

Grade 6 - Statistical Questions and Data Displays

- Lesson

Common Core 6.SP.A.1, 6.SP.A.2, 6.SP.B.4, 6.SP.B.5a, 6.SP.B.5b · maths-pdf.fr/en/

A statistical question expects different answers from a group, so its data vary. Data can be shown on a dot plot, with one dot per value, or on a histogram, with bars for equal intervals. A distribution is described by its center, spread, and shape, and by the number of observations, the attribute measured, and its unit.

Grade 6 · Common Core State Standards: **6.SP.A.1, 6.SP.A.2, 6.SP.B.4, 6.SP.B.5a, 6.SP.B.5b**

Key facts

- A statistical question has many possible answers.
- A dot plot shows one dot for each observation.
- A histogram uses equal intervals and bar height shows frequency.
- Describe a distribution by center, spread, shape, and outliers.
- Always give the attribute, unit, and number of observations.

What is a statistical question?

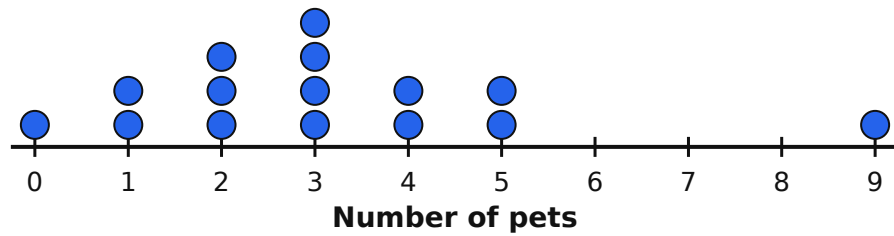
A **statistical question** is a question that expects different answers from a group, so the data vary. "How many pets does each student in our class have?" is statistical. "How many pets does Maya have?" is not, because it has only one answer.

Distribution

A **distribution** is the set of data values and how often each occurs. We describe it by its **center**, its **spread**, and its overall **shape**.

How do you show data on a dot plot?

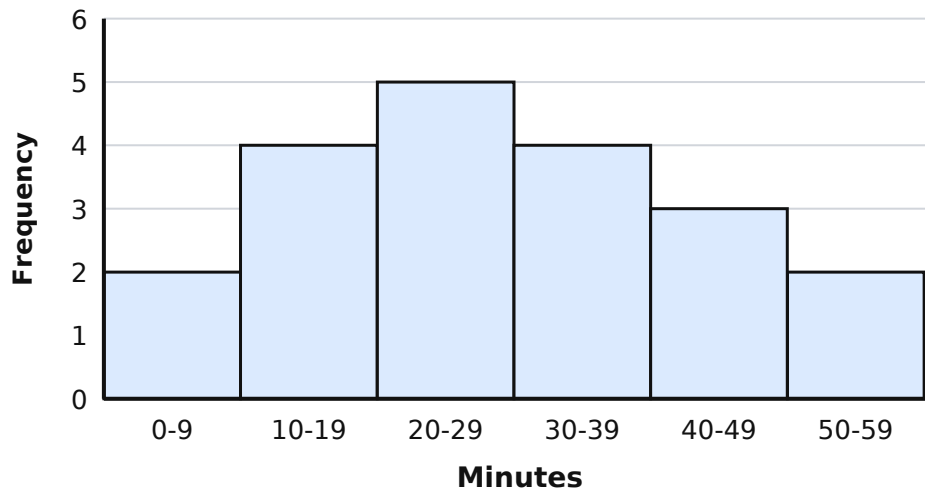
A **dot plot** puts one dot above a number line for every observation. Count the dots to find the number of observations. The tallest stack is the most common value.



A dot plot shows each value as a dot above a number line.

How do you read a histogram?

A **histogram** groups numerical data into equal intervals. Each bar's height shows how many values fall in that interval. Add the heights to find the number of observations.



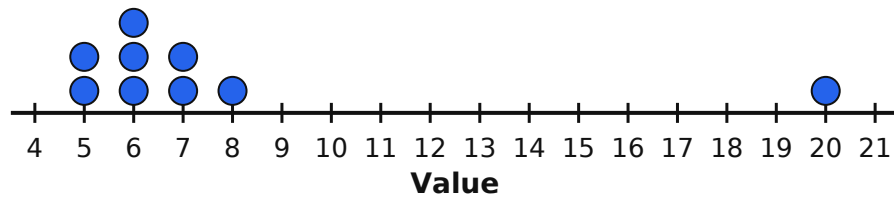
A histogram groups values into equal intervals; bar height is the frequency.

How do you describe a distribution?

Feature	Question to ask
Center	Where is the middle?
Spread	How far apart?
Shape	Peaks, gaps, symmetric?
Outliers	Any far values?

Four ways to describe a data set.

Look for a center (where most of the data cluster), a spread (the range from least to greatest), a shape (peaks, clusters, gaps, symmetry), and any **outliers**, values far from the rest.



Most values cluster between 5 and 8; 20 is an outlier.

1. Name the attribute and the unit, such as minutes or centimeters.
2. Count the observations.
3. Describe the center, spread, and shape in context.
4. Mention any outliers and what they could mean.

When you report a data set, give the context. Say what was measured (the attribute), how it was measured (the unit and the tool), and how many observations there are. A statement such as "20 students recorded the minutes they read last week" tells the reader exactly what the numbers mean. Without context, a dot plot or histogram is only a picture.

Example: In the pets plot, there are 15 students, the most common number is 3, the range is $9 - 0 = 9$, and the value 9 is an outlier.

Questions about statistical questions and data displays

What is a statistical question?

A statistical question expects answers that vary, such as "How tall are the students in our school?" A question with a single answer is not statistical.

What is the difference between a dot plot and a histogram?

A dot plot shows every value with a dot. A histogram groups values into intervals and shows the count in each interval with a bar.

How do you find the number of observations?

Count the dots in a dot plot or add the heights of the bars in a histogram.

What is an outlier?

An outlier is a value far from the rest of the data. In 5, 6, 6, 7, 8, 30, the value 30 is an outlier.

How do you find the range?

Subtract the least value from the greatest value. For data from 3 to 15, the range is 12.