Math 118 - Dr. Miller - Homework #3: Dimension Analysis

1. Convert as indicated; round to the nearest tenth as needed:

    (a) $6.75 per hour to cents per minute

    (b) 12 cents per day to dollars per year

    (c) $12 per square yard to cents per square inch

    (d) 65 miles per hour to feet per second

    (e) 3 watts per hour to kilowatts per week

    (f) 3 square meters per minute to square centimeters per second

    (g) 6 liters per second to kiloliters per hour

    (h) a fourth of a kilogram per day to grams per hour

    (i) 16 feet per second to meters per second ($2.54\ cm\ =\ 1\ in$)

    (j) Challenge: $350\ in^3$ to liters ($1\ dm^3\ =\ 1\ \ell$)

2. Convert as indicated; round to the nearest tenth as needed:

    (a) 2.5 foot-pounds to inch-ounces

    (b) 32 feet per second per second ($\frac{ft}{sec^2}$) to kilometers per minute per minute ($\frac{km}{min^2}$)

    (c) 25 man-hours to team-minutes, where 1 team equals 10 men/people

    (d) 6.5 kilowatt-hours to watt-seconds

    (e) 19.5 kg-meters per second to foot-pounds per minute ($2.2\ lb = 1\ kg$, $2.54\ cm = 1\ in$)

    (f) $4.53 per day to minutes per penny

    (g) 75,432 square feet per hour to days per square mile

    (h) $6.75 per kilowatt-hour to watt-minutes per penny

    (i) 7.3 miles per hour to seconds per yard

1. (a) 11.3 cents per minute
   (b) $43.80 per year
   (c) 0.9 cents (not 90 cents!) per square inch
   (d) 95.3 feet per second
   (e) 0.5 kW per week
   (f) 500 cm^2 per second
   (g) 21.6 kℓ per hour
   (h) 10.4 grams per hour
   (i) 4.9 meters per second
   (j) 5.7 ℓ

2. (a) 480 $in \cdot oz$
   (b) 35.1 km per min^2
   (c) 150 $team \cdot minutes$
   (d) $23,400,000$ $W \cdot sec$
   (e) 8444.9 ft-lb per minute
   (f) 3.2 minutes per penny
   (g) 15.4 days per square mile
   (h) 88.9 watt-minutes per penny
   (i) 0.3 seconds (per 1 yard)