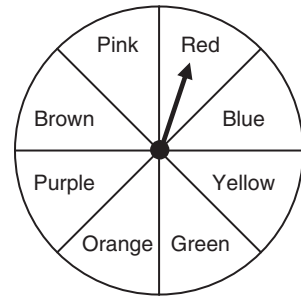

6. choosing a blue tile from a bag of 3 yellow tiles, 4 red tiles, and 5 green tiles

7. drawing the number 6 from a standard deck of playing cards

8. rolling two number cubes and getting a sum that is an even number

Suppose that you roll a six-sided number cube and then you spin the spinner shown.

9. Make a table to show the sample space of the events.



10. What are the total number of possible outcomes?
11. Are the events dependent or independent?
12. Use your table to determine the probability of rolling a 1 and the spinner landing on green.

-
13. Use your table to determine the probability of rolling an odd number and the spinner landing on red.

 14. Use your table to determine the probability of rolling a number greater than 2 and the spinner landing on a color that begins with the letter B.

 15. Use your table to determine the probability of rolling a number less than 7 and the spinner landing on yellow.

 16. Use your table to determine the probability of rolling an even number and the spinner landing on gray.

Assignment

Assignment for Lesson 7.2

Name _____ Date _____

Multiple Trials Compound and Conditional Probability

1. The table below shows the sample space for first flipping a coin and then rolling a number cube.

	Heads	Tails
1	H,1	T,1
2	H,2	T,2
3	H,3	T,3
4	H,4	T,4
5	H,5	T,5
6	H,5	T,6

- a. What is the probability of getting a head *and* then rolling a 4? Explain your answer.

- b. What is the probability of getting a tail *and* then rolling a number less than 5? Explain your answer.

-
2. a. You draw a card from a standard deck. You then replace the card, shuffle the deck, and draw a card again. What is the probability of getting a club twice in a row?
- b. You draw a card from a standard deck. You then draw another card from a second standard deck. What is the probability of getting two clubs?
- c. Are your answers to (a) and (b) the same? Explain why or why not.
3. The school's chess club has 18 members. The club needs to choose three members to travel to meet at another school.
- a. Calculate the probability that club members Julia, Felix, and Marc will be chosen.
- b. Calculate the probability that either Julia, Felix, or Marc will be chosen.
4. Suppose you draw two cards out of a standard deck.
- a. If the first card is a 7 of clubs, what is the probability that both cards have numbers on them that add up to 16? Explain your answer.
- b. If the first card is a 6 of diamonds, what is the probability that both cards have numbers on them that add up to less than 10? Explain your answer.

Name _____ Date _____

5. A brook trout fisherman catches a fish two casts in a row 16% of the time. He has a 40% chance of catching a fish on each cast. If he catches a fish on his first cast, what is the probability that he will catch a fish on the second cast?

Assignment

Assignment for Lesson 7.3

Name _____ Date _____

Counting Permutations and Combinations

1. Use any eight letters of the alphabet and the formula for permutations to answer the questions. Show your work.
 - a. How many three-letter strings can there be without repetition?

 - b. How many five-letter strings can there be without repetition?

2. Calculate the number of four-letter strings that can be formed from the letters in the word BOOK.

3. Calculate the number of seven-letter strings that can be formed from the letters in the word GEORGIA.

4. There are four tire positions on a car—left front (LF), left rear (LR), right front (RF), and right rear (RR).

a. List the arrangements that are equivalent to LR, LF, RF, RR.

b. How many different possible tire position arrangements are there?

c. Suppose the spare tire is added to the list of positions. How many different possible arrangements are there now?

5. Five friends—Abe (A), Bea (B), Charlie (C), Daisy (D), and Edgar (E)—are eating lunch together at a round table.

a. List the seating arrangements that are equivalent to C, E, B, A, D.

b. How many different possible table arrangements are there for the group?

c. Suppose two more friends join the group. How many different possible table arrangements are there for the new, larger, group?

6. State whether permutations or combinations should be used to answer the questions. Then calculate the answer.

a. A CD player in a car holds six CDs. In how many different orders can they be loaded?

b. If you have nine CDs, how many six-CD sets could be chosen from your CD collection?

c. How many different 4-player practice teams could be chosen from a 9-player soccer team?

d. A soccer team plays with nine different positions on the field. The goalie always stays in goal, but the remaining players can play any position. In how many different ways can the players fill these positions?

-
7. Using a standard deck of playing cards, what is the probability of drawing four aces in a row?

 8. Suppose you pick any three digits at random from the number 4732. What is the probability of making a three-digit number whose value is less than 400?

Assignment

Assignment for Lesson 7.4

Name _____ Date _____

Trials Independent Trials

1. You have a color cube with one brown face and five orange faces. You roll the cube twice. Calculate the probability of each outcome. Show your work.
 - a. What is the probability of rolling two browns?

 - b. What is the probability of rolling one brown and one orange?

