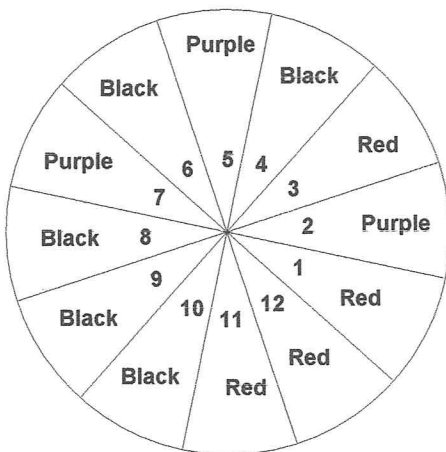


1. You will spin the spinner once. Find each probability as a fraction.



- a) $P(\# \text{ less than } 6 \text{ or Red})$ b) $P(\text{Purple or Red})$
 c) $P(\text{Black and even})$ d) $P(\text{Multiple of } 6 \text{ and odd})$

2. Use the results of the survey shown below of their favorite Food. You will select one person at random. Find each probability as a fraction.

	Pasta	Chicken	Steak	Vegetables	Total
Female	18	23	8	14	63
Male	21	14	16	13	64
Totals	39	37	24	27	127

- a) $P(\text{Female and Chicken})$ b) $P(\text{Male or Pasta})$ c) $P(\text{Pasta or Steak})$
 d) $P(\text{Vegetables and Pasta})$ e) $P(\text{Female} \mid \text{Steak})$ f) $P(\text{Vegetables} \mid \text{Male})$

3. You take into the dressing room 4 pairs of blue jeans, 6 pairs of black pants, and 5 pairs of grey pants. For parts a) and b): You randomly select a pair of pants and try them on. You set the first pair aside to purchase and randomly grab another pair of pants to try on. Find each probability as a fraction.

- a) $P(\text{Blue Jeans and then another pair of Blue Jeans})$
 b) $P(\text{Black pants and then a pair of Grey pants})$
 c) How many ways could you select one pair of pants of each color?

4. In your pantry at home there are 12 cans of beans, 8 cans of corn, and 10 cans of beets. for parts a) and b), you take one can at random, don't like what you got and return it to the shelf then you take another can at random. Find each probability as a fraction.

- a) $P(\text{Corn and then Beans})$ b) $P(\text{Beets and then Beets})$
 c) How many ways can you take 4 cans of beans, 3 cans of corn, and 2 cans of beets?

5. You are going to buy a car and have to decide which one. You have narrowed your choice to 4 different colors, 3 different kinds of engines, and 7 different accessory packages. If you can only choose one of each how many different cars could you order?

6. You have 8 different pictures you want to put up on your wall.
 - a) How many different ways could you arrange all 8 of the pictures on the wall?
 - b) If you only have room to hang 5 of them how many different ways could you arrange them on the wall?

7. There are 9 different topping to choose from at the buffet to put on your salad.
 - a) How many different salads could you make if you want only 4 different toppings?
 - b) Your plate has enough room for all of the toppings. How many different salads could be made if you choose all 9 toppings?

8. A serial number on the back of a radio has 5 numbers and 3 letters. How many different serial numbers are possible if:
 - a) Letters and numbers can repeat?
 - b) Letters can't repeat and you can't use the letter 'O' but numbers can repeat.

9. Use this set of numbers: 18, 43, 16, 19, 20, 16, 32, 44, 19, 23, 24, 33, 37, 40
 - a) Find the mean b) Find the mode c) Find the median
 - d) Find the range e) Find the standard deviation.

10. Use this set of numbers: 112, 118, 110, 109, 112, 107, 140, 115, 120
 - a) Find the standard deviation
 - b) Does the data from Prob 9 or 10 have more variation? Give a reason.

11. Two classes at a school have the following statistics:

1st Hour: Min: 32	Lower Quartile: 40	
Median: 48	Upper Quartile: 72	Max: 80
2nd Hour: Min: 20	Lower Quartile: 48	
Median: 72	Upper Quartile: 80	Max: 83

Draw a box-and-whisker plot for each class using the same number line then answer the following questions.

 - a) If your score in 1st hour was 72 then you did better than what percent of the others in 1st hour? What percent of 2nd hour did better than you?
 - b) If your score was 41 did you do better compared to the rest of the class in 1st or 2nd hour? Give a reason.
 - c) If your score was 72 what percent of 1st hour did better than you? What percent of 2nd hour scored lower than you?

12. Use this set of data: 16, 22, 23, 24, 26, 27, 33, 34, 39, 45, 47, 50, 60, 71, 75
 - a) What number is at the 20% percentile?
 - b) What number is at the 80% percentile?
 - c) 45 is at what percentile?

13. A quality control employee samples some cans of vegetables coming off the production line. The mean weight of the cans is 24.5 ounces with a standard deviation of 1.5 ounces.

- a) What is the z-score for a can that weighs 17 ounces? What does this z-score mean?
- b) What is the z-score of a can that weighs 29 ounces?
- c) What percent of the cans weighed less than 23 ounces?
- d) What percent of the cans weighed between 21.5 and 29 ounces?
- e) What interval of weights contains 68% of the cans?
- f) What is the probability of grabbing a can at random and the can weighs less than 26 ounces?
- g) If the z-score of a can is 1.6 find the weight of the can to the nearest tenth of an ounce.
- h) Find the percent of cans, to the nearest hundredth of a %, that weigh less than 26.3 ounces.
- i) Find the percent of cans that weight more than 21.32 ounces.

