# Hung Up on Histograms? Hang On to Explore the Hilly Terrain of Histograms! 

1. What are the features of a histogram?
2. Histograms may represent numerical data where the answer to the question is a number. Sometimes the answer is an Integer that counts how many of something (e.g., How many calculators do you own?) and sometimes the answer is a Real Number as a continuous measure of something that may include fractional or decimal values as well as Integer values (e.g., How many centimeters tall are you?).

List two questions that you will use to collect data that would be appropriate to represent with a histogram. Be sure you have one question to collect a set of data that includes only Integers, and one question to collect a set of data that is not restricted to Integer values.

Question 1 (Integer Data):
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$\qquad$

Question 2 (Continuous Data):
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$\qquad$
3. Histograms show the frequency of data values, or how many times each data value occurs. Histograms are helpful for organizing large sets of data. Be sure to collect a set of data with at least 20 data values. You may use the charts below (or make your own) to record the data collected for each question.

| Question 1 <br> (Integer Data) |  |
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| Question 2 <br> (Continuous Data) |  |
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4. The histogram plot on the $\mathrm{TI}-73$ Explorer requires attention to the WINDOW settings to determine the size of the intervals and to view the data. Based on the data you collected, determine what information will help you to set a reasonable WINDOW to view the data. For example, consider what size interval will group the data in a meaningful way.

|  |
| :--- |
| Minimum data value |
| Maximum data value |
| Interval Size |
| Lowest Frequency |
| Highest Frequency |


5. Use a TI-73 Explorer to enter the data in lists and set up plots for a histogram for each set of data. Only three plots may be set up at any one time, so use a TI-Graph Link cable and TIConnect to capture and print, or write the information below, from the screens with the following information:
a. Identify which question and data are represented in this histogram.
b. Print the TI-73 Explorer screen showing the histogram; or sketch your histogram below.
c. Print the TI-73 Explorer screen showing the WINDOW settings or fill in the information next to each graph.

Question


WINDOW:
$X \min =$
$X \max =$
$\mathrm{Xscl}=$
Ymin =
$Y \max =$
Yscl =

WINDOW:
Xmin $=$
Xmax $=$
$\mathrm{Xscl}=$
Ymin =
Ymax =
$\mathrm{Yscl}=$
6. Write at least two statements that make sense to conclude about the data represented in each histogram above.
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$\qquad$
$\qquad$
$\qquad$
7. Choose one of your questions and histograms above. Explore different size intervals to change the shape of the histogram. Print, or record below, the WINDOW settings and the resulting shape of the histogram.

Question
$\square$ WINDOW:

Xmin $=$
$X \max =$

Xscl =
Ymin =
Ymax =
$\mathrm{Yscl}=$
$\qquad$

WINDOW:

Xmin $=$
$X \max =$
$\mathrm{Xscl}=$
Ymin =
$Y \max =$
$\mathrm{Yscl}=$
8. Find the mean, median, mode and range for each set of data you collected, and explain how each describes the data.

Question 1 (Integer Data):

| mean | How does this describe the data? |
| :--- | :--- |
| median | How does this describe the data? |
| mode |  |
| range | How does this describe the data? |

Question 2 (Continuous Data):

| mean | How does this describe the data? |
| :--- | :--- |
| median | How does this describe the data? |
| mode |  |
| range | How does this describe the data? |

9. Write a paragraph (7-10 sentences) that explains your current thinking about appropriate ways to represent data using histograms. Include something about what you know, and what is still confusing, or questions you still have about histograms.
