1. Suppose a spinner has 3 colors: Red, Blue, Green. The Red sector takes up 120°, and the Blue sector is a right angle. Suppose we spin this spinner twice.
   (a) Make a tree diagram for this experiment, write down the sample space, and the probabilities for each outcome.
   (b) Find P(at least one Green).
   (c) Find P(no Green)

2. Suppose you roll a red die and a white die. Find the probability of the following.
   (a) P(sum at least 10)
   (b) P(rolling exactly one 3)
   (c) P(less than 3 on red die *and* sum = 5)
   (d) P(less than 3 on red die *or* sum = 5)

3. Suppose that an experiment has exactly 40 equally likely outcomes. For events X and Y, we have that $P(X) = 0.35$ and event Y has 7 outcomes.
   (a) If events X and Y share exactly 2 outcomes, find $P(X$ or $Y)$.
   (b) If events X and Y are disjoint, find $P(X$ or $Y)$.
   (c) If events X and Y are independent, find $P(X$ and $Y)$.

4. Suppose we have two spinners with the following angles:
   Spinner 1: red = 80°, blue = 80°, green = 120°, yellow = 40°.
   Spinner 2: red = 180°, green = 60°, yellow = 120°.
   Without making a tree diagram or listing the outcomes, find P(1st spinner red *or* 2nd spinner yellow).

5. In a particular classroom, there are 35 students. Of the girls, 5 of them wear glasses, and 10 do not. We also know that 10 of the boys wear glasses.
   (a) Make a contingency table comparing the gender of the students and whether or not the student wear glasses.
   (b) Find P(student is male *and* does not wear glasses).
   (c) Find P(student is female|student does not wear glasses).
   (d) Find P(student does not wear glasses|student is female).

6. Identify the type of sampling used in each of the situations. Identify any potential bias.
   (a) Suppose students are randomly seated at an exam, such that each row has 5 students. You want to get a feeling of how the students performed, so you ask all of the students seated on the right hand aisle.
   (b) Suppose students are randomly seated at an exam, such that each row has 5 students. You want to get a feeling of how the students performed, so you ask all of the students from a particular row.
   (c) Suppose a supermarket wants to conduct a survey on its customers to rate their satisfaction. A survey is handed to each person entering the store. The customer may choose to fill it out and turn it in when they leave.
   (d) Suppose that the university wants to know whether or not to build a new basketball court near the residence halls. In each residence hall they select a few random students to get their opinion.

(e) Suppose that the university wants to know whether or not to build a new basketball court near the residence halls. They go to one particular hall and ask everyone in that hall whether or not they want a new basketball court.

7. What type of data, categorical or measurement, is the response to each situation?

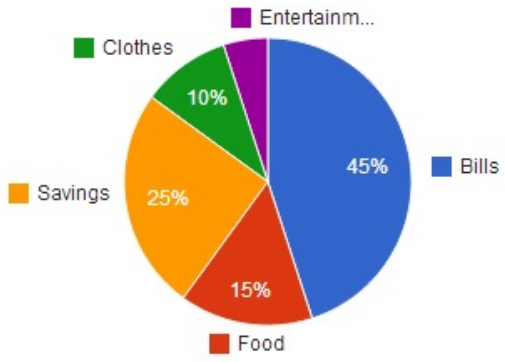
   (a) The number of M&Ms in a bag.

   (b) The most common color in a bag of M&Ms.

   (c) The average speed of a particular runner in a marathon.

   (d) The brand of shoe a particular runner is wearing in a marathon.

8. Consider the circle graph denoting the different categories he spends his income on:



   (a) What percent of his income does he spend on entertainment? What is the central angle for this category?

   (b) If he has to pay $27,000 in bills each year, what is his yearly income?

   (c) How much money does he spend on entertainment each year?

   (d) How much money does he put into his savings each year?

9. Consider the following test scores for 35 students on a exam:

$$91, 66, 84, 85, 65, 85, 81, 52, 93, 75, 97, 97, 69, 89, 60, 84, 89, 60, 84, 89,$$

$$71, 95, 82, 81, 86, 87, 70, 97, 83, 72, 89, 70, 85, 96, 83$$

   (a) Make a stem-and-leaf plot for the data.

   (b) Make a histogram for the data.

   (c) Make a box-and-whisker plot for the data.

   (d) What is the mean, median, and mode?

10. (a) Suppose that the odds of winning a particular is 3 to 1. What is the probability that you will win.

    (b) Suppose that the probability you win a particular game is 0.4. Rewrite the statement in terms of odds.

11. Suppose you have 2 red balls and 2 green balls in a bag. Suppose you draw one ball, then draw another ball without replacement. Let A be the event that you draw a red ball on your second draw. Let B be the event that you draw a red ball on your first draw.

(a) Make a tree diagram for this experiment, write down the sample space, and the probabilities for each outcome.

(b) Find $P(B)$.

(c) Find $P(A|B)$.

(d) Find $P(A \text{ and } B)$.

(e) Find $P(A)$.

(f) Are the events A and B independent?

12. Suppose you have a standard deck of cards and you draw two cards (without replacement).

(a) What is the probability that you drew two spades.

(a) What is the probability that the two cards belong to the same suit.

(b) What is the probability that you drew two aces.

(c) What is the probability that you drew a pair.

13. At a neighborhood block party, residents compared the grocery stores at which they shop. They found that 25 shopped at Star Store, 33 at Global Grocer, 12 at McGee's Market, and 30 at Kenny's Discounts.

(a) Make a bar graph of the data.

(b) Make a circle graph of the data.

14. The mean weight of three cats is 14 pounds. Which of the following is possible?

(a) One of the cats weighed 20 pounds.

(b) None of the cats weighs more than 14 pounds.

(c) Each cat weighs less than 14 pounds.

(d) The cats weigh 14, 18, and 10 pounds.

(e) The cats weigh 13, 18, and 8 pounds.

(f) Two of the cats weigh less than 13 pounds each.

1. (a) See me if you need help making tree diagrams.
   (b) 95/144
   (c) 49/144
2. (a) 1/6
   (b) 5/18
   (c) 1/18
   (d) 7/18
3. (a) 19/40
   (b) 21/40
   (c) 98/1600
4. 13/27
5. (a) See me if you need help making contingency tables.
   (b) 2/7
   (c) 1/2
   (d) 2/3
6. (a) Systematic Sampling
   (b) Cluster Sampling
   (c) Self-Selected/Voluntary
   (d) Stratified Sampling
   (e) Convenience Sampling or Cluster Sampling.
7. (a) measurement
   (b) categorical
   (c) measurement
   (d) categorical
8. (a) 5%, 18°
   (b) \$60,000
   (c) \$3,000
   (d) \$15,000
9. (a)-(c) Ask me if you have trouble graphing
   (d) mean=81.2, median=84, mode = 89
10. (a) 3/4
    (b) The odds that you win are 2 to 3
11. (a) See me if you need help making tree diagrams.
    (b) 1/2
    (c) 1/3
    (d) 1/6
    (e) 1/2

(f) These events are dependent.

12. (a) 1/17

(a) 4/17

(b) 1/221

(c) 1/17

13. (a)-(b) Ask me if you have trouble graphing

14. (a) possible

(b) possible

(c) not possible

(d) possible

(e) not possible

(f) possible