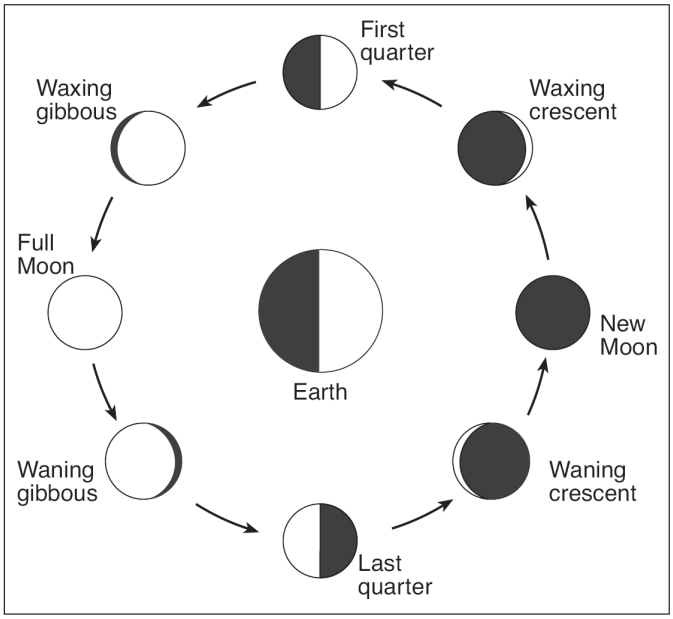
Mid Term Prep-Ellipses

1. Base your answer to the following question on

the diagram below, which shows positions of the Moon in its orbit and phases of the Moon as viewed from New York State.

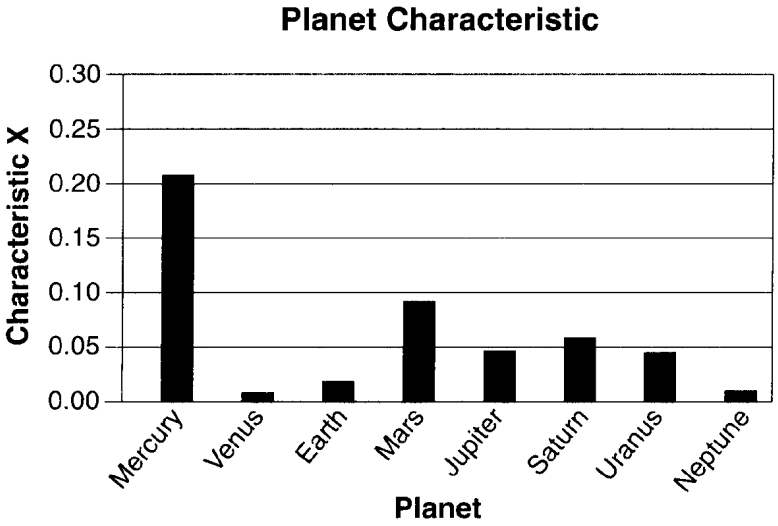


(Not drawn to scale)

What is the eccentricity of the Moon's orbit?

A) 0.017 B) 0.055 C) 0.386 D) 0.723

2. The bar graph below shows one planetary characteristic, identified as *X*, plotted for the planets of our solar system.



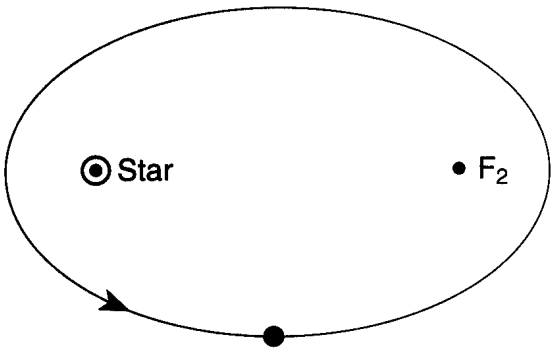
Which characteristic of the planets in our solar system is represented by *X*?

