

Module 7 Review

- ☐ Know what uniform circular motion is
- ☐ Know how the vectors for velocity, centripetal force, and centripetal acceleration are related
- ☐ Calculate the centripetal force or centripetal acceleration
- ☐ Calculate the gravitational force between two objects
- ☐ Know that the centripetal force will equal the force causing the object to move in a circle (either the friction force, tension in a string, or gravity force)
- ☐ Understand how period and frequency are related
- ☐ Know the units for measuring period and frequency
- ☐ Calculate period or frequency
- ☐ Calculate the circumference of a circle
- ☐ Honors: Calculate the speed of a planet given its distance from the sun and mass of the sun.

$$\text{Centripetal Force} = \frac{\text{Mass} \times \text{Velocity}^2}{\text{Radius}}$$

$$\text{Centripetal Acceleration} = \frac{\text{Velocity}^2}{\text{Radius}}$$

$$\text{Friction Force} = \mu \times \text{Mass} \times \text{Gravity}$$

$$\text{Gravity} = 9.81 \text{ m/s}^2$$

$$\text{Gravity Force} = \frac{G \times \text{Mass}_1 \times \text{Mass}_2}{\text{Radius}^2}$$

$$G = 6.67 \times 10^{-11}$$

$$\text{Frequency} = 1/\text{Period}$$

$$\text{Circumference} = 2\pi \times \text{Radius}$$

Module 8 Review

- ☐ Know the definitions of work, power, potential energy, and kinetic energy
- ☐ Know the units for work, power, potential energy, and kinetic energy
- ☐ Calculate the amount of work
- ☐ Calculate the power
- ☐ Understand how potential and kinetic energy are related
- ☐ Calculate potential and kinetic energy
- ☐ Understand how a system loses energy to friction
- ☐ Use PE, KE and the work done by friction to find the distance an object moves or its speed
- ☐ Honors: Use the dot product of Force • Distance to calculate work.

$$\text{Work} = \text{Force}_{\parallel} \times \text{Distance}$$

$$\text{Power} = \text{Work}/\text{Time}$$

$$\text{Potential energy} = \text{Mass} \times \text{Gravity} \times \text{Height}$$

$$\text{Kinetic energy} = \frac{1}{2} \times \text{Mass} \times \text{Velocity}^2$$