

Lesson 10.4^{s.10}

Objective: To determine when statistics are misleading.

Statistics are used frequently and statistics are often abused.

Explain what possible misuses or misinterpretations may exist with each statement.

1. Florida has the highest death rate in the country.
Therefore Florida should be condemned as unsafe.
2. Eighty percent of all automobiles accidents occur within ten miles of home. Therefore it is safer to take long trips.
3. The average depth of the pond is 3 feet, so it is safe to go wading.

To make sure that the statistics are not being misused, the following information should be reported when doing a survey:

1. The number of people surveyed.
2. The number of people who responded.
3. How the people who participated in the survey were chosen.
4. The number and type of items being surveyed.

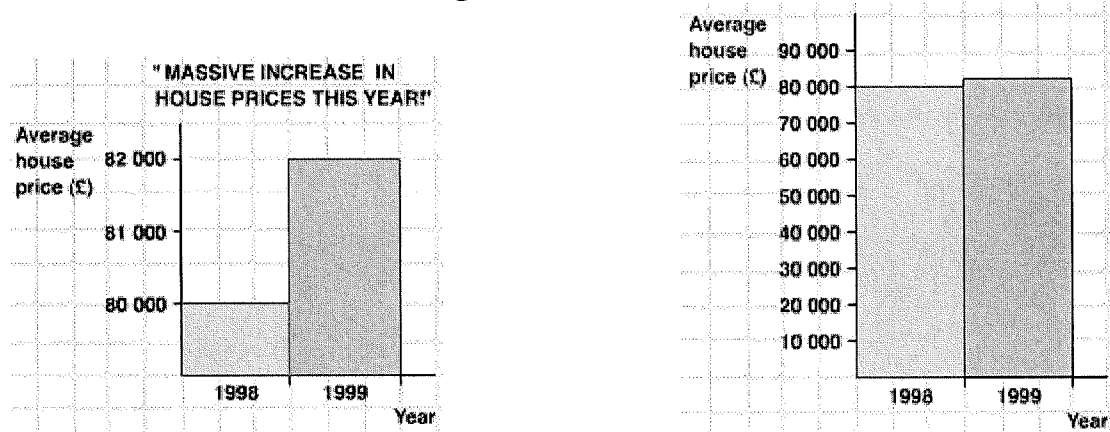
Common Sources of Bias Surveys

Faulty sampling	Faulty questions
Faulty interviewing	Lack of understanding
False answers	

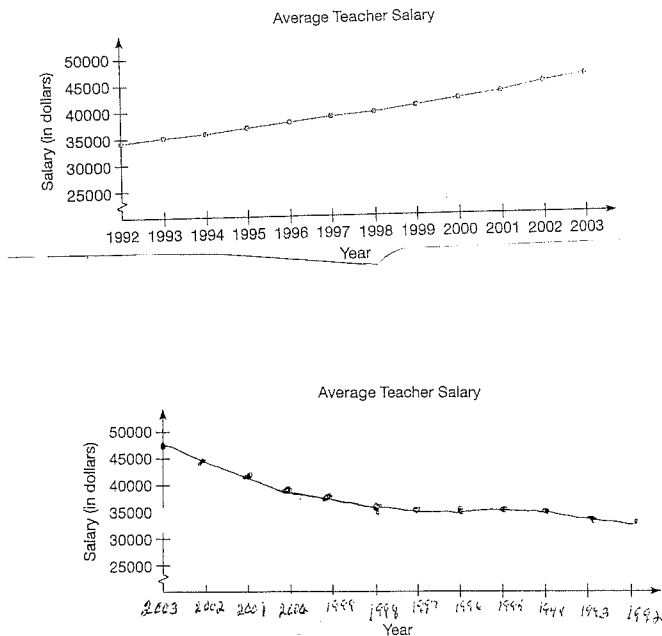
GRAPHS

SCALING AND AXIS MANIPULATION

To make the differences among the bars of a histogram or bar graph look more dramatic, a graph is drawn with part of the vertical axis missing.

