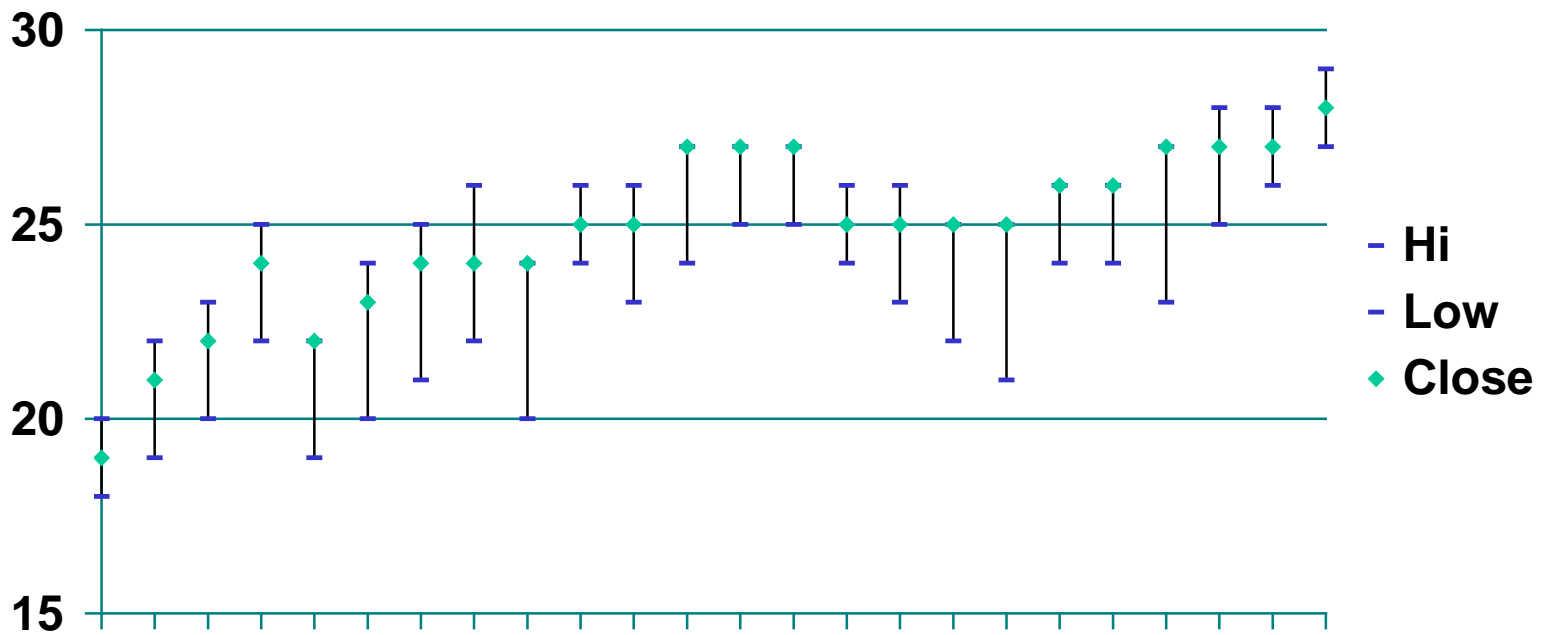


GRANDMA'S GIFT

Stock Performance to Date



Ray, Cathy, Lynda, Margaret and Vanessa
STATISTICS AND DATA ANALYSIS 6-8

GRANDMA'S GIFT

Names: Ray Kane, Lynda Rogers, Margaret McCloskey, Vanessa Wimberly, and Cathy Hibsichman

Grade Level: 6-8 **Content Area:** Statistics and Data Analysis

PA Standard(s) addressed:

- 2.6.8 A. Compare and contrast different plots of data using values of mean, median, mode, quartiles, and range.
- 2.6.8 E. Analyze and display data in stem-and-leaf and box-and-whisker plots.
- 2.6.8 F. Use scientific and graphing calculators and computer spreadsheets to organize and analyze data.

NCTM Standard(s) addressed:

Select, create, and use appropriate graphical representations of data, including histograms, box plots, and scatterplots.

Find, use, and interpret measures of center and spread, including mean and interquartile range.

