

MAPPING RIVER STATISTICS

Using river statistics, students will answer questions and create appropriate charts.

Answer Key

1. What is the range of the populations?
2,400,000–851
2. What is the mean of the populations?
293,677
3. What is the median of the data?
1,200,426
4. What is the mode of the data?
not applicable
5. What does the mean tell you about this set of data?
It is higher than 5/6 of the pieces of data.
6. How do the outliers affect the mean?
The average is not representative due to the outliers.
7. Do the mean or median represent the average town along the Mississippi River? Why?
Since the number of data items is so small and the range is large, neither the mean or the median represent this data.
8. How do the populations of Vicksburg and Rock Island relate?
Vicksburg has about half the population.
9. Describe all the population's relationships you can find in as many ways as possible.
Answers will vary.
10. What graph would display this data best? Make this graph.
box and whiskers, stem and leaf, histogram

RELATED STANDARDS AND BENCHMARKS

National Council of Teachers of Mathematics. *Curriculum and Evaluation Standards for School Mathematics*. <http://standards-e.nctm.org/1.0/normal/standards/intr_MAIN.html>, March 16, 2000.

Standard 10. Statistics

- systematically collect, organize, and describe data
- construct, read, and interpret tables, charts, and graphs
- make inferences and convincing arguments that are based on data analysis

Standard 7. Computation and Estimation

- use computation, estimation, and proportions to solve problems

Standard 3: Mathematics as Reasoning

- make and evaluate mathematical conjectures and arguments
- validate their own thinking

Objectives

By the end of this activity, students should be able to:

- display given data.
- use that set of data to find the range, mean, and median.
- describe relationships and ratios of the populations.

Time Considerations

Instructor Preparation:
20 minutes

Student Activity:
1-2 class periods



MAPPING RIVER STATISTICS

UNDERSTAND YOUR MISSION

In this activity, look at the cities' populations, ratios within these populations, average populations, and then create a graph to explain your findings.

LEARN THE LINGO

mean	the sum of the data divided by the number of pieces of data
median	the middle number in a set of data
mode	the item that appears most often in a set of data
outlier	an item of data that is much higher or lower than the rest of the data
subset	a set that is also part of a bigger, more inclusive set

CHART A COURSE FOR EXPLORATION

The populations of the cities and towns along the Mississippi River vary. Some are large cities. Some are the capital of their state. Some are small river towns. Below is a list of cities and their populations.

CITY	POPULATION
MINNEAPOLIS/ST. PAUL, MINNESOTA	2.4 MILLION
LA CROSSE, WISCONSIN	51,865
DUBUQUE, IOWA	57,546
ROCK ISLAND, ILLINOIS	40,552
BURLINGTON, IOWA	27,208
FORT MADISON, IOWA	11,618
KEOKUK, IOWA	12,451
ST. LOUIS, MISSOURI	396,690
WICKLIFFE, KENTUCKY	851
HELENA, ARKANSAS	7,491
VICKSBURG, MISSISSIPPI	20,908
NEW ORLEANS, LOUISIANA	496,938

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2. What is the mean of the populations?
3. What is the median of the data?
4. What is the mode of the data?
5. What does the mean tell you about this set of data?
6. How do the outliers affect the mean?
7. Do the mean or median represent the average town along the Mississippi River? Why?
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10. What graph would display this data best? Make this graph.

Go Beyond

Research the cities to find other similarities.

Compare climate data about these cities.

www.cdc.noaa.gov/PublicData is an excellent source for creating plots and subsets of climate data.

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Choose one state along the Mississippi River. Find all the towns and cities on the river. Find the mean, mode, and median population of this state. Gather other statistics about the towns. Analyze this data and present it in graphs and charts. What does the data tell you? Write a one page analysis.

CITY	YES	NO
MEAN CORRECTLY CALCULATED		
MEDIAN CORRECTLY CALCULATED		
MODE CORRECTLY CALCULATED		
INCLUDES OTHER RELEVANT STATISTICS		
INCLUDES CHARTS		
INCLUDES GRAPHS		
INCLUDES ANALYSIS		