General Physics I
PHY 115

Prof. Huang

Advise

Hand Shake

Introduce yourself

Name

Major

Reason for taking this course

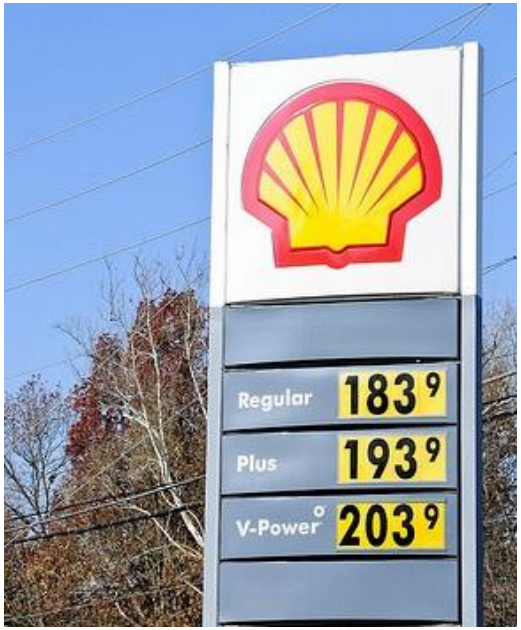
Something you like

Go around and exchange contact info

Emergency phone chain

Syllabus

Units



Measurements

Property	SI Base Unit	Derived Property
Length	Meter (m)	Area Volume
Mass	Kilogram (kg)	Density Weight
Time	Second (s)	

SI Prefixes in textbook

Unit Conversion

- What is the price of a bottle of coke?
- What is the price of one gallon of coke?

Conversion

- What is the speed limit in residential area?
- How many meters per second

Question

- How many meters does a car move in one second when it's moving at 25 miles per hour?

  Show the steps.

Answer

1. (1pt) Known: v = 25 mi/hr (Add a drawing)
2. (1pt) Unknown: v = ____ m/s
3. (1pt) Unit conversion factor

   1 mi = ____ km = _____m

   1 hr = ____ s
4. (1pt) Perform unit conversion

   25 mi = 25 mi *

   1 hr = 1 hr *

   25 mi/hr =
5. (1pt) The answer:

Feedback for the instructor

Quarter Page Survey

Quarter Page Lecture Survey

Measurement Inventory

Basic Concepts	Derived Concepts	Useful References	Problem Solving Skills
Length	Density	SI Base Units	Unit Conversion
Mass	Area	Unit Conversion Factors	
Time	Volume	SI Prefixes (bold)	

Read
Read
…
Read between the lines

How to Analyze a Problem

- Spacing in this book was generally done in units of points and picas: 12 points = 1 pica, and 6 picas = 1 inch. If a figure was misplaced in the page proofs by 0.80 cm, what was the misplacement in (a) picas and (b) points?

Analyze the problem

- Two types of barrel units were in use in the 1920s in the United States. The apple barrel had a legally set volume of 7056 cubic inches; the cranberry barrel, 5826 cubic inches. If a merchant sells 20 cranberry barrels of goods to a customer who thinks he is receiving apple barrels, what is the discrepancy in the shipment volume in liters?

Analyze the problem

A tourist purchases a car in England and ships it home to the United States. The car sticker advertised that the car's fuel consumption was at the rate of 40 miles per gallon on the open road. The tourist does not realize that the U.K. gallon differs from the U.S. gallon:

1 UK gallon = 4.5 Liters

1 US gallon = 3.78 Liters

- For a trip of 750 miles (in the United States), how many gallons of fuel does (a) the mistaken tourist believe she needs and (b) the car actually require?

Answer

- 1. Known
- 40 miles per imperial gallon
- 1 Imperial gallon = 4.5 L
- I US gallon = 3.78 L
- 2.gallons needed for 750 miles?
- 3. Conversion factor
- 40 miles/ imperial gallon
- 4. Calculation
- 750 miles * (1 imperial gallon/40 mile) = 18.7 UK gal
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problem 22: Gold, which has a density of 19.32 g/cm^3, is the most ductile metal and can be pressed into a thin leaf or drawn out into a long fiber. (a) If a sample of gold, with a mass of 27.63 g, is pressed into a leaf of 1.000 μm thickness, what is the area of the leaf? (b) If, instead, the gold is drawn out into a cylindrical fiber of radius 2.500 μm, what is the length of the fiber?

1. d=
   - m=
   - Thickness =

2 . area =?

3. d = m/V

4. V = m/d = 27.63g/19.32 =1.43 cm^3

4. Area = V / thickness = 1.43 cm^3 / 1.000 μm

5. = 1.43 cm^3 / 1.000 * 10^{-4} cm = 1.43 *10^4 cm^2

5. 1.43 *10^4 cm^2