Unit 5 – Statistics Practice Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Determine the range of the following test scores.

    History Test 1 Scores (out of 100)

90	84	77	66
89	84	77	65
86	82	75	65
86	81	72	61
84	79	70	56

    a. 90   b. 34   c. 56   d. 78

2. Determine the mean of the following test scores.

    History Test 2 Scores (out of 100)

95	85	72	62
92	84	72	59
89	80	70	52
88	78	68	40
85	73	67	32

    a. 71.15   b. 70.65   c. 71.65   d. 72.15

3. Determine the median of the following test scores.

    History Test 1 Scores (out of 100)

90	84	77	66
89	84	77	65
86	82	75	65
86	81	72	61
84	79	70	56

    a. 56   b. 79   c. 78   d. 77

4. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

0.42	0.04	0.81	0.40	0.03	0.74
0.28	0.03	0.70	0.23	0.03	0.66
0.13	0.02	0.61	0.12	0.01	0.58
0.10	0.00	0.49	0.07	1.08	0.43
0.05	0.91	0.42	0.04	0.88	

What value goes in the fourth row of this frequency table?

Lightning Strikes (per square kilometre)	Frequency
0.00–0.19	13
0.20–0.39	2
0.40–0.59	6
0.60–0.79	
0.80–0.99	3
1.00–1.19	1

a. 3   b. 5   c. 4   d. 6

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5. Which histogram represents the following test scores?

Geography Test 1 Scores (our of 100)

98	83	81	74	62
94	83	78	72	61
92	82	77	72	55
89	82	75	66	53
84	82	75	62	44

a.

b.

c.

d.

6. The range of a set of data is 122 and the minimum value is 87. To display this data in a histogram, Nat chose intervals of 20 starting with 80–99. How many intervals will her histogram have?

a. 10 b. 9 c. 7 d. 8

7. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

		0.42	0.04	0.81	0.40	0.03	0.74
		0.28	0.03	0.70	0.23	0.03	0.66
		0.13	0.02	0.61	0.12	0.01	0.58
		0.10	0.00	0.49	0.07	1.08	0.43
0.05	0.91	0.42	0.04	0.88			

Which range of data occurs most frequently?

a. 0.20–0.29 b. 0.10–0.19 c. 0.00–0.09 d. 0.30–0.39

8. At the end of a bowling tournament, three friends analyzed their scores. Erinn's mean bowling score is 92 with a standard deviation of 14. Declan's mean bowling score is 130 with a standard deviation of 18. Matt's mean bowling score is 116 with a standard deviation of 22. Who is the more consistent bowler?

a. Impossible to tell. b. Declan c. Matt d. Erinn

9. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

0.42	0.04	0.81	0.40	0.03	0.74
0.28	0.03	0.70	0.23	0.03	0.66
0.13	0.02	0.61	0.12	0.01	0.58
0.10	0.00	0.49	0.07	1.08	0.43
0.05	0.91	0.42	0.04	0.88	

Determine the mean, to two decimal places.

a. 0.12 b. 0.00 c. 0.36 d. 0.60

10. Environment Canada compiled data on the number of lightning strikes per square kilometre in Alberta and British Columbia towns from 1999 to 2008.

0.42	0.04	0.81	0.40	0.03	0.74
0.28	0.03	0.70	0.23	0.03	0.66
0.13	0.02	0.61	0.12	0.01	0.58
0.10	0.00	0.49	0.07	1.08	0.43
0.05	0.91	0.42	0.04	0.88	

Determine the standard deviation, to two decimal places.

a. 0.54 b. 0.32 c. 0.00 d. 0.76

11. A set of data is normally distributed. What percent of the data is within one standard deviation of the mean?

    a. about 95%   b. about 50%   c. about 68%   d. 100%

12. A set of data is normally distributed. What percent of the data is greater than the mean?

    a. about 95%   b. 100%   c. about 68%   d. about 50%

13. The ages of participants in a bonspiel are normally distributed, with a mean of 40 and a standard deviation of 10 years. What percent of the curlers are between 40 and 50?

    a. 95%   b. 34%   c. 16%   d. 68%

14. A teacher is analyzing the class results for a physics test. The marks are normally distributed with a mean (μ) of 76 and a standard deviation (σ) of 4. Determine Olivia's mark if she scored $\mu - \sigma$.

    a. 80   b. 72   c. 68   d. 84

15. Which set is normally distributed?

Interval	0–9	10–19	20–29	30–39	40–49	50–59
Set A.	2	5	7	10	15	15
Set B.	5	5	4	5	5	0
Set C.	1	5	9	10	4	1
Set D.	8	9	3	11	8	14

    a. Set A.   b. Set B.   c. Set D.   d. Set C.

