

Problem Set 1

This problem set is due in lecture on **Wednesday, February 11th**. No late problem sets will be accepted. **Be sure to show your work** (that is, do not use a spreadsheet or statistical program to generate your answers), and to write your name, ID number, as well as the name of your Teaching Assistant, on your problem set.

Answer all these problems. Unless indicated by an “X” prefix, the numbers indicate exercises from the textbook.

- 2.16
- Problem X.1

Let:

$$x_1 = 7, x_2 = 10, x_3 = 0, x_4 = 14, x_5 = -2, x_6 = 2$$

and Let:

$$y_1 = 1, y_2 = 5, y_3 = -3, y_4 = 4$$

Evaluate:

$$\text{a. } \frac{\sum_{i=1}^4 x_i}{\sum_{i=1}^4 y_i} \qquad \text{b. } \frac{\sum_{i=1}^6 |x_i|}{|\sum_{i=1}^4 y_i|} \qquad \text{c. } \sum_{i=1}^4 \frac{x_i}{y_i}$$

where the $|\cdot|$ operator indicates the absolute value operation.

- Problem X.2
Given $n=10$ measurements, 3, 5, 4, 6, 10, 5, 6, 9, 2, 8, find the following:
 - \bar{x}
 - m
 - mode
- 2.40
- Problem X.3
Given $n=8$ measurements, 4, 1, 3, 1, 3, 1, 2, 2, calculate the following:
 - \bar{x}
 - s^2 , using the standard formula.
 - s^2 and s using the shortcut formula; compare against the results found in b.
- 2.72
- 2.84

- Problem X.4
Compute the following:

a. $\binom{8}{3}$ b. $\binom{6}{4}$ c. $\binom{4}{0}$ d. $\binom{9}{8}$

- 3.8
- 3.12
- 3.20
- Problem X.5

In a survey involving 100 cars, each vehicle was classified according to whether or not it had antilock brakes and whether or not it had been involved in an accident in the past year.

	Antilock Brakes	No Antilock Brakes
Accident	0.03	0.12
No Accident	0.40	0.45

Suppose that one of these cars is randomly selected for inspection.

- What is the probability that the car has been involved in an accident in the past year?
- What is the probability that the car has not been in an accident and has antilock brakes?
- Given that the car has been involved in an accident in the past year, what is the probability that it has an antilock brake?