A) mass B) density
C) eccentricity of orbit D) period of rotation

3. Which planet has the *least* distance between the two foci of its elliptical orbit?

   A) Venus B) Earth
   C) Mars D) Jupiter

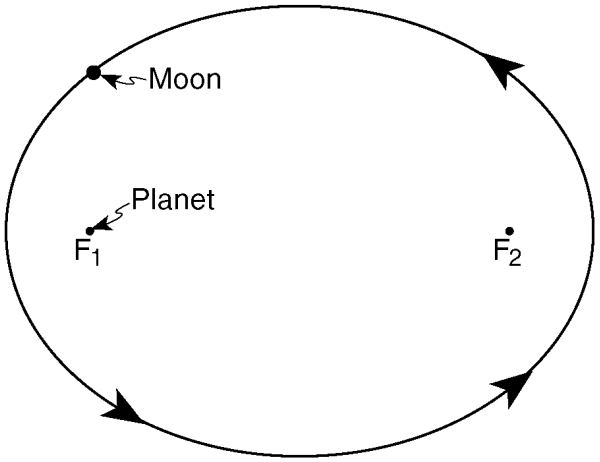
4. The diagram below shows the elliptical orbit of a planet revolving around a star. The star and F_2 are the foci of this ellipse.



   What is the approximate eccentricity of this ellipse?

   A) 0.22 B) 0.47 C) 0.68 D) 1.47

5. The diagram below represents the elliptical orbit of a moon revolving around a planet. The foci of this orbit are the points labeled F_1 and F_2.



(Drawn to scale)

   What is the approximate eccentricity of this elliptical orbit?

   A) 0.3 B) 0.5 C) 0.7 D) 1.4

6. Which planet's orbit around the Sun is most nearly circular?

   A) Mercury B) Neptune
   C) Pluto D) Venus

7. Which planet has an orbital eccentricity most like the orbital eccentricity of the Moon?

   A) Pluto B) Saturn
   C) Mars D) Mercury

8. Which object is located at one foci of the elliptical orbit of Mars?

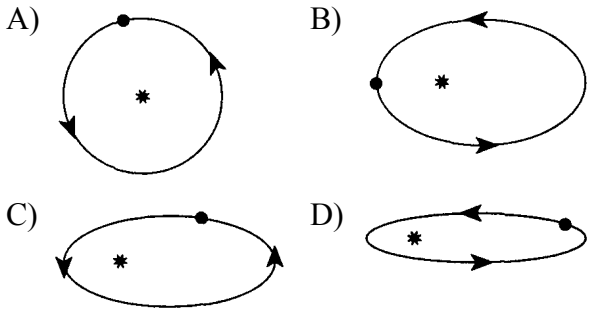
   A) the Sun B) *Betelgeuse*
   C) Earth D) Jupiter

9. The shape of the orbits of most of the planets in the solar system would best be described as

   A) elliptical and very elongated
   B) parabolic
   C) nearly circular
   D) perfectly circular

10. Which diagram shows a planet with the *least* eccentric orbit?

   (Key: • = planet * = star)



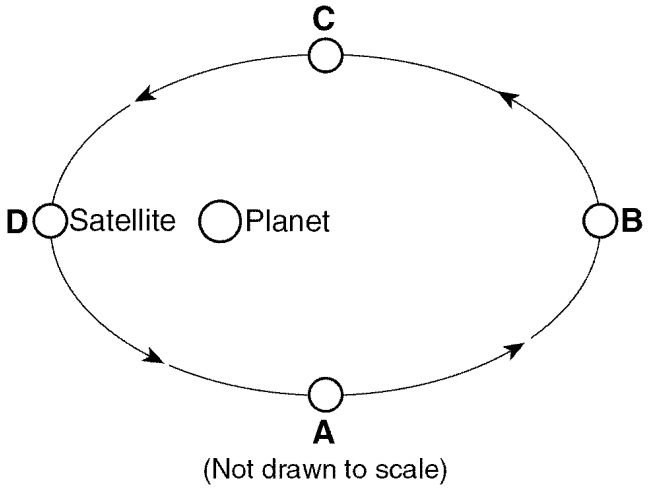
11. If the average distance between Earth and the Sun were doubled, what changes would occur in the Sun's gravitational pull on Earth and Earth's period of revolution?

