

Compound Probability

- compound event \rightarrow 2 events
- independent event \rightarrow event that does not depend on the results of another event
- dependent event \rightarrow event that does depend on another event
- mutually exclusive events \rightarrow unrelated events, no overlap
- Probability of Independent Events
 $\hookrightarrow P(A \text{ and } B) = P(A) \cdot P(B)$
EX \rightarrow P(heart) then P(black) = $\frac{1}{4} \cdot \frac{26}{51}$
= $\frac{26}{204} = \frac{13}{102}$
w/o replacement
- Probability of Mutually Exclusive Events
 $\hookrightarrow P(A \text{ or } B) = P(A) + P(B)$
EX \rightarrow P(club) + P(rolling 5)
 $\frac{1}{4} + \frac{1}{6} = \frac{3}{12} + \frac{2}{12}$
= $\frac{5}{12}$

- Probability of Overlapping Events

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

EX \rightarrow 26% of group has travelled to Italy, while 32% have travelled to France. 7% of the group have travelled to both. What is the probability of picking a person that has travelled to either country?

$$P(\text{Italy or France}) = P(\text{Italy}) + P(\text{France}) - P(\text{both}) = 0.26 + 0.32 - 0.07 = 0.51$$

$$\begin{aligned} \text{EX} \rightarrow P(\text{queen or spade}) &= \frac{1}{13} + \frac{1}{4} - \frac{1}{52} = \frac{4}{52} + \frac{13}{52} - \frac{1}{52} \\ &= \frac{16}{52} = \frac{4}{13} \end{aligned}$$

HW : p. 847 → 6-38 even