

Note: *in italic you may find some hints on how to answer these questions.*

Find the mean for the group of data items. Round to the nearest hundredth, if necessary.

1) 5.4, 5.9, 7.4, 9.1, 5.4, 9, 5.4, 2, 2, 3.2

A) 4.4

B) 5.28

C) 6.09

D) 5.48

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

*Note: mean is the average. Add up values and divide by 10, since there are 10 values.*

*OR, in a TI84, press STAT, enter data on List 1, press STAT again, Calc, and calculate.*

Find the mean for the data items in the given frequency distribution. Round to the nearest hundredth, if necessary.

2)

Score	Frequency
1	4
2	2
3	5
4	7
5	10
6	6
7	9
8	11
9	12
10	12

A) 6

B) 8

C) 6.62

D) 5.23

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

*Note: on TI 84 enter scores on L1 and Frequency on List 2; Press STST again, Calc, Calculate.*

Find the median for the group of data items.

3) 1.1, 2.3, 1.5, 2.7, 1.1, 2.3, 1.1, 9.1, 9.1, 1.8

A) 1.8

B) 2.05

C) 2.3

D) 1.1

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

*Median is the value in the middle of a sorted data set. If the number of values is even, add the two numbers in the middle and div by 2. On TI 84, enter data on List1, and proceed to Caclulate.*

Find the mode for the group of data items. If there is no mode, so state.

4) 1.4, 2.2, 1.6, 2.7, 1.4, 2.2, 1.4, 8.2, 8.2, 1.9

A) 1.4

B) 1.6

C) no mode

D) 8.2

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

*Mode is the most repeated value, if any. If no value repeats, there is no mode.*

Find the midrange for the group of data items.

5) 1.4, 2.1, 1.6, 2.5, 1.4, 2.1, 1.4, 9.5, 9.5, 2

A) 1.95

B) 1.75

C) 5.55

D) 5.45

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

*Midrange is = (max value + min value)/2*

For the given data set, find the a. mean b. median c. mode (or state that there is no mode) d. midrange.

6) A company advertised that, on the average, 96% of their customers reported "very high satisfaction" with their services. The actual percentages reported in 15 samples were the following: 96, 96, 92, 35, 74, 96, 92, 74, 96, 96, 35, 92, 92, 96, 35

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

a. Find the mean, median, mode and midrange. b. Which measure of central tendency was given in the advertisement? c. Which measure of central tendency is the best indicator of the "average" in this situation?

- A) a. mean = 79.8, median = 92, mode = 96, midrange = 65.5  
b. median  
c. mean
- B) a. mean = 79.8, median = 92, mode = 96, midrange = 65.5  
b. mode  
c. median
- C) a. mean = 79.8, median = 92, mode = 96, midrange = 65.5  
b. mode  
c. mode
- D) a. mean = 79.8, median = 92, mode = 96, midrange = 65.5  
b. mode  
c. mean

Find the range for the group of data items.

7) 5, 19, 5, 19, 5, 19, 5, 19

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

- A) 14
- B) 24
- C) 19
- D) 12

*Range = max value - min value*

Find the standard deviation for the group of data items (to the nearest hundredth).

8) 4, 4, 4, 7, 10, 10, 10

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

- A) 2.85
- B) 3
- C) 9
- D) 8.14

*Note: in a TI84, press STAT, enter data on List 1, press STAT again, Calc, and calculate.*

Find the a. mean and b. standard deviation for the data set. Round to two decimal places.

9) International Travel Destinations of U.S. Citizens

9) \_\_\_\_\_

Country      U.S. Citizens, in thousands

A	992
B	592
C	212
D	192
E	152
F	97
G	95
H	94
I	82
J	72

- A) a. 252 b. 300.55
- B) a. 258 b. 9000
- C) a. 258 b. 300.55
- D) a. 252 b. 9000

*Note: in a TI84, press STAT, enter citizens in thousands on List 1, press STAT again, Calc, and calculate.*

Provide an appropriate response.

- 10) In a normal distribution, approximately what percent of data items fall within 1 standard deviation of the mean (in both directions)? 10) \_\_\_\_\_  
A) 65%                      B) 99.7%                      C) 95%                      D) 68%

*Note: Answer based on the empirical rule or 68-95-99.7 rule, 68% of observations falls within the first standard deviation ( $\mu \pm \sigma$ ), 95% within the first two standard deviations ( $\mu \pm 2\sigma$ ), and 99.7% within the first three standard deviations ( $\mu \pm 3\sigma$ ).*

The scores on a driver's test are normally distributed with a mean of 100. Find the score that is:

- 11) Find the score that is 2 standard deviations below the mean, if the standard deviation is 28. 11) \_\_\_\_\_  
A) 44                      B) 128                      C) 156                      D) 72

