
Math Mammoth Data and Graphs

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Introduction

Math Mammoth Data and Graphs is a worktext that covers common statistical graphs and some related topics for grades 2-5. It is a worktext, containing both the “text” (instruction) and the “work” (exercises and problems).

The book starts with the easiest topics: reading and making bar graphs, pictograms, histograms, and various kinds of line graphs. Most of these lessons are best suited for 4th and 5th grades.

The goals for the study of bar graphs and line graphs are listed here. The student should learn to:

- read bar graphs, including double bar graphs, and answer questions about already plotted data
- draw bar graphs and histograms from a given set of data.

In order to make histograms, it is necessary to understand how to group the data into categories (“bins”). The lesson *Making Histograms* explains the method we use to make categories if the numerical data is not already categorized.

Toward the end of the book, we study average (also called the mean) and mode, and how these two concepts relate to line and bar graphs. This is also meant for grades 4-5. Other math curricula also introduce the median, but I decided to omit it from this book. There is plenty of time to learn that concept later, for example in *Math Mammoth Statistics & Probability*. Introducing all three concepts at the same time tends to jumble them together and become confusing — so that many students just grasp the calculation procedures. I feel it is better initially to just introduce and contrast the two concepts of the mean and mode, in order to give the student a solid foundation.

Lastly, we study *Circle Graphs* which may be left to study in 6th or 7th grade because it requires that the student understand percentages.

*Wishing you success in teaching math,
Maria Miller, the author*

Helpful Resources on the Internet

Mean, Median, Mode, Range, etc.

Using and Handling Data

Simple explanations for finding mean, median, or mode.

<http://www.mathsisfun.com/data/index.html#stats>

Mean, Median, and Mode

Lesson on how to calculate mean, median, and mode for set of data given in different ways. Also has interactive exercises.

http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8i5/bk8_5i2.htm

GCSE Bitesize Mean, mode and median lessons

Explanations with simple examples.

<http://www.bbc.co.uk/schools/gcsebitesize/maths/data/measuresofaveragerev1.shtml>

Measures Activity

Enter your own data and the program will calculate mean, median, mode, range and some other statistical measures.

<http://www.shodor.org/interactivate/activities/Measures/>

Graphing and Graphs

Bar Chart Virtual Manipulative

Build your bar chart online using this interactive tool.

http://nlvm.usu.edu/en/nav/frames_asid_190_g_1_t_1.html?from=category_g_1_t_1.html

An Interactive Bar Grapher

Graph data sets in bar graphs. The color, thickness and scale of the graph are adjustable. You can input your own data, or you can use or alter pre-made data sets.

<http://illuminations.nctm.org/Activity.aspx?id=4091>

Create a Graph

Kids can create bar graphs, line graphs, pie graphs, area graphs, and xyz graphs to view, print, and save.

<http://nces.ed.gov/nceskids/createagraph/default.aspx>

Circle Grapher

A tool to graph data sets in a circle graph. You can input your own data or alter a pre-made data set.

<http://illuminations.nctm.org/activitydetail.aspx?id=60>

Graphs Quiz from ThatQuiz.org

This quiz asks questions about different kinds of graphs (bar, line, circle graph, multi-bar, stem-and-leaf, boxplot, scattergraph). You can modify the quiz parameters to your liking, such as to plot the graph, answer different kinds of questions about the graph, or find mean, median, or mode based on the graph.

<http://www.thatquiz.org/tq-5/math/graphs>

Thatquiz.org Quiz for Graphs

A 10-question quiz involving bar graphs and pictographs.

<http://www.thatquiz.org/tq-5/?-j40v0h-l1-p0>

Survey game

A game where you do a survey in which you ask children their favorite hobby or color. Make a frequency table, a bar graph, and a pictogram from the results.

<http://www.kidsmathgamesonline.com/numbers/mathdata.html>

Stem-and-Leaf

Enter the values and this web page creates your stem-and-leaf plot for you.

<http://www.mrnussbaum.com/graph/sl.htm>

Stem-and-Leaf Plots Quiz

This is from Glencoe mathematics, an online multiple-choice quiz that is created randomly. Refresh the page (or press F5) to get another quiz.

<http://www.glencoe.com/sec/math/studytools/cgi-bin/msgQuiz.php4?isbn=0-07-825200-8&chapter=12&lesson=1&&headerFile=4&state=na>

Data Analysis and Probability gizmos from Explorelearning.com

Interactive exploration activities online, with lesson plans. Topics include box-and-whisker plots, histograms, stem-and-leaf plots, lines of best fits using least squares, scatter plots; probability topics; and more. This is an excellent resource. The gizmos work for 5 minutes for free. You can also sign up for a free trial account.

<http://www.explorelearning.com/index.cfm?method=cResource.dspChildrenForCourse&CourseID=129>

Statistics Interactive Activities from Shodor

A set of interactive tools for exploring and creating different kinds of graphs and plots. You can enter your own data or explore the examples.

<http://www.shodor.org/interactivate/activities/BarGraph/>

<http://www.shodor.org/interactivate/activities/Histogram/>

<http://www.shodor.org/interactivate/activities/CircleGraph/>

<http://www.shodor.org/interactivate/activities/MultiBarGraph/>

<http://www.shodor.org/interactivate/activities/PlopIt/>