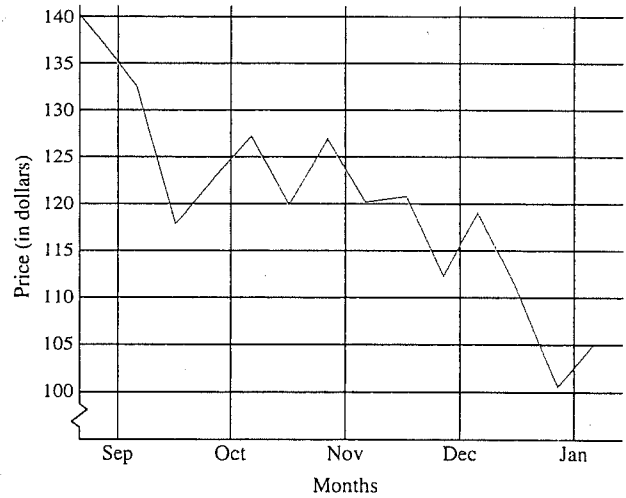
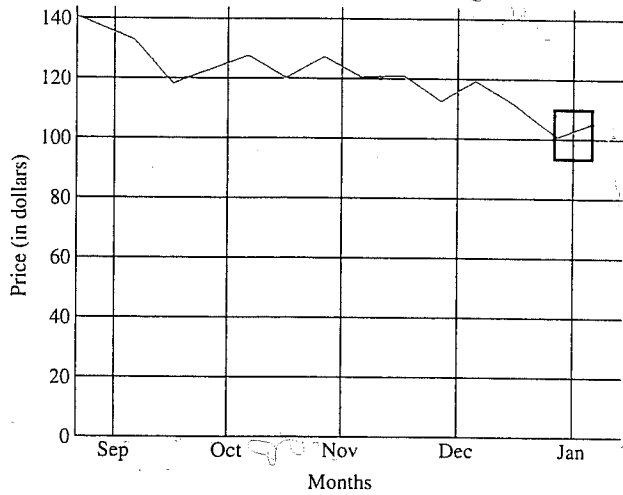


Another technique to distort the nature of some data is to reverse the axes and reverse orientation of an axis.



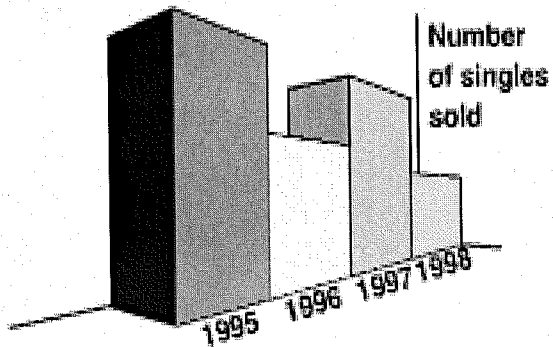
Cropping refers to the choice of the window that the graph uses to display the data.

Compare the following line graphs.

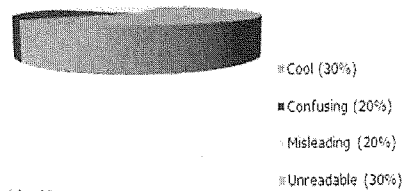


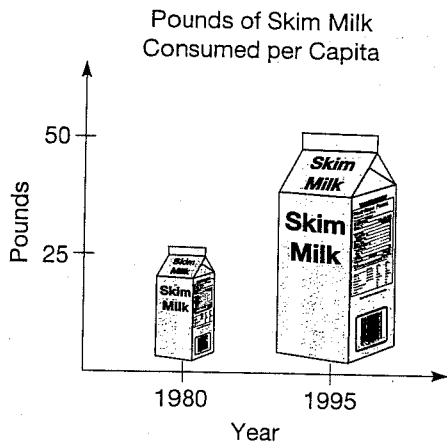
Three Dimensional Graphs

3-D graphs make the graph more attractive and can obscure the true data.

