

Data Display Mastery Bundle

Dot Plots | Histograms | Box Plots

3-Format Lab

CCSS 6.SP.B.4: Display numerical data in plots
CCSS 6.SP.B.5a-d: Summarize numerical data sets

Table of Contents

Section 1: Dot Plots Lab

Datasets 1-4: Siblings, Sleep, Screen Time, Test Scores

Section 2: Histograms Lab

Datasets 5-8: Heights, Temperatures, Word Lengths, Wait Times

Section 3: Box Plots Lab

Datasets 9-12: Ages, Allowance, Books, Miles Biked

Printable Templates

Dot Plot, Histogram, and Box Plot blank templates

Anchor Chart: 5-Number Summary

Visual reference for min, Q1, median, Q3, max

Anchor Chart: Box Plot Anatomy

Labeled diagram of box plot components

Vocabulary Foldable

10 key terms with definitions and examples

Exit Tickets

4 formative assessments (one per format + combined)

Quiz & Answer Key

16-question summative assessment

CCSS Alignment Chart

Standards mapping to each activity

Review & Feedback

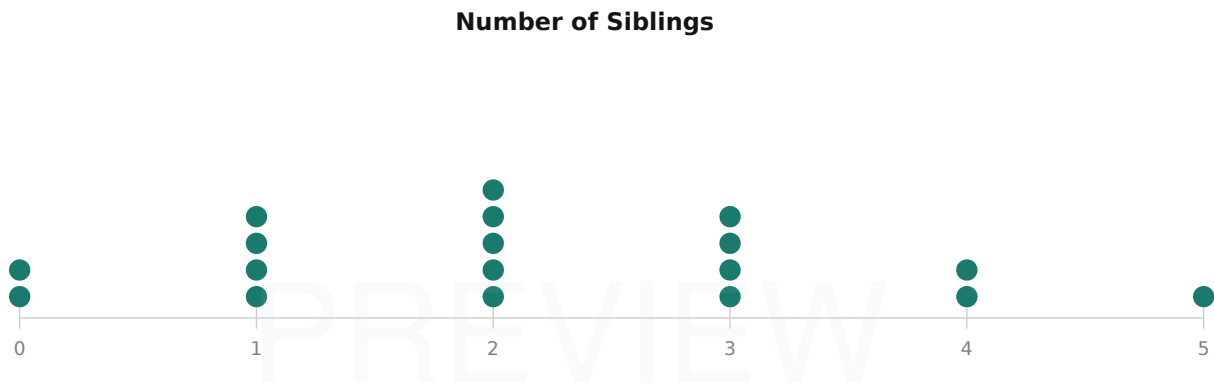
Share your experience with this resource

Section 1: Dot Plots Lab

A **dot plot** is a simple visual display of data using dots stacked above a number line. Each dot represents one data value. Dot plots are ideal for small to moderate datasets and make it easy to identify clusters (groups of data points), peaks (most frequent values), gaps (spaces with no data), and the overall shape of the distribution. In this section, you will construct dot plots from real-world datasets, describe the distributions you observe, and calculate measures of center (mean, median) and variability (MAD, range) for each dataset.

Dataset 1: Number of Siblings

A class of 18 students was asked: "How many siblings do you have?" The data below shows their responses. A value of 0 means the student is an only child. Study the dot plot and answer the questions that follow.



Statistic	Value	How to Find It
Mean	2.17	Sum of all values / number of values
Median	2.0	Middle value when data is ordered
Mode	2	Most frequent value(s)
Range	5	Maximum - Minimum
MAD	1.09	Mean of absolute deviations from the mean
5-Number Summary	0, 1, 2.0, 3, 5	Min, Q1, Median, Q3, Max

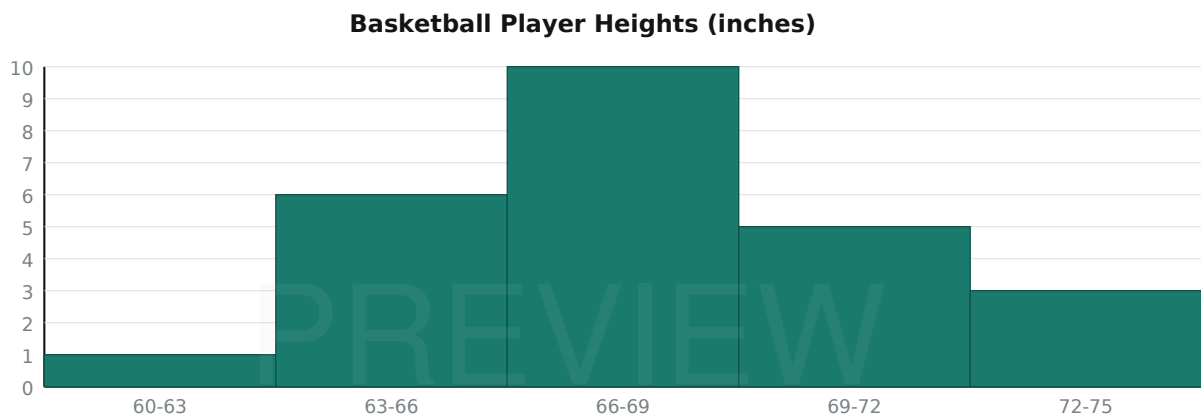
1. How many students have exactly 2 siblings?
2. What is the most common number of siblings (the mode)?
3. Describe the shape of the distribution. Is it symmetric or skewed?
4. Are there any gaps in the data? If so, where?
5. A new student joins with 6 siblings. How does this change the mean?

