

Sec. 12.8 Probability of Compound Events

Vocabulary

- Compound event: two or more events linked by the word and or or.
- mutually exclusive events: two events which have no outcomes in common
Note: If A and B are mutually exclusive,
 $P(A \text{ and } B) = 0$
- overlapping events: events that have at least one outcome in common
- independent events: the occurrence of one event does not affect the probability of the second event
- dependent events: the occurrence of one event affects the probability of the second event.

Probability of $A \text{ or } B$

If A and B are

- mutually exclusive

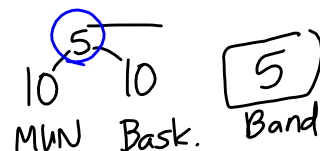
$$P(A \text{ or } B) = P(A) + P(B)$$

- overlapping

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

$$P(\text{MUN or Bask}) = \frac{10}{20} + \frac{10}{20} - \frac{5}{20} = \frac{15}{20}$$

20 students



$$P(\text{MUN}) = \frac{10}{20}$$

$$P(\text{Ba.}) = \frac{10}{20} > \frac{20}{20}$$

$$P(\text{MUN or Bask})$$

Probability of Two Events

- If A and B are

- independent

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

- dependent

$$P(A \text{ then } B) = P(A) \cdot P(B \text{ after } A)$$

A B C D E

$$P(A) = \frac{1}{5}$$

1 2 3

$$P(2) = \frac{1}{3}$$

A1	B1	C1	D1	E1
A2	B2	C2	D2	E2
A3	B3	C3	D3	E3

$$P(A \text{ and } 2) =$$

$$P(A) \cdot P(2) = \frac{1}{5} \cdot \frac{1}{3} = \frac{1}{15}$$

$$\frac{1}{15}$$