

From Yesterday's Practice

Universal Gravitation Questions

On Your Own #1

- Two spheres of mass 35kg are 60m apart.
- A) What force does one exert on the other?

$$\begin{aligned}\vec{F}_{gravity} &= \frac{GM_1 M_2}{R^2} = \frac{(6.67 \times 10^{-11})(35\text{kg})(35\text{kg})}{(60\text{m})^2} \\ &= \frac{(8.17 \times 10^{-8})}{(3600\text{m})} = 2.27 \times 10^{-11}\end{aligned}$$

On Your Own #1

- Two spheres of mass 35kg are 60m apart.
B.) If the mass of one is tripled and the radius is quadrupled how does the force change?

$$\begin{aligned}\vec{F}_{gravity} &= \frac{GM_1 M_2}{R^2} = \frac{(6.67 \times 10^{-11})(35kg)(105kg)}{(240m)^2} \\ &= \frac{(2.45 \times 10^{-7})}{(57600m)} = 4.25 \times 10^{-12}\end{aligned}$$

On Your Own #2

- Two spheres of equal mass have a force of gravity of 7×10^{-9} exerted on each other. If the distance between them is 7m, find the mass.

$$\vec{F}_{gravity} = \frac{GM_1 M_2}{R^2}$$

$$M = \frac{(\vec{F}_{gravity})(R^2)}{G} \quad M = \frac{(7 \times 10^{-9})(7^2)}{(6.67 \times 10^{-11})}$$

= 5142.43kg then divide M by 2 to get the two EQUAL MASSES! (2571.215 kg for each mass)

On Your Own #3

- Find the value of the gravitational acceleration g. The mass of the earth is 6.0×10^{24} kg.

HA! Tricky!

You already have this one memorized!

Sample Questions

Simple Pendulum
& Mass Spring Systems
Example Questions

On Your Own #1

Which of the following factors affect the period (think T) of a simple pendulum that is oscillating in simple harmonic motion?

I.) Mass

II.) Length

III.) Amplitude

A.) I only

B.) II only

C.) I & II only

D.) I & III only

On Your Own #1

Which of the following factors affect the period (think T) of a simple pendulum that is oscillating in simple harmonic motion?

I.) Mass

II.) Length

III.) Amplitude

A.) I only

B.) II only

C.) I & II only

D.) I & III only

On Your Own #2

A load of 50 N attached to a spring hanging vertically stretches the spring 5.0 cm. The spring is now placed horizontally on a table and stretched 11.0 cm. What force is required to stretch the spring this amount?

$$F_s = kx$$

$$50 = k(0.05)$$

$$k =$$

$$F_s = kx$$

$$F_s = (1000)(0.11)$$

$$F_s =$$