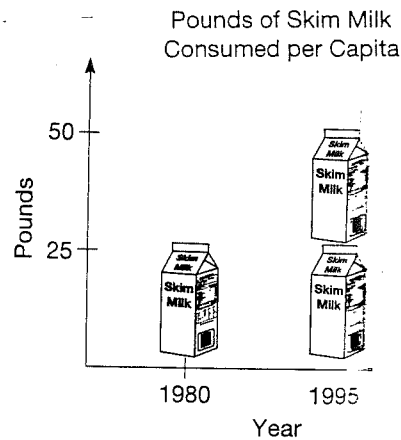


Perception of 3D pie charts





Source: US Department of Agriculture

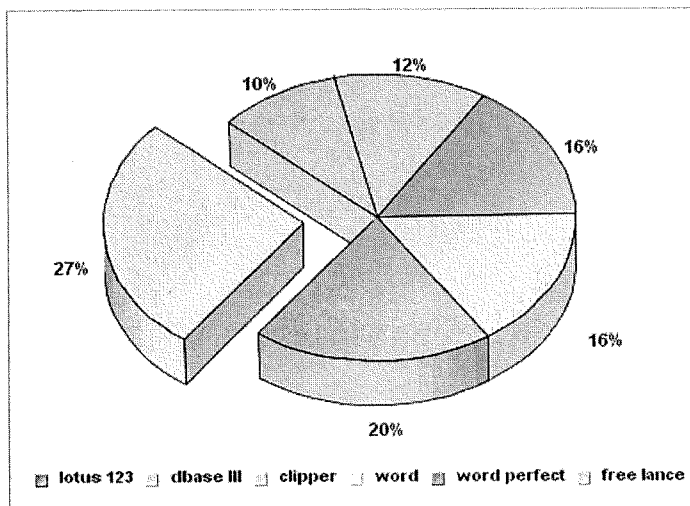


Source: US Department of Agriculture

What is wrong with this 3-D graph on the left?

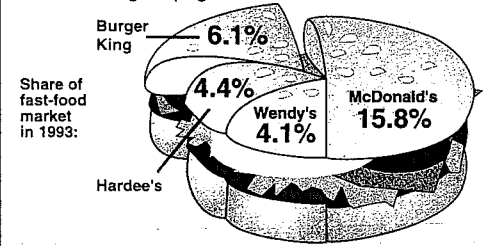
Compare this with the graph on the right.

Look at the effect of separating a piece of a circle graph and in making the picture 3-D .



Campaign heats up

Burger King's bite of the \$89.8 billion fast-food market is down from a high of 8.7% in 1986. The company is hoping its new menu, back-to-basics philosophy and new advertising campaign will reverse the decline.

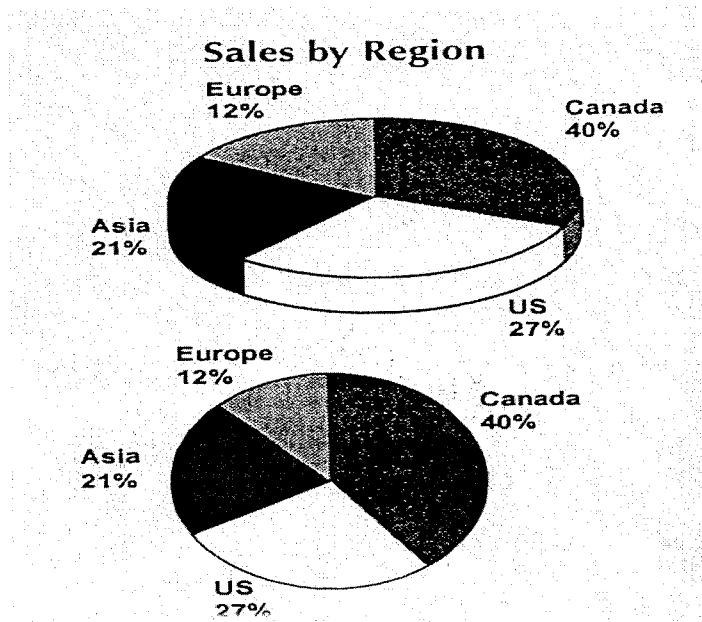


Source: Technomic

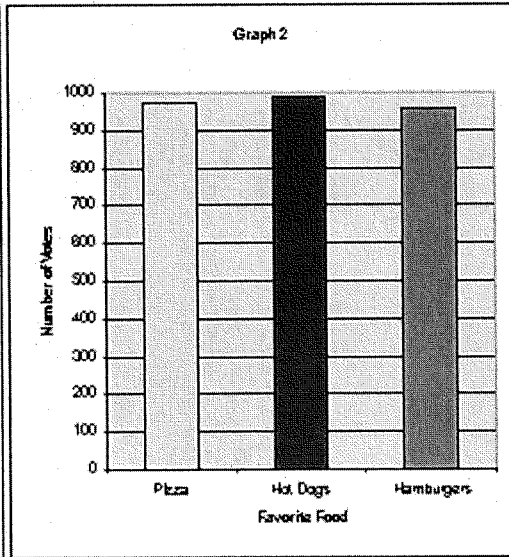
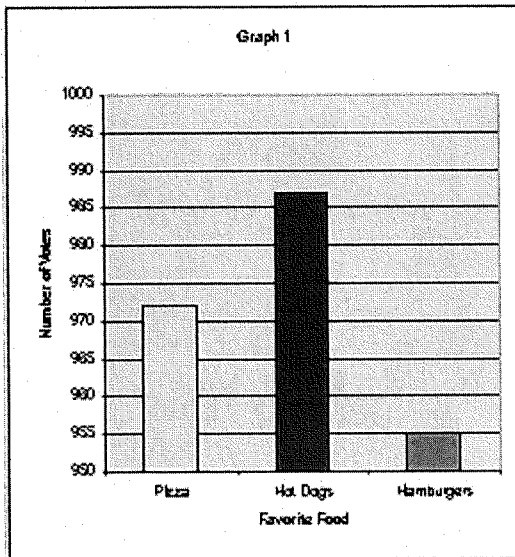
By Bob Laud, USA Today.