16. Determine the z-score for the given value. $\mu = 120$, $\sigma = 10$, $x = 125$

    a. –2   b. 0.5   c. –0.5   d. 2

17. Determine the percent of data to the left of the z-score: $z = -1.50$.

    a. 8.08%   b. 6.68%   c. 6.81%   d. 7.35%

18. Determine the percent of data to the right of the z-score: $z = -1.96$.

    a. 98.50%   b. 97.50%   c. 1.50%   d. 2.50%

19. Determine the percent of data between the following z-scores: $z = -2.25$ and $z = 1.75$.

    a. 95.99%   b. 94.77%   c. 93.55%   d. 97.23%

20. A poll was conducted about an upcoming election. The results are considered accurate within ±2.7 percent points, 19 times out of 20. State the confidence level.

    a. 19%   b. 95%   c. 99%   d. 90%

21. A poll was conducted about an upcoming election. The result that 44% of people intend to vote for one of the candidates is considered accurate within ±2.7 percent points, 19 times out of 20. State the confidence interval.

    a. 41.3%–44%   b. 42.65%–45.35%   c. 44%–46.7%   d. 41.3%–46.7%

22. Which sample size will have the greatest margin of error?

a. 50   b. 100   c. It is impossible to tell.   d. 200

23. In a recent survey of high school students, 72% of those surveyed agreed that school should start half an hour later. The survey is considered accurate to within 3.5 percent points, 19 times out of 20. If a high school has 1200 students, state the range of the number of students who would agree with the survey.

a. 864–948   b. 822–906   c. 822–864   d. 864–906

Short Answer
Show all of your work (either the formula used or what you typed on the calculator). Clearly indicate your final answer

1. A group of 40 students recorded their pulse rates after a 2 km run.

Group 1	126	168	158	192	146	166	104	164	116	138
Group 2	158	132	156	160	108	150	178	136	172	140
Group 3	136	174	156	176	150	166	142	156	130	182
Group 4	144	150	142	152	174	176	118	152	178	164

a) Make a frequency table with five intervals to organize the pulse rates.

Interval	Frequency
100–120	
120–140	
140–160	
160–180	
180–200	

b) Construct a histogram of the data.

c) Mean = _____   Standard Deviation =_____

2. Show how to calculate the standard deviation (without the STAT menu on the calculator) for the following list of five numbers: 4,8,12,16,20

3. Use the data to fill in the chart below:

The following data represents the weight of watermelons at two different supermarkets.

Supermarket A (in kg)	Supermarket B (in kg)
5.7	5.7
6.3	6.2
5.5	4.9
4.9	6.5
5.0	5.8
6.1	5.0
5.8	5.8
	6.1

	Supermarket A	Supermarket B
Mean		
Median		
Standard Deviation		

On average, which store has bigger watermelons?

Which store carries a more consistent product?

4. The ages of members in a hiking club are normally distributed, with a mean of 32 years and a standard deviation of 6 years.
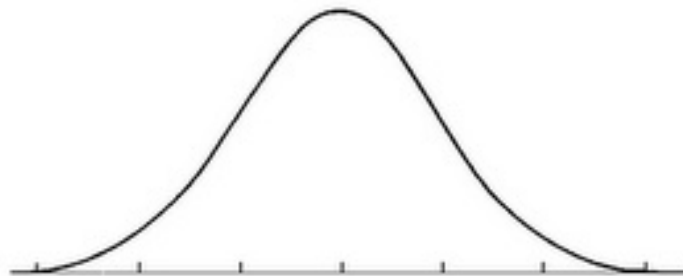
   Label the normal curve with the ages of the members.
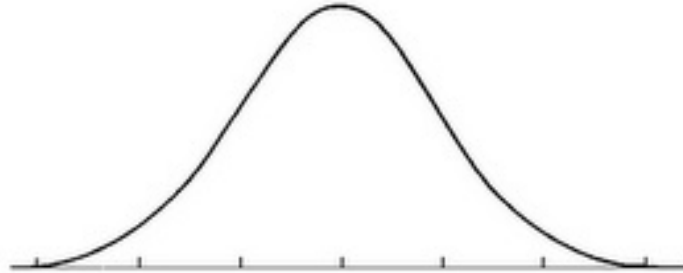
   Estimate the percentage (or use normalcdf) of the members that are between 26 and 38

5. A manufacturer offers a warranty on its vacuum cleaners. The vacuum cleaners have a mean lifespan of 3.4 years, with a standard deviation of 0.4 years.

   Label the normal curve with the lifespan of the vacuum cleaners

   For how long should the vacuum cleaners be covered by the warranty, if the manufacturer wants to repair no more than 5% of the vacuum cleaners sold?

6. A teacher is analyzing the class results for a math test. The marks are normally distributed with a mean (μ) of 70 and a standard deviation of 8. What percent of the class would you expect to get a B on the test?

a) Label the normal curve with the distribution of test scores.
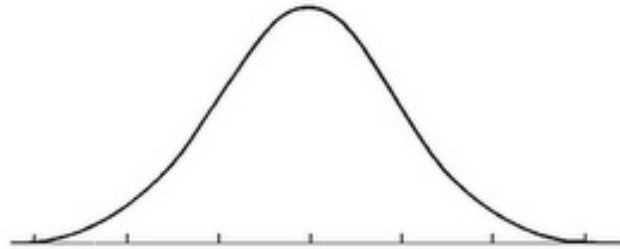
b) Find the z-scores for each of the given values: 73% and 85%

c) Find the area between the two Z-scores

d) Show how to check your answer using the normalcdf function on the calculator

7. A poll was conducted about an upcoming election. The result that 46% of people intend to vote for one of the candidates is considered accurate within ±6.7 percent points, 19 times out of 20.

a) State the margin of error

b) State the confidence interval.

c) State the level of confidence.

d) If 500 000 people vote in the election, what is the range that will vote for this candidate (according to the survey)?

Formulas

$$\sigma = \sqrt{\frac{sum\ of\ the\ squares\ of\ the\ differences\ from\ the\ mean}{number\ of\ values}}$$

$$Z = \frac{x - \mu}{\sigma}$$