Math 1030 #3b  \( \text{ft}^2 \)
Units and Conversions
Solving Problems  \( ^\circ \text{C} \)
grams
meters
EX 1: Use the units to help solve these problems.

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

\[
\text{note: } 1 \text{ cubic yard} = 1 \text{ yd}^3
\]

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

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?

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

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?

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

\[
\approx 81.967 \frac{\text{deaths}}{100000 \text{ people}}
\]

\[
\approx 82 \frac{\text{deaths}}{100000 \text{ people}}
\]
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.)

\[
\frac{1.75 \text{ €}}{\text{lt}} \cdot \frac{1 \text{ €}}{1.30 \text{ $}} \cdot \frac{0.946 \text{ qt}}{1 \text{ lt}} \approx 2.15 \text{ $/qt}
\]

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

\[
4500 \text{ €} \cdot \frac{1 \text{ €}}{1.30 \text{ $}} = 5850 \text{ $}
\]
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?

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