

Conditional Probability

Minds on Math: Classifying Compound Events

Definition:

Compound events are made up of two or more simple events. The following are examples of compound events:

- a) flipping a coin and then rolling a die to see if you get heads (or tails) and ____ (#)
- b) flipping a coin three times to see if you get ____ (#) heads (or tails) in a row
- c) drawing two cards from a deck, one at a time, to see if you get two _____

Problem 1

Study the problems, above, such that you are able to classify them according to your own criteria.

Minds on Math (contd.)

Summary

- The events in a)... _____
- The events in b)... _____
- The events in c)... _____

Recall

In general, when a compound event occurs, its probability is the product of the individual simple event probabilities. The formula below calculates the probability of independent events.

$$P(A \cap B) = P(A) \times P(B)$$

Problem 2

Solve the problem in c) where you're trying to determine the probability of drawing two aces in a row (assume that the first card is not returned to the deck). Space, for your solution, has been provided on the next page.

Solution to c):



E.g., The probability that Pat will go to U of T is $1/5$. The probability that she will go to another university is $1/2$. If Pat goes to U of T, the probability that she will get financial aid is $3/4$. What is the probability that Pat will go to U of T and get financial aid?

Solution:

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Solution:

$$\begin{aligned}P(\text{go} \cap \text{aid}) &= P(\text{go}) \times P(\text{aid} | \text{go}) \\ &= \frac{1}{5} \times \frac{3}{4} \\ &= \frac{3}{20}\end{aligned}$$

Therefore, Pat has a $3/20$ chance of going to U of T and receiving financial aid.

Exit Problems_4.4_Cond Prob

- 1 A class is surveyed to determine whether they prefer mathematics or english. The table shows the results. State $P(\text{male}|\text{prefers english})$.

A $\frac{9}{17}$

B $\frac{9}{13}$

C $\frac{9}{4}$

D none of the above

Gender	Mathematics	English
Males	4	9
Females	7	8

2 Determine the probability of drawing a spade and then a club from a regular deck of cards if the spade is *not returned* to the deck.

A $\frac{1}{16}$

B $\frac{1}{2}$

C $\frac{3}{51}$

D $\frac{13}{204}$

3 A pair of students is picked randomly from four students John, Sara, Adam, and Laura. Determine the probability that a girl will be chosen *given* that Adam has been chosen already.

A $\frac{1}{6}$

B $\frac{2}{3}$

C $\frac{1}{3}$

D $\frac{1}{2}$