Worksheet 11/15/2023

Outcome: the most basic result of an observation/experiment

Event: collection of outcomes sharing a certain common property

Probability of event A: $\quad P(A) = \frac{\text{number of outcomes A consists of}}{\text{number of all possible outcomes}}$

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

Odds for A $= \frac{P(A)}{P(\text{not } A)}$

Odds against A $= \frac{P(\text{not } A)}{P(A)}$

Probability distribution: distribution of outcomes (histogram of relative frequencies)

Multiplication principle: Assume that a task can be broken up into two consecutive steps. If step 1 can be performed in m ways and for each of these, step 2 can be performed in n ways, then the task itself can be performed in m × n ways.

1) How many outcomes are possible if you toss five coins?

2) How many possible outcomes are there if you toss three 6-sided dice?

3) Draw a random card from a standard deck of 52 cards. Determine the probability of getting a red card (heart or diamond).

4) A restaurant has a special menu that features two choices of salad, eight choices of entree, and six choices of dessert. How many different three-course meals could you order?

5) What is the probability of *not* tossing 3 heads with three fair coins?

6) What is the probability of tossing at least 1 head with three fair coins?

7) Find the odds for and the odds against the event of rolling a die and getting a 4.

8) Find the odds for and the odds against the event of rolling two dice and getting at least one 6.

9) Make a probability distribution for the sum of the dice when two fair, 6-sided dice are rolled together. What is the most probable sum?