1. A biased coin has probability 0.35 of yielding heads. What is the probability of tails?

2. Events $A$ and $B$ have respective probabilities $P(A) = 0.4$ and $P(B) = 0.5$. 
   You also know that $P(A \cup B) = 0.7$.
   (a) What is $P(A \cap B)$?
   (b) What is $P(A|B)$?
   (c) What is $P(B|A)$?

3. A fair coin is flipped 4 times.
   (a) What is the probability that the third flip is tails?
   (b) What is the probability that we never get the same outcome (heads or tails) twice in a row?
   (c) What is the probability of tails appearing on at most one of the four flips?
   (d) What is the probability of tails appearing on either the first or the last flip (or both)?
   (e) What is the probability of tails appearing before any heads appear?

4. Let $A$ and $B$ be two events in a sample space $S$. If the probability that at least one of them occurs is 0.3 and the probability that $A$ occurs but $B$ does not occur is 0.1, what is $P(B)$?

5. Two fair dice are tossed.
   (a) What is the probability that the resulting values sum to 10 or more?
   (b) What is the probability that the values appearing on the two dice are different?

Answers:

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\begin{array}{cccc}
\frac{9}{36} & \frac{8}{27} & \frac{7}{18} & \frac{6}{9} \\
\frac{5}{3} & \frac{4}{3} & \frac{3}{2} & \frac{2}{1} \\
\frac{1}{3} & \frac{2}{3} & \frac{3}{4} & \frac{4}{5} \\
\frac{5}{6} & \frac{4}{5} & \frac{3}{4} & \frac{2}{3} \\
\frac{6}{5} & \frac{5}{4} & \frac{4}{3} & \frac{3}{2} \\
\frac{7}{6} & \frac{6}{5} & \frac{5}{4} & \frac{4}{3} \\
\frac{8}{7} & \frac{7}{6} & \frac{6}{5} & \frac{5}{4} \\
\frac{9}{8} & \frac{8}{7} & \frac{7}{6} & \frac{6}{5} \\
\end{array}
\]