(9 pts.) 1. An Internet search for the best deal on a 12-megapixel digital camera revealed the following prices (in U.S. dollars).

160	169	783	90	129	188	300	295	600	579	356	553

(1 pt.) a) What is the mean for these price data?
(1 pt.) b) What is the median for these price data?
(1 pt.) c) What is the standard deviation for these price data? You may use either the computing formula or the definition.
(2 pts.) d) What are Q_1 and Q_3 for these price data?
(2 pts.) e) Are there any outliers in this data set? If so, what are they?
(1 pt.) f) What is the five-number summary?
(1 pt.) g) Draw a modified boxplot in this situation. You may draw it by hand or use computer software.

(1 pt.) 2. BONUS: Calculate the computing formula from the definition of sample variance. That is show that

$$s^2 = \frac{1}{n-1}\sum (x_i - \bar{x})^2 = \frac{1}{n-1}\left(\sum x_i^2 - \frac{1}{n}\left(\sum x_i\right)^2\right)$$

(1 pt.) 3, Bonus: Show that the sum of the z scores of a data set has to be zero. That is, show that

$$\sum z_i = \sum \frac{x_i - \bar{x}}{s} = 0$$

(2 pts.) 4. Three taxpayers are selected at random and asked whether they itemized their tax deductions last year or used the standard deduction. An experiment consists of recording each response.
(1 pt.) a) Construct a tree diagram to represent this experiment.
(1 pt.) b) Write down the sample space.

(3 pts.) 5. Consider an experiment with events A and B and having the following probabilities:
P(A) = 0.31, P(B) = 0.68, and P(A U B) = 0.8. Calculate the following probabilities
(1 pt.) a) P(A ∩ B)
(1 pt.) b) P(A')
(1 pt.) c) P[(A U B)']

(6 pts.) 6. The following table lists the most popular U.S. convention centers. Suppose the probability given represents the likelihood that a randomly selected U.S. convention will be held at that site.

Site	Probability
Orlando	0.310
Chicago	0.225
Las Vegas	0.098
Washington, DC	0.075
Dallas	0.064
Atlanta	0.055
Phoenix	0.033
Other	0.140

Suppose a convention is randomly selected. Consider the events:

A = {Convention in Orlando or Chicago}
B = {Convention not in Washington, DC}
C = {Convention in Las Vegas}

Find the following probabilities.
(1 pt.) a) P(A)
(1 pt.) b) P(B)
(1 pt.) c) P(C)
(1 pt.) d) P(A ∩ B)
(1 pt.) e) P(A ∪ C)
(1 pt.) f) P(A ∩ C)