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