

Physics: Chapter 7.1 Quiz

Name _____

Briefly answer each question.

1. State Kepler's Three Laws

a. First Law:

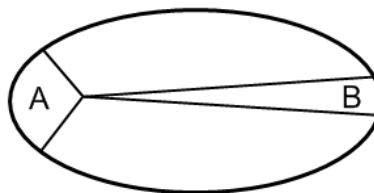
b. Second Law:

c. Third Law:

2. A planet is in orbit as shown below. Where are the two possible locations for a Sun?



3. In the picture below, the area in section A = the area in section B.



a. According to Kepler's 2nd law, which section takes more time for the planet to travel?

b. What does this mean about the relative speed of an orbiting body?

Solve each problem. Show all work.

4. The average orbital distance of Mars is 1.52 times the average orbital distance of the Earth. Knowing that the Earth orbits the sun in approximately 365 days, use Kepler's law to predict the time for Mars to orbit the sun in Earth days.
5. Two satellites are in orbit around a planet. One satellite has an orbital radius of 8×10^6 m. The period of rotation for this satellite is 1×10^6 s. The other satellite has an orbital radius of 2×10^7 m. What is this satellite's period of rotation?
6. A Martian lander is to be placed in orbit around Mars at a mean altitude of 100 km. What will be the period of the Martian lander?
7. What is the force of attraction between a 60 kg student in the senior parking lot and the school? The distance between the two is 100 m and the mass of the school is 65,000,000 kg.
8. While on the surface of the Earth a student has a weight of 450 N. If she is moved twice as far from the center of the Earth, how does her new weight compare to her old?