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.

	s on Math (contd.)				
Sumr • The	mary e events in a)				
	e events in b)				
• The	e events in c)				
Reca In ger simpl	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.				
$P(A \cap B) = P(A) \times P(B)$					
Solve row (a	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.				
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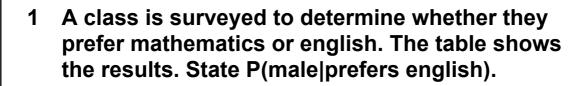
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The formula you've applied, above, is used to determine the probability of compou			
	events where there is a condition. The formula for determining conditional probability is given by		
	$P(A \cap B) = P(A) \times P(B \text{ given } A)$ $= P(A) \times P(B A)$		
	$= P(A) \times P(B A)$		

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:			

 $P(go \cap aid) = P(go) \times P(aid|go)$ $= \frac{1}{5} \times \frac{3}{4}$ $= \frac{3}{20}$

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

Exit Problems_4.4_Cond Prob



A $\frac{9}{17}$

B $\frac{9}{13}$

C -

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** $\frac{3}{51}$
 - $\mathbf{D} = \frac{13}{204}$

- 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** $\frac{1}{2}$