

Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.****Determine the number of outcomes in the event. Then decide whether the event is a simple event or not. Explain your reasoning.**

- 1) You roll a six-sided die. Event B is rolling an even number. 1) \_\_\_\_\_  
 A) 3; Simple event because the die is only rolled once.  
 B) 2; Not a simple event because it is an event that consists of more than a single outcome.  
 C) 1; Simple event because it is an event that consists of a single outcome.  
 D) 3; Not a simple event because it is an event that consists of more than a single outcome.
- 2) You randomly select a computer from a batch of 50 which contains 3 defective computers. Event B is selecting a defective computer. 2) \_\_\_\_\_  
 A) 1; Simple event because it is an event that consists of only one type of computer.  
 B) 50; Not a simple event because it is an event that consists of more than a single outcome.  
 C) 3; Simple event because it is an event that consists of only one type of computer.  
 D) 3; Not a simple event because it is an event that consists of more than a single outcome.

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

- 3) Flip a coin twice. 3) \_\_\_\_\_  
 A) HH HT TH TT      B) HH TT HT HT      C) HH HT TT      D) HT TH

**Determine whether the events are disjoint.**

- 4) Draw one ball colored red from a bag. 4) \_\_\_\_\_  
 Draw one ball colored blue from the same bag.  
 A) Yes      B) No

**Find the indicated complement.**

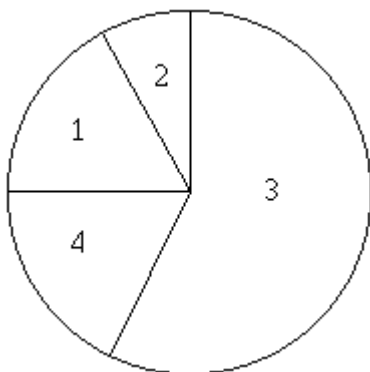
- 5) The probability that Luis will pass his statistics test is 0.26. Find the probability that he will fail his statistics test. 5) \_\_\_\_\_  
 A) 0.35      B) 0.74      C) 3.85      D) 0.13
- 6) If a person is randomly selected, find the probability that his or her birthday is not in May. Ignore leap years. 6) \_\_\_\_\_  
 A)  $\frac{11}{12}$       B)  $\frac{31}{365}$       C)  $\frac{334}{365}$       D)  $\frac{31}{334}$

**Find the indicated probability.**

- 7) 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? 7) \_\_\_\_\_  
 A)  $\frac{1}{22}$       B)  $\frac{25}{52}$       C)  $\frac{11}{26}$       D)  $\frac{9}{26}$

- 8) A sample of 100 wood and 100 graphite tennis rackets are taken from the warehouse. If 9 wood and 14 graphite are defective and one racket is randomly selected from the sample, find the probability that the racket is wood or defective. 8) \_\_\_\_\_
- A) 0.545  
B) 0.115  
C) 0.57  
D) There is insufficient information to answer the question.

- 9) 100 employees of a company are asked how they get to work and whether they work full time or part time. The figure below shows the results. If one of the 100 employees is randomly selected, find the probability of getting someone who carpools or someone who works full time. 9) \_\_\_\_\_



1. Public transportation: 8 full time, 6 part time  
2. Bicycle: 4 full time, 3 part time  
3. Drive alone: 29 full time, 32 part time  
4. Carpool: 8 full time, 10 part time

- A) 0.59                      B) 0.67                      C) 0.28                      D) 0.51
- 10) A 6-sided die is rolled. Find  $P(3 \text{ or } 5)$ . 10) \_\_\_\_\_
- A)  $\frac{1}{3}$                       B) 2                      C)  $\frac{1}{36}$                       D)  $\frac{1}{6}$
- 11) A card is drawn from a well-shuffled deck of 52 cards. Find  $P(\text{drawing an ace or a 9})$ . 11) \_\_\_\_\_
- A)  $\frac{2}{13}$                       B) 8                      C)  $\frac{4}{13}$                       D)  $\frac{13}{2}$
- 12) A bag contains 6 red marbles, 2 blue marbles, and 1 green marble. Find  $P(\text{not blue})$ . 12) \_\_\_\_\_
- A)  $\frac{7}{9}$                       B) 7                      C)  $\frac{2}{9}$                       D)  $\frac{9}{7}$

- 13) The table below describes the smoking habits of a group of asthma sufferers. 13) \_\_\_\_\_

	Nonsmoker	Occasional smoker	Regular smoker	Heavy smoker	Total
Men	351	47	70	48	516
Women	395	40	87	43	565
Total	746	87	157	91	1081

If one of the 1081 people is randomly selected, find the probability of getting a regular or heavy smoker.

