Homework

Complete the following problems. Please show all work done to arrive at your answer.

1. Solve for x

$3x^2 = 6x$

$\frac{}{x} \quad \frac{}{x}$

$\frac{3}{3}x = \frac{6}{3}$

$x = 2$

2. Solve for d

$2d^4 - 32 = 0$

$2(d^4 - 16) = 0$

$d = 2$

3. Solve for R

$F = \frac{G m_1 m_2}{R^2}$

$R^2 F = \frac{G m_1 m_2}{R^2} R^2$

$\frac{R^2 F}{F} = \frac{G m_1 m_2}{F}$

$R^2 = \frac{G m_1 m_2}{F}$

$R = \sqrt{\frac{G m_1 m_2}{F}}$

4. Solve for L

$T = 2\pi\sqrt{\frac{L}{g}}$

$\frac{T}{2\pi} = \frac{2\pi}{2\pi}\sqrt{\frac{L}{g}}$

$g\left(\frac{T}{2\pi}\right)^2 = \frac{L}{g} g$

$L = g\frac{T^2}{4\pi^2}$

5. The Earth is an average of 9.3×10^7 miles from the Sun. How far is this in kilometers if there are 5280 feet in a mile and 3.28 feet in a meter?

$$\frac{9.3\times10^{7}\ \text{mi}}{1}\left|\frac{5280\ \text{ft}}{1\ \text{mi}}\right|\frac{1\ \text{m}}{3.28\ \text{ft}} = \frac{4.9104}{3.28}\times10^{11}\ \text{m}$$

Earth to Sun Distance $= 1.497\times10^{11}$ m

6. An airplane cruises at an altitude of 35,000 feet at a speed of 425 miles per hour. Determine the altitude of the plane in meters and its speed in meters per second.

$$\frac{35000\ \text{ft}}{1}\left|\frac{1\ \text{m}}{3.28\ \text{ft}}\right. = 10671\ \text{m}$$

altitude

$$\frac{425\ \text{mi}}{\text{hr}}\left|\frac{5280\ \text{ft}}{1\ \text{mi}}\right|\frac{1\ \text{m}}{3.28\ \text{ft}}\left|\frac{1\ \text{hr}}{60\ \text{min}}\right|\frac{1\ \text{min}}{60\ \text{s}}$$

Speed $= 190$ m/s

7. A rectangular back yard patio area is measured by a home owner to have the following dimensions: 23.55 feet, 20.1 feet, 23 feet, and 20.5 feet. Calculate the area and perimeter of the patio space following the rules for significant figures.

$A = L \times W$

$A_1 = 23.55\,ft \times 20.5\,ft$
$= 483\,ft^2$

$A_2 = 23\,ft \times 20.1\,ft$
$= 460\,ft^2$

$P = \Sigma sides = 87\,ft$

Quiz time!

You may use your reference tables, a calculator, and a pen/pencil.

Please sit every other seat.