Cheatsheet for Math Exercises

Probability and Conditional Probability

Value	Description	Formula
$$P(A)$$	Probability of event A occuring.	$$P(A) = \frac{\text{Number of favorable outcomes for } A}{\text{Total number of possible outcomes}}$$
$$P(A \mid B)$$	Conditional probability of event A occurring, given that event B has occurred.	$$P(A \mid B) = \frac{P(A \cap B)}{P(B)}$$
$$P(A \cap B)$$	Probability of both events A and B occurring.	In general: $$P(A \cap B) = P(A) \cdot P(B \mid A)$$ If A and B are independent events, then: $$P(A \cap B) = P(A) \cdot P(B)$$
$$P(A \cup B)$$	Probability that event A or event B (or both) occur.	$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

Information Theory

Combinatorics