- A) 0.476                      B) 0.229                      C) 0.109                      D) 0.145

- 14) In one town, 20% 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. 14) \_\_\_\_\_
- A) 0.038                      B) 0.200                      C) 0.040                      D) 0.400

- 15) When a pair of dice are rolled there are 36 different possible outcomes: 1-1, 1-2, ... 6-6. If a pair of dice are rolled 5 times, what is the probability of getting a sum of 5 every time? Round to eight decimal places. 15) \_\_\_\_\_
- A) 0.00032                      B) 0.04                      C) 0.00001694                      D) 0.00005168

- 16) 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. 16) \_\_\_\_\_
- A)  $\frac{13}{51}$                       B)  $\frac{1}{2,652}$                       C)  $\frac{25}{102}$                       D)  $\frac{25}{51}$

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

- 17) The table below shows the soft drinks preferences of people in three age groups. 17) \_\_\_\_\_

	cola	root beer	lemon-lime
under 21 years of age	40	25	20
between 21 and 40	35	20	30
over 40 years of age	20	30	35

If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

- A)  $\frac{6}{17}$                       B)  $\frac{2}{5}$
- C)  $\frac{5}{17}$                       D) None of the above is correct.

**Evaluate the expression.**

- 18)  $\frac{12!}{7!}$  18) \_\_\_\_\_

- A) 2!                      B)  $\frac{12}{7}$                       C) 95,040                      D) 84,000

- 19)  $5P_4$  19) \_\_\_\_\_
- A) 24                      B) 120                      C) 1                      D) 5

- 20)  $8C_3$  20) \_\_\_\_\_
- A) 112                      B) 120                      C) 56                      D) 3

**Solve the problem.**

- 21) There are 13 members on a board of directors. If they must form a subcommittee of 5 members, how many different subcommittees are possible? 21) \_\_\_\_\_
- A) 120                      B) 1287                      C) 154,440                      D) 371,293

- 22) How many ways can an IRS auditor select 4 of 12 tax returns for an audit? 22) \_\_\_\_\_
- A) 20,736                      B) 24                      C) 11,880                      D) 495

- 23) 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? 23) \_\_\_\_\_  
 A) 210 B) 6 C) 5 D) 343
- 24) How many ways can 6 people be chosen and arranged in a straight line if there are 8 people to choose from? 24) \_\_\_\_\_  
 A) 48 B) 720 C) 20,160 D) 40,320
- 25) In a certain lottery, five different numbers between 1 and 31 inclusive are drawn. These are the winning numbers. To win the lottery, a person must select the correct 5 numbers in the same order in which they were drawn. What is the probability of winning? 25) \_\_\_\_\_  
 A)  $\frac{120}{20,389,320}$  B)  $\frac{1}{120}$  C)  $\frac{1}{31!}$  D)  $\frac{1}{20,389,320}$

**Use the fundamental counting principle to solve the problem.**

- 26) A shirt company has 4 designs each of which can be made with short or long sleeves. There are 7 color patterns available. How many different shirts are available from this company? 26) \_\_\_\_\_  
 A) 28 B) 11 C) 13 D) 56
- 27) How many license plates can be made consisting of 2 letters followed by 3 digits? 27) \_\_\_\_\_  
 A) 676,000 B) 67,600 C) 11,881,376 D) 100,000

**Find the mean of the given probability distribution.**

- 28) The number of golf balls ordered by customers of a pro shop has the following probability distribution. 28) \_\_\_\_\_

x	P(x)
3	0.14
6	0.25
9	0.36
12	0.15
15	0.10

- A)  $\mu = 9$  B)  $\mu = 5.79$  C)  $\mu = 9.06$  D)  $\mu = 8.46$
- 29) A police department reports that the probabilities that 0, 1, 2, and 3 burglaries will be reported in a given day are 0.48, 0.39, 0.12, and 0.01, respectively. 29) \_\_\_\_\_  
 A)  $\mu = 1.50$  B)  $\mu = 0.25$  C)  $\mu = 1.14$  D)  $\mu = 0.66$

**Provide an appropriate response. Round to the nearest hundredth.**

- 30) Find the standard deviation for the given probability distribution. 30) \_\_\_\_\_

x	P(x)
0	0.12
1	0.17
2	0.09
3	0.28
4	0.34

- A)  $\sigma = 2.91$  B)  $\sigma = 1.99$  C)  $\sigma = 1.41$  D)  $\sigma = 1.45$

