Starter 1/21

1. What is the probability of drawing a heart out of a standard deck of cards given that one heart has already been drawn out?

2. Are drawing 2 cards out of a deck without replacement independent or dependent events?

p. 333 #104-106

5.36

rule #8 **Multiplication Rule for Independent Events**

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

And means multiply

ex: roll 2 dice.

P(1st dice is a 6 and 2nd dice is a 1)

$\left(\frac{1}{6}\right) \cdot \left(\frac{1}{6}\right) = \frac{1}{36}$

P(1st is odd and 2nd is a 2)

$\left(\frac{1}{2}\right)\left(\frac{1}{6}\right) = \frac{1}{12}$

Calculating Conditional Probabilities

side note: general mult. rule: $P(A \cap B) = P(B) \cdot P(A|B)$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

ex: What % of youth with good grades are heavy media users?

$P(\text{heavy media user} \mid \text{good grades})$

$= \frac{P(\text{heavy user and good grades})}{P(\text{good grades})}$

$= \frac{0.1092}{0.6566}$

$= 0.166$

about 16.6% of youth with good grades are heavy media users.

ex: Are grades and media usage independent?

$P(\text{heavy} \mid \text{good}) = 16.6\%$

$\overset{?}{=}$

$P(\text{heavy}) = 21\%$

not the same, not indep.