

I. Counting

1. In a race in which six automobiles are entered and there are not ties, in how many ways can the first four finishers come in?
2. The model of the car you are thinking of buying is available in nine different colors and three different styles (hatchback, sedan, or station wagon). In how many ways can you order the car?
3. A corporation has 10 members on its Board of Directors. In how many ways can it elect a president, vice-president, secretary and treasurer?

II. Use the table on the left to answer the following questions:

Number on Spinner	Frequency
1	4
2	5
3	2
4	6
5	2

4. If each of the sections on the spinner are the same size, what is the **theoretical** probability that any given number will be spun?
5. What was the **experimental** probability of how many times a 4 was actually rolled using the table?
6. **Theoretically** if you spin this spinner 50 times, how many times would you expect to roll the number 3?

III. Find each probability:

7. If a satellite launch has a 97% chance of success, what is the probability of 3 consecutive successful launches?
8. A coin and a die are tossed. Calculate the probability of getting heads and a 2.
9. 2 cards are chosen from a deck of cards. The first card is replaced before choosing the second card. What is the probability that they both will be 10's?
10. Mike is rolling 2 dice and needs to roll a 10 to win the game he is playing. What is the probability that Mike wins the game?
11. 2 dice are tossed.
 - A. What is the probability of obtaining a sum equal to 7?
 - B. What is the probability of obtaining a sum less than 7?
 - C. What is the probability of obtaining a sum of at least 7?
12. A card is chosen at random from a standard deck of cards. What is the probability that the card chosen is a heart or spade?
13. 3 coins are tossed simultaneously. What is the probability of getting exactly 3 heads OR exactly 3 tails?

14. What is the probability of choosing a number from 1 to 15 that is greater than 5 or even?
15. On a game show, there are 18 questions: 8 easy, 6 medium-hard, and 4 hard. If contestants are given questions randomly, what is the probability that the first two contestants will get easy questions if a question is discarded once it has been asked?
16. On the game show above, what is the probability that the first contestant will get an easy question and the second contestant will get a hard question?
17. A die is tossed. Find $P(\text{less than } 5/\text{even})$.

18. The figure shows the counts of earned degrees for several colleges on the East Coast. The level of degree and the gender of the degree recipient were tracked.

	Bachelor's	Master's	Professional	Doctorate	Total
Female	632	128	26	32	818
Male	438	165	27	20	650
Total	1070	293	53	52	1468

- A. What is the probability that a randomly selected degree recipient is a female?
- B. What is the probability that a randomly selected degree recipient is a male?
- C. What is the probability that a randomly selected male has a bachelor's degree?
- D. What is the probability that a randomly selected female has a doctorate degree?
19. You select one person who has taken the written drivers test.

	Pass	Fail	Total
Men	50		80
Women		20	60
Total	90		140

- A. Find the probability that you select a woman
- B. Find the probability that you select a woman, given that she passed.
- C. Find the probability that you select a failure, given it was a man
- D. Are being male and passing the written test independent?
20. At a particular school with 200 male students, 58 play football, 40 play basketball and 8 play both.
- A. Find the probability that a randomly selected male student plays basketball or football.
- B. Find the probability that a randomly selected male student plays neither sport.