

One Thursday, researchers gave students enrolled in a section of basic Spanish a set of 50 new vocabulary words to memorize. On Friday the students took a vocabulary test. When the students returned to class the following Monday, they were retested---without advance warning. Both sets of test scores for the 25 students are shown below:

Friday 42 44 45 48 44 43 41 35 43 48 43 45 47 50 34 38 43 39 46 37 40 41 48 37 36
Monday 36 44 46 38 40 38 37 31 32 37 41 32 44 47 34 31 40 41 32 36 31 32 39 31 41

- Create a graphical display to compare the two distributions of scores.
- Write a few sentences about the scores reported on Friday and Monday.
- From the calculator, get the numerical summaries including the mean & SD and five number summary. Compare the numerical summary between the scores of the two different days.
- Find the change in student scores from Friday to Monday and display that below the chart above.
- Create a graphical display showing the distribution of those changes you found in part (d).
- Describe the distribution of changes both graphically and using the numerical summaries.

Is the Statue of Liberty's nose too long? Her nose measures, 4'6'', but she is a large statue, after all. Her arm is 42 feet long. That means her arm is $42/4.5 = 9.3$ times as long as her nose. Is that a reasonable ratio? Shown in the table below are arm and nose lengths of 18 girls and the ratio of arm-to-nose length for each.

Arm (cm)	Nose (cm)	Arm/Nose Ratio
73.8	5	14.8
74	4.5	16.4
69.5	4.5	15.4
62.5	4.7	13.3
68.6	4.4	15.6
64.5	4.8	13.4
68.2	4.8	14.2
63.5	4.4	14.4
63.5	5.4	11.8
67	4.6	14.6
67.4	4.4	15.3
70.7	4.3	16.4
69.4	4.1	16.9
71.7	4.5	15.9
69	4.4	15.7
69.8	4.5	15.5
71	4.8	14.8
71.3	4.7	15.2

- Make an appropriate plot and describe the distribution of the ratios.
- Summarize the ratios numerically, choosing appropriate measures of center and spread.
- Is the ratio of 9.3 for the Statue of Liberty unrealistically too low? Explain.