Physics Conversions Assignment

On a separate sheet of paper, calculate each of the following solutions. Show all your work and problem setups, and box in your answer.

1. Starting with the definition 1 in. = 2.54 cm, compute the number of kilometers in one mile, to five significant figures.

2. The density of water is 1 g/cm^3. What is this value in kilograms per cubic meter?

3. Convert the following speeds, as indicated: a) 60 miles per hour to feet per second b) 100 kilometers per hour to meters per second

4. What is the mass in kilograms of a person weighing 170 pounds?

5. Compute the number of seconds in a day, and in a year (365 days).

6. If one deutschmark (The German unit of currency) is worth 40 cents and gasoline costs 1.30 deutschmarks per liter, what is its cost in dollars per gallon?

7. The gasoline consumption of a small car is 17.0 kilometers per liter. How many miles per gallon is this?

8. The speed limit on a highway in Lower Slovonia was given as 150,000 furlongs per fortnight. How many miles per hour is this?

9. The piston displacement of a certain automobile engine is given as 2.0 liters. Using only the facts that 1 liter = 1000 cm^3 and 1 in. = 2.54 cm, express this volume in cubic inches.

10. What is the percent error in each of the following approximations of π? a) 22/7 b) 355/113

Conversion Factors

1 mile = 5280 feet = 1.609 kilometers
1 kilometer = 1000 meters = 0.6214 miles
1 meter = 100 centimeters = 3.281 feet = 39.37 inches
1 kilogram = 1000 grams = 2.205 pounds
1 liter = 1000 milliliters = 1000 cm^3
1 gallon = 3.788 liters
1 fortnight = 14 days
1 furlong = 1/8 mile