1. Give an example of random experiment, and a set of mutually exclusive, collectively exhaustive events.

2. Suppose A and B are independent events, with probabilities P(A) and P(B) respectively. What is the probability P(A,B) of the joint event, "A and B"?

3. Suppose A and B are not independent. What is the conditional probability of event A, given the occurrence of event B? Assume that you know the probabilities P(A), P(B), and P(A,B).

4. Write down the formula for a Gaussian (normal) random variable with zero mean and unit variance.