*Score,  $x$ ; number of standard deviations is  $z$  (negative if below the mean, positive if above the mean), mean is  $\mu$ ; standard deviation is  $\sigma$ : Use formula,  $x = z\sigma + \mu$      $x = -2*28+100 = 44$*

- 12) Find the score that is 2.5 standard deviations below the mean, if the standard deviation is 26. 12) \_\_\_\_\_  
A) 35                      B) 74                      C) 48                      D) 165

*Use formula,  $x = z\sigma + \mu$      $x = -2.5*26+100 = 35$*

- 13) Find the score that is 2 standard deviations above the mean, if the standard deviation is 21. 13) \_\_\_\_\_  
A) 142                      B) 121                      C) 79                      D) 58

*Use formula,  $x = z\sigma + \mu$      $x = 2*21+100 = 142$*

At one high school, the mean time for running the 100-yard dash is 15.2 seconds with a standard deviation of 0.9 seconds. The times are very closely approximated by a normal curve. Find the percent of times that are:

- 14) Between 14.3 and 16.1 seconds 14) \_\_\_\_\_  
A) 68%                      B) 50%                      C) 47.5%                      D) 34%

*Find the  $z$  score for each value ( $x = 14.3$  and  $x = 16.1$ ) using the  $z$  score formula:  $z = (x-\mu)/\sigma$   
Then, apply the empirical rule (see question 10). Since the  $z$  scores are  $-1$  and  $1$ , the area is 68%  
Alternatively, use TI84; 2nd key, distr, normal cdf, update lower, upper,  $\mu$ ,  $\sigma$*

- 15) Greater than 16.1 seconds 15) \_\_\_\_\_  
A) 2%                      B) 15.5%                      C) 13.5%                      D) 16%

*Same procedure as 14.*

- 16) Less than 17 seconds 16) \_\_\_\_\_  
A) 97.7%                      B) 2.5%                      C) 84%                      D) 98%

*Same procedure as 14.*

A set of data items is normally distributed with a mean of 60. Convert the data item to a  $z$ -score, if the standard deviation is as given.

- 17) data item: 55; standard deviation: 5 17) \_\_\_\_\_  
A) 1                      B) -5                      C) -1                      D) 5

*Use formula,  $z = (x-\mu)/\sigma$      $z = (55-60)/5 = -1$*

- 18) data item: 0; standard deviation: 16 18) \_\_\_\_\_  
A) 16                      B) -3.75                      C) 3.75                      D) -16

*Use formula,  $z = (x-\mu)/\sigma$      $z = (0-60)/16 = -3.75$*

Use a table of z-scores and percentiles to find the percentage of data items in a normal distribution that lie between:

- 19)  $z = -0.2$  and  $z = 0.2$  19) \_\_\_\_\_  
A) 50% B) 57.93% C) 42.07% D) 15.86%

Use TI84; 2nd key, distr, normal cdf, update lower, upper,  $\mu$ ,  $\sigma$

- 20)  $z = -2$  and  $z = -0.6$  20) \_\_\_\_\_  
A) 25.15% B) 2.28% C) 72.57% D) 27.43%

Use TI84; 2nd key, distr, normal cdf, update lower, upper,  $\mu$ ,  $\sigma$

Test scores are normally distributed with a mean of 500. Convert the given score to a z-score, using the given standard deviation. Then find the percentage of students who score:

- 21) below 650 if the standard deviation is 100. 21) \_\_\_\_\_  
A) 6.68% B) 100% C) 93.32% D) 56.68%

Use TI84; 2nd key, distr, normal cdf, update lower, upper,  $\mu$ ,  $\sigma$

Use a table of z-scores and percentiles to find the percentage (to the nearest whole percentage) of data items in a normal distribution that lie between:

- 22)  $z = 1$  and  $z = 2$  22) \_\_\_\_\_  
A) 6% B) 8% C) 12% D) 14%

Use TI84; 2nd key, distr, normal cdf, update lower, upper,  $\mu$ ,  $\sigma$

Solve the problem.

- 23) At Loop College, the mean grade point average (gpa) of the current student body is 2.76 with a standard deviation of 0.64. Find the gpa of a student whose z-score is  $-2.8$ . 23) \_\_\_\_\_  
A)  $-0.041$  B) 5.562 C) 2.121 D) 0.968

Use formula,  $x = z\sigma + \mu$        $x = -2.8*0.64+2.76 = 0.968$

- 24) Scores on a test are approximately normally distributed with a mean of 70 and a standard deviation of 9. The teacher wants to give A's to the top 10% of students. What is the bottom cutoff for an A grade? Round your answer to the nearest whole number. 24) \_\_\_\_\_  
A) 90 B) 79 C) 80 D) 82

Use TI84; 2nd key, distr, inv normal, area is 0.90,  $\mu=70$ ,  $\sigma=9$   
Notice that a top 10%, implies a bottom 90%. Enter the bottom area.

## Answer Key

Testname: REVIEW5V

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