Stats: Test 1 Review
Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the given frequency distribution to find the
(a) class width.
(b) class midpoints of the first class.
(c) class boundaries of the first class.

1) **Height (in inches)** 1) _____

Class	Frequency, f
50 – 52	5
53 – 55	8
56 – 58	12
59 – 61	13
62 – 64	11

A) (a) 3
(b) 51
(c) 49.5–52.5

B) (a) 3
(b) 51
(c) 50–52

C) (a) 2
(b) 51.5
(c) 49.5–52.5

D) (a) 2
(b) 51.5
(c) 50–52

2) **Miles (per day)** 2) _____

Class	Frequency, f
1 – 2	9
3 – 4	22
5 – 6	28
7 – 8	15
9 – 10	4

A) (a) 1
(b) 1
(c) 1–2

B) (a) 2
(b) 1
(c) 1–2

C) (a) 2
(b) 1.5
(c) 0.5–2.5

D) (a) 1
(b) 1.5
(c) 0.5–2.5

Provide an appropriate response.

3) A city in the Pacific Northwest recorded its highest temperature at 89 degrees Fahrenheit and its lowest temperature at 28 degrees Fahrenheit for a particular year. Use this information to find the upper and lower limits of the first class if you wish to construct a frequency distribution with 10 classes. 3) _____

A) 23–33 B) 28–34 C) 28–33 D) 28–35

4) A sample of candies have weights that vary from 2.35 grams to 4.75 grams. Use this information to find the upper and lower limits of the first class if you wish to construct a frequency distribution with 12 classes. 4) _____

A) 2.35–2.54 B) 2.35–2.65 C) 2.35–2.55 D) 2.35–2.75

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

5) Listed below are the ACT scores of 40 randomly selected students at a major university. 5) _____

18	22	13	15	24	24	20	19	19	12
16	25	14	19	21	23	25	18	18	13
26	26	25	25	19	17	18	15	13	21
19	19	14	24	20	21	23	22	19	17

a) Construct a relative frequency histogram of the data, using eight classes.
b) If the university wants to accept the top 90% of the applicants, what should the minimum score be?
c) If the university sets the minimum score at 17, what percent of the applicants will be accepted?

The Highway Patrol, using radar, checked the speeds (in mph) of 30 passing motorists at a checkpoint. The results are listed below.

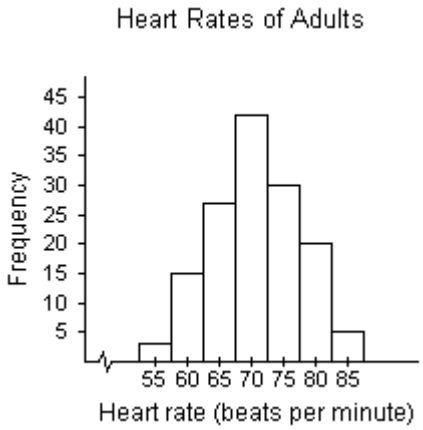
44	**38**	**41**	**50**	**36**	**36**	**43**	**42**	**49**	**48**
35	**40**	**37**	**41**	**43**	**50**	**45**	**45**	**39**	**38**
50	**41**	**47**	**36**	**35**	**40**	**42**	**43**	**48**	**33**

6) Construct a frequency distribution, a relative frequency distribution, and a cumulative frequency distribution using six classes. 6) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

7) Use the histogram below to approximate the mode heart rate of adults in the gym. 7) _____



A) 42 B) 55 C) 2 D) 70

8) A student receives test scores of 62, 83, and 91. The student's final exam score is 88 and homework score is 76. Each test is worth 20% of the final grade, the final exam is 25% of the final grade, and the homework grade is 15% of the final grade. What is the student's mean score in the class? 8) _____

A) 80.6 B) 90.6 C) 76.6 D) 85.6

9) The top 14 speeds, in miles per hour, for Pro–Stock drag racing over the past two decades are listed below. Find the median speed. 9) _____

181.1 202.2 190.1 201.4 191.3 201.4 192.2
201.2 193.2 201.2 194.5 199.2 196.0 196.2

A) 196.1 B) 201.2 C) 196.7 D) 195.8

10) Grade points are assigned as follows: A = 4, B = 3, C = 2, D = 1, and F = O. Grades are weighted according to credit hours. If a student receives an A in a four–unit class, a D in a two–unit class, a B in a three–unit class and a C in a three–unit class, what is the student's grade point average? 10) _____

A) 2.75 B) 1.75 C) 3.00 D) 2.50

Approximate the mean of the grouped data.

