An Average Lunch?

Math Concepts	Overview
• whole numbers • division • addition • mean • multiplication **Materials** • TI-10, TI-15 Explorer™ • **An Average Lunch?** recording sheets • pencils	Students will explore the meaning of the average (mean) value for a set of data.

Introduction

1. Have students read about Wayside School in *Sideways Stories from Wayside School* by Louis Sachar.

2. Present a scenario about managing the cafeteria at Wayside School. Tell students: It doesn't matter how much an individual lunch costs at Wayside School, just as long as the average price per lunch for the lunches sold is $1.85 each day.

3. Have students work in small groups to brainstorm different possible combinations of lunch prices that could satisfy this requirement. Have them record these combinations in the Data Set column on their recording sheets. Encourage students to use efficient mathematical notation.

   Example:
   3($1.00) for three lunches costing $1.00 each.

4. Have students look for patterns in the sets of data they recorded in the table.

5. Have students write three summary statements on their recording sheets. These statements should describe characteristics that might be expected in a data set that has a given mean value.

Collecting and Organizing Data

While students are creating data sets for the given mean value, ask questions such as:

• What does it mean for the "average" lunch price to be $1.85?

🖩 How can you use the calculator to find the mean of each data set?

An Average Lunch? *(continued)*

Collecting and Organizing Data (continued)

- How many pieces of data do you want to have in your data set? Why? What is the least number possible? What is the greatest number possible?

- Do all the lunches have to cost the same amount? Can they?

- What happens when you sell a lunch for less than the mean value? What happens when you sell a lunch for more than the mean value?

⊞ How can you use the calculator to help you find data sets that will produce a given mean?

⊞ How can you use ⟮ and ⟯ to help you investigate this problem?

Analyzing Data and Drawing Conclusions

After students have investigated a variety of data sets that all have the same mean, have them discuss their observations as a whole group. Ask questions such as:

- What does a mean represent?

- What does the mean of a data set tell you about the number of pieces of data in a data set?

- What does the mean tell you about the values of individual pieces of data in the data set?

- What are some advantages of using the mean to describe a set of data?

- What are some disadvantages of using the mean to describe a set of data?

⊞ How did you use the calculator to help you investigate this problem?

⊞ How were you able to tell whether the displayed values on your calculator were reasonable?

⊞ How did you use ⟮ and ⟯ to help you investigate this problem?

Continuing the Investigation

Have students:

- Change the mean for the school lunches and investigate how their data sets need to change to produce the new given mean.

- Collect examples from newspapers and magazines illustrating uses of means and write short paragraphs evaluating these uses.
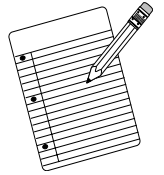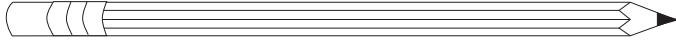
Name:

An Average Lunch?
Recording Sheet

Collecting and Organizing Data

For a mean value of:_____

Data Set	Total Cost	Number of Lunches

Analyzing Data and Drawing Conclusions

Characteristics we might expect in a data set with a mean of _____:

A.

B.

C.