Note: Add up these percents

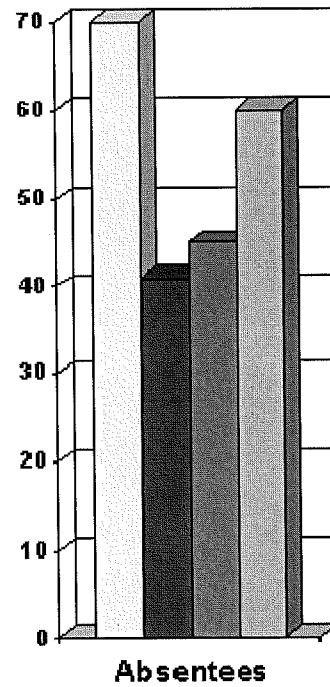
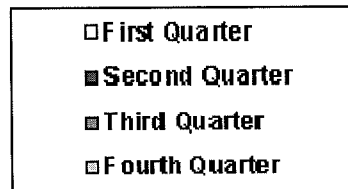
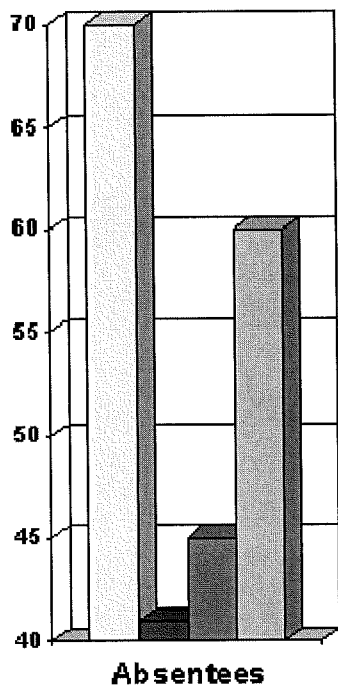
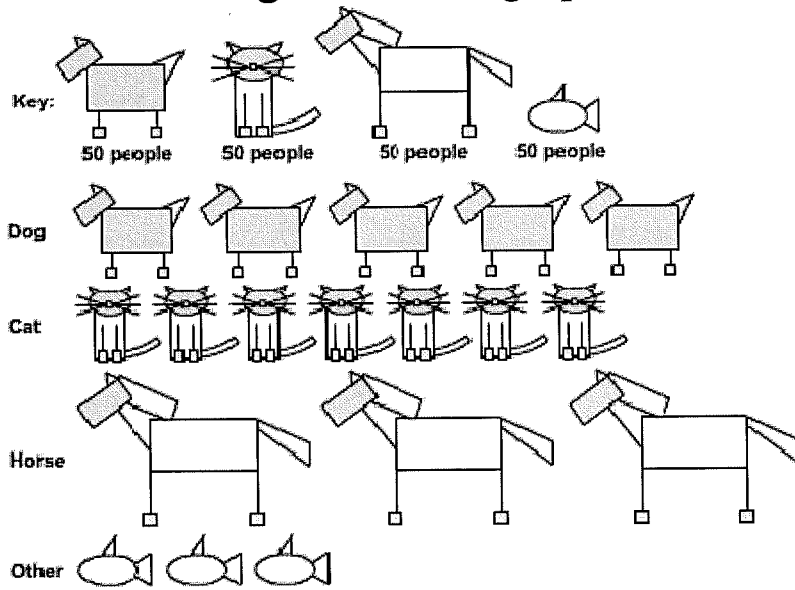
Compare these two circle graphs.



Compare these.



What is wrong with these graphs?



Class work Normal curve

Homework Course Compass Section 10.4

More to look at:

