Intro: Probability Test

Multiple Choice
Identify the choice that best completes the statement or answers the question. Your work must match your answer for full credit.

_____ 1. Find \( P(\text{rolling 3 or 6}) \) with one number cube.
   a. 1
   b. \( \frac{1}{3} \)
   c. \( \frac{1}{6} \)
   d. \( \frac{1}{2} \)

_____ 2. You have 10 pennies in your pocket. Of those pennies, 2 are Canadian. Suppose you pick a penny out of your pocket at random. Find \( P(\text{not Canadian}) \).
   a. \( \frac{6}{10} \)
   b. \( \frac{1}{5} \)
   c. 5
   d. \( \frac{4}{5} \)

_____ 3. You put the names of all the students in your class in a paper bag. There are 15 boys and 17 girls. If you draw a name at random, what is \( P(\text{boy's name}) \)?
   a. \( \frac{17}{32} \)
   b. \( \frac{15}{32} \)
   c. \( \frac{17}{15} \)
   d. \( \frac{15}{17} \)

_____ 4. A survey of teenagers found the music preferences listed. If you pick a teenager at random, what is \( P(\text{rock}) \)?

<table>
<thead>
<tr>
<th>Country</th>
<th>Jazz</th>
<th>Rock</th>
<th>Classical</th>
<th>New Age</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

   a. \( \frac{33}{40} \)
   b. \( \frac{1}{7} \)
   c. \( \frac{7}{40} \)
   d. 1

_____ 5. A bag contains 7 green marbles and 9 white marbles. Suppose a marble is randomly selected. What are the odds in favor of picking a white marble?
   a. 9 to 7
   b. 7 to 16
   c. 7 to 9
   d. 9 to 16

_____ 6. A jar contains 45 red candies and 60 black candies. Suppose a candy is selected at random. What are the odds against selecting a red candy?
   a. 3 to 7
   b. 4 to 7
   c. 3 to 4
   d. 4 to 3
7. The probability of winning a particular game at the Game Place is \( \frac{1}{4} \). Find the odds against winning the game.
   a. 1 to 4  
   b. 3 to 4  
   c. 3 to 1  
   d. 5 to 1

8. A lunch menu consists of 4 different sandwiches, 2 different soups, and 3 different drinks. How many choices are there for ordering a sandwich, a bowl of soup, and a drink?
   a. 21 choices  
   b. 24 choices  
   c. 9 choices  
   d. 34 choices

9. Ms. Wong is redecorating her office. She has a choice of 8 colors of paint, 3 kinds of curtains, 6 colors of carpet, and 2 styles of furniture. How many different ways are there to redecorate if she can choose two different colors of paint, one kind of curtain, one color of carpet, and one style of furniture?
   a. 288 ways  
   b. 2,016 ways  
   c. 2,304 ways  
   d. 27 ways

10. Use the table.
   a. How many possible pairs of jeans are there if each pair has one style and one color?
   b. Suppose you have one pair of jeans of each possible style and color in the table. What is the probability of choosing a pair of black jeans at random?

<table>
<thead>
<tr>
<th>Style</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>regular</td>
<td>light blue</td>
</tr>
<tr>
<td>loose fit</td>
<td>indigo</td>
</tr>
<tr>
<td>boot cut</td>
<td>washed</td>
</tr>
<tr>
<td>slim fit</td>
<td>black blue</td>
</tr>
</tbody>
</table>

   a. 30 pairs; \( \frac{1}{4} \)  
   b. 9 pairs; \( \frac{1}{20} \)  
   c. 20 pairs; \( \frac{1}{5} \)  
   d. 4 pairs; \( \frac{1}{5} \)

11. Find the sample space for tossing 3 coins. Then find \( P(\text{exactly 2 heads}) \).
   a. \( \frac{1}{2} \)  
   b. \( \frac{1}{8} \)  
   c. \( \frac{3}{8} \)  
   d. \( \frac{1}{4} \)
Use the Counting Principle to find the probability.

