Statistics & Probability **Normal Distribution & Percentiles Review**

Name_____ **Date**_____ **Period**_____ **Score**_____

Below are recent Intro Stats quiz scores in percent form.

60 67 69 75 65 70 72 80 81 81
83 84 85 86 88 87 89 90 93 95

1. a) **Biff scored a 60 on the quiz. What percentage of the scores are less than 60?**

1.
a)_____

b) **Marty scored a 90 on the quiz. What percentage of the scores are less than 90?**

b)_____

The mean of the data above is 80 and the standard deviation is 10.

2. a) **How many points from the mean is Biff's score of 60 and in what direction (below or above)?**

2.
a)_____

b. **How many standard deviations is 60 away from the mean?**

b)_____

3. a) **How many points from the mean is Marty's score of 90 and in what direction?**

3.
a)_____

b) **How many standard deviations is 90 away from the mean?**

b)_____

4. a) **How far away from the mean is 87 and in what direction?**

4.
a)_____

b) **How many standard deviations is 87 away from the mean?**

b)_____

The cumulative relative frequency graph and the numerical summaries below describe the distribution of household incomes in the 50 states in a recent year.

Median household income	
n	50
Mean	51742.44
SD	8210.642

Use the information provided to help you answer the following questions.

5. **At what percentile is North Dakota, with a household income of $55,766?**

5._____

6. **a)** **Estimate the first quartile Q_1 of the distribution.**

6. a)_____

b) **Interpret the first quartile Q_1 of the distribution.**

b) **Answer in area provided.**

_____

_____

_____

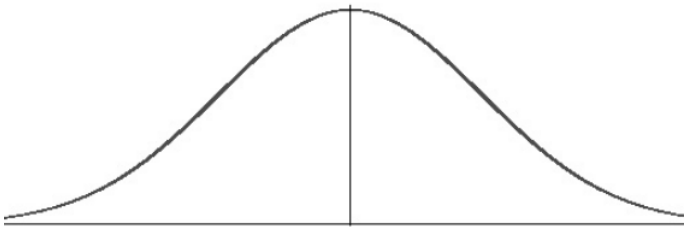
7. **Find the standardized score (z-score) for New Jersey, with a household income of $66,692.**

7._____

8. ***Sketching a Normal distribution***

Chapter 1 test scores from Mrs. Gallas's first-hour class follow an approximately Normal distribution with a mean of 81 and standard deviation of 6. Sketch the Normal curve that approximates the distribution of Chapter 1 test scores.

(a) Label the mean and the points that are 1, 2, and 3 standard deviations from the mean.



(b) About what percent of students scored greater than 69 on the Chapter 1 test? Show your method clearly.

(c) A student who scored a 69 would be at about what percentile of the distribution? Show your work.

9. ***Finding area to the left/right***

In the class of 2016, more than 1.6 million students took the SAT. The distribution of scores on the math section (out of 800) follows an approximately Normal distribution with a mean of 500 and standard deviation of 100.

(a) About what percent of students who took the SAT scored less than 300 on the math section?

(b) The University of Michigan has a recommended math SAT score of at least 700. What percent of students who took the math SAT meet this requirement?

(c) What percent of students score in the 500s?

8.

a) Use curve provided.

b)_____

c)_____

9.

a) _____

b)_____

c)_____

10. ***Finding a value from an area***

10._____

After accelerating for 20 seconds, a DeLorean sports car has a wide range of speeds that it can achieve, depending on traction. The distribution of speed follows an approximately Normal distribution with a mean of 80 mph and standard deviation of 7.7 mph. Marty wants the next acceleration run to be in the fastest 16% of all possible speeds.

How fast will the car have to go?