Section 2: Histograms Lab

A **histogram** displays numerical data using bars that touch. Unlike bar charts (which show categorical data), histograms show continuous numerical data grouped into **bins** (also called intervals). The height of each bar represents the **frequency** (count) of data values within that bin. Histograms are excellent for showing the shape of a distribution for larger datasets. Key features to look for include the overall shape (symmetric, skewed left, skewed right), the tallest bar (the mode bin), and whether there are any unusual gaps or outliers.

Dataset 5: Basketball Player Heights (inches)

A youth basketball league recorded the heights of 25 players. Heights are measured in inches and grouped into bins of width 3. This kind of data is naturally continuous and well-suited for histogram display. Study the histogram and answer the analysis questions below.



Statistic	Value
Mean	67.44
Median	67.0
Range	12
MAD	2.41
5-Number Summary	62, 65.0, 67, 69.5, 74

1. Which bin has the highest frequency? What does this tell you?
2. How many players are 66 inches or taller?
3. Describe the shape of the histogram. Is it symmetric or skewed?
4. What is the effect of changing the bin width from 3 to 5?
5. Estimate the percentage of players in the tallest bin.

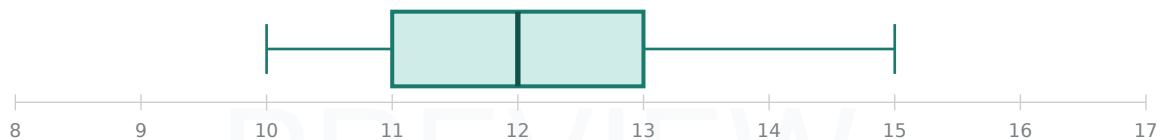
Section 3: Box Plots Lab

A **box plot** (also called a box-and-whisker plot) summarizes a dataset using five key numbers: the minimum, first quartile (Q1), median, third quartile (Q3), and maximum. The "box" spans from Q1 to Q3 and contains the middle 50% of the data. The line inside the box marks the median. The "whiskers" extend to the most extreme data values within 1.5 times the IQR from the box edges. Any points beyond the whiskers are plotted as individual points called **outliers**. Box plots are especially useful for comparing distributions side by side.

Dataset 9: Ages of Students in a Drama Club

A school drama club includes students from multiple grade levels. The ages of 15 members are recorded below. Because the club draws from different grades, the ages may cluster around certain values. The box plot summarizes the five-number summary and reveals the spread of ages in the club.

Ages of Students in a Drama Club



Statistic	Value	Interpretation
Minimum	10	Youngest student in the club
Q1	11	25% of students are this age or younger
Median	12	Middle value; 50% of students on each side
Q3	13	75% of students are this age or younger
Maximum	15	Oldest student in the club
IQR	2	Spread of the middle 50% (Q3 - Q1)
Outliers	None	Values beyond 1.5 x IQR from the box

1. What percentage of students are between Q1 and Q3?
2. Is the median closer to Q1 or Q3? What does this tell you about the shape?
3. Are there any outliers? How do you know?
4. What is the IQR, and what does it measure?
5. If a 9-year-old joins, would they be an outlier? Show your work.

The 5-Number Summary

Minimum (Min)

The smallest value in the dataset.

Example: In {3, 5, 7, 9, 12}, Min = 3

First Quartile (Q1)

The median of the lower half of the data.

25% of data falls at or below Q1

Median (Q2)

The middle value when data is ordered.

50% of data falls on each side

Third Quartile (Q3)

The median of the upper half of the data.

75% of data falls at or below Q3

Maximum (Max)

The largest value in the dataset.

Example: In {3, 5, 7, 9, 12}, Max = 12

Written as: Min, Q1, Median, Q3, Max

UM Printables

CCSS 6.SP.B.5a-d: Summarize numerical data sets with measures of center & variability.

CCSS 6.SP.B.4: Display numerical data in dot plots, histograms, and box plots.

Full mapping: 6.SP.B.4 & 6.SP.B.5a-d

CCSS Alignment Chart

Summative assessment with complete answer key

16-Question Quiz + Key

Dot Plots, Histograms, Box Plots, Cumulative

4 Exit Tickets

10 key terms with definitions & examples

Vocabulary Foldable

5-Number Summary + Box Plot Anatomy

2 Anchor Charts

Blank dot plot, histogram & box plot templates

Printable Templates

4 datasets with 5-number summaries, IQR & outlier detection

Box Plots Lab

4 datasets with binned frequency displays & interpretation

Histograms Lab

4 real-world datasets with plots, stats tables & analysis questions

Dot Plots Lab

29 Pages of Data Display Mastery for Grade 6

What's Inside This Bundle?