

## Data Unit Plan

Algebra 1 - 9th Graders

7 days

Designer: Marissa Misura with help from resources from the [Mathematics Assessment Project](#)

### **Standards:**

- Summarize, represent, and interpret data on a single count or measurement variable
- Summarize, represent, and interpret data on two categorical and quantitative variables
- Interpret linear models
- Understand and evaluate random processes underlying statistical experiments
- Make inferences and justify conclusions from sample surveys, experiments and observational studies

### **Essential Questions:**

Do you know how to create a frequency bar chart?  
Do you know how to calculate mean, median, mode, and range?  
Do you know how to create a scatter plot?  
Do you know how to create a line of best fit?  
Do you know how to create a pie chart?  
Do you know how to write a statistical question?  
Do you know how to administer a survey randomly and without bias?

### **Monitoring and Feedback:**

Students will work individually  
Students will work in groups  
Call and Response

### **Assessment Evidence:**

Different homework assignments  
Group Sorting Activity  
Project Assessment at the end of the unit

## Overview

Units Prior: Simplifying Rational Expressions

[Day 1&2:](#) Bar Graphs and Introductory Vocabulary

[Day 3:](#) Trend Lines

[Day 4:](#) Work on Project - create survey

[Day 5:](#) Pie Charts

[Day 6 & 7:](#) Work on Project (NOTE: Students may want to survey other classes so send an email in advance to administration and staff asking teachers if they are available during that time period to have students come in and administer a short survey)

Units After: none

## Daily Plans

## **Day 1: Bar Graphs and Introductory Vocabulary**

Materials needed:

[Statistics!](#) - Slides presentation

[MAPs - Mean, Median, Mode, and Range](#) - print pages 16-19 and make sure you have a card set for each group (8 groups of 4 members) if these can be cut out individually beforehand this will save a TON of time.

[Collecting and Analyzing Data - Project Guide](#) - one for each student

Using the Statistics! Slides presentation as a guide, at the beginning of the unit introduce their overall project and end goal - to create and conduct a survey about a topic that is important to them, then analyze and display the results using different types of representations.

Introduce basic vocabulary that some students may have some prior knowledge on, but all definitions will be solidified tomorrow using a frayer chart.

Have students begin brainstorming ideas for topics that interest them and some questions you could ask about that topic. It is ok if students don't have any set idea yet, while doing different activities throughout the week they will hopefully think of new ideas and eventually settle on one they feel confident about.

Next begin first activity to introduce Bar graphs and mean, median, mode, and range using the computer/app games example and then the MAPs activity cards sort. Have students tape their matches to a poster board and write a short description as to why the matches were made.

Let students know tomorrow they will compare with other groups so they will want to write their ideas down so that they do not forget.

## **Day 2: Bar Graphs and Introductory Vocabulary Continued**

Materials needed:

[Statistics!](#) - PowerPoint presentation starting at slide 12

[Frayer Chart](#) - print double sided (total of 8 boxes) one for each student

[Penalty Shoot Out!](#) - one for each student

[Collecting and Analyzing Data - Project Guide](#)

[Boy Bands](#) - one for each student

Students try penalty shoot out to remind and refresh their memory on bar graphs and mean, median, mode and range. Take no more than 10 minutes, if they do not finish that is ok.

Get back into groups and look over matches. One student will stay at their group to be the 'expert' while the other 3 group members rotate to a different group to

compare and contrast results. It can be helpful here to have one student take a picture on their phone of their poster board results as they rotate to the new group so that they can compare more easily. After 10 minutes, groups return and discuss results as a class.

Solidify vocabulary words on Frayer Charts and have students go back and look over their Penalty Shoot Out answers.

Then have students revisit their brainstorming session from yesterday for their final project. Have they thought of any new topics to research? Can they add questions that will give numerical results?

Boy Bands for 'homework'

### **Day 3: Trend Lines**

Materials needed:

[Statistics!](#) - PowerPoint presentation starting at slide 18

[Changing Temperatures](#) - one for each student

[Collecting and Analyzing Data - Project Guide](#)

Check over Boy Bands homework and Penalty Shoot out from yesterday to make sure students understand the connection between bar graphs and how to find mean, median, mode and range.

Talk about representing 2-variable data using the Changing Temperatures assignment as a guide. This can also be a good example of a topic that students may want to survey people about.

If there is time, have students continue to brainstorm questions to ask about their topic. Let students know that if they would like to pair up with someone on a topic they may.

### **Day 4: Work on Project**

Materials needed:

[Statistics!](#) - PowerPoint presentation starting at slide 25

[Collecting and Analyzing Data - Project Guide](#)

Student Chromebooks

Today students will start creating their survey. Guide students through creating a Google Form - how to add a title, change the settings, add a question, add different types of responses, etc. then have them start creating their survey.

As a test run, have students share their link or QR code with their classmates to

make sure they can see results and to have students peer edit their questions.

### **Day 5: Pie Charts**

Materials Needed:

[Statistics!](#) - PowerPoint presentation starting at slide 26

[State Minimum Wage Rates](#) one for each student

Student Chromebooks

Protractor

Colored pencils or crayons

Today introduces the last way students will be presenting their data, Pie Charts. Using the State Minimum Wage Rates worksheet as a guide, as a class we will create a pie chart.

If time permits, have students look at their results from yesterday's trial run of their survey and show them how they can look at bar graphs of their data, or transfer it to a google sheet and create a pie chart in google sheets.

### **Day 6: Work on Project**

Materials Needed:

[Statistics!](#) - PowerPoint presentation starting at slide 28

[Data and Statistics Project Requirements](#) - one per group project

Student Chromebooks

Today students will need to think about how they will administer their survey. Talk about 4 different ways to survey.

Students should pick a way to survey around 50 people - this can be done during school (at lunch, during class, during passing time, etc) or at home. If students want to do it during class right now let them know which classes/teachers have given permission to come to their class to survey students.

During this time students can also start preparing their project final report - either digitally or drawn/written by hand. Give students Data and Statistics Project Requirements document and go over all the requirements for the project with students and the grading rubric. As long as they have been working through things each day they should already have the first 3 tasks complete! Tomorrow they will work on completing tasks 4 and 5.

### **Day 7: Complete Project**

Materials Needed:

Student Chromebooks

Hopefully at this point students have administered their survey to around 50 people. If not, have them go to classrooms where teachers have volunteered their time and administer the survey to as many students, adults, etc as possible. This class period students should read and analyze their results. Pick one question that they can display their results as a bar graph and talk about the mean, median, mode, and range. One question that they can represent as a scatter plot and then find a line of best fit, and finally a question that can be represented as a pie chart. Students can create these digitally using sheets, or by hand.

Students should also work on a concluding paragraph that shares some of their findings based on their graphs and/or results. They can talk about something surprising to them, or something that they felt they already knew was true. Make sure that these comments are tied to results from the questions you asked in the survey. Students may also include personal testimonials from answers respondents provided, however they must be kept anonymous.