

# Arts & Science 2R06

## “Test 1”

October 7, 2009

*Answer all four questions, for a total of 20 marks.  
Total time allowed is 90 minutes.*

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1. The Environmental Protection Agency (EPA) tracks fuel economy of automobiles based on information from the manufacturers (Ford, Toyota, Honda, etc.). Among the data the agency collects are the manufacturer, vehicle type (car, SUV, etc.), weight, horse power, and gas mileage (mpg) for city and highway driving. Identify the variables measured, and specify for each variable whether its use indicates that it should be treated as qualitative or quantitative, and for any quantitative variable, identify the units in which it was measured (or note that they were not provided).

(5 marks)

2. The organization Monitoring the Future ([www.monitoringthefuture.org](http://www.monitoringthefuture.org)) asked 2,048 eighth graders who said they smoked cigarettes what brands they preferred. The table below shows brand preferences for two regions of the country:

Brand Preference	East	West
Marlboro	58.4%	58.0%
Newport	22.5%	10.1%
Camel	3.3%	9.5%
Other (over 20 brands)	9.1%	9.5%
No usual brand	6.7%	12.9%

- (a) Construct a side-by-side bar chart for the two regions;
- (b) Write a few sentences describing the similarities and differences in brand preferences among the eighth graders in the two regions listed.

(5 marks)

*contd.*

*contd.*

3. Presented below are the number of points by which the winning team outscored the losing team in 42 Super Bowl games:

25	19	9	16	3	21	7
17	10	4	18	17	4	12
17	5	10	29	22	36	19
32	4	45	1	13	35	17
23	10	14	7	15	7	27
3	27	3	3	11	12	3

- (a) Find the five-figure summary for these data;  
(b) Construct a modified box plot;  
(c) Describe the shape characteristics of the distribution. (5 marks)
4. In March 2006, 16 gas stations in Grand Junction, Colorado, posted these prices for a gallon of regular gasoline:

2.22	2.21	2.45	2.24
2.27	2.28	2.27	2.23
2.26	2.46	2.29	2.32
2.36	2.38	2.33	2.27

- (a) Make a stem-and-leaf plot of these gas prices, using split stems; for example, use two 2.2 stems — one for prices between \$2.20 and \$2.24 and the other for prices from \$2.25 to \$2.29;  
(b) Find the mean and standard deviation as measures of the center and variability, respectively, of this distribution;  
(c) What unusual feature do you see?

(5 marks)

All the Best!