12. choosing the 7 winning lottery numbers when the numbers are chosen at random from 0 to 9
   a. \(\frac{1}{1,000,000}\)  
   b. \(\frac{1}{4,782,969}\)  
   c. \(\frac{1}{100,000,000}\)  
   d. \(\frac{1}{10,000,000}\)

13. rolling a 6 on each of 5 number cubes
   a. \(\frac{1}{7,776}\)  
   b. \(\frac{5}{6}\)  
   c. \(\frac{1}{30}\)  
   d. \(\frac{5}{7,776}\)

14. Jason and Kyle both choose a number from 1 to 20 at random. What is the probability that both numbers are odd?
   a. \(\frac{1}{8}\)  
   b. \(\frac{1}{2}\)  
   c. \(\frac{1}{4}\)  
   d. \(\frac{1}{3}\)

15. A drawer contains 3 red socks, 2 white socks, and 2 blue socks. Without looking, you select a sock at random, replace it, and select a second sock at random. What is the probability that the first sock is blue and the second sock is red?
   a. \(\frac{5}{14}\)  
   b. \(\frac{6}{49}\)  
   c. \(\frac{5}{49}\)  
   d. \(\frac{3}{7}\)

16. Two urns each contain green balls and red balls. Urn I contains 4 green balls and 2 red balls, and Urn II contains 3 green balls and 3 red balls. A ball is drawn at random from each urn. What is the probability that both balls are red?
   a. \(\frac{1}{22}\)  
   b. \(\frac{5}{132}\)  
   c. \(\frac{5}{36}\)  
   d. \(\frac{1}{6}\)

17. A local weather forecaster is accurate 85% of the time when predicting precipitation for the day. What is the probability that she will make correct precipitation predictions 4 days in a row? Round to the nearest whole percent.
   a. about 49%  
   b. about 52%  
   c. about 48%  
   d. about 54%
18. The probability that Shania is on time for school is \( \frac{1}{5} \). Find the probability that Shania arrives on time for school for the next 2 days. Express your answer as a percent, to the nearest tenth of a percent.
   a. 8%  
   b. 7.2%  
   c. 4%  
   d. 20%

19. On an 8-question true-or-false test you randomly guess at the answers. What is the probability that you get all 8 answers correct? What is the probability that you get all 8 answers wrong?
   a. \( \frac{1}{256} \)  
   b. \( \frac{1}{256} \)  
   c. \( \frac{1}{1} \)  
   d. \( \frac{7}{8} \) \( \frac{7}{8} \)

20. A bag contains 8 purple marbles and 4 white marbles. Two marbles are drawn at random. One marble is drawn and not replaced. Then a second marble is drawn. What is the probability that the first marble is white and the second one is purple?
   a. \( \frac{2}{9} \)  
   b. \( \frac{8}{33} \)  
   c. \( \frac{1}{11} \)  
   d. \( \frac{12}{23} \)

You select a card at random. Without replacing the card, you select a second card. Find the probability.

| M | A | T | H | E | M | A | T | I | C | S |

21. \( P(\text{M, then H}) \)
   a. \( \frac{3}{11} \)  
   b. \( \frac{2}{21} \)  
   c. \( \frac{1}{55} \)  
   d. \( \frac{2}{121} \)

22. \( P(\text{T, then a vowel}) \)
   a. \( \frac{3}{55} \)  
   b. \( \frac{8}{121} \)  
   c. \( \frac{6}{121} \)  
   d. \( \frac{4}{55} \)

23. \( P(\text{C, then T or S}) \)
   a. \( \frac{3}{110} \)  
   b. \( \frac{4}{110} \)  
   c. \( \frac{3}{121} \)  
   d. \( \frac{4}{11} \)
Short Answer.

24. A sandwich is made with only one type of bread, one type of meat, and one type of cheese. There are 3 types of bread: white, wheat, or rye; 2 types of meat: turkey or roast beef; and 2 types of cheese: American or Swiss. Draw a tree diagram to show the number of sandwich choices.

25. You can order a skirt with the three different lengths (knee, mid-calf, ankle) and the four different colors (navy, black, khaki, denim). Draw a tree diagram to show the number of choices.

26. Extra Credit. Find the probability that 5 students chosen at random were all born on a Wednesday.
MULTIPLE CHOICE

1. ANS: B
2. ANS: D
3. ANS: B
4. ANS: C
5. ANS: A
6. ANS: D
7. ANS: C
8. ANS: B
9. ANS: B
10. ANS: C
11. ANS: C
12. ANS: D
13. ANS: A
14. ANS: C
15. ANS: B
16. ANS: D
17. ANS: B
18. ANS: C
19. ANS: B
20. ANS: B
21. ANS: C
22. ANS: D
23. ANS: A
SHORT ANSWER

24. ANS:

25. ANS:

26. ANS:
\[ \frac{1}{16,807} \]