1. The proportion of blood types A, B, AB, and O in a certain population are 0.41, 0.10, 0.04, and 0.45, respectively. One person is chosen at random from this population.

   (a) Find a sample space for this experiment.

   (b) Assign a probability to each outcome in the sample space.

   (c) Find the probability that the person chosen has either type A or type AB blood.

2. Two fair coins are tossed.

   (a) Find a sample space for this experiment.

   (b) Assign a probability to each outcome in the sample space.

   (c) Let $A$ denote the event that exactly one head is observed and let $B$ be the event that at least one head is observed. List the outcomes in both $A$ and $B$.

   (d) Find $P(A)$, $P(B)$, $P(A \cap B)$, $P(A \cup B)$, and $P(A^c \cup B)$.

3. Three craft beers, A, B, and C are to be ranked from best to worst by a purported beer expert.

   (a) Find a sample space for this experiment.

   (b) Assume that one beer is of much better quality than the other two. Further assume that the expert knows nothing about beer and simply ranks them at random. What is the probability that the best beer is ranked no worse than second best?

4. At a certain restaurant, a diner may choose from four appetizers, three salads, four entrees, and five desserts. A dinner consists of one appetizer, one salad, one entree, and one dessert. In how many ways can dinner be ordered?

5. Let $P(A^c \cup B) = 0.6$ and $P(A^c \cup B^c) = 0.9$. Find $P(A)$.

6. Among students at a certain university, 30% take both calculus and physics and 10% take neither calculus nor physics. The percentage who take calculus is greater by 20% than the percentage who take physics. What is the probability that a randomly chosen student is taking physics?

7. A fleet of nine taxis is to be dispatched to three airports. The dispatcher will choose three to go to airport A, five to go to airport B, and one to go to airport C. The choices will be made at random.

   (a) If exactly one of the taxis is red, what is the probability that it is dispatched to airport C?
(b) If exactly three of the taxis are red, what is the probability that each airport receives a red taxi?

8. A review sheet contains ten problems, five of which will appear on an exam. A student knows how to do six of the problems. What is the probability that the student will know how to do all five of the problems on the exam?

9. A fair die is tossed six times. What is the probability that the six tosses are 1, 2, 3, 4, 5, and 6, in any order?