 - c. What is the probability of rolling two oranges?

 - d. Are the probabilities in (a), (b), and (c) the same? Why or why not?

2. What is the eighth row of Pascal's Triangle?

-
3. You have a bag of fruit containing two apples and four oranges. Calculate the probability of each outcome.
- a. Suppose that you close your eyes, reach into the bag, and choose a piece of fruit at random. What is the probability of choosing an apple?

 - b. Suppose that you close your eyes, reach into the bag, and choose a piece of fruit at random. What is the probability of choosing an orange?

 - c. Suppose that you close your eyes, reach into the bag, and choose a piece of fruit at random. You do this four times. What is the probability of choosing three apples and one orange? Show your work, including use of combinations.

 - d. Suppose that you close your eyes, reach into the bag, and choose a piece of fruit at random. You do this five times. What is the probability of choosing two apples and three oranges? Show your work, including use of combinations.
4. You have a color cube with two yellow faces and four green faces. Calculate the probability of each outcome. Show your work.
- a. Use Pascal's Triangle to calculate the probability of rolling two greens and four yellows when the color cube is rolled six times.

b. Use Pascal's Triangle to calculate the probability of rolling six greens and one yellow when the color cube is rolled seven times?

5. You have a regular octahedron with five sides painted green and three sides painted yellow. Calculate the probability of each outcome.

a. What is the probability of rolling a green?

b. What is the probability of rolling a yellow?

c. What is the probability of rolling three yellows and three greens in six rolls? Show your work.

d. What is the probability of rolling two yellows and five greens in seven rolls? Show your work.

Assignment

Assignment for Lesson 7.5

Name _____ Date _____

To Spin or Not to Spin Expected Value

You are on a game show where you throw a bean bag at a group of 9 targets. Each target has different amounts of money marked on it: \$200, \$400, \$100, \$200, \$500, \$300, \$600, \$400, and \$300. Use this information to answer Questions 1 and 2.

1. What amount could you expect to win from a random throw that hits a target? Show your work and explain each step. (Round all amounts to the nearest dollar.)

-
2. Suppose the game show host offers you \$350 cash to keep instead of throwing a bean bag at the targets. Should you keep the \$350 or throw a bean bag? Explain your answer.

 3. Suppose the game show host offers you \$270 cash to keep instead of throwing a bean bag at the targets. Should you keep the \$270 or throw a bean bag? Explain your answer.

Name _____ Date _____

You are playing a game where you draw a card from a deck that contains cards numbered from 2 to 9. The amount of money you win is based on the number on the card. Use this information to answer Questions 4 through 6.

4. What is the expected value you could expect to win from a random draw? Show your work and explain each step. (Round all amounts to the nearest cent.)

-
5. Suppose you are offered \$7 cash to keep instead of drawing a card. Should you keep the \$7 or draw a card? Explain your answer.

 6. Suppose you are offered \$6.50 cash to keep instead of drawing a card. Should you keep the \$6.50 or draw a card? Explain your answer.

 7. Suppose you get a \$50 parking ticket. You can choose to either pay the ticket or go to court and try to get it overturned. Assume that there is a 50% chance that you'll win, and have to pay \$0, and a 50% chance that you'll lose and have to pay the ticket plus court fees, for a total of \$125. What should you do, pay the ticket or take it to court? Explain your answer.

Name _____ Date _____

8. A lottery ticket costs \$3. There is a single \$6 million jackpot for the drawing. It is expected that 2.5 million tickets will be sold. Does it make sense to buy a ticket for this drawing? Explain your answer.

Assignment

Assignment for Lesson 7.6

Name _____ Date _____

The Theoretical and the Actual Experimental Versus Theoretical Probability

Determine whether the statement is based on theoretical or experimental probability. Explain your answer.

1. The probability that a person chooses vanilla as his or her favorite type of ice cream is $\frac{1}{6}$.
2. The probability that you will choose a king from a standard deck of shuffled cards is $\frac{1}{13}$.
3. The probability that you get 2 tails when you flip a coin 5 times is $\frac{5}{16}$.
4. The probability that a person chosen at random is left-handed is $\frac{1}{10}$.

Suppose you roll a six-sided number cube 30 times. Your results are shown in the table. Use the table to answer Questions 5–8.

Outcome	1	2	3	4	5	6
Result	10	4	5	2	9	0

5. What is the experimental probability that you roll a 3 on your next roll? What is the theoretical probability that you roll a 3 on your next roll?
6. What is the experimental probability that you roll an even number on your next roll? What is the theoretical probability that you roll an even number on your next roll?
7. What is the experimental probability that you roll a number less than 6 on your next roll? What is the theoretical probability that you roll a number less than 6 on your next roll?
8. What is the experimental probability that you roll a 1 and then roll another 1 on your next two rolls? What is the theoretical probability that you roll a 1 and then roll another 1 on your next two rolls?