11) 11) _____

Miles (per day)	Frequency
1–2	29
3–4	12
5–6	18
7–8	2
9–10	16

A) 6 B) 15 C) 5 D) 4

12) 12) _____

Weight (in pounds)	Frequency
135–139	19
140–144	11
145–149	5
150–154	12
155–159	14

A) 144 B) 146 C) 148 D) 12

Provide an appropriate response.

13) The grade point averages for 10 students are listed below. Find the range of the data set. 13) _____

2.0 3.2 1.8 2.9 0.9 4.0 3.3 2.9 3.6 0.8

A) 1.4 B) 2.45 C) 3.2 D) 2.8

14) Find the sample standard deviation. 14) _____

2 6 15 9 11 22 1 4 8 19

A) 2.1 B) 6.8 C) 7.1 D) 6.3

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

15) The heights (in inches) of all 10 adult males in an office are listed below. Find the population standard deviation and the population variance. 15) _____

70 72 71 70 69 73 69 68 70 71

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

16) The mean SAT verbal score is 401, with a standard deviation of 97. Use the Empirical Rule to determine what percent of the scores lie between 207 and 498. (Assume the data set has a bell-shaped distribution.) 16) _____

A) 83.9% B) 34% C) 68% D) 81.5%

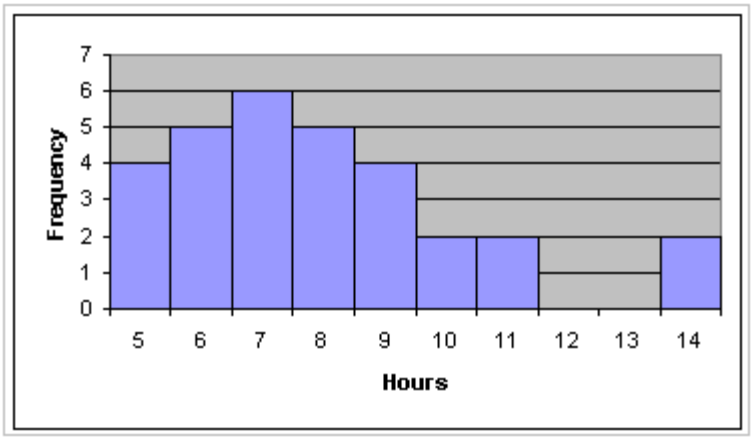
Use the grouped data formulas to find the indicated mean or standard deviation.

17) The speeds of a random sample of 100 cars are recorded as they pass a highway checkpoint. The results are summarized in the frequency distribution below. Approximate the sample mean. 17) _____

Speed (mph)	Cars
30–39	6
40–49	15
50–59	51
60–69	15
70–79	13

A) 61.5 mph B) 55.9 mph C) 54.5 mph D) 58.7 mph

18) A random sample of 30 high school students is selected. Each student is asked how many hours he or she spent on the Internet during the previous week. The results are shown in the histogram. Estimate the sample mean. 18) _____



A) 8.1 hr B) 8.3 hr C) 7.9 hr D) 7.7 hr

Provide an appropriate response.

19) The birth weights for twins are normally distributed with a mean of 2353 grams and a standard deviation of 647 grams. Use z-scores to determine which birth weight could be considered unusual. 19) _____

A) 2353 g B) 1200 g C) 2000 g D) 3647 g

20) If one card is drawn from a standard deck of 52 playing cards, what is the probability of drawing a heart? 20) _____

A) $\frac{1}{4}$ B) $\frac{3}{4}$ C) $\frac{1}{2}$ D) 1

21) The distribution of blood types for 100 Americans is listed in the table. If one donor is selected at random, find the probability of selecting a person with blood type A+ or A−. 21) _____

Blood Type	O+	O−	A+	A−	B+	B−	AB+	AB−
Number	37	6	34	6	10	2	4	1

A) 0.06 B) 0.02 C) 0.34 D) 0.4

22) If an individual is selected at random, what is the probability that he or she has a birthday in July? Ignore leap years. 22) _____

A) $\frac{364}{365}$ B) $\frac{31}{365}$ C) $\frac{1}{365}$ D) $\frac{12}{365}$

Use the fundamental counting principle to solve the problem.

