#10377
STATISTICS: PART 1

BENCHMARK MEDIA, 2004
Grade Level: 4-10
13 Minutes

TEACHER'S GUIDE

MATH SERIES 2

STATISTICS, Part 1:
13 Minutes

Distributed by BENCHMARK MEDIA

FOR USE IN: Mathematics

LEVEL: Grades 7-9

EDUCATIONAL ADVISOR: Richard Albero, Math Instructor, Briarcliff Manor High School, MS Educational Psychology, MS Physics

EDUCATIONAL OBJECTIVES:
To help the students understand:
- **the collecting of data**
- **presenting data in graph forms: circle or pie charts, horizontal & vertical bar charts, broken line graphs, frequency tables, frequency histograms and frequency polygons**
- **the range of data**
- **stem and leaf plots**

BACKGROUND INFORMATION:
In our daily lives, we often deal with problems that involve many related items of numerical information called *data*. For example, in the daily newspaper we can find data dealing with sports, with business, with politics, even with the weather. *Statistics* is the study of numerical data. There are three typical steps in a statistical study of data..

Step 1. The collection of data by written questionnaires, interviews, and written logs or diaries of periodic observations..

Step 2. The organization of data into tables, charts, and graphs.

Step 3. The drawing of conclusions from an analysis of the data.

Sampling When conducting a statistical study, it is not always possible to obtain information about every person, object, or situation to which the study applies. Unlike a *census,* in which every person is counted, some statistical studies use only a *sample,* or portion, of the items being investigated.

To find effective medicines, pharmaceutical companies usually conduct tests in which a sample, or small group, of the patients having the disease under study receive the medicine, If the manufacturer of flashlight batteries tested the life span of every battery made, he would soon have a warehouse filled with dead batteries. He tests only a sample of the batteries to determine their average life.

BEFORE SHOWING THE VIDEO:

Discuss examples from everyday life that the students may have seen of the graphical display of data. Can they recall any pie or circle graphs commonly used to display the percentages of the data falling within certain categories, categories such as income ranges, or age ranges? Was the graphic display of the data more readily absorbed than it would have been from just a presenting of the numerical data? What graphic displays of frequency do they recall seeing? Do they use statistics in talking about sports? What are some examples? The answers to some of these questions may be dealt with in Statistics Part 2.

CONTENT OF THE VIDEO:

A girl with a summer job selling ice cream from a cart in a park, wants to analyze her sales by: ice cream flavor, weekly income, and customers by sex, age, and home location. Additionally she wants to choose a type of music to play on a portable radio most appealing to the diversity of the ages of her patrons. She **collects her data** from sales records and interviews. Graphs are very useful for representing data in an easy to read form. The data is organized into a: **pictograph, horizontal bar graph, vertical bar graph, circle or pie chart, and a broken line graph.**
What has been presented so far is reviewed.
To better see the distribution of ages, **a stem and leaf plot** is done. Another way to organize data is in a **frequency table**. From that we make a **frequency histogram**, and from that a **frequency polygon.**
A review follows of what was learned in the above paragraph.
The final selection of appropriate music awaits Part 2.

AFTER SHOWING THE VIDEO:

The students may be given the following problems:

1. The electoral votes cast for the winning presidential candidate in elections from 1900 and 1994 are as follows: 292, 336, 321, 435, 277, 404, 382, 444, 472, *523*, 449, 432, 303, 442, *457*, 303, 486, 301, 520, 297, 489, *525*, 426, 370.

   a .Organize the data in a stem-and-leaf diagram. (Use the first digit as the stems, and the last two digits as the leaves.)

2. The table below shows tile distribution of test scores for 32 students in a class. The data have been organized into six score intervals, each having a value of ten. Display the data graphically as a: frequency histogram, and then from the frequency histogram, make a frequency polygon. Remember that there are no spaces between the vertical bars, and the intervals being equal, the width of the bars must also all be the same.

Test Scores (intervals)	Frequency (number of scores)
91—100	6
81—90	8
71—80	11
61—70	4
51—60	0
41—50	3

7. In a horizontal bar graph, 1 centimeter represents 30 kilometers. Find the length of the bar needed to represent each given distance and draw the graph..

      a. 60 km   b. 300 km   c 15km   d.75km

8.. In a vertical bar graph, one-quarter inch represents 100 people. In each case, find the length of the bar needed to represent the given number of people, and draw the graph..

      a.   200   b. 400 c. 2,000   d .500   e. 1,500 f. 50

Math Series 1, consists of 10 videos:
ALGEBRA: A Piece of Cake Part 1
ALGEBRA: A Piece of Cake Part 2
SLOPES: That's a Bit Steep!
PERCENTAGES: That Make Sense
LINEAR EQUATIONS and Their Graphs: Let's Get It Straight Part 1
LINEAR EQUATIONS and Their Graphs: Let's Get It Straight Part 2
INTEGER OPERATIONS: Into the Negative Zone Part 1 Adding and Subtracting
INTEGER OPERATIONS: Into the Negative Zone Part 2 Multiplying and Dividing
FACTORING IS FANTASTIC Part 1: Common Factors
FACTORING IS FANTASTIC Part 2: Quadratic Trinomials

Math Series 2, consists of 12 videos:
PROBABILITY, Parts 1 & 2
RATIOS
TRIGONOMETRY, Parts 1 & 2
STATISTICS Parts 1 & 2
PROBLEM SOLVING Parts 1 & 2
GEOMETRIC SOLIDS Parts 1, 2, &3