14. A survey of 350 people indicates that 185 will vote for Charles in the upcoming city election.

- a) Find the sample proportion to the nearest whole percent.
- b) Find the margin of error to the nearest whole percent.
- c) Find the interval, as percents, that is most likely to contain the actual percent of the population that will vote for Charles.
- d) If there are 24,600 registered voters in the city find the interval, as # of voters, that is most likely to contain the actual number of voters that will vote for Charles.

15. A sample of ice cream bars coming off of the production line indicates that 8% of the boxes are damaged. If the sample had a margin of error of $\pm 5\%$ find the sample size to the nearest whole number.

16. The soccer team has one more game in the regular season. The probability that the goalie has a shutout is $\frac{2}{5}$. The probability that the goalie gives up at least 3 goals is $\frac{1}{8}$. Find the following probability as a fraction without reducing.

P(shutout or at least 3 goals)=

17. You are going to your grandmothers for dinner. The probability that you ride with your sister in the car is $\frac{3}{7}$. The probability that you ride with your parents in the car is $\frac{5}{12}$. Find the following probability as a percent to the nearest tenth.

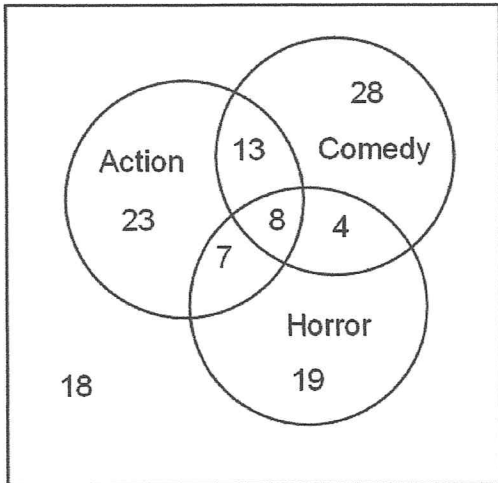
P(ride with sister or ride with parents)=

18. A school committee is being formed. There will be 10 people on the committee. It has been decided to have 5 adults and 5 students on the committee. There are 12 adults and 13 students that want to be on the committee. Names will be chosen at random. How many ways can the committee be formed?

19. At a qualifying race the fastest 8 cyclists move on to the finals.

- a) If there are 15 cyclists in the qualifying race, how many ways can the 8 cyclists for the finals be decided?
- b) Once the 8 cyclists are determined their lane assignments for the final race is determined by random drawing. There are only 8 lanes on the track. How many different lane assignments are possible for the finals?

20. Use the Venn Diagram to find each probability as a fraction without reducing.



- a) $P(\text{Action or Comedy})$ b) $P(\text{Horror but not Action})$ c) $P(\text{Comedy and Horror})$
d) $P(\text{Not Action})$ e) $P(\text{neither Comedy nor Horror})$ f) $P(\text{Action and Comedy and Horror})$

ANSWERS Algebra 2 Probability, Outcomes, and Statistics Review.

Spring 2011

1. a) $\frac{7}{12}$ b) $\frac{7}{12}$ c) $\frac{4}{12}$ d) $\frac{0}{12}$
2. a) $\frac{23}{127}$ b) $\frac{82}{127}$ c) $\frac{63}{127}$ d) $\frac{0}{127}$ e) $\frac{8}{24}$ f) $\frac{13}{64}$
3. a) $\frac{12}{210}$ b) $\frac{30}{210}$ 4. a) $\frac{96}{900}$ b) $\frac{30}{210}$ c) 120
5. 84 6. a) 40,320 b) 6720
7. a) 126 b) 1 8. a) 1,757,600,000 b) 1,380,000,000
9. a) 27.43 b) 16 and 19 c) 23.5 d) 28 e) 9.99
10. a) $\sigma = 9.4$ b). Due to the larger standard deviation the set of numbers in problem 9 has more variation.
11. a) 72 is better than 75% of 1st hour but 50% of 2nd hour did better.
b) If you had a 41 you did better in 1st hour because over 25% of 1st hour scored lower whereas less than 25% of 2nd hour scored lower.
c) 50% of 1st hour scored better than 48 and 25% of 2nd hour scored lower.
12. a) 24 is at the 20th percentile b) 60 is at the 80th percentile.
c) 45 is at the 60th percentile.
13. a) $z\text{-score} = -5$ which means 17 ounces is five standard deviations below the mean.
b) $z\text{-score} = +3$ c) 16% d) 97.5% e) 23 to 26 ounces.
f) 84% probability. g) 26.9 ounces. h) 88.49% i) 1.70%
14. a) 53% b) $\pm 5\%$ c) 48 to 58 percent. d) 11,808 to 14,268
15. Sample size is about 400. 16. $\frac{21}{40}$ 17. 66.7% 18. 1,019,304
19. a) 6435 b) 40,320
20. a) $\frac{83}{120}$ b) $\frac{23}{120}$ c) $\frac{12}{120}$ d) $\frac{69}{120}$ e) $\frac{41}{120}$ f) $\frac{8}{120}$