

Answer the question.

1) Which of the following cannot be a probability?

A) -1

B) 0

C)  $\frac{1}{2}$

D) 1

1) \_\_\_\_\_

2) On a multiple choice test with four possible answers (like this question), what is the probability of answering a question correctly if you make a random guess?

A) 1

B)  $\frac{3}{4}$

C)  $\frac{1}{4}$

D)  $\frac{1}{2}$

2) \_\_\_\_\_

Find the indicated probability.

3) A sample space consists of 154 separate events that are equally likely. What is the probability of each?

A) 154

B)  $\frac{1}{154}$

C) 0

D) 1

3) \_\_\_\_\_

4) A die with 12 sides is rolled. What is the probability of rolling a number less than 11?

A)  $\frac{5}{6}$

B)  $\frac{1}{12}$

C) 10

D)  $\frac{11}{12}$

4) \_\_\_\_\_

5) Two 6-sided dice are rolled. What is the probability that the sum of the two numbers on the dice will be 3?

A)  $\frac{1}{2}$

B)  $\frac{17}{18}$

C) 2

D)  $\frac{1}{18}$

5) \_\_\_\_\_

Answer the question, considering an event to be "unusual" if its probability is less than or equal to 0.05.

6) Is it "unusual" to get a 12 when a pair of dice is rolled?

A) Yes

B) No

6) \_\_\_\_\_

$$P(12) = 1/36 = 0.02777... < 0.05$$

7) Is it "unusual" to get 5 when a pair of dice is rolled?

A) Yes

B) No

7) \_\_\_\_\_

$$P(5) = 4/36 = 1/9 = 0.11111... > 0.05$$

From the information provided, create the sample space of possible outcomes.

8) Flip a coin three times.

A) HHH HTT HTH TTT HTT THH HHT THT

B) HHH TTT THT HTH HHT TTH HTH

C) HTT THT HTH HHH TTH TTT

D) HHH HHT HTH HTT THH THT TTH TTT

8) \_\_\_\_\_

Answer the question.

- 9) Find the odds against correctly guessing the answer to a multiple choice question with 3 possible answers. 9) \_\_\_\_\_  
A) 3 : 1                      B) 2 : 1                      C) 3 : 2                      D) 2 : 3

Find the indicated complement.

- 10) The probability that Luis will pass his statistics test is 0.67. Find the probability that he will fail his statistics test. 10) \_\_\_\_\_  
A) 0.33                      B) 2.03                      C) 1.49                      D) 0.34

$$P(\text{no A}) = 1 - P(A) = 1 - 0.67 = 0.33$$

Find the indicated probability.

- 11) A bag contains 8 red marbles, 4 blue marbles, and 1 green marble. Find P(not blue). 11) \_\_\_\_\_  
A) 9                      B)  $\frac{4}{13}$                       C)  $\frac{9}{13}$                       D)  $\frac{13}{9}$

- 12) A 6-sided die is rolled. Find P(3 or 5). 12) \_\_\_\_\_  
A)  $\frac{1}{6}$                       B) 2                      C)  $\frac{1}{3}$                       D)  $\frac{1}{36}$

$$P(A \text{ or } B) = P(A) + P(B) \qquad P(3 \text{ or } 5) = P(3) + P(5) \\ = 1/6 + 1/6 = 2/6 = 1/3$$

- 13) A card is drawn from a well-shuffled deck of 52 cards. Find P(drawing an ace or a 9). 13) \_\_\_\_\_  
A)  $\frac{5}{13}$                       B)  $\frac{13}{2}$                       C)  $\frac{2}{13}$                       D) 10

$$P(A \text{ or } B) = P(A) + P(B) \qquad P(\text{Ace or } 9) = P(\text{Ace}) + P(9) = 4/52 + 4/52 = 8/52 = 2/13$$

- 14) A spinner has equal regions numbered 1 through 15. What is the probability that the spinner will stop on an even number or a multiple of 3? 14) \_\_\_\_\_  
A)  $\frac{2}{3}$                       B) 12                      C)  $\frac{7}{9}$                       D)  $\frac{1}{3}$

$$1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 \qquad P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) \\ P(\text{even or mult of } 3) = P(E) + P(m \text{ of } 3) - P(\text{even and mult of } 3) \\ = 7/15 + 5/15 - 2/15 \\ = 10/15 = 2/3$$

- 15) If you pick a card at random from a well shuffled deck, what is the probability that you get a face card or a spade? 15) \_\_\_\_\_  
A)  $\frac{11}{26}$                       B)  $\frac{9}{26}$                       C)  $\frac{25}{52}$                       D)  $\frac{1}{22}$

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) = 12/52 + 13/52 - 3/52 = 22/52 = 11/26$$

- 16) In one town, 45% of all voters are Democrats. If two voters are randomly selected for a survey, find the probability that they are both Democrats. Round to the nearest thousandth if necessary. 16) \_\_\_\_\_
- A) 0.900                      B) 0.198                      C) 0.203                      D) 0.450

$$P(A \text{ and } B) = P(A) * P(B) \quad P(\text{1st voter dem And 2nd voter dem}) = 0.45 * 0.45 = 0.2025$$