   A) Gravitational pull would decrease and period of revolution would increase.
   B) Gravitational pull would decrease and period of revolution would decrease.
   C) Gravitational pull would increase and period of revolution would increase.
   D) Gravitational pull would increase and period of revolution would decrease.

12. One factor responsible for the strength of gravitational attraction between a planet and the Sun is the

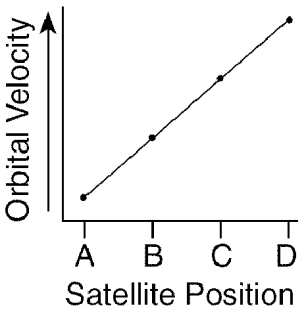
    A) degree of tilt of the planet's axis
    B) distance between the planet and the Sun
    C) planet's period of rotation
    D) amount of insolation given off by the Sun

13. The diagram below shows a satellite in four different positions as it revolves around a planet.

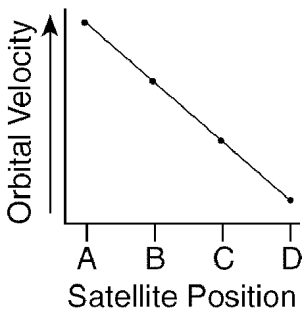


Which graph best represents the changes in this satellite's orbital velocity as it revolves around the planet?

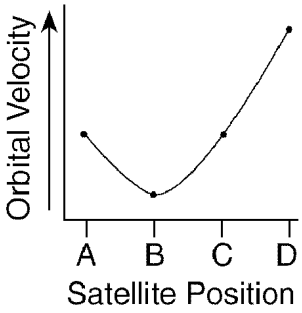
A)



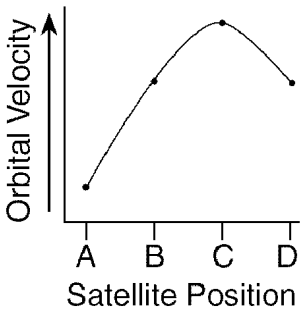
B)



C)

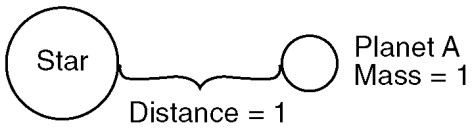


D)

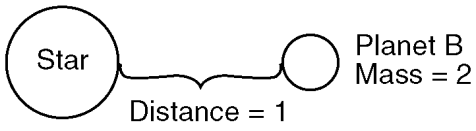


14. In each diagram below, the mass of the star is the same. In which diagram is the force of gravity greatest between the star and the planet shown?

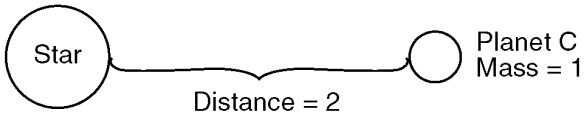
A)



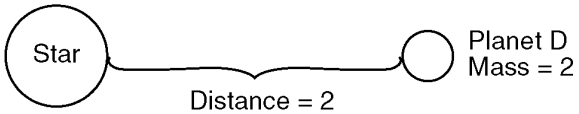
B)



C)

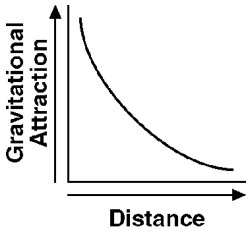


D)

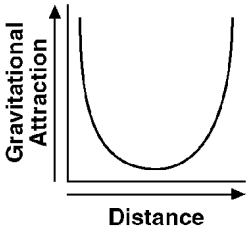


15. Which graph best represents the change in gravitational attraction between the Sun and a comet as the distance between them increases?

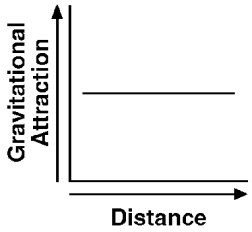
A)



B)



C)



D)