Geometry 13.5

Find probabilities of independent and dependent events

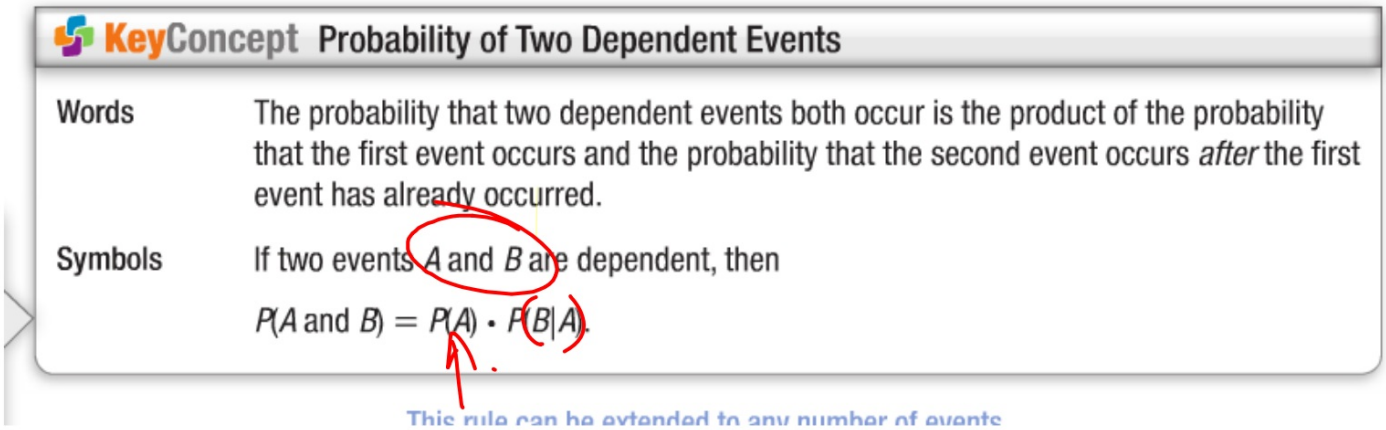
Find probabilities of events given the occurrence of other events (conditional probability)

compound (composite) event 2+

independent events options don't change

dependent events options have changed

First result changes the options for the second choice.



KeyConcept Probability of Two Dependent Events

Words The probability that two dependent events both occur is the product of the probability that the first event occurs and the probability that the second event occurs *after* the first event has already occurred.

Symbols If two events A and B are dependent, then

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

This rule can be extended to any number of events

The notation $P(B|A)$ is read *the probability that event B occurs given that event A has already occurred*. This is called **conditional probability**.

52

13 13 13 13

GuidedPractice

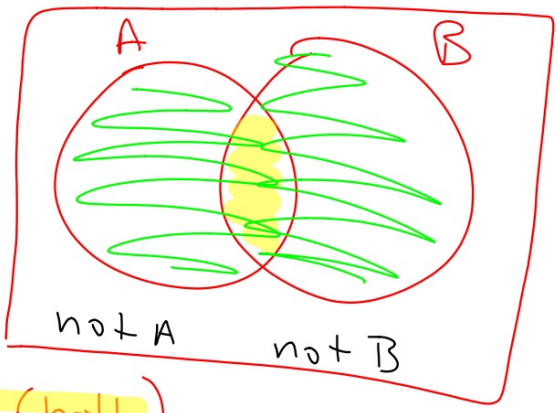
3. Three cards are selected from a standard deck of 52 cards. What is the probability that all three cards are diamonds if ~~neither the first nor the second card~~ is replaced?

D:

w/o $\frac{13}{52} \cdot \frac{12}{51} \cdot \frac{11}{50} = \frac{1,716}{132,600} \approx 1.3\%$

Does the first event change the options for the second event?

with $\frac{13}{52} \cdot \frac{13}{52} \cdot \frac{13}{52} = \frac{2197}{140,608}$ 1.6%

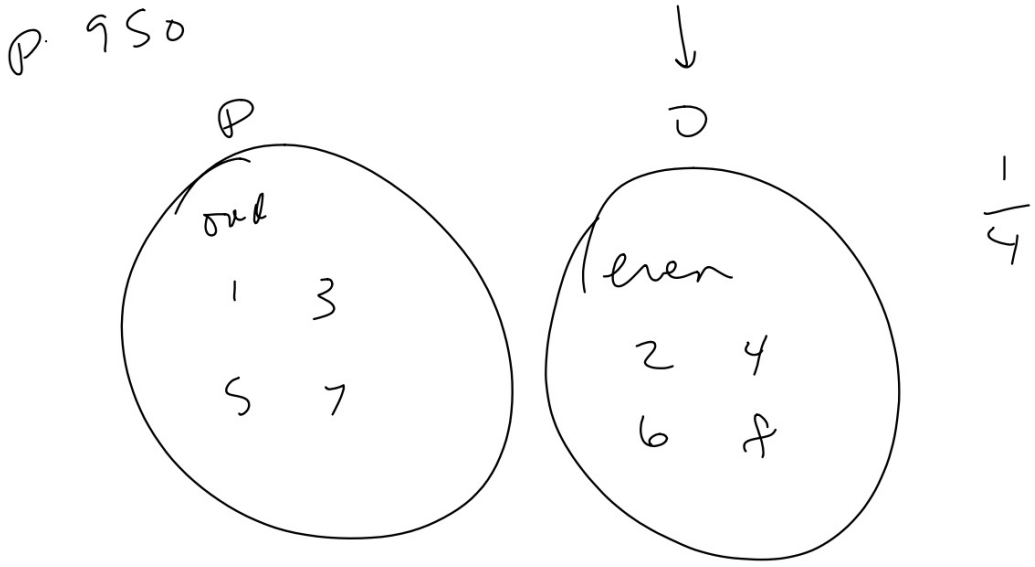


intersection (both)

$A \wedge B = A \cap B$

union $A \vee B = A \cup B$ either

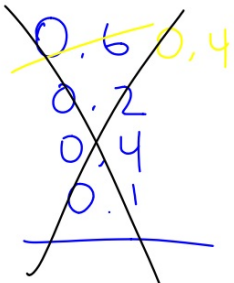
P. 950

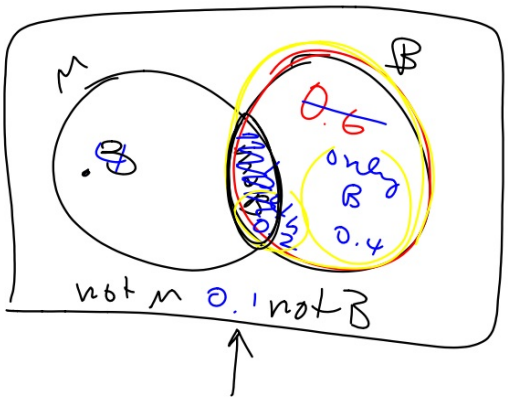


$\frac{1}{4}$

22.

WB





$B \cap M$

$B \cap M$

0.4
0.2
0.1

$\frac{0.2}{0.3} = \frac{2}{3}$