

Grade 4 - Line Plots with Fractions - Lesson

Common Core 4.MD.B.4 · maths-pdf.fr/en/

A line plot is a number line with a dot or an X above each measurement in a data set. In Grade 4, the number line shows fractions such as $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$. Taller stacks mean more measurements at that length. You can add and subtract the fractions shown on the plot to answer questions.

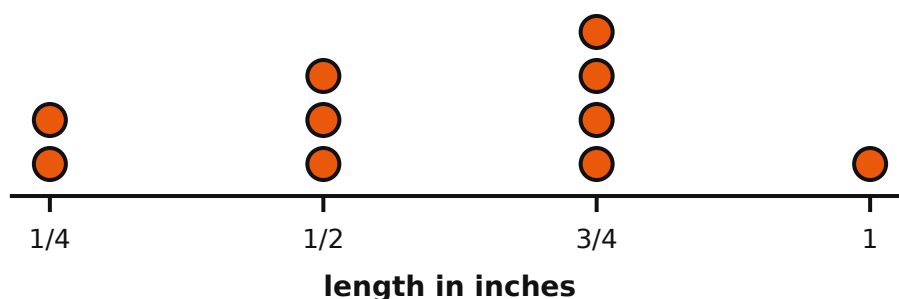
Grade 4 · Common Core State Standards: **4.MD.B.4**

Key facts

- A line plot shows data above a number line, one dot per measurement.
- The tick marks are equally spaced, for example every $\frac{1}{4}$ or every $\frac{1}{8}$.
- A taller stack of dots means that length happened more often.
- To find a total, add the length once for every dot.
- To find a difference, subtract the shortest length from the longest.

What is a line plot?

A line plot is a quick picture of measurements. Ten ribbon scraps were measured to the nearest quarter inch. Each dot stands for one scrap, and it sits above the length that scrap measured.

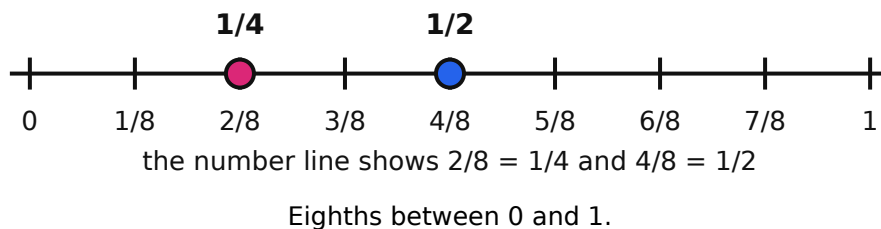


Ribbon scraps. Each dot is one scrap.

Read the plot like a story. There are 2 scraps of $\frac{1}{4}$ inch, 3 scraps of $\frac{1}{2}$ inch, 4 scraps of $\frac{3}{4}$ inch, and 1 scrap of 1 inch. That is $2+3+4+1=10$ scraps.

How do you read the fractions on the number line?

The marks are equally spaced. If you cut each inch into 4 equal parts, the marks are quarters. If you cut each part again, the marks are eighths. Always check the labels first.



How to make a line plot

1. Find the shortest and longest measurement.
2. Draw a number line with equal steps (halves, quarters, or eighths).
3. Put one dot above the number for every measurement.
4. Add a title and the unit, such as inches.

What do the stacks of dots tell you?

A tall stack means many measurements share the same length. A short stack means that length is rare. A gap with no dots means nobody measured that length. Here, bead lengths are in eighths of an inch.



Bead lengths. Each dot is one bead.

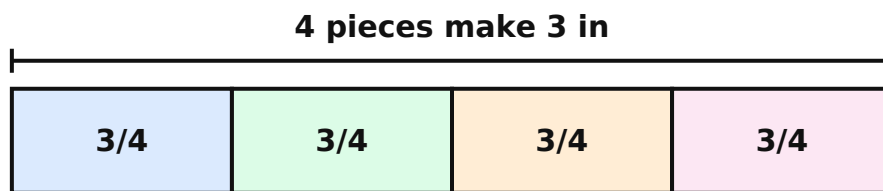
The tallest stack is above $\frac{1}{4}$ inch, with 3 beads. The longest bead is $\frac{1}{2}$ inch. The shortest bead is $\frac{1}{8}$ inch. Count all the dots to find that 8 beads were measured. Before you answer any question, find the unit on the number line, read the title, and check what one dot

stands for.

How do you solve problems with a line plot?

Example. Use the ribbon plot. How long are all the $\frac{3}{4}$ -inch scraps together? How much longer is the longest scrap than the shortest?

1. There are 4 dots at $\frac{3}{4}$. Add: $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{12}{4} = 3$ inches.
2. Longest is 1 inch, shortest is $\frac{1}{4}$ inch.
3. Subtract: $1 - \frac{1}{4} = \frac{4}{4} - \frac{1}{4} = \frac{3}{4}$ inch.



Four equal pieces of $\frac{3}{4}$ inch.

The four $\frac{3}{4}$ -inch scraps measure **3 inches** together, and the longest scrap is **$\frac{3}{4}$ inch** longer than the shortest.

Questions about line plots with fractions

What is a line plot?

A line plot is a graph that uses a number line and dots or Xs to show how many times each measurement happens. Each dot stands for one measurement.

How do you make a line plot with fractions?

Draw a number line with equal fraction steps, like $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{3}{4}$. Then place one dot above the matching mark for each measurement in the list.

How do you find the total length on a line plot?

Add each length once for every dot. For three dots at $\frac{1}{4}$ inch, add $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$ inch. Then add the totals from the other columns.

How do you find how much longer the longest is than the shortest?

Subtract the smallest measurement from the biggest. If the longest is $\frac{1}{2}$ inch and the shortest is $\frac{1}{8}$ inch, then $\frac{4}{8} - \frac{1}{8} = \frac{3}{8}$ inch.

What does a tall stack of dots tell you?

A tall stack shows the most common length. It tells you that many measurements were the same size.