Math 310 - Dr. Miller - Homework #14: More Probability Practice

1. An experiment involves tossing two coins and spinning a wheel marked 1, 2, 3 in equal sections.

   (a) Find the probability that you got a 3 on the wheel or two tails on the coins.
   (b) Find the probability that you got a 3 on the wheel and two tails on the coins.
   (c) Find the probability that you got a 3 on the wheel, given that you got two tails.
   (d) Find the probability that the number on the wheel is at least as large as the number of heads.

2. An experiment consists of spinning a wheel marked 3, 4, 7 and tossing a die.

   (a) What is the probability that the number on the wheel is odd and the number on the die is less than 3?
   (b) What is the probability that the number on the wheel is odd or the number on the die is less than 3?
   (c) Given that the number on the die was odd, what is the probability that the sum was less than 6?
   (d) What is the probability that the number on the wheel is at most equal to the number on the die?
   (e) What is the probability that you don't get a 3 or 4 on either object?

3. An experiment consists of spinning two spinners, each numbered 4, 5, 6 and then drawing a card that says "yes" or "no."

   (a) Find the probability that the numbers on the wheels match, given that their sum is larger than 9.
   (b) Find the probability that the word on the card truthfully answers this question: "Is the first number less than the second?"

4. An experiment has the following uniform sample space:

$$
\begin{array}{ccccc}
(red, 3) & (cat, 3) & (dog, 3) & (cow, 3) & (pig, 3) \\
(black, 5) & (cat, 5) & (horse, 5) & (goat, 5) & (cow, 5) \\
(yellow, 4) & (pig, 4) & (goat, 4) & (cow, 4) & (iguana, 4) \\
(green, 1) & (cat, 1) & (dog, 1) & (goat, 1) & (iguana, 1)
\end{array}
$$

   (a) What is the probability that the word is a color, given that the number is odd?
   (b) What is the probability that the length of the word is at most equal to the number?
   (c) What is the probability that the word is a reptile and the number is a 5?
   (d) What is the probability that the word is not a color, given that it has 3 letters?

5. An experiment consists of spinning a spinner equally marked 1, 2, 3, spinning another equally marked 3, 4, 5, and picking a card that says either "Higher" or "Lower."

   (a) What is the probability that you get an odd number on the first spinner or an even number on the second?
   (b) What is the probability that you get an odd number on the first spinner and an even number on the second?
   (c) What is the probability that you get an odd number on the first spinner given that you got an even number on the second?
   (d) What is the probability that the number 3 appears at most once when you perform the experiment?
   (e) What is the probability that the word on the card correctly describes how the first number compares to the second?

1. (a) 6/12
   (b) 1/12
   (c) 1/3
   (d) 11/12

2. (a) 4/18
   (b) 14/18
   (c) 2/9
   (d) 7/18
   (e) 4/18

3. (a) 4/12
   (b) 9/18

4. (a) 3/15
   (b) 13/20
   (c) 0/20=0
   (d) 10/11

5. (a) 14/18
   (b) 4/18
   (c) 4/6
   (d) 16/18
   (e) 8/18