PAL Problem Set 1 for Phys 5A (Math Review 1)

Always explain your answers and show your work.

1. Scientific notation: Answer the questions below and explain your reasoning.

    a. Is it unusual for a human to have an age of 6×10^8 s?

    b. Would 10^6 g be a reasonable mass for an adult person?

2. Unit Conversion: The recommended daily allowance (RDA) of the trace metal magnesium is 410 mg/day for males. Express this quantity in g/day.

3. Unit Conversion: The RDA of the amino acid lysine recommended for adults is 12 mg per kg of body weight. How many grams per day should a 75 kg adult receive?

4. Unit Conversion: In Europe gasoline costs about 1.35 euros per liter. If you went to Europe when the euro was worth $1.25. What was the cost of gasoline per gallon? How does your answer compare to the price of gasoline in the United States? (1 gallon = 3.788 L)

5. Unit Conversion: A piece of paper has dimensions 11 cm by 5 cm. What is the area of the paper in cm^2 and in m^2?

6. Unit Conversion: A rectangular box has dimensions 11 cm by 5 cm by 3 cm. What is the volume of the box in cm^2 and in m^2?

7. Unit Conversion: A piece of land has an area of 2.8 acres. What is the area in square meters? (1 acre = 43560 ft^2, and 1 m = 3.28 ft)

8. Estimation: How could you determine the average thickness of a textbook page with an ordinary ruler? (this question requires no calculations)