**Provide an appropriate response.**

- 31) In a game, you have a  $\frac{1}{27}$  probability of winning \$100 and a  $\frac{26}{27}$  probability of losing \$4. What is your expected value? 31) \_\_\_\_\_  
 A) -\$3.85 B) \$7.56 C) -\$0.15 D) \$3.70

- 32) Suppose you buy 1 ticket for \$1 out of a lottery of 1,000 tickets where the prize for the one winning ticket is to be \$500. What is your expected value? 32) \_\_\_\_\_  
 A) -\$0.50 B) -\$1.00 C) \$0.00 D) -\$0.40

**Assume that a procedure yields a binomial distribution with a trial repeated  $n$  times. Use the binomial probability formula to find the probability of  $x$  successes given the probability  $p$  of success on a single trial. Round to three decimal places.**

- 33)  $n = 4, x = 3, p = \frac{1}{6}$  33) \_\_\_\_\_  
 A) 0.023 B) 0.015 C) 0.004 D) 0.012

**Find the indicated probability. Round to three decimal places.**

- 34) A test consists of 10 true/false questions. To pass the test a student must answer at least 6 questions correctly. If a student guesses on each question, what is the probability that the student will pass the test? 34) \_\_\_\_\_  
 A) 0.172 B) 0.377 C) 0.828 D) 0.205

**Find the indicated probability.**

- 35) An archer is able to hit the bull's-eye 50% of the time. If she shoots 8 arrows, what is the probability that she gets exactly 4 bull's-eyes? Assume each shot is independent of the others. 35) \_\_\_\_\_  
 A) 0.00391 B) 0.219 C) 0.0625 D) 0.273

**Find the standard deviation,  $\sigma$ , for the binomial distribution which has the stated values of  $n$  and  $p$ . Round your answer to the nearest hundredth.**

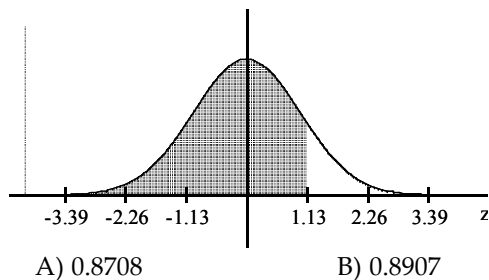
- 36)  $n = 2699; p = 0.63$  36) \_\_\_\_\_  
 A)  $\sigma = 25.08$  B)  $\sigma = 28.35$  C)  $\sigma = 29.20$  D)  $\sigma = 22.67$

**Find the mean,  $\mu$ , for the binomial distribution which has the stated values of  $n$  and  $p$ . Round answer to the nearest tenth**

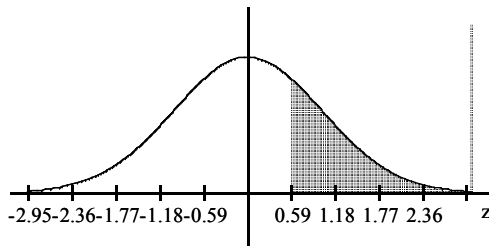
- 37)  $n = 671; p = 0.7$  37) \_\_\_\_\_  
 A)  $\mu = 471.0$  B)  $\mu = 468.2$  C)  $\mu = 469.7$  D)  $\mu = 471.4$

**Find the area of the shaded region. The graph depicts the standard normal distribution with mean 0 and standard deviation 1.**

- 38) 38) \_\_\_\_\_



39)



A) 0.2776

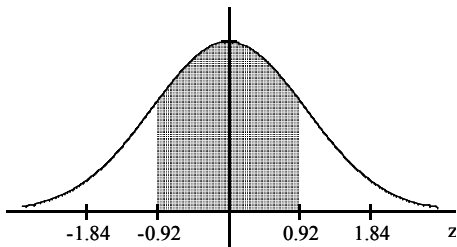
B) 0.2190

C) 0.7224

D) 0.2224

39) \_\_\_\_\_

40)



A) 0.1788

B) 0.6424

C) 0.8212

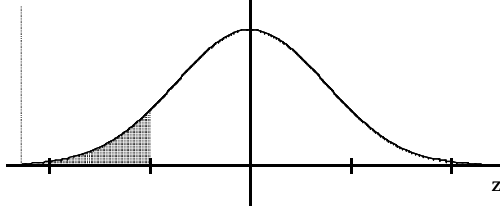
D) 0.3576

40) \_\_\_\_\_

Find the indicated  $z$  score. The graph depicts the standard normal distribution with mean 0 and standard deviation 1

41) Shaded area is 0.0901.

