

Lesson B

Problem Solving Skills: Line Graphs and Line Plots

Use after Lesson 2-8

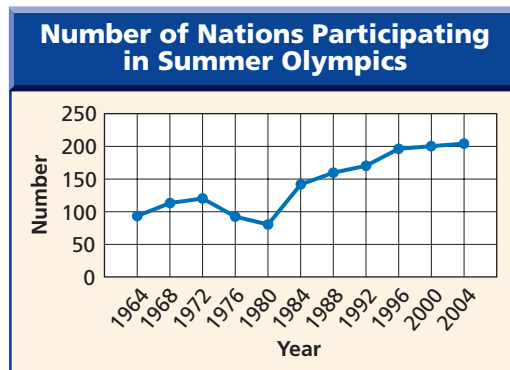
Some people get confused trying to tell the difference between **line graphs** and **line plots**. Line graphs are useful when looking at trends over time.

Problem Solving Strategies

- Guess and check
- Look for a pattern
- Solve a simpler problem
- ✓ **Make a table, chart or list**
- Use a picture, diagram or model
- Act it out
- Work backwards
- Eliminate possibilities
- Use an equation or formula

PROBLEM

JoAnn is predicting the number of nations that will participate in the Summer Olympics in 2012. She uses the graph below to examine the trend.



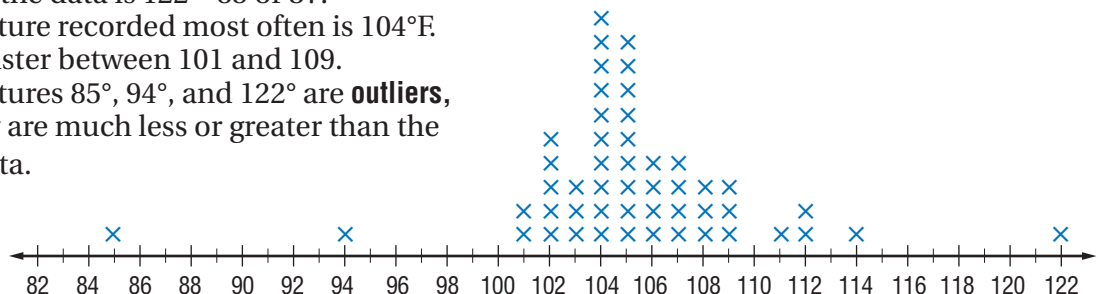
- Why do you think the scale of the axis representing the number of nations goes from 0 to 250?
- What is the trend of the data?
- If this trend continues, how many nations will participate in the 2012 Summer Olympics?

Solve the Problem

- Because the least possible value is 0, and the greatest value is a little more than 200. Since the unit on the axis is 50, the next greatest unit is $200 + 50$ or 250.
- The trend of the data is that with each Summer Olympic Games, there are more nations participating.
- Continue the graph with a dashed line in the same direction. If the trend continues, there will be about 225 nations participating.

Line plots show the frequency of data on a number line. The line plot below shows record high temperatures recorded by weather stations in each of the 50 states.

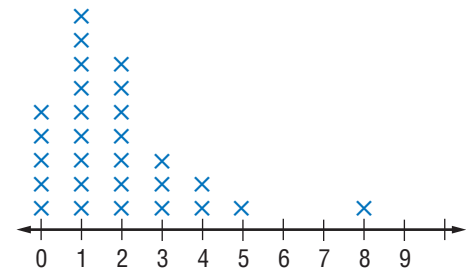
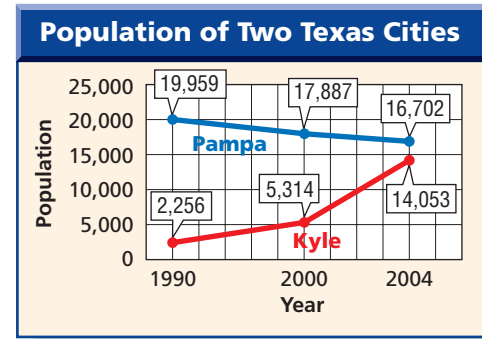
The range of the data is $122 - 85$ or 37.
 The temperature recorded most often is 104°F .
 There is a cluster between 101 and 109.
 The temperatures 85° , 94° , and 122° are **outliers**, because they are much less or greater than the rest of the data.



Source: *The World Almanac*

TRY THESE EXERCISES

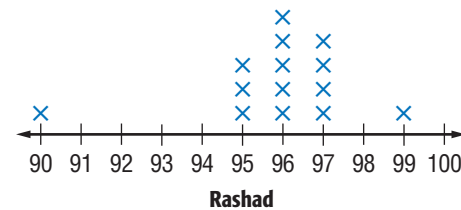
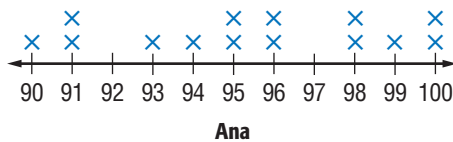
- POPULATION** The graph shows the change in population of Pampa, Texas, and Kyle, Texas.
 - Describe the trend in each line on the double-line graph.
 - Assuming that the trend continues, when do you think the population of Kyle will pass the population of Pampa?
 - Predict the population of each city in 2008.
- FAMILIES** In a survey of her classmates, Jenny asked how many siblings each one had. The results are shown on the line plot.
 - What is the most common number of siblings?
 - What is the greatest number of siblings?
 - What is the range in the number of siblings?
 - Would Jenny be correct if she said that most of her classmates come from large families? Why or why not?



PRACTICE EXERCISES

Would the data be better illustrated with a line graph or a line plot?

- growth in popularity of salsa in the 20th century
- number of people who have 0, 1, or 2 cars
- students with birthdays in each month
- growth in a Christmas club savings account
- BOWLING** The last fourteen bowling scores of Ana and Rashad are shown on the line plots below. If you had to guess, which of them would you say is more consistent? How do you know?



- WRITING MATH** The average cost of raising a child born in 2004 is shown at the right. Write an analysis of the data based on this graph.

