Mathematics 102 Name _____
Assignment 10
Due Monday, November 13

SECTION 7.2 - Part 1

1. **Black or white?** Your friend has two pairs of sneakers, one white, the other black. The probability that he wears the white pair is 3/5. What is the probability that he wears the black pair?

2. **Eleven cents.** You have a dime and a penny. Flip them both, noting whether each coin lands heads up or tails up. List all possible outcomes.

Let E be the event that you get at least one head. List all the outcomes that give E. What is the probability that E occurs?

3. **Yumm.** You have a small bag of candy-coated chocolates that melt in your mouth; three are red, four are yellow, two are green, and five are blue. If you take a piece out of the bag at random, what is the probability it is green?

What is the probability it is blue?

4. **Rubber duckies.** A game at a carnival has 75 rubber ducks floating in water. The ducks are numbered 1 to 75, with the numbers written on their undersides so they can't be seen. To play, you select a duck and see what number it has. If the number is less than 60, you win a consolation prize. If the number is at least 60 but less than or equal to 70, you win a stuffed duck. If the number is greater than 70 you win a giant, stuffed banana. What is the probability you win a stuffed duck? Explain your answer.

What is the probability you don't win a duck or a banana? Explain your answer.

SECTION 7.2 - Part 2

7. **Giving orders.** Determine the probability of each of the following events:

a. You randomly select an ace from a regular deck of 52 playing cards.

b. There is a full moon at night.

c. A politician fulfills all his or her campaign promises.

d. You randomly select the queen of hearts from a regular deck of 52 playing cards.

e. You randomly select a black card from a regular deck of 52 playing cards.

10. **BURGER AND STARBIRD.** Suppose you randomly select a letter from BURGER AND STARBIRD. Imagine writing these letters on Ping-Pong balls - one ball per letter - then putting them all in a barrel and removing one.

a. What is the probability of pulling out an R?

b. What is the probability of pulling out a B?

c. What is the probability of pulling out a letter that appears in the first half of the alphabet?

d. What is the probability of pulling out a vowel?

12. **7 or 11.** What is the probability of rolling a 7 or 11 with two fair dice? Explain your answer.

13. **D and D.** You simultaneously flip a dime and roll a die. Make a table of all the possible outcomes.

What is the probability of seeing Roosevelt and a 4?

Suppose now that someone else flipped and rolled, did not show you the result, but reported that the die shows a 2. What is the probability that the dime is showing tails? Justify your anwer.

14. **The top 10.** Suppose you have 10 marbles. They are each marked with one number: 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10. They are placed in a jar, and you reach in and select one. What is the probability that the number you select has a factor of 3? Justify your answer.

What is the probability that the number you select is a prime number? Justify your answer.

What is the probability that the number you select is even?

18. **Spinning wheel.** A roulette wheel has 36 spaces marked from 1 to 36. Half the spaces are marked red and half are marked black. In addition, there are two green spaces marked 0 and 00. What is the probability of the little ball landing on 13?

What is the probability of it landing on a red spot?

19. **December 9.** Choose two people at random. What is the probability that they were both born on December 9? Explain your answer.

20. **High roller.** Using two fair dice, what is the probability of rolling a sum that exceeds 4? Justify your answer.

SECTION 7.2 - Part 3

26. **Flip side.** Someone flips three coins behind a screen and says, "I flipped at least two heads." What is the probability that the flipper flipped three heads? Justify your answer.

27. **Other flip side.** Someone flips three coins behind a screen and says, "I didn't flip all tails." What is the probability that the flipper flipped all three heads? Justify your answer.

28. **Blackjack.** From a regular deck of 52 playing cards, you turn over a 5 and then a 6. What is the probability that the next card you turn over will be a face card? Explain your answer.