Graphs of Data
ID: 12413

Time required
45 minutes

Activity Overview
In this activity, students create and analyze graphical representations of a data set.

Topic: Numbers and Operations
- *Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them*

- *Select, create, and use appropriate graphical representations of data, including pictographs, pie chars, and scatter plots*

Teacher Preparation and Notes
- *Prior experience with entering data in lists and setting up plots would be helpful, though not necessary.*

- *TI-Navigator is not required for this activity, but an extension is given for those teachers that would like to use it.*

- ***To download the student worksheet and TI-Navigator file, go to education.ti.com/exchange and enter "12413" in the keyword search box.***

Associated Materials
- *Graphs_Student.doc*

- *Graphs_Nav_TI73.act*

Suggested Related Activities
To download the activity listed, go to education.ti.com/exchange and enter the number in the keyword search box.

- *Graphical Representations (TI-73 Explorer & TI-Navigator) — 6693*

- *The Stock Market Project (TI-73 Explorer) — 7677*

- *Data Analysis (TI-73 Explorer) — 5198*

- *Taste Test (TI-73 Explorer) — 4489*

Problem 1 – Create a Pictograph

In this activity, students will explore different types of graphs for displaying data. Facilitate discussion that helps students see that different graphs are better for displaying different information. One graph may make it easy to compare one group to another while a different graph may make it easier to compare one group to the whole.

Question 1

Students initially enter a set of data into lists. If students have not entered words in lists before, using the [TEXT] screen may be new. You may want to compare this to them entering a high score on a video game.

For the first element in a list using words, students must enclose the word with **" "**. (The other entries do not need the quotation marks.) To enter **"SOCCR"**, press [2nd][MATH] and use the arrow keys to move around to each letter. Press [ENTER] to select each letter or character. When students have finished each word, they need to move to DONE and press [ENTER] again to copy the entry back to the list.
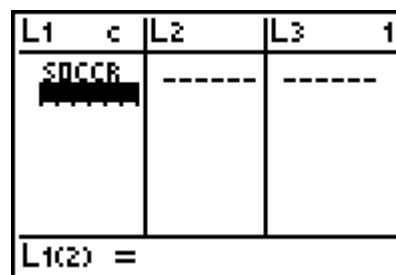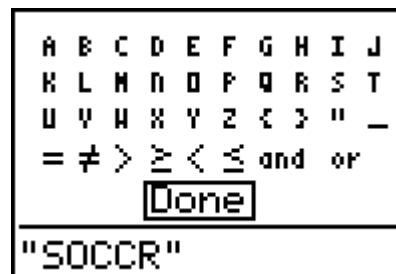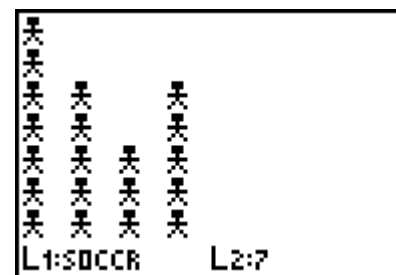
Question 2

Students need to understand that they are entering the sum of the number of responses for each category.

Questions 3–4

If students have not had much experience setting up stat plots, you may need to ensure they have set the first one up correctly.

When setting up pictographs remember that only 7 symbols in one column fit on the screen. If there are more than 7 items, the scale must be changed. To view the data for each column, students can press [TRACE] and use the arrow keys to move to each part of the graph.

Problem 2 – Create a Pie Chart

Questions 5–8

In this question, students change the type of stat plot from pictograph to pie chart. Press [2nd] [Y=] [ENTER] and change the Type: to ⊕. Also change the setting from Number to Percent (since the questions ask about percents). Press [GRAPH] again.
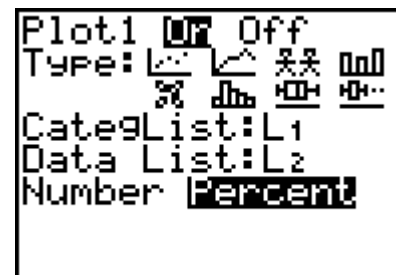
Problem 3 – Display Survey Results

Questions 9–11

Students should create a survey, collect data, and choose and appropriate display. Some ideas are favorite color, number of siblings, or favorite food. You may want to question students on why they selected the type of graph they did. Students should be able to explain their reasoning.
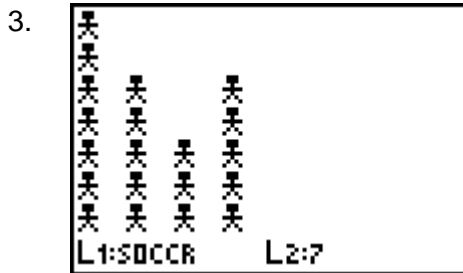
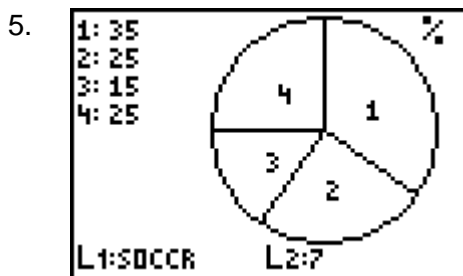**Solutions – student worksheet**

Problem 1

1.

L1	c	L2	L3	3
SOCCR		7	▄▄▄▄▄▄	
TENNS		5		
BSKTB		3		
FOOTB		5		
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L3(1) =

2. {7, 5, 3, 5}

3.

L1:SOCCR   L2:7

4. Soccer; This is the tallest column in the graph.

Problem 2

5.

1: 35
2: 25
3: 15
4: 25

L1:SOCCR   L2:7

6. Soccer: 35%, Tennis: 25%, Basketball: 15%; Football: 25%

7. Both graphs show the number of items in each category. They are different because it's easier to see which group has more compare to the other categories in the pictograph. It's easier to see how each category compares to the whole with the pie chart.

8. Use the pie chart to see how a group compares to the whole and use a pictograph to see how each category compares to other categories.

Problem 3

9–11. Check students' work. Reasoning should fit the data and the graphs selected.

Extension – TI-Navigator^{TM}

1. Load the *Graphs_Nav_TI73.act* activity settings file into **Activity Center**. This sets up Activity Center so that students can submit one point.

   Instruct students to move their cursor to a point where the *x*-coordinate represents their birth month. For example, a student born in June will use an *x*-coordinate of 6. Students should use a *y*-coordinate of 0.5, unless another student already occupies this position. If so, students should move up vertically 1 unit until they reach a spot that is not occupied by another student.

   Tell students to press MARK to mark the point in **Activity Center**. The collection of student responses in **Activity Center** will resemble a line plot. Ask a variety of questions related to the line plot to assess student understanding. For example, you can ask students to identify the median and mode.

2. Use **Screen Capture** to monitor student progress. You can also pull an individual screen to discuss as a class.