

Grade 5 - Line Plots and Data - Lesson

Common Core 5.MD.B.2 · maths-pdf.fr/en/

A line plot shows data as X marks above a number line. To solve problems, count the X's at each fraction, add or subtract the fractions, and divide to share equally. If three X's sit above $\frac{1}{2}$, those measurements total $3 \times \frac{1}{2} = 1 \frac{1}{2}$. Equal sharing means total divided by the number of items.

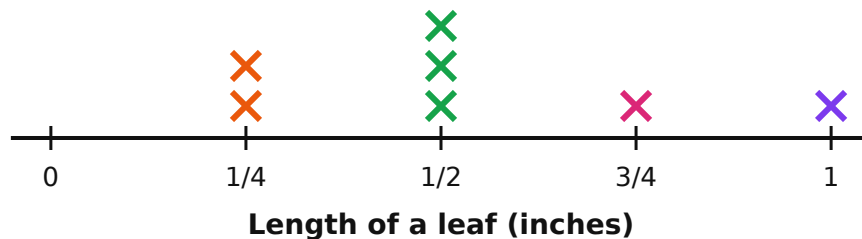
Grade 5 · Common Core State Standards: **5.MD.B.2**

Key facts

- Each X on a line plot stands for one measurement.
- Multiply the count of X's by the fraction to find the total at one mark.
- Add the totals from all marks to find the sum of all the data.
- Equal share = total amount $\div$ number of containers.
- Greatest value minus least value tells how far the data spread.

What is a line plot?

A **line plot** shows data on a number line. Each X above a number stands for one measurement. When the measurements are fractions, the number line is marked in halves, fourths or eighths. This plot shows the lengths of 7 leaves that Maya collected, in inches.



Line plot. Each X is one measurement. Label: Length of a leaf (inches).

Vocabulary

Data: the measurements you collect. **Line plot:** a graph that uses X marks above a number line. **Equal share:** the amount each person gets when a total is split evenly.

How do you read a line plot?

Look at each mark on the number line and count the X's above it. In Maya's plot there are 2 leaves of $\frac{1}{4}$ inch, 3 leaves of $\frac{1}{2}$ inch, 1 leaf of $\frac{3}{4}$ inch and 1 leaf of 1 inch. Count all the X's to find how many leaves there are: $2+3+1+1=7$.

How do you add up all the measurements?

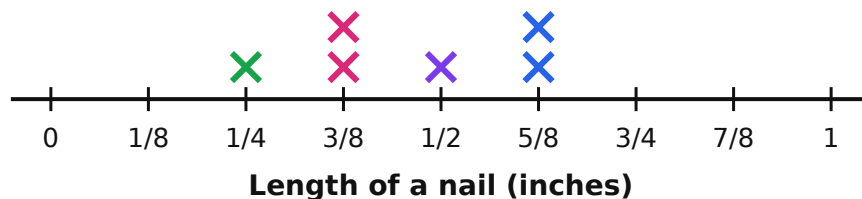
Multiply each measurement by the number of X's above it, then add the products. Multiplying is faster than adding the same fraction again and again.

$2 \times \frac{1}{4} = \frac{1}{2}$
$3 \times \frac{1}{2} = 1 \frac{1}{2}$
$1 \times \frac{3}{4} = \frac{3}{4}$
$1 \times 1 = 1$
Total = $\frac{1}{2} + 1 \frac{1}{2} + \frac{3}{4} + 1 = 3 \frac{3}{4}$

Multiply each measurement by its number of X's, then add.

What changes when the marks are eighths?

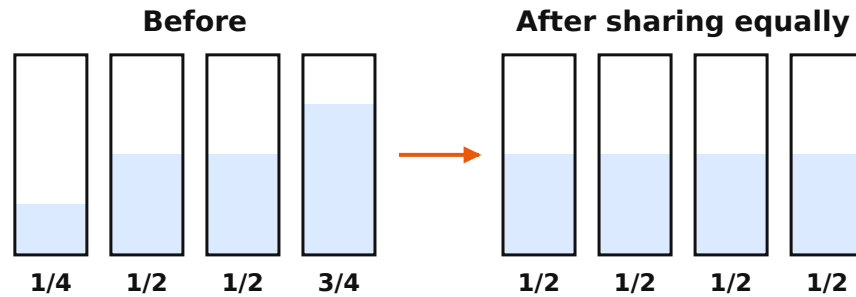
Nothing about the method changes. Only the size of the steps is smaller. Here are 6 nails measured to the nearest eighth of an inch. The two longest nails are $\frac{5}{8}$ inch each.



Line plot. Each X is one measurement. Label: Length of a nail (inches).

How do you share the total equally?

Add all the amounts, then divide by the number of containers. Four glasses hold $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{2}$ and $\frac{3}{4}$ cup of juice. The total is $\frac{1}{4} + \frac{1}{2} + \frac{1}{2} + \frac{3}{4} = 2$ cups. Divide by 4 glasses: each glass gets $2 \div 4 = \frac{1}{2}$ cup.



Each tall box holds 1 cup when full.

Steps

1. Read the question and find the data on the line plot.
2. Count X's or multiply count times measurement.
3. Add, subtract or divide the fractions.
4. Write the answer with its unit and check that it makes sense.

Questions about line plots and data

What does each X on a line plot mean?

Each X stands for one measurement or one item. If there are 3 X's above $\frac{1}{2}$, three objects measured exactly $\frac{1}{2}$ unit. Counting the X's tells you how many measurements there are.

How do I find the total of the data on a line plot?

Multiply each measurement by the number of X's above it, then add the products. For 2 X's above $\frac{1}{4}$ and 3 X's above $\frac{1}{2}$, compute $2 \times \frac{1}{4} + 3 \times \frac{1}{2} = \frac{1}{2} + 1\frac{1}{2} = 2$.

What is redistributing equally?

Redistributing means pooling all the amounts and splitting the total evenly. Add the amounts first, then divide by the number of containers. Each container then holds the same amount, called the equal share.

How do I find how much greater the longest is than the shortest?

Subtract the least value from the greatest value. If the longest is $\frac{5}{8}$ inch and the shortest is $\frac{1}{8}$ inch, then $\frac{5}{8} - \frac{1}{8} = \frac{4}{8} = \frac{1}{2}$ inch.

Do I need a common denominator on a line plot?

The marks on the number line already use the same denominator, such as fourths or eighths.

When you add amounts with different denominators, rewrite them with a common denominator first, then add.