



## Computing Technology for Math Excellence

# Preparing for the Ohio Graduation Test in Mathematics

### Strand Resources: Data Analysis and Probability

The following pages are for students. Use them to help you monitor your own test preparation. You can print the entire booklet, or just those pages for benchmarks you want to work on. The resources provided are at CT4ME: [https://www.ct4me.net/Ohio\\_Graduation\\_Math\\_Test\\_Prep\\_DataStrand.htm](https://www.ct4me.net/Ohio_Graduation_Math_Test_Prep_DataStrand.htm)

#### Directions:

1. Identify the benchmark (A-K) below for review in Data Analysis and Probability. Below the benchmark, you will find Web resources for reviewing the concept and practice problems.
2. *Before beginning the Web exercises* for the benchmark you chose, fill in the “K” column: What do you already know about that benchmark? Then in the “W” column: Write what you still want to know.
3. When you have completed using a resource provided, place a check in the box in the first column. This will help you keep track of resources used. Decide if the resource was helpful. Write “yes” or “no” in the last column. Add your comments, if any, about the resource.
4. *After using all the resources* for each benchmark, go to the “L” column and write what you learned. Read your “K” column entries again to see if any of your prior knowledge was inaccurate, and rewrite those statements so that they are correct.
5. Look at the “W” column again, and place a check next to any of your questions that were not answered by using the resources. Be sure to mention those questions in class. Decide how you will find answers to those remaining questions.
6. *When you have completed all of the exercises provided with each benchmark and your K-W-L chart is complete*, reflect on your overall understanding of the benchmark. Be honest with yourself. In the last column circle your belief about your level of mastery: still no or very little understanding (N), some to a great deal of progress (P), I’ve got it!--mastery (M).

Name \_\_\_\_\_

A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatterplots, measures of center and variability.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	The <a href="#">basics about line graphs</a> in representing data is a short module by David Lane. It shows how line graphs compare to bar graphs and when to use line graphs. Two self-check questions included.	
	National Center for Education Statistics (for students): <a href="#">Create a Graph</a>	



Name \_\_\_\_\_

	Statistics Canada: Statistics, Power from Data: <a href="#">Graph Types</a> and create the graph	
	NCTM Illuminations E-Examples: <a href="#">7.4: Understanding Line of Best Fit with a Visual Mode: Measuring Error in a Linear Model</a>	
	Prentice Hall: Using the TI-83 or TI-84: <a href="#">Perform a Linear Regression, Quadratic Regression</a> , or <a href="#">Exponential Regression</a>	
	Utah State University, National Library of Virtual Manipulatives: <ul style="list-style-type: none"><li>• <a href="#">Data Analysis and Probability Manipulatives</a>--select by grade band</li></ul>	


Name \_\_\_\_\_

	<ul style="list-style-type: none"><li>• <a href="#">Box Plots and Histograms</a></li> <li>• <a href="#">Scatterplots</a></li></ul>	
	<p>JAVA applet for <a href="#">Scatterplots</a> from the Math Department at Hobart and William Smith Colleges: Launch the scatter plot, modify data and view the resulting line of best fit.</p>	

Name \_\_\_\_\_

	<p> Play the YouTube videos from the Ohio Resource Center Tutorials for High School Mathematics:</p> <ul style="list-style-type: none"><li>• <a href="#">Data Display</a> for organizing information into tables and graphs with titles, legends, correct units, error bars, and fitting functions.</li> <li>• <a href="#">Lines of Fit</a> for defining and finding lines of best fit using real data.</li></ul>	
	<p> Play video at YouTube.com:</p> <p><a href="#">Box Plots</a> by Brainingcamp Math Software: How to construct box plots by ordering a data set to find the median of the set of data, median of the upper and lower quartiles, and upper and lower extremes.</p>	

Name \_\_\_\_\_

B. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Eduplace.com: <a href="#">Choosing an Appropriate Graph</a>	
	 Play the YouTube video from the Ohio Resource Center Tutorials for High School Mathematics: <a href="#">Graphing Data</a> for working with a spreadsheet to create different types of graphs with discussion of appropriateness.	

