Solutions Quiz 3(B)

Name:
Row #1:

1. (a) A class consists of 6 boys and 4 girls. 4 students from the class are to be selected to go on a trip. What is the probability that 3 boys and 1 girl go on the trip? (2.5 pts)
\[
\frac{C(6,3) \times C(4,1)}{C(10,4)}
\]

(b) Martha and Sam are in class. If it has been decided that 2 boys and 2 girls will go on the trip, what is the probability that both of them will go? (2.5 pts)
\[
\frac{C(5,1) \times C(3,1)}{C(6,2) \times C(4,2)}
\]

2. Tanya wants to pass a qualifying exam, and she is allowed 3 attempts at passing the exam. Each time she takes the exam, there is a 25% chance she will pass.

(a) Draw a probability tree diagram. (1.5 pts)

(b) What is the probability she will pass the exam? (1.5 pts)

(c) If she fails the first attempt, what is the conditional probability she will pass? (2 pts)

(b) \( P(\text{she will pass}) = 0.25 \times 0.25 + 0.75 \times 0.75 \times 0.25 = 0.375 \)

(c) Define \( A = \) she fails the first attempt, \( B = \) she will pass.

\( P(B|A) = \frac{P(A|B)}{P(A)} = \frac{0.25 \times 0.25 + 0.75 \times 0.25}{0.75} = 0.375 = \frac{1}{16} \)
Bonus (1 pt)

Ellen has asked for job interviews with IBM, Apple, Exxon, K-Mart, and Kodak. She has no control over the order in which the interviews are scheduled.

(a) What is the probability that the last interview is with Kodak.

\[
\frac{4!}{5!} = \frac{1}{5}
\]

(b) What is the probability that the Apple interview will come sometime after the Exxon interview.

# of ways Apple interview is after Exxon

\[
\frac{5!}{2} = 60
\]

p(Apple's interview after Exxon's interview) = \frac{60}{120} = \frac{1}{2} = 0.5