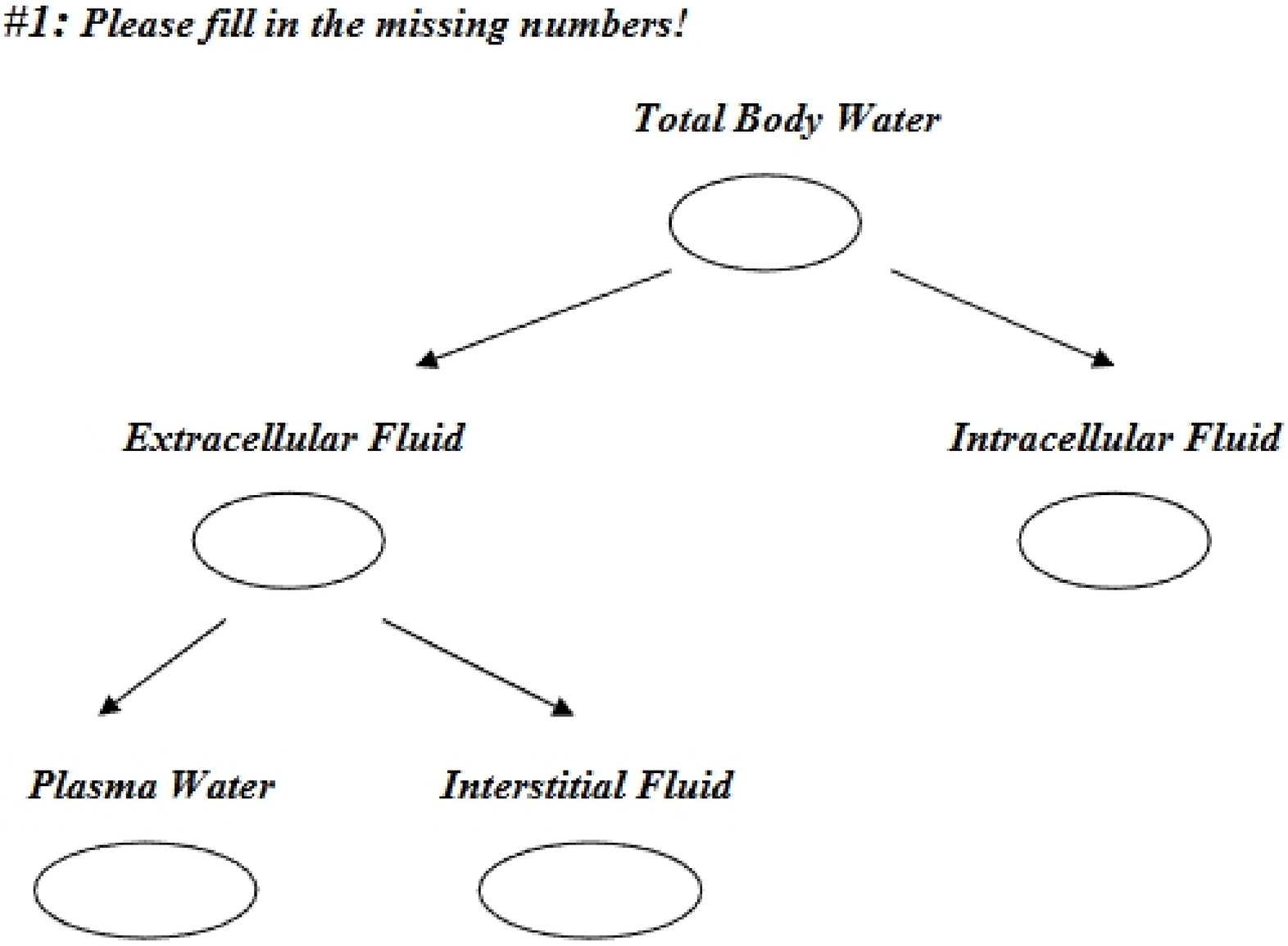
PHA 5127 – Fall 2006
Case Study #2

#1: Please fill in the missing numbers!



#2: The volume of distribution (V_d) of a lipophilic drug A is 800L. Answer the following questions with true or false!

a) Drug A is able to cross membranes
b) Drug A does not show any tissue protein binding
c) Plasma protein binding is more pronounced than tissue binding
d) V_d indicates that this drug is highly metabolized in the tissue
e) Drug A does not leave the plasma
f) V_d does reflect a real volume

#3: Basics and Background of V_d.

a) Give a definition of the Volume of distribution in your own words and give additionally the formula used for calculations.
b) Patient H. was given 100mg of drug M intravenously. His plasma levels are listed below. Please calculate V_d!

Time (h)	Cp (µg/L)
1.5	171
4	119
6	79.5
7.5	51
10	1

#4: Quinidine has a plasma protein binding, ranging from 70-90%. In patients with chronic liver disease plasma protein binding is decreased by 20%. How will the volume of distribution change? Use a plasma volume of 3 L and the fraction bound in plasma 85% (for normal patients), a tissue volume of 38 L and the fraction unbound in tissue 30% to calculate the volume of distribution in patients with liver disease.