Name \_\_\_\_\_

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C. Compare the characteristics of the mean, median and mode for a given set of data, and explain which measure of center best represents the data.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Statistics Canada: Statistics, Power from Data: <a href="#">Measures of Central Tendency</a>	

Name \_\_\_\_\_



	University of Illinois at Urbana-Champaign, Jay Hill: <a href="#">Introduction to Descriptive Statistics</a> --mean, median, mode, range, and so on, simply explained.	
	BBC GCSE Bitesize Maths, Statistics and Probability: <a href="#">Averages: Mean, Mode, and Median</a> --There is an explanation (called Revise), activity, and test.	



Name \_\_\_\_\_

D. Find, use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Shodor Interactive: <a href="#">Introduction to Statistics</a> : Mean, Median, Mode	
	AlgebraLab.org: <a href="#">Mean, Median, Mode</a> . Lesson, interactive online practice problems. Show the Related AlgebraLab documents for activities, additional practice problems and word problems.	

Name \_\_\_\_\_

	<p> Play the YouTube video from the Ohio Resource Center Tutorials for High School Mathematics: <a href="#">Measures of Center and Dispersion</a> for discussing the meaning of measures of center and using a calculator to explore measures of dispersion.</p>	
	<p> Play video at YouTube.com: <a href="#">GCSE Maths Median and IQR</a>: This short video shows how to find a median, lower quartile, upper quartile, then inter-quartile range.</p>	

Name \_\_\_\_\_

E. Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collection and analysis.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Statistics How To: <a href="#">Misleading Graphs</a> : Real Life Examples	
	BBC (GCSE Bitesize): <a href="#">Statistics and Probability</a> : Collecting Data, Averages, Representing Data	

Name \_\_\_\_\_

F. Construct convincing arguments based on analysis of data and interpretation of graphs.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	<a href="#">Interpret line graphs</a> from the Earth Observatory at NASA. Analyze some temperature and precipitation graphs from different cities and match them up to the correct biome.	

Name \_\_\_\_\_

G. Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Statistics Canada: Statistics: Power from Data: <a href="#">Sampling Methods</a>	


Name \_\_\_\_\_

H. Use counting techniques, such as permutations and combinations, to determine the total number of options and possible outcomes.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Webmath.com: <a href="#">Permutations</a> verify your list of permutations for up to 8 entries.	

Name \_\_\_\_\_

I. Design an experiment to test a theoretical probability, and record and explain results.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	AlgebraLab.org: <a href="#">Law of Large Numbers and Simulations</a> explains the process of experimental probability and suggests experiments to try. Be sure to show related AlgebraLab documents for additional lessons and practice problems in probability.	

Name \_\_\_\_\_

J. Compute probabilities of compound events, independent events, and simple dependent events.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Integrated Publishing: <a href="#">Dependent Events</a> , explanation of probability and problems	
	 Play videos at YouTube.com: <ul style="list-style-type: none"> <li>• <a href="#">GCSE Probability Part 1</a>: This video is from a professor in Great Britain who nicely explains probability and shows examples: expected frequency, the typical problems</li> </ul>	



Name \_\_\_\_\_

	<p>involving picking balls from a bag, mutually exclusive events, independent events, and drawing diagrams to help identify possibilities.</p> <ul style="list-style-type: none"><li>• <a href="#">Probability Part 2: tree diagrams.</a> The same professor in Great Britain discusses the balls in a bag problems when making two picks, which leads to tree diagrams to help determine probability involving replacing after each pick, and then not replacing after a pick.</li></ul>	
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Name \_\_\_\_\_

K. Make predictions based on theoretical probabilities and experimental results.		Circle Mastery Level: N            P            M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the Web resource helpful? (yes/no) Comment(s)
	Utah State University, National Library of Virtual Manipulatives: <a href="#">Box Model</a> -- investigate theoretical and experimental probabilities.	

Name \_\_\_\_\_

**Are you ready for the test?**

1. Don't forget to [review and complete the Six Steps for Success, including the full online practice tests.](#)
2. Complete an [online OGT Practice Test.](#)



How did you do?

Score: \_\_\_\_\_ right out of \_\_\_\_\_ questions.

Look at the “W” column again for the benchmarks you chose to work on. List the questions you checked that you still have. For each of those, decide how you will find the answer.

What I still <b>WANT</b> to know—my unanswered questions	My Plan to Find the Answers

Name \_\_\_\_\_

Use this page for additional resources you use for test preparation. Write the benchmark.

Benchmark:		Circle Mastery Level: N          P          M
What I <b>K</b> now	What I <b>W</b> ANT to know	What I <b>L</b> earned
Check when completed	Resources	Was the resource helpful? (yes/no) Comment(s)