WAMC Lab: Get to Know the Class Data
Math Concept(s): Statistics
Source / Text: Illustrative
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Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

- Students will develop a question to ask classmates which will result in a numerical value.

Lab Plan
Lab Title: Interesting Facts about Classmate

Prerequisite skills: central tendencies, graph distribution, outliers

Lab objective: Students will have the ability to use statistics to determine the best description of the class from the given data.

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*
Mathematics K–12 Learning Standards:

HSS-ID.A

- **HSS-ID.A.1** Represent data with plots on the real number line (dot plots, histograms, and box plots).
- **HSS-ID.A.2** Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
- **HSS-ID.A.3** Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

Standards for Mathematical Practice:

- MP4: Model with Mathematics

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- **SL.9-10.6** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

K-12 Science Standards

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Technology

-

Engineering

-

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

☐ Global Awareness ☐ Financial/Economic/Business/Entrepreneurial Literacy ☐ Civic Literacy
☐ Health/Safety Literacy ☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION
Creativity and Innovation
☐ Think Creatively
☐ Work Creatively with Others
☐ Implement Innovations
Critical Thinking and Problem Solving
☐ Reason Effectively
☐ Use Systems Thinking
☐ Make Judgments and Decisions
☐ Solve Problems
Communication and Collaboration
☐x Communicate Clearly
☐ Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS
Information Literacy
☐xAccess and Evaluate Information
☐xUse and manage Information
Media Literacy
☐ Analyze Media
☐ Create Media Products
Information, Communications and Technology (ICT Literacy)
☐ Apply Technology Effectively

LIFE & CAREER SKILLS
Flexibility and Adaptability
☐ Adapt to Change
☐ Be Flexible
Initiative and Self-Direction
☐ Manage Goals and Time
☐xWork Independently
☐xBe Self-Directed Learners
Social and Cross-Cultural
☐xInteract Effectively with Others
☐ Work Effectively in Diverse Teams

Productivity and Accountability
☐ Manage Projects
☐x Produce Results
Leadership and Responsibility
☐ Guide and Lead Others
☐ Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Pencil
- Paper

Set-Up Required:

- Problem of the Day: What does not belong?
  - Estimate the number of skittles in a bag?
  - What is your favorite color/flavor of skittles?
  - How many chips are in a bag?
  - Estimate the ounces of one standard size apple? (Red Delicious size 100)

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Students will be able to communicate with each other by asking a question and answering questions.

Cooperative Learning:

- Students will ask questions and walk around the class with classmates answering.
- Students will be getting to know each other's name as they will formally ask their question.
- If there are ML students, the students can be paired to collect the data from their question with another ML student whose English skills are better.

Expectations:

- Students will have data to be able to analyze in an extension lesson.

Timeline:

- 15-20 minutes of collecting data from all classmates.

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Students learn how to collect data and record the data.
- How can this data be analyzed with what we have previously learned? "Central tendencies", can a graph be used to represent this data? How would the student go about analyzing the data to make a statement about the classroom's data from the question.

Career Applications

- Any career which requires individuals to understand graphs and statistical information.

Optional or Extension Activities

- Students will take their data to analyze the data:
  - Find the mean, median, and mode. Describe which of these is the best central tendency and why.
  - Find the 5 number summary, interquartile range (IQR) and determine if there are outliers.
  - Make a frequency table, dot plot, histogram and a box plot.

Name: _____ **Date:** _____ **Period:** _____

Get to Know You Lab Questions

Problem of the Day: Which of the following does not belong?

- In a 64 oz of Skittles how many candies are in the bag?
- What is your favorite color?
- How many chips were in your bag of chips from lunch today?
- Number of chocolate chips in your chocolate chip cookie today at lunch?

Objective: students should come up with a question (G rated) to ask their classmates that will result in a numerical value. Students will record the answer along with the student's name on the record sheet.

Sample questions:

- How many shoes do you own?
- How many siblings do you have?
- Number of rooms in your home?
- Number of meals eat out in a month.
- Number of times you work out in a month.
- Number of times you eat vegetables in a day.

Question:

Name	Result	Name	Result

Name: _____ Date: _____ Period: _____

Get to Know Class Data Analysis

1. Find the mean, median, and mode.
2. Find the 5 Number Summary
3. Find the IQR.
4. Discovery of outliers
5. Construct histogram, box plot on the same grid.
6. Denote any outliers on the box plot.
7. Describe the best measure of center. Explain.
8. Write a statement describing the data of the class.
9. Place this information on a poster to be displayed in the hallway. Please check the rubric to make sure you have answered all questions correctly.

Grading Rubric for Get to Know Class Data Analysis

3 points	2 points	1 point	Self-Grade	Teacher Grade
Accurate calculation of mean, median and mode with work shown. (80%-100%)	Mostly accurate of calculation of mean, median, and mode and/or missing work. (80%-60%)	Missing major concepts of calculating mean, median, or mode. (40%-60%)		
Accurate calculation of 5 Number Summary and IQR with work shown. (80%-100%)	Mostly accurate of calculation of 5 Number Summary and IQR and/or missing work. (80%-60%)	Missing major concepts of calculating 5 Number Summary and IQR. (40%-60%)		
Accurate calculation of discovery of outliers with work shown. (80%-100%)	Mostly accurate of calculation of discovery of outliers and/or missing work. (80%-60%)	Missing major concepts of calculating discovery of outliers and/or work. (40%-60%)		
Construction of the histogram and box plot with 80%-100% accuracy and labeling any outliers on the box plot.	Construction of the histogram and box plot with 60%-80% accuracy and labeling any outliers on the box plot.	Construction of the histogram and box plot with 40%-60% accuracy and labeling any outliers on the box plot.		
Write a statement describing the data making sure to describe the best measure of center. 80%-100% accurate.	Write a statement describing the data making sure to describe the best measure of center 60%-80% accurate.	Missing major description of data and/or not describing the best measure of center 40%-60% accurate.		
Neatness/Eye Catching: Spelling, grammar, nice handwriting, and things are written in markers so people can read while walking in the hallway.	Neatness/Eye Catching: At least 60% of the following: Spelling, grammar, nice handwriting, and things are written in markers so people can read while walking in the hallway.	Neatness/Eye Catching: At least 40% of the following: Spelling, grammar, nice handwriting, and things are written in markers so people can read while walking in the hallway.		
Total Points				