



DEPARTMENT OF PHYSICS

Problem 1:

On an interstate highway in a rural region of Wyoming, a car is travelling at a speed of 38 m/s . Is this car exceeding the speed limit of 75 mi/h ? ($1 \text{ mi} = 1609.344 \text{ m}$)

Ans: (driving with 85 mi/h so exceeding)

Problem 2:

A worker is to paint the walls of a square room 8 ft high and 12 ft along each side. What surface area in square meters must she cover? ($1 \text{ ft} = 30.48 \text{ cm}$)

Ans: 35.58 m^2

Problem 3:

The volume of a wallet is 8.5 in^3 . Convert this volume to m^3 . ($1 \text{ in} = 2.54 \text{ cm}$)

Ans: $(1.39 \times 10^{-4} \text{ m}^3)$

Problem 4:

A solid piece of lead has a mass of 23.94 g and a volume of 2.1 cm^3 . From these data, calculate the density of lead in SI units (kg/m^3).

Ans: $1.14 \times 10^4 \text{ kg}/\text{m}^3$

Problem 5:

A pyramid has a height of 481 ft and its base covers an area of 13 acres . If the volume of a pyramid is given by the expression $V = \frac{1}{3} Bh$, where B is the area of the base and h is the height, find the volume of this pyramid in cubic meters. ($1 \text{ acre} = 43560 \text{ ft}^2$ and $1 \text{ ft} = 30 \text{ cm}$)

Ans: $2.57 \times 10^6 \text{ m}^3$