Bayes' Theorem Exercise

1. If dangerous fires are rare (1%) but smoke is fairly common (10%) due to barbecues, and 90% of dangerous fires make smoke then what is the probability of dangeraous firese when there is smoke?

2. Given two coins, one is unfair with 90% of flips getting a head and 10% getting a tail, another one is fair. Randomly pick one coin and flip it. What is the probability that this coin is the unfair one, if we get a head?

3. Three machines A, B, and C in a factory account for 35%, 20%, and 45% of the bulb production. And the fraction of defective bulbs produced by each machine is 1.5%, 1%, and 2% respectively. A bulb produced by this factory was identified defective (denoted as event D). What are the probabilities that this bulb was manufactured by machine A, B, and C respectively?