

Assignment #5**Due on Friday, September 20, 2013**

Read Section 1.3 on *Real World Measurements: Dealing with Units*, on pages 41–57 in the text.

Background and Definitions

Red Blood Cell Count. The red blood cell (RBC) count is the number of red blood cells per microliter of a sample. The hematocrit (HCT) is the proportion of volume of blood comprised of red blood cells.

Do the following problems

1. The blood volume for an infant aged 6 months to a year is estimated to be 86 milliliters per kilogram of weight. Estimate the volume of blood in pints of a 6-month old baby who weighs 16 pounds.
2. The blood volume for an adult, female human is estimated to be 70 milliliters per kilogram of weight. A 150-pound woman has an *RBC*-count of 4.9 million cells per microliter. Estimate the total number of red blood cells for the woman.
3. Suppose a 150-pound woman has a hematocrit level of 40.2%. Estimate the volume of blood comprised by red blood cells.
4. A 150-pound woman has a hematocrit level of 40.2% and an *RBC*-count of 4.9 million cells per microliter. Estimate the average volume in femtoliters of one red blood cell. One femtoliter is one quadrillionth of a liter, or 10^{-15} liter.
5. Assuming that red blood cells are spherical, estimate the average diameter in micrometers for the red blood cells in the woman of Problem 4.