

# Chesapeake Excursions: More Than a Boat Ride

## Teacher's Guide

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### Objectives:

- Students will use the similar criteria to characterize many different types of excursions.
- Students will use a table to record data about each excursion. They will answer questions about each excursion dealing with:
  - Motive power of the boat.
  - The cost of the excursion.
  - The number of passengers carried by the boat.
  - The number of crew needed to handle the boat.
- Students will create a bar graph to compare the number of passengers on excursions powered by three different technologies: sail, steam, and diesel.
- Students will discuss how the influence of technological development made recreation on the water available to people in the “middle class.”

### Maryland Learning Outcomes:

#### Economics:

*Students will develop economic reasoning to understand the historical development and current status of economic principles, institutions, and processes needed to be effective citizens, consumers, and workers participating in local communities, the nation, and the world.*

- Explain how changes in technology (factories, machinery, transportation, communication, new technology) impact Maryland's economy.

#### Mathematics: Statistics and Probability

*Students will collect, organize, display, analyze and interpret data to make decisions and predictions and will use experimental methods and theoretical reasoning to determine probabilities to make predictions.*

- Compare data sets to answer a question.
- Organize and display data using stem and leaf plots, line plots and line graphs.
- Analyze and interpret stem and leaf plots, circle graphs, line plots, and line graphs.
- Find the mean, median, mode, and range of a data set.
- Make a prediction based on the outcomes of the experiment.

### Worksheets:

- Chesapeake Excursions Worksheet #1: Collecting Data
- Chesapeake Excursions Worksheet #2: Analyzing Data
- Chesapeake Excursions Worksheet #3: Graphing Data
- Chesapeake Excursions: Working with Your Data (3 pages)

## Key Web Sites Referenced in this lesson:

- Amusement Parks:  
<http://naid.sppsr.ucla.edu/coneyisland/mapsdocs/stp06-map6.htm>  
This web site shows a picture of a Ferris wheel from the same time period of Tolchester Beach amusement park.
- Diesel Power from "How Stuff Works"  
<http://www.howstuffworks.com/diesel.htm>  
This web site includes an animated diagram of a diesel engine. Students will have to scroll down through the site to see it.

## Teacher Background:

This lesson uses the history of excursion boats on Chesapeake Bay to explore how technology influences efficiency. The time covered by this lesson is 1813 to the present. Over this time period, the development of steam power gave rise to very efficient water transportation, at least in terms of numbers of passengers transported. Eventually, the steam powered boats used for so long gave way to diesel powered excursion boats. The transitions provide useful lessons about the development of technology and its influence on the way of life of ordinary people.

Although the main point of this lesson is to give students data useful for discussing the influence of increasing efficiency in technology on recreation, this lesson could be used in many different ways. The types of excursions taken by Marylanders between 1813 and the present reflect the relative prosperity of Marylanders during those times. The lesson could be used as an economic history lesson. You could use this lesson to note the fact that many more people were able to afford a vacation with prosperity brought about by the industrial revolution and the rise of the middle class. You might also use the lesson to compare the costs of a vacation over the time period in order to discuss the concept of inflation.

## Introduction/Motivation:

One way to introduce this lesson is to explore your students' understanding of the development of transportation technology. Have students brainstorm a list of forms of transportation. Write this list on the board. Encourage your students to think historically and include all sorts of transportation from oxen and donkeys to jet airplanes and space shuttles. Then have your students think backwards in time, perhaps by increments of 50 years. As your students think backwards, ask them to erase the items on the list that weren't invented yet. For instance for 1950, you would erase the space shuttle, and for 1900 you would erase the airplane. Ask students to think about ways the development of transportation technology changed people's lives.

Tell students you will be studying one kind of transportation over almost 200 years, that is, boat excursions. Define "excursion" for students.

## Lesson Development:

In the first section of the lesson, have students use Worksheet #1: Collecting Data. They will read information in the online lesson about each of ten excursions. The answers to the following four questions is imbedded in this information:

- What powers the boat?
- What is the price of the boat ride?
- How many passengers can go on the boat?
- How many crew members are needed to handle the boat?

The Worksheets provide space for students to record this information in an organized fashion. One way to save time during this section of the lesson would be to assign different students a few excursions to research. They could then share their data so that everyone would have a complete data table.

In the second section of the lesson, students use the information they recorded to analyze the data they have collected. To do this, they will organize the data according to power source of the excursion boats against the number of passengers for each excursion. They will use Worksheet #2: Analyzing Data for this task. This task is organized around the concept of using a central tendency for a data set to compare that data set with other data sets. In other words, students will find one number which accurately represents all the numbers in a particular category: for instance, the number of passengers on a steam powered vessel. To do this, students will calculate median number of passengers carried by each type of power and write this information on the Worksheet.

The online lesson provides directions for this calculation and for making the graph. This information is repeated on the Worksheet: Working with Your Data so they will be easy to follow step by step without continually referring back to the computer.

Once students have analyzed the data and found the median number of passengers for each type of power source, they will graph their findings on Worksheet #3: Graphing Data. The instructions on the Worksheet: Working with Your Data provide guidance on how to do this.

## Thoughtful Application:

The students' grasp of the concepts and information presented in this lesson will be clearly demonstrated in their graphs. The graph should correctly show the median for each type power and correctly state the most efficient type of power for an excursion boat.

## Scoring Tool:

Students will receive:	
3 Points	The media for each power type is correct. The graph includes an appropriate scale, approximate axis labels, and labels for each bar.
2 Points	The media for each power type is correct. The graph may be lacking bar labels or one axis may not be labeled.
1 Point	The media for each power type of vessel is not correct. The graph may not be drawn to appropriate scale, or may lack labels.

## Extensions:

This lesson affords many opportunities for extensions. Some options are to have students:

- Research workings of a steam engine and draw a diagram.
- Prepare other graphs using the data collected.
- Research mechanical advantage and its use in sailboats.
- Research the diesel engine. These following two web site provide background information on diesel power and the internal combustion engine. They are not appropriate fourth grade students, but teachers and older students may find these articles from "Encyclopedia.com" helpful.  
Diesel Engine <http://www.encyclopedia.com/articles/03653.html>  
Internal Combustion Engine <http://www.encyclopedia.com/articles/06415.html>

## Children's Literature:

- *Bay Shore Park: The Death and Life of an Amusement Park.* Victoria Crenson, Author, Bryn Barnard, Illustrator. W.H. Freeman and Co., New York, NY, 1995.

## Other Resources On This Topic:

- *Chesapeake Bay: A Pictorial Maritime History.* M. V. Brewington. Cornell Maritime Press, Cornell, NJ, 1956.
- *This was Chesapeake Bay.* Robert H. Burgess. Tidewater Publishers, Centreville, MD, 1972.
- *Steamboat on the Chesapeake: Emma Giles and the Tolchester Line.* David C. Holly. Tidewater Publishers, Centreville, MD, 1987.
- *Maryland Time Exposures: 1840-1940.* Mame Warren and Marion E. Warren. The Johns Hopkins University Press, Baltimore, MD, 1984.
- *Otto Mears Goes East: The Chesapeake Beach Railway.* Ames W. Williams. Meridian Sun Press, Alexandria, VA, 1975.
- "Steamboat Vacations: Destinations on the Chesapeake." Special Exhibition at the Chesapeake Bay Maritime Museum, St. Michaels, MD. For information call 410-745-2916.