

Show **all** of your work on this assignment and answer each question fully in the given context.

Please staple your assignment!!

1. Chapter 3, Section 1, Problem 3 (page 77)
2. Chapter 3, Exercise 9 (page 116)
3. Chapter 3, Exercise 12 (address the report referred to in part (b) to *Manager Gu* for full credit) (page 118)
4. Chapter 3, Exercise 18 (parts a, c, e only) (page 120)
5. An engineer woke up in the middle of the night, struck with the sudden awareness that when reporting the standard deviation for a recent sample of safety criteria tests, she mistakenly used the population formula, replacing μ with \bar{x} , instead of the correct sample formula.
 - (a) Was the value for standard deviation she reported too large or too small? Explain.
 - (b) Write the ratio of the formula she used (population standard deviation, with μ replaced by \bar{x}) to the formula she should have used (sample standard deviation). Simplify it as much as possible (note: it should only depend on sample size).
 - (c) What happens to this ratio you if the sample size is very large? What happens as the sample size goes to infinity?
6. Calculate the variance for the following samples (*note: if you are neat with your work, you may notice a pattern*):
 - (a) Sample 1: -1.05, -1.0, -0.5, 0.15, 0.6, 0.65, 0.7, 1.25
 - (b) Sample 2: -2.1, -2.0, -1.0, 0.3, 1.2, 1.3, 1.4, 2.5
 - (c) Sample 3: -4.2, -4.0, -2.0, 0.6, 2.4, 2.6, 2.8, 5.0
 - (d) Sample 4: -8.4, -8.0, -4.0, 1.2, 4.8, 5.2, 5.6, 10.0
 - (e) Sample 5: -16.8, -16.0, -8.0, 2.4, 9.6, 10.4, 11.2, 20.0
7. Chapter 3, Exercise 22 (page 122). Note, parts (b) and (e) are not required but will count for 10 bonus points on this assignment).