

Discrete Math

QR.DMR.1: Understand, analyze, and apply vertex-edge graphs to model and make informed decisions related to paths, circuits, networks, and relationships in real-world settings.

QR.DMR.2: Devise, analyze, and apply algorithms for solving vertex-edge graph problems.

QR.DMR.3: Extend work with adjacency matrices for graphs, such as interpreting row sums and using the n th power of the adjacency matrix to count paths of length n in a graph

CCSS.MATH.CONTENT.HSS.CP.A.2

Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

CCSS.MATH.CONTENT.HSS.CP.A.3

Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A , and the conditional probability of B given A is the same as the probability of B .

CCSS.MATH.CONTENT.HSS.CP.B.7

Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.

CCSS.MATH.CONTENT.HSS.CP.B.8

Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$, and interpret the answer in terms of the model.

CCSS.MATH.CONTENT.HSS.CP.B.9

(+) Use permutations and combinations to compute probabilities of compound events and solve problems.