

## Formulas

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### Complementary Events

$$P(\text{not } A) = 1 - P(A).$$

### Addition Rule

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

### Multiplication Rule\*

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

*\*Caution: This multiplication rule only works if A and B are independent events.*

### Conditional Probability

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

### 95% Confidence Interval for a Population Mean

*In a large sample with no bias, there is a 95% chance that the population mean  $\mu$  is between:*

$$\bar{x} \pm 2 \frac{s}{\sqrt{N}}.$$