

Universal Gravitation

Chapter Eight

Physics

$$m_e = 5.98 \times 10^{24} \text{ kg}$$

$$r_e = 6.38 \times 10^6 \text{ m}$$

$$r_{oc} = 1.5 \times 10^{11} \text{ m (orbital)}$$

$$m_s = 1.99 \times 10^{30} \text{ kg}$$

$$r_s = 6.96 \times 10^8 \text{ m}$$

$$m_v = 4.87 \times 10^{24} \text{ kg}$$

$$r_{ov} = 1.08 \times 10^{11} \text{ m}$$

$$m_m = 7.22 \times 10^{22} \text{ kg}$$

$$r_m = 1.785 \times 10^6 \text{ m}$$

$$r_m = 3.9 \times 10^8 \text{ m (from earth)}$$

$$T_m = 27.3 \text{ days}$$

1. Find the period of a planet that is $1.89 \times 10^{11} \text{ m}$ from the sun using Newton's Variation of Kepler's 3rd Law?
2. What would "g" be on the surface of the sun if it imploded and became $\frac{1}{4}$ its present size?...still has same mass....
3. What is the velocity of the planet in #1 as it circles the sun?
4. State Kepler's Three Laws of Planetary Motion:
 - 1)
 - 2)
 - 3)
5. Mr. G (90.0 kg) stands 25 cm away from his 925 kg Corvette. What gravitational force of attraction is present? (note the distance is in centimeters)
6. Neptune is 30 times further from the sun than the earth is. What is its period?