Programming Assignment 1
BE-104, Dr. C. S. Tritt, Spring '05
Due 4/12/05

Write a program that uses a class to estimate the lean body mass, surface area and plasma volume based on an individual's height and weight. Your class should be designed for someone of your age and sex (later, I may have you modify it to work with other ages and sexes).

Use the "Method of Hume" to estimate the lean body mass:

For men over the age of 16: Lean body mass in kilograms =
(0.32810 * (body weight in kilograms)) + (0.33929 * (height in centimeters)) - 29.5336

For women over the age of 30: Lean body mass in kilograms =
(0.29569 * (body weight in kilograms)) + (0.41813 * (height in centimeters)) - 43.2933

Use the formula of Dubois and Dubois for Body Surface Area. The body surface area can be calculated from a person's height and weight.

Body surface area in square meters =
((weight in kg)^(0.425)) * ((height in cm)^(0.725)) * (0.007184)

Given the Body Surface Area (BSA), the plasma volume can be calculated fairly accurately using:

For males: plasma volume in mL = (BSA in m^2) * 1560
For females: plasma volume in mL = (BSA in m^2) * 1410

Reference: The Medical Algorithms Project (http://www.medal.org/).