A bag has 4 cinnamon candies, 6 peppermint candies, and 12 cherry candies. Sasha draws 3 candies at random from the bag one at a time without replacement. Does the situation describe dependent or independent events? What is the probability of drawing a cinnamon first, then a cherry, and then a peppermint?

candies = 6 + 12 + 4 = 22

① $\boxed{P(Ci) = 4/22}$ | $P(P) = 6/22$ | $P(Ch) = 12/22$

② $P(Ci) = 3/21$ | $P(P) = 6/21$ | $\boxed{P(Ch) = 12/21}$

③ $P(Ci) = 3/20$ | $\boxed{P(P) = 6/20}$ | $P(Ch) = 11/20$

Nyla has 12 stuffed animals, 7 of which are elephants (4 of the elephants play music and light up) and 5 of which are bears (2 of the bears play music and light up). Her mother randomly selects an animal to bring with them on vacation. Let *A* be the event that she selects an elephant and *B* be the event that she selects an animal that plays music and lights up.

Find *P*(*A*), *P*(*B*), *P*(*A*|*B*), and *P*(*B*|*A*).

$P(A) = 7/12$

$P(B) = 1/6$

$P(A|B) =$

$P(B|A) =$

You have two coins. One is fair and the other one is weighted to land on tails 4/5 of the time. Without knowing which coin you're choosing, you pick one at random, toss the coin and get tails. What is the probability you flipped the biased coin?

A ⇒ get a tail

B ⇒ weighted coin

biased

unfair

You have two dice. One is fair and the other is biased. The biased die is weighted to land on 6 every 1 out of 36 rolls. There's an equal probability for all of the other five faces on the biased die. Without knowing which one you're choosing, you pick one of the dice, roll it, and get a 6.

Find the following and use them to answer the question: What is the probability that you rolled the fair die?

$P(6 \mid \text{fair})$

$P(\text{fair})$

$P(6)$

Charlie knows that, at his school, $P(\text{senior}) = 0.40$ $\frac{40}{100}$

$P(\text{playing soccer}) = 0.15$ $\frac{15}{100}$

$P(\text{soccer and senior}) = 0.05$ $\frac{5}{100}$

$P(A \text{ and } B) = 0.05$

$= P(A|B) \cdot P(B)$

Solve for the probability $P(\text{senior}|\text{soccer})$, then state whether or not

$= P(\text{soccer}|\text{senior}) \cdot P(\text{senior})$

Bayes' Theorem can be used to solve the problem

$$P(\text{senior}|\text{soccer}) = \frac{P(\text{soccer}|\text{senior}) \times P(\text{senior})}{P(\text{soccer})}$$

independent

$P(A \text{ and } B) = \boxed{P(A) \cdot P(B)}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \cap B)$

dependent

$P(A \text{ and } B) = \boxed{P(A|B) \cdot P(B)}$

$$= \frac{0.05}{0.15} = 5/15 = 1/3$$

$P(A \text{ and } B) =$

$P(A \text{ or } B) =$

You have two coins. One is fair and the other is weighted to land on tails 3/4 of the time. Without knowing which coin you're choosing, you pick one at random, toss the coin, and get tails. What's the probability you flipped the biased coin?