grams

Math 1030 #3b

ft^2

Units and Conversions

Solving Problems

meters

^oC

EX 1: Use the units to help solve these problems.

a) What is the <u>total cost</u> of 1.2 cubic yards of soil if it sells for $24 per cubic yard?

(note: 1 cubic yard = 1 yd³)

$$1.2 \text{ yd}^{\cancel{3}} \left(\frac{\$24}{1 \text{ yd}^{\cancel{3}}} \right) = 1.2(\$24) = \$28.80$$

b) Suppose you earn $8.50 per hour and work 24 eight-hour days in a month. How much do you earn in that month?

$$\frac{\$8.50}{\cancel{hr}} \left(\frac{8 \cancel{hr}}{1 \cancel{day}} \right) \left(\frac{24 \cancel{days}}{1 \text{ mo}} \right) = \$1632/\text{mo}$$

c) Each year over 250,000 Americans die of a sudden cardiac death. Assuming a population of 305 million, what is mortality rate in units of deaths per 100,000 people?

$$\frac{250,000 \text{ deaths}}{305,000,000 \text{ people}} = \frac{250000 \text{ deaths}}{3050 \ (100,000 \text{ people})}$$

$$\simeq 81.967 \ \frac{\text{deaths}}{100000 \text{ people}}$$

$$\simeq 82 \text{ deaths}/100000 \text{ people}$$

EX 2: Use conversions to answer these questions.
Assume 1 € (1 euro) = $1.30.

a) Bottled water costs 1.75 € per liter in Paris. What
is that in dollars per quart? (1 qt = 0.946 liters.)

$$\frac{1.75\ \cancel{€}}{\cancel{L}}\left(\frac{\$1.30}{1\ \cancel{€}}\right)\left(\frac{0.946\ \cancel{L}}{1\ qt}\right) = \frac{\$1.30\,(1.75)(0.946)}{qt}$$

$$\approx \$2.15/qt$$

b) As you leave Paris, you convert 4500 euros to dollars.
How many dollars do you receive?

$$4500\ \cancel{€}\left(\frac{\$1.30}{1\ \cancel{€}}\right) = \$5850$$

EX 3: Amazon's Kindle 2 has a capacity of 1.4 gigabytes (1.4 billion bytes). Assume that one byte corresponds to one character and an average page consists of 2000 characters.

   a) How many pages of text can a Kindle hold?

$$1{,}400{,}000{,}000 \text{ bytes} \left(\frac{1 \text{ char}}{1 \text{ byte}}\right)\left(\frac{1 \text{ pg}}{2000 \text{ char}}\right)$$

$$= 700{,}000 \text{ pgs}$$

   b) How many 500-page books can a kindle hold?

$$700{,}000 \text{ pgs} \left(\frac{1 \text{ book}}{500 \text{ pgs}}\right) = 1400 \text{ books}$$