Lesson 2: Bar Graphs, Pie Graphs, Bad Graphs

Daily Data Collection

Each student will record the following information on the board:

What type of vehicle to you drive?

What is your favorite subject?

Terms:

Frequency: the number of times a value occurs (count them)

Relative Frequency: the percent that the value occurs relative to the others (frequency divided by total)

Graphs for Categorical Data

Graph Name	Example	Purpose / Features
Bar Graph		Shows a picture of the frequency of each category. The area is the proportional to the frequency– so a category with twice the frequency will have twice the area for its bar. Categories on the x or y axis. Scale starts at zero. Place gaps between the categories. <u>Lying when:</u> Areas do not match frequencies. Scale does not start at zero.
Pie Graph		Shows a picture of how the categories make up the whole population. The relative frequency matches the percent of the circle's area assigned to the category. Adds to 100% All categories must be included. <u>Lying when:</u> Area do not match the relative frequency. The percents do not add to 100% Not all categories are included.

Guided Practice on bad graphs.

Who Owns an MP3 Player?

Choosing the best graph to display the data

Portable MP3 music players, such as the Apple iPod, are popular—but not equally popular with people of all ages. Here are the percents of people in various age groups who own a portable MP3 player, according to an Arbitron survey of 1112 randomly selected people.[4]

Age group (years)	Percent owning an MP3 player
12 to 17	54
18 to 24	30
25 to 34	30
35 to 54	13
55 and older	5

PROBLEM:

(a) Make a well-labeled bar graph to display the data. Describe what you see.

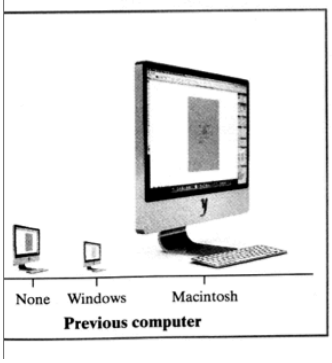
(b) Would it be appropriate to make a pie chart for these data? Why or why not?

EXAMPLE

Who Buys iMacs?

Beware the pictograph!

When Apple, Inc., introduced the iMac, the company wanted to know whether this new computer was expanding Apple's market share. Was the iMac mainly being bought by previous Macintosh owners, or was it being purchased by first-time computer buyers and by previous PC users who were switching over? To find out, Apple hired a firm to conduct a survey of 500 iMac customers. Each customer was categorized as a new computer purchaser, a previous PC owner, or a previous Macintosh owner. The table summarizes the survey results.[5]

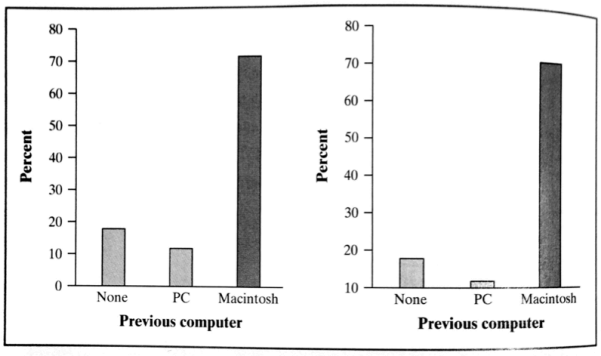


Previous ownership	Count	Percent
None	85	17.0
PC	60	12.0
Macintosh	355	71.0
Total	500	100.0

PROBLEM:

(a) Here's a clever graph of the data that uses pictures instead of the more traditional bars. How is this graph misleading?

(b) Two possible bar graphs of the data are shown on the next page. Which one could be considered deceptive? Why?



HW 2 Section 1-1 problems 11,13,15,17