13.1 Probability Theory
M. Goodroe - Quantitative Skills and Reasoning

Objectives:
1. Calculate probabilities by counting outcomes in a sample space.
2. Use counting formulas to compute probabilities.
3. Perform computations using the relationship between probability and odds.
4. Use probability theory to investigate genetic diseases.

Key Terms:
Experiemnt
Outcomes
Sample Space
Event
Probability
Empirical Assignment
Odds

Name:_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

List all equally likely outcomes in the sample space for the indicated experiment.

1) A box contains 3 blue cards numbered 1 through 3, and 4 green cards numbered 1 through 4. List the sample space of picking a blue card followed by a green card.

2) The aces are separated from a deck of standard playing cards and shuffled. Two are randomly selected.

Write the event as a set of outcomes.

3) When we roll two dice, the total showing is eight.

Solve the problem.

4) Seven slips of paper marked with the numbers 1, 2, 3, 4, 5, 6, and 7 are placed in a box and mixed well. Two are drawn. What are the odds that the sum of the numbers on the two selected slips is not 5?

5) Seven slips of paper marked with the numbers 1, 2, 3, 4, 5, 6, and 7 are placed in a box and mixed well. Two are drawn. What are the odds that the sum of the numbers on the two selected slips is 8?

6) Seven slips of paper marked with the numbers 1, 2, 3, 4, 5, 6, and 7 are placed in a box and mixed well. Two are drawn. What are the odds that the sum of the numbers on the two selected slips is 7?

7)

$\boxed{1}\ \boxed{2}\ \boxed{3}\ \boxed{4}\ \boxed{5}$

What are the odds of drawing a number greater than 2 from these cards?

8) If two fair dice are rolled, what is the probability that a total of four shows?

9) If we toss four fair coins, what is the probability that we get exactly four tails?

10) The odds in favor of a horse winning a race are posted as 7 : 2. Find the probability that the horse will win the race.

11) The odds in favor of Carl beating his friend in a round of golf are 7 : 5 Find the probability that Carl will beat his friend.

12) The odds against Muffy beating her friend in a round of golf are 1 : 6. Find the probability that Muffy will lose.

Answer the question.

13) If $P(A) = \dfrac{1}{7}$ then find the odds in favor of A happening.