

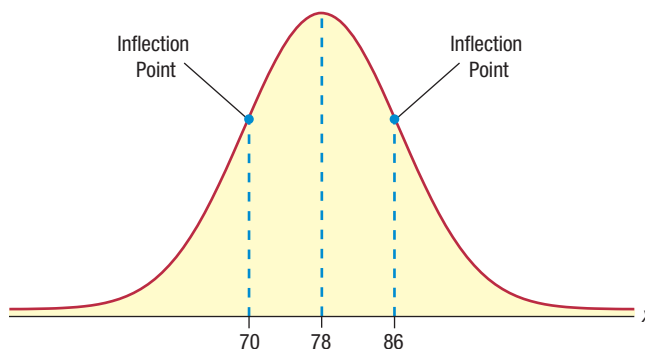
Name: _____

Date: _____

Chapter 8 Project

Setting the Curve

Dr. Groppe, a professor in the School of Computing at Klaggen University, is using a standardized final exam that is “nationally normed” for his Computer Science II class. Nationally normed implies that the normal distribution is an appropriate approximation for the probability distribution of students’ scores on the exam. The probability distribution of students’ scores on this standardized exam can be estimated using the normal distribution shown below.



1. State the mean of the distribution of the computer science exam scores based on the figure above.
2. State the standard deviation of the computer science exam scores based on the figure above.

At some point in our academic pursuit, we all think that we would like our professors to curve our grades. Especially if we’re the ones setting the curve. After considering his students’ request to curve the grades on the final exam, Dr. Groppe has come up with two options to use if he decides to curve the grades. Follow the steps listed to determine the grading scale for each option.

Curved Grading Option #1

- Students whose raw scores are at or above the 90th percentile will receive an A.
- Students whose raw scores are in the 80th–89th percentile will receive a B.
- Students whose raw scores are in the 70th–79th percentile will receive a C.
- Students whose raw scores are in the 60th–69th percentile will receive a D.
- Students whose raw scores are below the 60th percentile will receive an F.

3. In order to know the cutoff exam scores required for Curved Grading Option #1, Dr. Groppe needs to know what z-scores correspond to the upper limit percentiles. Find each z-score that corresponds to the following percentiles by using WolframAlpha online (<https://www.wolframalpha.com/>). For example, inputting “z score 90th percentile normal curve” will return the z-score such that 90 percent of data is below it in a normal curve. Round your z-scores to 3 decimal places. We’ve found the z-score of the 90th percentile for you.

90th percentile 1.282

80th percentile _____

70th percentile _____

60th percentile _____

4. Using the z-scores found in Step 3, find the exam scores that correspond to Curved Grading Option #1. Assume that the exam scores range from 0 to 100. (Round to the nearest whole number.)

Curved Grading Option #1

A: _____ – 100

B: _____ – _____

C: _____ – _____

D: _____ – _____

F: 0 – _____

Curved Grading Option #2

The second option for curving the grades is as follows:

- Students whose raw scores are at least two standard deviations above the mean of the standardized test will receive an A.
- Students whose raw scores are from one up to two standard deviations above the mean of the standardized test will receive a B.
- Students whose raw scores are from one standard deviation below the mean up to one standard deviation above the mean of the standardized test will receive a C.
- Students whose raw scores are from two standard deviations below the mean up to one standard deviation below the mean of the standardized test will receive a D.
- Students whose raw scores are more than two standard deviations below the mean of the standardized test will receive an F.

5. Using the information above, find the exam scores that correspond to Curved Grading Option #2. Assume that the exam scores range from 0 to 100. (Round to the nearest whole number.)

Curved Grading Option #2

A: _____ – 100

B: _____ – _____

C: _____ – _____

D: _____ – _____

F: 0 – _____

**Computer Science II
Raw Exam Scores**

Name	Raw Score/ Uncurved Grade
J. Alexander	79/C
W. Thouy	69/D
C. Bradford	88/B
S. Nance	66/D
A. Moore	75/C
K. Pinkston	86/B
C. Navas	91/A
R. Alexandru	77/C
S. Garcia	82/B

*A partial list of raw scores for students in
Dr. Groppe's Computer Science II class.*

6. Using the grading scales you just created in Steps 4 and 5, complete the following table of the partial list of grades and find the new curved letter grades that the students would receive in each of the curving options given their raw scores on the exam.

Computer Science II Final Exam Scores

Name	Raw Score/ Uncurved Grade	Option #1 Curved Grade	Option #2 Curved Grade
J. Alexander	79/C	_____	_____
W. Thouy	69/D	_____	_____
C. Bradford	88/B	_____	_____
S. Nance	66/D	_____	_____
A. Moore	75/C	_____	_____
K. Pinkston	86/B	_____	_____
C. Navas	91/A	_____	_____
R. Alexandru	77/C	_____	_____
S. Garcia	82/B	_____	_____

After reviewing the grades for each student using the two optional curving methods, answer the following questions.

7. Who do you think benefits the *most* from Curved Grading Option #1? Why?

8. Who is likely to disapprove of Curved Grading Option #1? Why?

9. Who do you think benefits the *most* from Curved Grading Option #2? Why?

10. Who is likely to disapprove of Curved Grading Option #2? Why?

11. Which grading scale do you feel is *most* fair? Explain why?