**Problems on Bayes Theorem**

1. A factory has three machines, A, B, and C, producing 30%, 50%, and 20% of the total products, respectively. Machine A has a 1% defect rate, B has a 2% defect rate, and C has a 3% defect rate. If a randomly chosen product is found to be defective, what is the probability it was produced by Machine B?
2. In a random drug test, 5% of the population uses the drug. The drug test is 90% sensitive and 95% specific. If someone tests positive, what is the probability that they actually use the drug?

3. A spam filter is designed to detect spam emails. The probability that an email is spam is 20%. The filter is 98% accurate at identifying spam (true positive rate) and 95% accurate at identifying non-spam emails (true negative rate). If an email is flagged as spam, what is the probability that it is actually spam?