

Activity 1:

Comparing Continuous and Discrete Data

John Neral

CALCULATORS: Casio: *fx-9750G Plus* • Casio: *CFX-9850G Series*

Teaching Notes/Lesson Plan

Objective

Students will demonstrate the ability to explore continuous and discrete data. Data will be plotted on a coordinate graph and based on a given scenario, the students will demonstrate the ability to identify the data as continuous or discrete.

Getting Started

In any exploration of functions, it is important for students to understand what type of data they are about to analyze. Some data can be classified as being "discrete" data and other data is classified as "continuous". Through this activity, students will not only explore the definitions of these different types of data, but also be able to identify them, and graph them

Activity Notes

Ask students to define "continuous data" and "discrete data". Once students have had some time to reflect on these terms and develop a definition in their own words, provide them with the following examples. Have students identify whether each set of data can be classified as being "continuous data" or "discrete data".

- The amount of rainfall recorded each day for seven days. (discrete)
- The amount of money earned during an 8-hour workday. (continuous)
- The weight of newspapers collected at each house on a route. (discrete)
- The length of hair growth over a one-month period. (continuous)

Next, use the following two scenarios in the activity section, to input the data and graph it using the Casio calculator. Students should determine whether the data is continuous or discrete and then be able to write an equation for any continuous data.

Extension

Have students create their own scenarios that involve continuous data and/or discrete data. Have students write an explanation describing the data and if possible, determine the equation that can be used to model the data.

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Calculator Notes

Calculator Notes

To enter data into the STAT application:

- From the Main Menu, press **2** or **STAT** to access the Statistics application.
- In List 1, enter the data that is represented by the x -variable.
- In List 2, enter the data that is represented by the y -variable.
- Press **F1** to access the graphing application.
- Press **GPH1** to draw the graph.
- The Casio calculator will automatically set the viewing window to display the ordered pairs.
- Press **F1** to calculate the line of best fit or the equation of a line that models the data.
- Use any of the function keys to draw the line.
- In the next window, you can press **F5** to copy the function and paste that into the Graph application or press **F6** to draw the line in the STAT window.

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Answers to the Problems

Answers

Scenario 1:

1. The data is continuous because over a period of time, there must be a continuous progression to get from one salary to another.
2. $y = \$7.15x$
3. Mark's salary will be \$286.00 after he works 40 hours.

Scenario 2:

1. The data contained in this table represent discrete data because each house produces a different amount of recyclable cans. There is no correlation between the house and the number of cans it will recycle.
2. $y = 3.9x + 31.3$ (as determined by the Casio calculator)
3. There is no reasonable way to predict the number of cans that will be recycled by the sixth house. Since there is no correlation between the house and the number of cans, it is unrealistic to determine the number of cans.

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Mark is working at the local fast food restaurant and earns \$7.15 per hour.

The following table shows the amount of money he earns by working a particular number of hours per week.

Hours Worked	Money Earned
1	\$7.15
3	\$21.45
7	\$50.05
12	\$85.80
15	\$107.25

1. Does this table represent data that is "continuous" or "discrete"? Explain your answer using complete sentences.

2. Write an equation that models the data.

3. Use the equation to predict what Mark's salary will be if he works 40 hours.

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A local neighborhood community is asking everyone to participate in a new recycling program. At the end of each month, each house records the number of aluminum cans they recycle. The following data is compiled in the subsequent table.

House	Number of Cans
1	28
2	49
3	35
4	62
5	41

1. Does this table represent data that is "continuous" or "discrete"? Explain your answer using complete sentences.

2. Write an equation that models the data.

3. Can you predict how many cans the 6th house on the block will recycle the next month?
