

**Subject 25**

**RATIOS & PROBABILITIES**

*Please do not write on this exam paper and give it back at the end of the test*

**2014 EBOLA OUTBREAK IN WEST AFRICA**

**DOC1 : Countries with Widespread Transmission**

Country	Total Cases	Laboratory-Confirmed Cases	Total Deaths
Guinea	2,769	2,465	1,767
Liberia	8,115	3,116	3,471
Sierra Leone	9,772	7,570	2,915
<b>Total</b>	20,656	13,151	8,153

World Health Organization updates, January 5, 2015

**DOC2 : Population (in million)**

Guinea : 11.75	Liberia : 4.294	Sierra Leone : 6.092
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The World Bank, 2013

1. Compare the rates of Ebola cases among the population of each of these three countries (in percentage with 2 significant digits) and conclude.
2. Calculate the average ratio of Ebola cases (in percentage with 2 significant digits) in the total population of these three countries. Comment on this ratio.
3. What can explain that all the cases are not confirmed by laboratories?
4. What is the data lacking in the table to analyse the last column?
5. Considering the data about Guinea, we suppose that now all the laboratory-confirmed patients are hospitalized.  
The probability of dying of Ebola, knowing that the case is confirmed, is 62%.  
The probability of dying of Ebola, knowing that the case is not-confirmed is 79%.
  - a. Draw a probability tree diagram for the sick people in Guinea.
  - b. What is the probability of escaping death if a person is sick?  
Compare with the real value of 2014.
  - c. What is the probability to have been laboratory-confirmed knowing that the person hasn't died of Ebola Virus? Conclude.