Midterm: Some problems for review

The exam will be taken in class (SCB 303) on Friday 5/29. You need to bring your laptop and calculator (of any kind). You are not allowed to use any app on your laptop, even a calculator app. Your web browser can only have 3 tabs opened: Canvas, MyLab, StatCrunch. The browser should occupy the full screen at all time. Phones and notecard are not allowed. The instructor will provide scratched papers for you. When you are seated, go to Canvas and click on link for Midterm on the home page. You will be directed to MyLab Statistics, which will ask you for an access code. The instructor will give you the access code.

Other exam policies:

The proctor may reassign your seat at the beginning or at any time during the exam.

Your laptop screen must be bright enough for the proctor to see your screen activities without difficulties.

Using a phone or any unauthorized assistance while the exam is in progress, whether inside or outside of the classroom, is prohibited.

If you need to leave the room for any reason, you must first obtain the proctor's permission. If the proctor is not present in the room and you want to leave, you must wait until he/she comes back. If you finish your exam, you must notify the proctor immediately. He/she will then ask you to log out of the exam and close your browser.

Violation of any of the above policies will be considered as cheating and may result in a score of zero.

The textbook sections to be covered are 2.1-2.4, 3.3-3.5, 4.1-4.4, 5.1-5.4, 6.1-6.2. You should review the homework problems, worksheets, quizzes, examples given in the lectures. It is always a good idea to study for the exam with someone.

Some problems to practice:

1) A small company surveyed a group of 30 employees about their daily commute time to work in minutes:

12, 14, 15, 16, 17, 18, 18, 19, 20, 20, 21, 22, 22, 23, 24, 24, 25, 26, 27, 28, 29, 30, 32, 34, 36, 40, 45, 55, 70, 95

a) Draw a histogram using StatCrunch

b) Comment on the shape: symmetry, mode, spread

c) Find the 5-number summary

d) What percentage of data lies between 19 and 32?

e) What percentage of data lies between 19 and 95?

f) Based on the shape of the histogram, find the suitable center and spread of this data set.

2) Another group of 30 employees work at a different branch of the same company. Their commute times are:

15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 28, 29, 29, 30, 30, 31, 31, 32, 32, 33, 34, 35, 36, 37, 38, 40, 41, 43, 45

a) Draw a histogram using StatCrunch

b) Comment on the shape: symmetry, mode, spread

c) Find the 5-number summary

d) Compare the center and spread of this set of employees and the set of employees in Problem 1.

3) A car dealership tracked 15 cars of the same model. For each car, the dealership recorded the age of the car (in years) and the resale value (in thousands of dollars).

Age	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Value	28.5	27.2	25.8	24.1	22.9	21.4	20.2	18.7	17.5	16.1	14.8	13.6	12.1	11.0	9.8

a) Which variable is the independent variable (predictor)? Which variable is the dependent variable?

b) Find the correlation coefficient r. Does the value of r show a weak, moderate, or strong negative linear relationship?

c) Find the coefficient of determination. Explain its meaning.

d) Find the slope and y-intercept of the regression line. Then write the regression equation.

e) Use your regression equation to predict the resale value of a car that is 8.5 years old.

4) You tossed an unfair coin with P(Head) = 3/4 and P(Tail) = 1/4. Toss the coin 5 times. Find the probability that you get 3 Heads and 2 Tails in that order.

5) Suppose that you have an 18% chance of making a free throw in basketball. You attempted 3 throws.
a) Make a table showing the probability distribution of all the outcomes.

b) What is the probability that you make exactly 2 of the 3 throws?