Discuss and understand the correspondence between data sets and their graphical representations, especially histograms, stem-and-leaf plots, box plots, and scatterplots.

Understand and use appropriate terminology to describe complementary and mutually exclusive events.

Problem Name: **GRANDMA'S GIFT**

Problem:

Peggy, Lynda and Ray received stock gifts from their grandmother. Grandma had information about each stock prepared for her three grandchildren. Unfortunately, the information slipped off of Grandma's counter into a mop bucket filled with cleaning solution. She retrieved the papers as quickly as possible, only to find the names were missing from the reports. Grandma knew key pieces of information about the stocks. Use her "clues" to help her figure out which report belongs to Peggy, Ray and Lynda.

Directions:

Use the stem-and-leaf plot, box-and-whisker, and the table of values along with the clues displayed below to find Peggy's stock.

Data:

_____ 's
Report

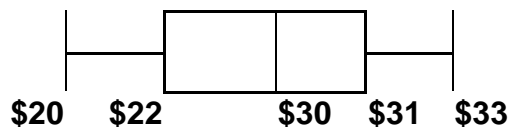
_____ 's
Report

_____ 's
Report

Month	Dollar Value
Jan	\$31
Feb	\$32
Mar	\$30
Apr	\$28
May	\$30
Jun	\$32
Jul	\$22
Aug	\$33
Sep	\$32
Oct	\$22
Nov	\$23
Dec	\$21

Tens	Units
2	1,1,2,3,4,9
3	1,2,2,2,3,3

Key 2|1 = \$21



Clues:

Lynda and Peggy have the same median.

Lynda has the greatest range.

Peggy's mean is greater than Ray's.

Please Write Solutions Here:

TABLE

STEM AND LEAF

BOX AND WHISKER

<p>_____ 's Report</p>	<p>_____ 's Report</p>	<p>_____ 's Report</p>
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Problem Solution(s):

- **Median**: The median for the box & whisker is \$30 because the middle line and middle number represent the median in any box & whisker.
- The median for the stem & leaf is \$30. Since each line of data in the stem & leaf has the same number of items, then \$29 is closest to the middle in the first line and \$31 is closest to the middle in the second line. Therefore, to find the median $(29 + 31) / 2 = \$30$
- For the table, first the student must put the data in order: 21,22,22,23, 28,30,30,31,32,32,32,33 counting up six or back six, the median is \$30.
- The median does not have to be determined to find the three correct answers. Some students may realize this and not put this information into their solution.
- **Range**:

Table	Stem & Leaf	Box-&-Whisker
$33 - 21 = 12$	$33 - 21 = 12$	$33 - 20 = 13$
- Therefore, Lynda has the box & whisker, because she has the highest range.
- **Mean**: To find the mean of the table the student must add all the data in the table(336) and divide by the number of items(12) to obtain \$28.
- To find the mean of the stem & leaf the student may form two-digit numbers and add and then divide by 12, which is \$27.75.
- There is no mean for the box & whisker.
- Therefore, Peggy has the table and Ray has the stem & leaf.

Specific Rubric:

5. Advanced Understanding:

- a. Correct answer with all calculations, correct procedures and a clear explanation.
- b. Demonstrates an understanding of the measures of central tendencies displayed.

4. Satisfactory Understanding:

- a. Correct calculations, proper use of mean, median, range but no explanation.
- b. Correct answer, procedures and correct use of terms and some explanation given.

3. Almost Satisfactory Understanding:

- a. Correct answer with mostly correct procedures shown and no explanation.
- b. Correct answer. Few correct calculations, procedures. Some explanation.
- c. Incorrect answer. All calculations are correct except one error that continues throughout procedure. Some explanation.

2. Partial Understanding:

- a. Correct answer with few correct procedures, misuse of some of terms or no explanation.
- b. Incorrect answer, some understanding of mean, median and range with some explanation.

1. Minimal Understanding:

- a. Correct answers but no understanding of data inferences, explanation is not clear or legible.
- b. Incorrect answer; can identify range and mean; no explanation.
- c. Incorrect answer but can find mean or median for some of the data; no explanation.

0. No Understanding:

- a. Incorrect answer; no understanding of median, mean and range; no explanation or calculations.
- b. Blank (????), refused, I don't know.