be orbiting either clockwise or counterclockwise.)

- a) A
- b) C
- c) D
- d) B, E
- e) A, C

Question 9: If the arrows depicted in the picture represent velocity, which planet or planets is shown correctly? (Planets can be orbiting either clockwise or counterclockwise.)

- a) A
- b) C
- c) D
- d) B, E

Question 10: If a planet has a semimajor axis of 6 and an eccentricity of 0.1, how far is the planet at [aphelion/perihelion]?

- a) 0.6
- b) 5.4
- c) 5.9
- d) 6.1
- e) 6.6
- f) 60