Unit: 6. PROBABILITY

VOCABULARY

biased decision	a decision based on an event in which certain outcomes are favored or more likely than others
categorical variable	variables that take on values that are names or labels. The color of a ball, gender, or year in school (freshman, sophomore, junior, senior) are examples of categorical variables
combination	a group of objects chosen from a larger set, in which the order or arrangement is not considered
conditional probability	in probability, two events in which the outcome of one event is dependent on the outcome of a second event
dependent events	in probability, two events in which the outcome of one event is dependent on the outcome of a second event
equally likely events	events equally probable of happening; the probability that each of them will occur is 1/n
event	a subset of a sample space
fair decision	a decision based on an event in which the outcomes are equally likely
independent events	if event A and event B have nonzero probabilities in a sample space, and if and only if $P(A \cap B) = P(A) \cdot P(B)$, then events A and B are independent events.
joint frequencies	entries in the body of a two-way frequency table
marginal frequencies	entries in the TOTAL row and TOTAL column of a two-way frequency table

mutually exclusive events	events that cannot occur at the same time
permutation	an arrangement of a group of objects chosen from a larger set in a definite or precise order
probability	likelihood of occurring. $P(A) = \frac{\text{number of successes}}{\text{total number of possibilities}}$. The formula for addition of probabilities is $P(A \cup B) = P(A) + P(B) - P(A \cap B)$. If $P(A \cap B) = 0$, then $P(A \cup B) = P(A) + P(B)$. The formula for multiplication of probabilities is $P(A) \cdot P(B)$. The formula for conditional probability is $P(A \mid B) = \frac{P(A \cap B)}{P(B)}$.
sample space	the set of all possible outcomes of a random experiment
sum of probabilities	total of probabilities assigned to all the elements of a sample space; equals 1
The Multiplication Principle	if you are choosing one element from a set that has p elements, and one element from a set that has q elements, then the total number ways of doing this is $p \cdot q$. A similar principle works for three or more sets. If you then choose from a third set that has r elements, then the total number ways of doing this is $p \cdot q \cdot r$
two-way frequency table	a useful tool for examining relationships between categorical variables