23) 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? 23) _____

A) 11 B) 13 C) 56 D) 28

24) How many license plates can be made consisting of 2 letters followed by 3 digits? 24) _____

A) 67,600 B) 100,000 C) 11,881,376 D) 676,000

25) How many different codes of 4 digits are possible if the first digit must be 3, 4, or 5 and if the code may not end in 0? 25) _____

A) 300 B) 2999 C) 2700 D) 3000

Provide an appropriate response.

26) A group of students were asked if they carry a credit card. The responses are listed in the table. 26) _____

Class	Credit Card Carrier	Not a Credit Card Carrier	Total
Freshman	45	15	60
Sophomore	32	8	40
Total	77	23	100

If a student is selected at random, find the probability that he or she owns a credit card given that the student is a freshman. Round your answer to three decimal places.

A) 0.584 B) 0.750 C) 0.450 D) 0.250

27) A group of students were asked if they carry a credit card. The responses are listed in the table. 27) _____

Class	Credit Card Carrier	Not a Credit Card Carrier	Total
Freshman	10	50	60
Sophomore	20	20	40
Total	30	70	100

If a student is selected at random, find the probability that he or she is a sophomore and owns a credit card. Round your answers to three decimal places.

A) 0.333 B) 0.667 C) 0.750 D) 0.200

28) You are dealt two cards successively without replacement from a standard deck of 52 playing cards. Find the probability that the first card is a two and the second card is a ten. Round your answer to three decimal places. 28) _____

A) 0.994 B) 0.250 C) 0.006 D) 0.500

29) A multiple–choice test has five questions, each with five choices for the answer. Only one of the choices is correct. You randomly guess the answer to each question. What is the probability that you answer the first two questions correctly? 29) _____

A) 0.4 B) 0.04 C) 0.2 D) 0.02

30) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a heart. 30) _____

A) $\frac{17}{52}$ B) $\frac{3}{13}$ C) $\frac{7}{52}$ D) $\frac{4}{13}$

31) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a black card. 31) _____

A) $\frac{4}{13}$ B) $\frac{15}{26}$ C) $\frac{29}{52}$ D) $\frac{7}{13}$

Perform the indicated calculation.

32) $\frac{{}_6P_4}{{}_9P_3}$ 32) _____

A) 0.71 B) 0.18 C) 0.68 D) 0.00050

33) $\frac{{}_6C_3}{{}_9C_4}$ 33) _____

A) 8900 B) 0.040 C) 0.16 D) 0.0079

Provide an appropriate response.

34) Seven guests are invited for dinner. How many ways can they be seated at a dinner table if the table is straight with seats only on one side? 34) _____

A) 1 B) 5040 C) 720 D) 40,320

35) How many ways can five people, A, B, C, D, and E, sit in a row at a movie theater if D and E will not sit next to each other? 35) _____

A) 24 B) 72 C) 48 D) 60

Solve the problem.

36) Five cards are drawn at random from an ordinary deck of 52 cards. In how many ways is it possible to draw two red aces and two black jacks? 36) _____

A) 192 ways B) 48 ways C) 144 ways D) 1,152 ways

37) A bag contains 3 blue, 4 red, and 4 green marbles. Four marbles are drawn at random from the bag. How many different samples are possible which include exactly two red marbles? 37) _____

A) 18 B) 6 C) 126 D) 504

Find the probability of the following card hands from a 52–card deck. In poker, aces are either high or low. A bridge hand is made up of 13 cards.

