

## Activity 4: When It Comes to Salary, What Do You Mean?

John Neral

CALCULATOR: Casio: fx-115ES

### Teaching Notes and Solutions

*Objectives: Students will use the statistics application of the Casio fx-115ES to calculate statistical information for a particular set of data. Students will be able to derive statistical information and then interpret the results in reference to the problem.*

#### Getting Started:

Being able to calculate and interpret statistical information is an important aspect of mathematics. Whether you are calculating a measure of central tendency or the standard deviation of a set of data, these measures can help paint a detailed picture of whatever data you are studying. For some, knowing the measures of central tendency (mean, median, and mode) may be helpful in manipulating the data in such a way that one may try to mislead his/her audience. Nevertheless, interpreting statistical information is essential in understanding what the data is revealing and can aid in solving various types of problems.

#### Answers:

1. \$33809.58
2. \$6485.54
3. Yes, the mean is now \$1,000 greater because everyone's salary increased by one thousand dollars. The standard deviation however, does not change because the difference between everyone's salaries remains the same.
4. The sum of the salaries is \$417,715. The sum of its squares is  $1.500316943 \times 10^{10}$ .

#### Extension Answers:

Use the summation key to calculate the lifetime earnings of an employee that earns \$30,000 a year at age 23, gets a 4% raise per year, and works until age 60. This employee will work for 38 years.

38

The formula is:  $\sum_{x=1}^{38} (30000 \times 1.04^{38})$ .

$x=1$

The total lifetime earnings are \$2,682,274.49 and the last year's salary is \$133,164.40.

**Activity 4: When It Comes to Salary, What Do You Mean?**CALCULATOR: Casio: *fx-115ES***Student Worksheet Activity 4**

A manager is examining the yearly salary of her employees to create an end of the year report for her supervisor. There is a possibility that most of her employees will be eligible for a raise next year providing that the company's profits exceed their projected goals. The following table reveals the names of twelve employees and their yearly salaries. Use the data to calculate the mean and the standard deviation of the data set rounded to the nearest cent.

Name	Salary	Name	Salary
April	\$22,500	Bart	\$41,950
Cathy	\$31,750	David	\$40,875
Ethel	\$28,895	Frank	\$33,500
Greta	\$34,950	Howie	\$35,700
Ivette	\$31,000	James	\$26,595
Kim	\$33,025	Laverne	\$44,975

**Calculator Notes:**

Calculate the Mean of a Data Set:

- Turn the calculator on and press **MODE SETUP** .
- Press **3** for STAT (Statistics).
- Press **1** for 1-VAR (1 Variable Statistics).
- Enter the salary data from the table in the X column.
- After the last salary has been entered, press **AC** to exit the STAT Editor Window.
- Press **Shift 1** .
- Press **5** to enter the Variable Sub-Menu.
- Press **2** to calculate the mean ( $\bar{x}$ ).
- Press **=** .

To Calculate the Standard Deviation of the X-Data:

- Once you have entered the data into the STAT Editor Window, press **AC** .
- Press **Shift 1** to enter the STAT Menu.
- Press **5** to enter the Variable Sub-Menu.
- Press **4** to calculate the Sample Standard Deviation of the X-Data.
- Press **=** .

Name \_\_\_\_\_ Date \_\_\_\_\_

## Activity 4: When It Comes to Salary, What Do You Mean?

CALCULATOR: Casio: *fx-115ES*

<b>Student Worksheet Activity 4 (continued)</b>
---

### Problems:

1. What is the average salary of the 12 employees? (Round your answer to the nearest cent.)  
\_\_\_\_\_
2. What is the standard deviation of the data? (Round your answer to the nearest cent.)  
\_\_\_\_\_
3. Return to the STAT Editor Screen and add \$1,000 to everyone's salary. Does this change the mean and the standard deviation of the data?  
\_\_\_\_\_
4. Calculate the sum of the data along with the sum of its squares.