- 17) Find the probability of correctly answering the first 5 questions on a multiple choice test if random guesses are made and each question has 4 possible answers. 17) \_\_\_\_\_
- A)  $\frac{4}{5}$                       B)  $\frac{1}{1024}$                       C)  $\frac{1}{625}$                       D)  $\frac{5}{4}$

$$P(A \text{ and B and C and C and D and E}) = (1/4)(1/4)(1/4)(1/4)(1/4) = (1/4)^5 = 1/1024$$

- 18) A manufacturing process has a 70% yield, meaning that 70% of the products are acceptable and 30% are defective. If three of the products are randomly selected, find the probability that all of them are acceptable. 18) \_\_\_\_\_
- A) 0.027                      B) 2.1                      C) 0.343                      D) 0.429

$$P(A \text{ and B and C}) = 0.70^3 = 0.343$$

- 19) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that both cards are black. Express your answer as a simplified fraction. 19) \_\_\_\_\_
- A)  $\frac{1}{2,652}$                       B)  $\frac{13}{51}$                       C)  $\frac{25}{51}$                       D)  $\frac{25}{102}$

$$P(A \text{ and } B) = P(A) * P(B|A) = 26/52 * 25/51 = 25/102$$

*Note: since the cards are dealt with replacement, the probability of selecting the 2nd card is dependent (or affected by) selecting the first card: there is one black card less, and one less in total.*

*P(B|A) is read "probability of event B given that event A has occurred".*

- 20) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that the first card is a King and the second card is a queen. Express your answer as a simplified fraction. 20) \_\_\_\_\_
- A)  $\frac{1}{663}$                       B)  $\frac{13}{102}$                       C)  $\frac{4}{663}$                       D)  $\frac{2}{13}$

$$P(A \text{ and } B) = P(A) * P(B|A) = 4/52 * 4/51 = 4/663$$

Find the indicated probability. Round to the nearest thousandth.

- 21) An unprepared student makes random guesses for the ten true-false questions on a quiz. Find the probability that there is at least one correct answer. 21) \_\_\_\_\_
- A) 0.001                      B) 0.900                      C) 0.999                      D) 0.100

$$P(\text{at least one } \underline{\hspace{2cm}}) = 1 - P \text{ none of } \underline{\hspace{2cm}}$$

$$\begin{aligned} P(\text{at least one correct}) &= 1 - P \text{ none of them correct} \\ &= 1 - P \text{ all questions wrong.} \\ &= 1 - (1/2)^{10} \\ &= 1023/1024 = 0.999.... \end{aligned}$$

- 22) A study conducted at a certain college shows that 56% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that among 6 randomly selected graduates, at least one finds a job in his or her chosen field within a year of graduating. 22) \_\_\_\_\_
- A) 0.167                      B) 0.560                      C) 0.969                      D) 0.993

$$\begin{aligned}
 P(\text{at least one finds a job}) &= 1 - P(\text{no one finds a job}) \\
 &= 1 - (0.44)^6 = \\
 &= 0.9927\dots
 \end{aligned}$$

*Note: since probability of finding a job is 0.56, prob of not finding a job is  $1 - 0.56 = 0.44$*

Find the indicated probability. Express your answer as a simplified fraction unless otherwise noted.

- 23) The table below describes the smoking habits of a group of asthma sufferers. 23) \_\_\_\_\_

		Light smoker	Heavy smoker	Total
Men	358	71	69	498
Women	304	78	76	458
Total	662	149	145	956

If one of the 956 subjects is randomly selected, find the probability that the person chosen is a nonsmoker given that it is a woman. Round to the nearest thousandth.

- A) 0.459                      B) 0.318                      C) 0.664                      D) 0.379

$$P(A|B) = P(A \text{ and } B)/P(B) = 304/458 = 0.663755 \dots$$

Solve the problem.

- 24) There are 10 members on a board of directors. If they must form a subcommittee of 4 members, how many different subcommittees are possible? 24) \_\_\_\_\_
- A) 24                      B) 10,000                      C) 210                      D) 5040

*A subcommittee, no ranks, order does not matter: Combinations,  $nCr$ .  $10C4 = 210$*

- 25) The library is to be given 3 books as a gift. The books will be selected from a list of 16 titles. If each book selected must have a different title, how many possible selections are there? 25) \_\_\_\_\_
- A) 560                      B) 3360                      C) 4096                      D) 48

*Order does not matter.  $nCr$   $16C3 = 560$*

- 26) How many 3-digit numbers can be formed using the digits 1, 2, 3, 4, 5, 6, 7 if repetition of digits is not allowed? 26) \_\_\_\_\_
- A) 5                      B) 343                      C) 6                      D) 210

*Forming a three digits number the order matters.:  $nPr$   $7P3 = 210$*

- 27) How many ways can 6 people be chosen and arranged in a straight line if there are 8 people to choose from? 27) \_\_\_\_\_
- A) 48                      B) 20,160                      C) 720                      D) 40,320

*"Arranged" implies that order matters,  $nPr$ .  $8P6 = 20160$*

## Answer Key

Testname: PRACTICE2V

- 1) A
- 2) C
- 3) B
- 4) A
- 5) D
- 6) A
- 7) B
- 8) D
- 9) B
- 10) A
- 11) C
- 12) C
- 13) C
- 14) A
- 15) A
- 16) C
- 17) B
- 18) C
- 19) D
- 20) C
- 21) C
- 22) D
- 23) C
- 24) C
- 25) A
- 26) D
- 27) B