Holy Spirit High School
Math 2201 Chapter 5 Statistical Reasoning SAMPLE Test

Name:_____

Formulas Provided
$\sigma = \sqrt{\dfrac{\sum (x-\bar{x})^2}{n}}$
$z = \dfrac{x-\mu}{\sigma}$

Part 1: Multiple Choice (10 marks)
*Identify the choice that best completes the statement or answers the question.*

1. Which data set has the greatest range?   1._____

   A.   13, 4, 23, 7, 9
   B.   36, 45, 56, 22, 49
   C.   4, 4, 4, 4, 4
   D.   82, 85, 72, 94, 86

2. A bank teller would like to determine the dispersion among the withdrawals   2._____
   at the ATM. Which measures would she use to determine this dispersion?

   A.   mean and mode
   B.   mode and median
   C.   mean and range
   D.   range and standard deviation

3. A set of data has a mean of 132 and a standard deviation of 14.8. If   3._____
   each data value in the set decreases by 5, what is the new mean and
   standard deviation?

   A. $\mu=127$, $\sigma = 9.8$
   B. $\mu=127$, $\sigma = 14.8$
   C. $\mu=132$, $\sigma = 9.8$
   D. $\mu=132$, $\sigma = 14.8$

4. Which statement is true based on the graph?   4._____

   A.   Graphs A and B have the same standard deviation
   B.   Graphs B and C have the same mean
   C.   Graphs A and C have the same standard deviation
   D.   Graphs A and C have the same mean
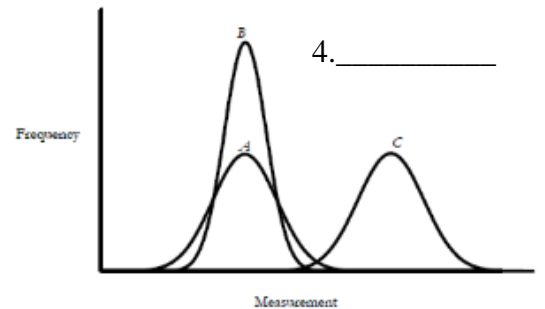
5. A set of data is normally distributed. What percent of the
   data is within three standard deviation of the mean?   5._____

   A.   2.5%
   B.   68%
   C.   95%
   D.   99.7%

6. The ages of participants in a curling bonspiel are normally distributed,   6._____
   with a mean of 40 and a standard deviation of 10 years. What percent
   of the curlers are between 20 and 30?

   A.   2.35%
   B.   13.5%
   C.   50%
   D.   68%

7. Which set is normally distributed?   7._____

   A.   Set A
   B.   Set B
   C.   Set C
   D.   Set D

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

8.   Which description does not describe the normal curve?   8._____

      A.   starts off increasing
      B.   symmetrical
      C.   shaped like a bell
      D.   always increasing

9.   A set of data is normally distributed with a mean of 184 and a standard   9._____
      deviation of 5. What is the z-score for a value of 196?

      A.   −2.40
      B.   −0.9918
      C.   0.9918
      D.   2.40

10.   Quality control wants to replace fewer than 2.56% of the game consoles it   10._____
      produces. What is his corresponding z-score?

      A.   -1.95
      B.   -0.9948
      C.   0.9948
      D.   1.95

Part 2: Short Answer   (22 marks)
Show ALL necessary workings in the space provided.

11.   The histogram below shows the scores (out of 100) students received on a psychology final
      exam.

Exam Marks

Test Score
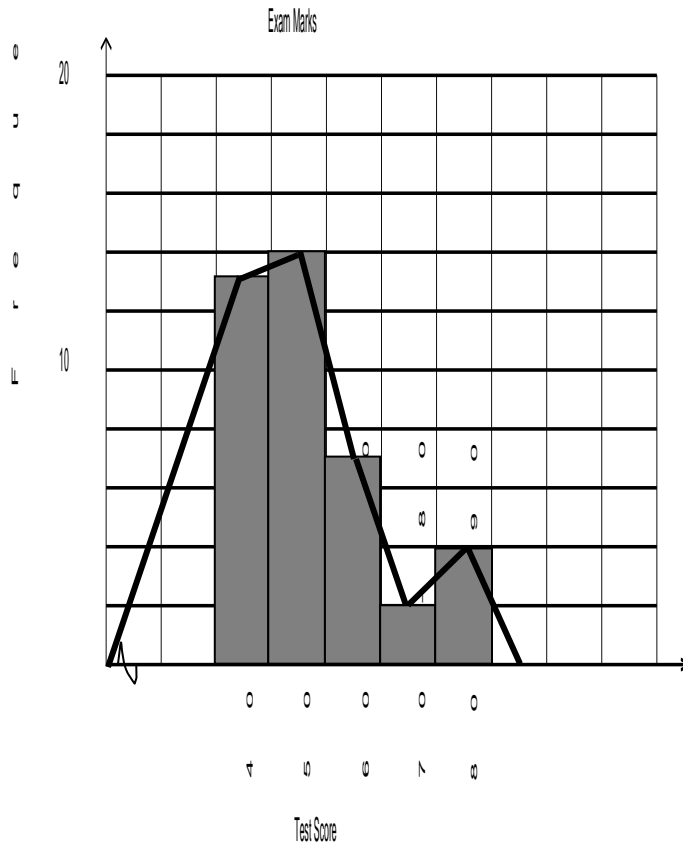
a)   How many students wrote the exam? (1 mark)_____**40**_____

b)   Into which interval would a score of 80 be placed? (1 mark)_____**80-90**_____

c)   How many students scored greater than 70? (1 mark)_____**2+4=6**_____

c)   Construct a frequency polygon. (2 marks)

    d)   Is the data normally distributed? Explain how you know. (2 marks)

                No. The data does

    not follow a bell curve

12. The hours of 5 different employees at two local fast food restaurants are given below.

a) Calculate standard deviation for the hours for both companies below.   (6 marks)

    Monster Burgers   Super Chicken

    26, 34, 45, 10, 30   13, 15, 34, 16, 22

x	*x-*	

b) Max has a car loan and wants to work consistent hours to ensure he can cover his payments, to which company would you recommend that he apply and explain why.   (1 mark)

13. The average life expectancy of a certain breed of cat was determined to be 11.4 years with a standard deviation of 1.6 years.

a) Draw a normal distribution curve that represents this information. (2 marks)

b) What is the probability that a given cat will live less than 9.8 years? (1 mark)

c)   What is the probability that a given cat will live more than 9.8 years?   (1 mark)

d)   What is the probability that a cat will live less than 8 years? (1.5 marks)

e)   What is the probability that a cat will live between 8 and 10 years? (2.5 marks)

14.   Treena and Maggie both wrote a provincial exam in math.   Treena wrote in January and Maggie
       wrote in June.   Their results are given below.

Student	Student's Mark %	Provincial Mean %	Provincial Standard Deviation %
Treena	84	71	5.3
Maggie	82	66	6.2

a).   Determine which girl's result is better when compared the others who wrote the same exam.

b).   If the results of each exam are normally distributed, what percent of people who wrote the exam in
      January scored better than Treena?