PHYS 2211 Homework 2
Chapter 1 Problems 5, 14
Chapter 2 Problems 7, 24, 30

Sunday, August 28, 2011
12:43 PM

1 furlong = 201.168 m
1 rod = 5.0292 m
1 chain = 20.117 m

$\Delta X = 4$ furlongs

a) $4 \text{ furlongs} \left(\frac{201.168 \text{ m}}{1 \text{ furlong}}\right)\left(\frac{1 \text{ rod}}{5.0292 \text{ m}}\right) = 160 \text{ rod}$

b) $4 \text{ furlongs} \left(\frac{201.168 \text{ m}}{1 \text{ furlong}}\right)\left(\frac{1 \text{ chain}}{20.117 \text{ m}}\right) = 40 \text{ chains}$ //

Chapter 1 Problem 14

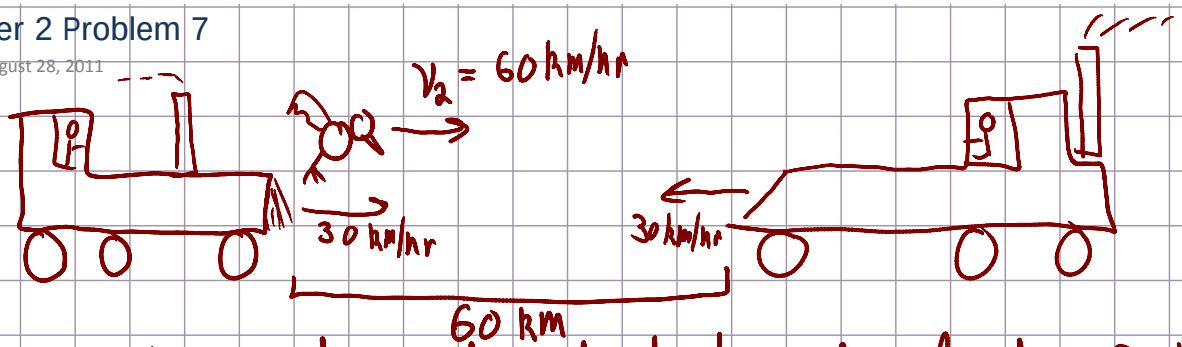
Sunday, August 28, 2011
12:44 PM

a) $1 \text{ Microcentury} \left(\frac{1 \times 10^{-6} \text{ cent}}{1 \text{ microcent}}\right)\left(\frac{100 \text{ years}}{1 \text{ cent}}\right)\left(\frac{365 \text{ days}}{1 \text{ year}}\right)\left(\frac{24 \text{ hrs}}{1 \text{ day}}\right)\left(\frac{60 \text{ min}}{1 \text{ hr}}\right) = 52.5 \text{ Min}$

b) $\left(\frac{52.56 - 50 \text{ min}}{52.56}\right) \times 100 = 4.9\%$

Chapter 2 Problem 7

Sunday, August 28, 2011
12:44 PM



trains hit when both have travel $d_1 = 30km$

$$v_1 = \frac{d_1}{t_1}$$

$$t_1 = \frac{d_1}{v_1} = \frac{30\ km}{30\ km/hr}$$

$$t_1 = 1\ hr$$

$$v_2 = \frac{d_2}{t_2}$$

$$d_2 = v_2 t_2$$

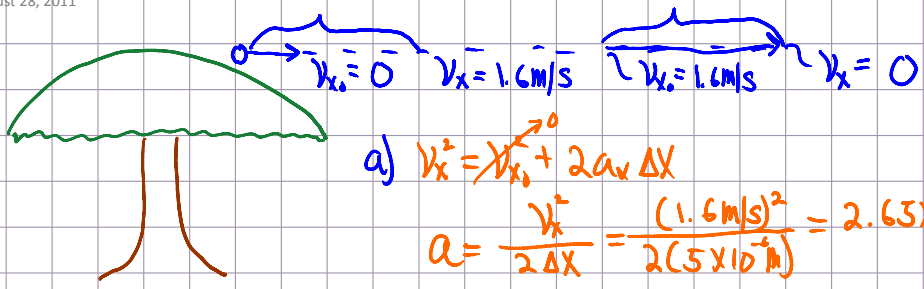
$$d_2 = (60\ km/hr)(1\ hr)$$

$$d_2 = 60km$$

Chapter 2 Problem 24

Sunday, August 28, 2011
12:44 PM

$\Delta x = 5\times10^{-6}\,m$ $\quad \Delta x_2 = 1\times10^{-3}\,m$ $\quad g = 9.8\,m/s^2$



a) $v_x^2 = \cancel{v_{x_0}^{2\to 0}} + 2a_x\Delta x$

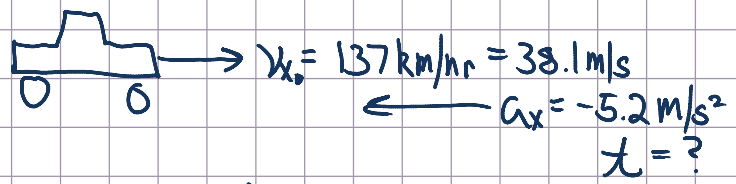
$a = \dfrac{v_x^2}{2\Delta x} = \dfrac{(1.6\,m/s)^2}{2(5\times10^{-6}\,m)} = 2.63\times10^5\,m/s^2$ or $\dfrac{2.56\times10^3\,m/s^2}{9.8\,m/s^2} = 26\times10^4\,g's$

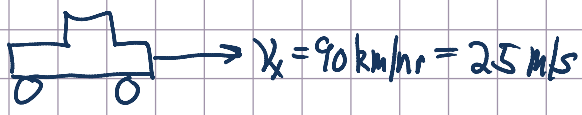
b) $\cancel{v_x^{2\to 0}} = v_{x_0}^2 + 2a_x\Delta x_2$

$a_x = \dfrac{-v_{x_0}^2}{2\Delta x_2} = \dfrac{-(1.6\,m/s)^2}{2(1\times10^{-3}\,m)} = -1.28\times10^3\,m/s^2$ or $-1.3\times10^2\,g's$

Chapter 2 Problem 30

Sunday, August 28, 2011
12:44 PM





$$v_x = v_{x_0} + a_x t$$

$$t = \frac{v_x - v_{x_0}}{a_x} = 2.5\ s$$

b) $\Delta x = v_{x_0} t + \frac{1}{2} a_x t^2$