Name Key Homework 9.1 Day 1

1-3 Identify the units of the following quantities. State the units mathematically (mi/hr) and in words (miles per hour)

1) Your average speed on a long walk, found by dividing distance traveled in miles by time elapsed in hours.

$\frac{mi}{hr}$ miles per hour

2) The cost of a piece of carpet, found by dividing its price in dollars by its area in square yards.

$\frac{\$}{yd^2}$ dollar per square yard

3) The unit price of rice in Japan, found by dividing the price in yen by the weight in kilograms.

$\frac{yen}{kg}$ yen per kilogram

4-9 Solve using dimensional analysis.

4) Convert 24 feet to yards

$24\ ft \cdot \frac{1\ yd}{3\ ft} = 8\ yd$

5) Convert 25 hours to seconds

$25\ hours \cdot \frac{60\ min}{1\ hour} \cdot \frac{60\ sec}{1\ min} = 90{,}000\ sec$

6) Convert 5 tons to ounces

$5\ tons \cdot \frac{2000\ lb}{1\ ton} \cdot \frac{16\ oz}{1\ lb} = 160{,}000\ oz$

7) Convert 1000 inches to miles

$1000\ in. \cdot \frac{1\ ft}{12\ in.} \cdot \frac{1\ mi}{5280\ ft} = .0158\ mi$

8) Convert 3 years to hours (neglecting leap years)

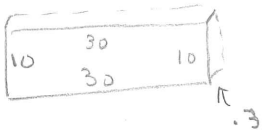
$3\ years \cdot \frac{365\ days}{1\ year} \cdot \frac{24\ hr}{1\ day} = 26{,}280\ hr$

9) Convert 30 feet per second to miles per hour

$\frac{30\ ft}{sec} \cdot \frac{1\ mile}{5280\ ft} \cdot \frac{60\ sec}{1\ min} \cdot \frac{60\ min}{1\ hr} = 20.45\ mph$

$20.45\ \frac{miles}{hour}$

10-11 A flat-bottom reflecting pool has a length of 30 yards, a width of 10 yards, and depth of 0.3 yard.



10) Find the surface area of the pool.

SA Bottom: $10 \cdot 30 = 300\ yd^2$

SA Sides: $2(10(.3)) + 2(30(.3))$

$= 6 + 18 = 24\ yd^2$

$A = b \cdot h$

Total = $300 + 24 = \boxed{324\ yd^2}$

11) Find the volume of water it holds.

$V = l \cdot w \cdot h = (30\ yd) \cdot (10\ yd)(.3\ yd) = \boxed{90\ yd^3}$

12-16 Use the currency exchange rates from table 2.1 on your reference sheet.

12) You arrive in London with $400. How many pounds can you buy?

$(\$400)\ \frac{.7072\ \text{Pound}}{\$1} = 282.88\ \text{Pounds}$

13) You return from Mexico with 3000 pesos. How much are they worth in US dollars?

$3000\ \text{peso} \cdot \frac{\$1}{15.19\ \text{peso}} = \$197.50$

14) Which is worth more 1 yen or 1 peso?

1 yen = 0.01007 $

1 peso = 0.06584 $ ← worth more

15) Gasoline sells for 1.2 euros/liter in Bonn. What is the price in US dollars per gallon? (1 gallon = 3.785 liters)

$1.2\ \frac{\text{euro}}{\text{liter}} \cdot \frac{3.785\ \text{L}}{1\ \text{gal}} \cdot \frac{\$1}{0.7965\ \text{euro}} = \$5.70\ \text{per gallon}$

16) Apples cost $2 per pound. How much would apples cost in yen per ounce?

$\frac{\$2}{\text{pound}} \cdot \frac{1\ \text{pound}}{16\ \text{oz}} \cdot \frac{99.34\ \text{yen}}{\$1} = 12.42\ \frac{\text{yen}}{\text{oz}}$