41) \_\_\_\_\_



A) -1.39

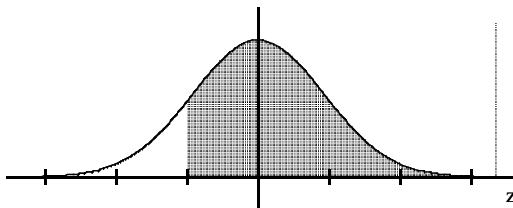
B) -1.34

C) -1.26

D) -1.45

42) Shaded area is 0.8599.

42) \_\_\_\_\_



A) 0.8051

B) 1.08

C) 0.5557

D) -1.08

If  $z$  is a standard normal variable, find the probability.

43) The probability that  $z$  lies between 0 and 3.01

43) \_\_\_\_\_

A) 0.1217

B) 0.9987

C) 0.4987

D) 0.5013

44) The probability that  $z$  lies between 0.7 and 1.98

44) \_\_\_\_\_

A) -0.2181

B) 1.7341

C) 0.2175

D) 0.2181

45)  $P(z < 0.97)$ 

45) \_\_\_\_\_

A) 0.8315

B) 0.8340

C) 0.1660

D) 0.8078

**Provide an appropriate response.**

- 46) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the x-score that corresponds to a z-score of -1.645. 46) \_\_\_\_\_  
A) 91.0 B) 79.1 C) 82.3 D) 75.3

**Provide an appropriate response. Use the Standard Normal Table to find the probability.**

- 47) An airline knows from experience that the distribution of the number of suitcases that get lost each week on a certain route is approximately normal with  $\mu = 15.5$  and  $\sigma = 3.6$ . What is the probability that during a given week the airline will lose less than 20 suitcases? 47) \_\_\_\_\_  
A) 0.8944 B) 0.4040 C) 0.1056 D) 0.3944

**Assume that the weight loss for the first month of a diet program varies between 6 pounds and 12 pounds, and is spread evenly over the range of possibilities, so that there is a uniform distribution. Find the probability of the given range of pounds lost.**

- 48) Between 8 pounds and 11 pounds 48) \_\_\_\_\_  
A)  $\frac{2}{3}$  B)  $\frac{1}{3}$  C)  $\frac{1}{4}$  D)  $\frac{1}{2}$

**Solve the problem.**

- 49) The weights of the fish in a certain lake are normally distributed with a mean of 11 lb and a standard deviation of 12. If 16 fish are randomly selected, what is the probability that the mean weight will be between 8.6 and 14.6 lb? 49) \_\_\_\_\_  
A) 0.4032 B) 0.6730 C) 0.3270 D) 0.0968

**Estimate the indicated probability by using the normal distribution as an approximation to the binomial distribution**

- 50) With  $n = 18$  and  $p = 0.30$ , estimate  $P(6)$ . 50) \_\_\_\_\_  
A) 0.1015 B) 0.1958 C) 0.8513 D) 0.1239
- 51) A certain question on a test is answered correctly by 22% of the respondents. Estimate the probability that among the next 150 responses there will be at most 40 correct answers. 51) \_\_\_\_\_  
A) 0.8997 B) 0.1003 C) 0.9306 D) 0.0694
- 52) Two percent of hair dryers produced in a certain plant are defective. Estimate the probability that of 10,000 randomly selected hair dryers, at least 219 are defective. 52) \_\_\_\_\_  
A) 0.0934 B) 0.0869 C) 0.9066 D) 0.0823

**Use the normal distribution to approximate the desired probability.**

- 53) Find the probability that in 200 tosses of a fair die, we will obtain at least 30 fives. 53) \_\_\_\_\_  
A) 0.5871 B) 0.8871 C) 0.6229 D) 0.7673

## Answer Key

Testname: STATS-2-REVIEW

- 1) D
- 2) D
- 3) A
- 4) A
- 5) B
- 6) C
- 7) C
- 8) C
- 9) A
- 10) A
- 11) A
- 12) A
- 13) B
- 14) C
- 15) C
- 16) C
- 17) B
- 18) C
- 19) B
- 20) C
- 21) B
- 22) D
- 23) A
- 24) C
- 25) D
- 26) D
- 27) A
- 28) D
- 29) D
- 30) C
- 31) C
- 32) A
- 33) B
- 34) B
- 35) D
- 36) A
- 37) C
- 38) A
- 39) A
- 40) B
- 41) B
- 42) D
- 43) C
- 44) D
- 45) B
- 46) D
- 47) A
- 48) D
- 49) B
- 50) B



## Answer Key

Testname: STATS-2-REVIEW

51) C

52) A

53) D