

1. If each outcome of an experiment is equally likely, the Probability of an event is a fraction of favorable outcomes.
- A) chances
 - B) odds
 - C) probability
 - D) success

2. Probability may be expressed as a fraction, a decimal, or a percent.
- A) True
 - B) False

3. If the event can never occur, then the probability of the event is:
- A) 0
 - B) 1
 - C) $1/2$
 - D) $2/3$

4. Probability of an event not occurring = Probability of event occurring - 1.
- A) True
 - B) False

5. A city study finds that the probability of a car running a red light at a certain intersection during any given day is 9.6%. What is the probability that a car will not run the red light on a given day?
- $1 - 9.6\% = 90.4\%$
- A) 8.6%
 - B) 96.0%
 - C) 4.0%
 - D) 90.4%

6. Michael and Surrey are planning to have three children. Assuming it is equally likely for a boy or a girl to be born, what is the probability that at least one of their children will be a boy?
- $= \frac{7}{8}$
- A) $1/8$
 - B) $3/8$
 - C) $5/8$
 - D) $7/8$

- bbb
- bbG
- bGb
- bGG
- Gbb
- GbG
- GGb
- GGG

7. Suppose there are seven jelly beans in a bowl—three red and four blue. If a jelly bean is selected at random, what is the probability that it is blue?

- A) $2/7$
- B) $3/7$
- C) $4/7$
- D) $5/7$

$$= \frac{4}{7}$$

8. Suppose there are 15 jelly beans in a bowl—3 green, 5 blue, and 7 red. A jelly bean is selected at random. What is the probability the jelly bean is not blue?

- A) $1/3$
- B) $2/3$
- C) $7/15$
- D) $8/15$

$$\frac{3+7}{15} = \frac{10}{15} = \frac{2}{3}$$

9. Suppose you pick a marble from a box containing five red and seven blue marbles. You record the color and put the marble back in the box. What is the probability of getting a red marble both times if you do this twice?

- A) $5/12$
- B) $4/11$
- C) $25/144$
- D) $5/33$

$$\frac{5}{12} * \frac{5}{12} = \frac{25}{144}$$

10. Suppose a coin is tossed three times. What is the total possible number of outcomes?

- A) 2
- B) 4
- C) 6
- D) 8

↓
3

$$2^3 = 8$$

11. You have six socks in your drawer, three brown and three black. You get up early in the morning, while it is still dark, reach into your drawer, and grab two socks without looking. What is the probability that the socks are the same color?

$$\frac{3}{6} * \frac{2}{5} + \frac{3}{6} * \frac{2}{5} = \frac{2}{5} = 0.4 = 40\%$$

12. Suppose you pick a marble from a box containing five red and seven blue marbles. You record the color and put the marble back in the box. What is the probability of getting a blue marble each time if you do this three times?

$$\frac{7}{12} * \frac{7}{12} * \frac{7}{12} = \frac{343}{1728} \approx 19.85\%$$

13. The _____ of a test is the probability that the test will detect the disease in a person who does have the disease.
- A) specificity
 - B) sensitivity**
 - C) false positive
 - D) true negative
14. The result of a medical test is a true negative if the people who test negative do not have the disease.
- A) True**
 - B) False
15. The _____ of a test is the probability that the test will give a negative result for a person who does not have the disease.
- A) specificity**
 - B) sensitivity
 - C) false positive
 - D) true negative
16. _____ probability is the probability that one event occurs given that another has occurred.
- A) Recurrent
 - B) Disjunctive
 - C) Conditional**
 - D) Predictive

17. ABC College is using a new screening test to test its employees for TB. The following table shows the results of a pilot study:

	Has TB	Does not have TB	Total
Test positive	42	26	68
Test negative	8	240	248
<i>total</i>	<i>50</i>	<i>266</i>	<i>316</i>

What percentage of the individuals in the study were false negatives?

- A) 75.9%
- B) 2.5%**
- C) 13.3%
- D) 8.2%

$$\frac{8}{316} = 0.025$$

$$= 2.5\%$$

tested negative
and has TB

18. ABC College is using a new screening test to test its employees for TB. The following table shows the results of a pilot study:

	Has TB	Does not have TB
Test positive	42	26
Test negative	8	240

What percentage of the individuals in the study who had TB tested negative?

- A) 3.2%
- B) 2.5%
- C) 16.0%
- D) 8.0%

Answer Key

- 1. C
- 2. A
- 3. A
- 4. B
- 5. D
- 6. D
- 7. C
- 8. B
- 9. C
- 10. D
- 11. $2/5 = 0.4 = 40\%$
- 12. $343/1728 \approx 0.1985 \approx 19.85\%$
- 13. B
- 14. A
- 15. A
- 16. C
- 17. B
- 18. C