38) In poker, a flush (5 in same suit) in any suit 38) _____

A) .000495 B) .00198 C) .000347 D) .00122

39) In poker, four of a kind (4 cards of the same value) 39) _____

A) 2.00×10^{-5} B) 4.34×10^{-4} C) 2.40×10^{-4} D) 1.85×10^{-5}

Provide an appropriate response.

40) The random variable x represents the number of boys in a family of three children. Assuming that boys and girls are equally likely, find the mean and standard deviation for the random variable x. 40) _____

A) mean: 1.50; standard deviation: 0.87 B) mean: 1.50; standard deviation: 0.76

C) mean: 2.25; standard deviation: 0.76 D) mean: 2.25; standard deviation: 0.87

41) The random variable x represents the number of tests that a patient entering a hospital will have along with the corresponding probabilities. Find the mean and standard deviation. 41) _____

x	0	1	2	3	4
P(x)	$\frac{3}{17}$	$\frac{5}{17}$	$\frac{6}{17}$	$\frac{2}{17}$	$\frac{1}{17}$

A) mean: 1.59; standard deviation: 3.71 B) mean: 2.52; standard deviation: 1.93

C) mean: 3.72; standard deviation: 2.52 D) mean: 1.59; standard deviation: 1.09

42) At a raffle, 10,000 tickets are sold at $5 each for three prizes valued at $4,800, $1,200, and $400. What is the expected value of one ticket? 42) _____

A) $0.64 B) –$0.64 C) $4.36 D) –$4.36

43) In a raffle, 1,000 tickets are sold for $2 each. One ticket will be randomly selected and the winner will receive a laptop computer valued at $1200. What is the expected value for a person that buys one ticket? 43) _____

A) –$0.80 B) –$1.20 C) $0.8 D) $1.20

Solve the problem.

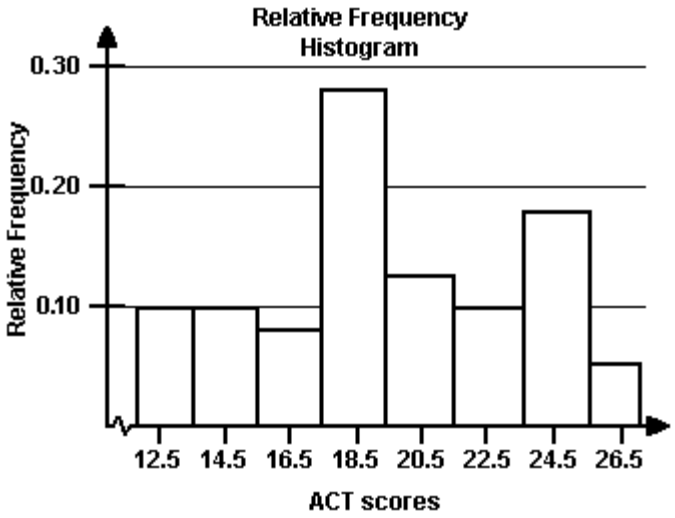
44) There are 8 members on a board of directors. If they must form a subcommittee of 6 members, how many different subcommittees are possible? 44) _____

A) 20,160 B) 28 C) 720 D) 262,144

45) How many ways can an IRS auditor select 5 of 10 tax returns for an audit? 45) _____

A) 100,000 B) 30,240 C) 252 D) 120

1) A
2) C
3) B
4) C
5) a) See graph below
   b) The minimum score = 14
   c) The university will accept 76.57% of the applicants.



6)

Speed (in mph)	Frequency	Relative Frequency	Cumulative Frequency
33–35	3	0.10	3
36–38	6	0.20	9
39–41	6	0.20	15
42–44	6	0.20	21
45–47	3	0.10	24
48–50	6	0.20	30

7) D
8) A
9) A
10) A
11) C
12) B
13) C
14) C
15) $\sigma = 1.42$, $\sigma^2 = 2.01$
16) D
17) B
18) C
19) D
20) A
21) D
22) B

23) C
24) D
25) C
26) B
27) D
28) C
29) B
30) D
31) D
32) A
33) C
34) B
35) B
36) B
37) C
38) B
39) C
40) A
41) D
42) D
43) A
44) B
45) C