

T-102 EXAM4 PRACTICE

DIRECTIONS: Show all work on this test paper. You must justify how you arrived at each answer.

List the elements in the sample space of the experiment.

- 1) An 8-sided die is rolled. The sides contain the numbers 1, 2, 3, 4, 5, 6, 7, 8. List the sample space of rolling one die. 1) _____
- 2) Two 6-sided dice are thrown. Determine the number of ways that a score of either 3 or 4 can be obtained. Then determine the probability of rolling a 3 or 4. 2) _____

Find the probability.

- 3) Two dice are rolled. Find the probability that the score on the dice is 11 or that the dice both show the same number ("doubles"). 3) _____
- 4) When a single card is drawn from an ordinary 52-card deck, find the probability of getting a red 7 or a red 10. 4) _____

Answer the following question.

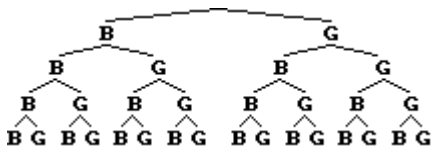
- 5) A sports club is composed of 20 women and 45 men. There are 15 volleyball players, 32 basketball players, and 18 soccer players. No person plays two sports. If a single member is chosen from the club, what is the probability that the member is : 5) _____
- a. A volleyball player?
- b. A basketball player or a soccer player?

Determine whether the players have equal probabilities of winning.

- 6) Draw two cards from a regular deck. If cards of the same suit are drawn, player 1 wins; if cards of the same color are drawn, player 2 wins. 6) _____

Construct the requested tree diagram.

- 7) Use the tree diagram to **count how many** four-child families have two boys and two girls. 7) _____



Two marbles are drawn without replacement from a box with 3 white, 2 green, 2 red, and 1 blue marble. Find the probability.

8) The first marble is red and the second marble is white. 8) _____

9) One marble is white and one marble is blue. 9) _____

Construct the requested tree diagram.

10) Construct a tree diagram that shows all possible 3-letter code words using only the letters p, q, and r without repetition. 10) _____

Find the requested probability.

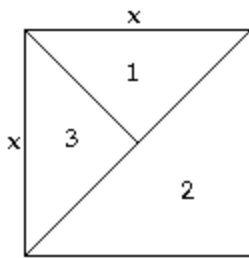
11) A box contains the following mixture of colored marbles: 2 black, 3 red, 3 yellow, and 1 green. If two marbles are drawn, the second being drawn **after the first is replaced**, then what is the probability that both are yellow? 11) _____

12) A box contains the following mixture of colored marbles: 4 black, 4 red, 3 yellow, and 3 green. What is the probability of drawing three marbles of the following colors, in order, if they are drawn **without replacement**: black, green, black? 12) _____

13) Two baseball players bat first and second in the lineup. The first batter has an on-base percentage of 0.31. The second batter has an on-base percentage of 0.48 if someone is on base, but only 0.21 if the bases are empty. At the start of the game, what is the probability that both players get on base? At the start of the game, what is the probability that neither player gets on base? 13) _____

Solve the problem.

14) What is the probability of a dart landing in region 2? 14) _____
 What is the probability of a dart landing in region 3?
 (Assume that the x's represent equal measures and that the dart is equally likely to land in any region on the board.)



15) A husband and wife have a $\frac{2}{3}$ probability of passing on brown eyes to their children. If they have three children, what is the probability that the children will all have brown eyes? 15) _____
 If they have three children, what is the probability that at least one of the children will have brown eyes? (HINT: A tree diagram might be helpful)

16) In a certain population, the probability that a woman has red hair is $\frac{1}{3}$. If a woman has red hair, the probability of her having freckles is $\frac{4}{5}$. If she does not have red hair, the probability of her having freckles is $\frac{1}{30}$. If a woman is chosen at random from the population, what is the probability that she will have freckles? 16) _____

17) The following list of digits was taken from a table of random numbers. We will let them represent 50 tosses of 5 fair coins. If a digit is 0 - 4, it will be an H, and the digit 5 - 9 will be a T. Use this simulation to estimate the probability of getting two heads on a toss of five coins. (3 points) 17) _____

18728	94741	32063	04963	54859
15592	71357	28152	11732	17173
89555	75520	08882	95295	72895
38894	58070	77371	10194	94917
64336	95103	90740	03577	62599
52052	24004	03845	11507	45233
27510	33761	86563	61729	39087
48061	59412	79969	11339	27067
27324	72723	22406	86253	26409
29970	95877	70975	99129	16866

18) Two dice are rolled. Find the odds that the score on the dice is either 6 or 11. 18) _____

19) A football player with a field goal kicking percentage of 60% for kicks of 40 yards or less attempts a final-minute field goal of 32 yards. What are the odds in favor of a successful kick? 19) _____

20) A race track tote board has the odds for a horse listed as 30 to 1. Tote boards list the odds that a horse will lose the race. If this is the case, then what is the probability of the horse winning the race? 20) _____

21) A contractor is considering a sale that promises a profit of \$30,000 with a probability of .7 or a loss (due to bad weather, strikes, and such) of \$7000 with a probability of .3. What is the expected profit? 21) _____

22) In how many ways can 6 people line up for play tickets? 22) _____

23) How many ways can a president, vice-president, and secretary be chosen from a club with 11 members? 23) _____
How many ways can ways can a committe of three be choosen from the club?

24) Find the number of ways to arrange the letters in GIGGLE. 24) _____

25) How many 5-card poker hands consisting of 2 aces and 3 kings are possible with an ordinary 52-card deck? 25) _____

26) In a shipment of 11 CD players, two are defective. Find the probability that a sample of 3 CD players will not contain any that are defective. 26) _____

27) A teacher has prepared a 6 item test with the first three items being multiple choice with 5 choices and the last 3 being true or false. What is the probability that a student will score 100% if every answer is a guess? 27) _____

28) If a letter is drawn from container 1, shown below, and then placed in container 2, and then a letter is drawn from container 2, what is the probability that the last letter drawn is a G. 28) _____



29) If two die are rolled 240 times predict about how many times a sum of 4 will be rolled? (3 points) 29) _____

30) There are 9 nominees for queen and 5 different nominees for king. In how many ways can the slate be chosen? (3 points) 30) _____

31) **BONUS** 31) _____
Susan, Dora, Tom and Charlie are randomly seated in a row of three seats. Find the probability that Susan is in the middle.

Answer Key

Testname: EXAM3

1) $\{1, 2, 3, 4, 5, 6, 7, 8\}$

2) $5, P(X) = \frac{5}{36}$

3) $\frac{2}{9}$

4) $\frac{1}{13}$

5) a. $\frac{3}{13}$ b. $\frac{10}{13}$

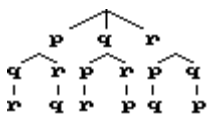
6) No

7) 6 families

8) $\frac{3}{28}$

9) $\frac{3}{28}$

10)



11) $\frac{1}{9}$

12) $\frac{3}{182}$

13) 0.1488, 0.5451

14) $\frac{1}{2}, \frac{1}{4}$

15) $\frac{8}{27}, \frac{26}{27}$

16) $\frac{13}{45}$

17) $\frac{16}{50}$

18) 7 : 29

19) 3 to 2

20) $\frac{1}{31}$

21) \$18,900

22) 720

23) 990, 165

24) 120

25) 24

26) $\frac{28}{55}$

27) $\frac{1}{1000}$

Answer Key

Testname: EXAM3

28) $\frac{4}{15}$

29) 20 times

30) 45 different ways

31)