

Choose, Measure, Plot

Represent the observations, then explain the evidence.

GRADE 5 • TEKS 5.9

5.9 "Excerpt: represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots"

NAME _____

DATE _____

Make every observation count

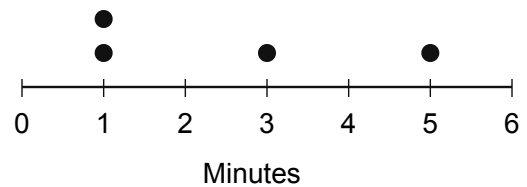
A category describes a group; a measurement gives a numerical value. A dot plot preserves repeated measurements. A scatterplot keeps each pair of observations together as one point.

Worked example

Plot the waits 1, 1, 3, 5 minutes.

Stack two dots at 1. Place one each at 3 and 5. Four separate dots preserve all four observations.

Practice waits



Key: one dot = one wait

Simulated data. Use a pencil and ruler. Show your reasoning.

1. Organize the choices

Count every reply below. Complete the frequency table and find the total. Each student chose once.

Twelve students: one garden choice each

- | | | | |
|------------|------------|------------|-------------|
| 1. Trees | 2. Flowers | 3. Grass | 4. Flowers |
| 5. Trees | 6. Grass | 7. Flowers | 8. Trees |
| 9. Flowers | 10. Grass | 11. Trees | 12. Flowers |

Garden choice frequencies

Choice	Count
Trees	
Flowers	
Grass	
Total	

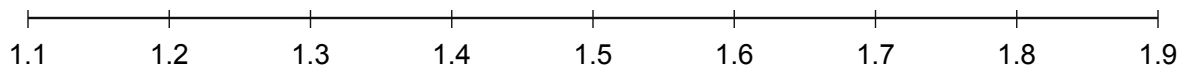
2. Represent measurements

Plot all eight shoot lengths below. Add a title, finish the horizontal-axis label and complete the dot key. Stack every repeated measurement.

Eight measured garden shoots, in metres

1. 1.2	2. 1.3	3. 1.3	4. 1.4
5. 1.6	6. 1.6	7. 1.6	8. 1.8

Plot title: _____



Horizontal axis: _____

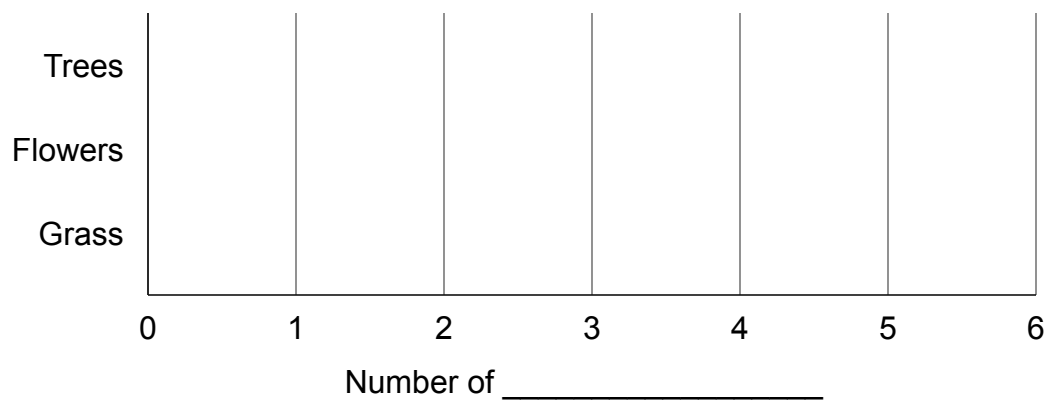
Key: one dot = _____

3. Show the categorical data

Use the counts in task 1 to draw a bar for each garden choice. Start at zero. Add a title and finish the number-axis label.

Graph title: _____

Choice



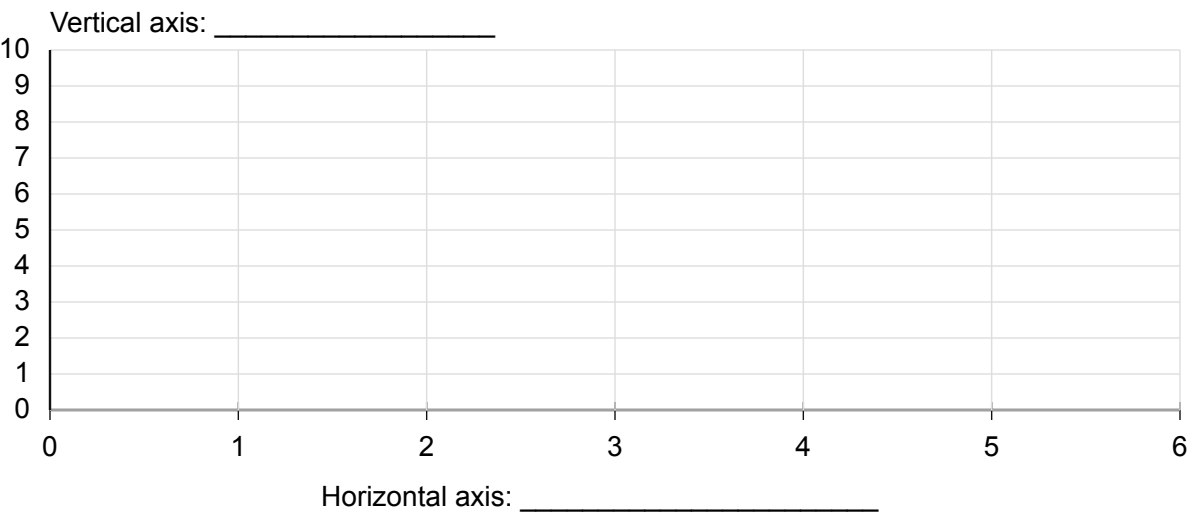
4. Keep each pair together

Each pair below describes a different student. Plot the paired counts, add a title and finish both axis labels. Do not connect the points.

Five separate students: (sessions, successful throws)

Students	Paired counts
A, B, C, D, E	(1, 2); (2, 3); (3, 3); (4, 6); (5, 7)

Plot title: _____



5. Calculate from the dot plot

Use task 2. How many shoots measured 1.6 m? How many shoots measured 1.3 m or 1.6 m altogether, and how many more is that than measured 1.8 m?

6. Calculate from the scatterplot

How many more successful throws did the student with 5 practice sessions make than the student with 2 sessions? Add the successful throws for the students with 1 and 4 sessions, then subtract the count for 2 sessions.

7. Explain what a display preserves

Why is the bar graph useful for garden choices, the dot plot useful for shoot lengths, and the scatterplot useful for the paired counts? Describe the pattern in the scatterplot without claiming that it proves a cause.

TEACHER NOTES

Accept equivalent titles and units. Check repeated observations, ordered leaves and the stated dataset. Predictions need evidence, not certainty. Keep completed plots in this key.

TASK 1

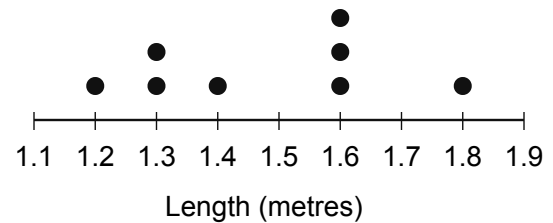
Trees 4, Flowers 5, Grass 3; total 12. Every reply belongs to one category.

Completed garden frequencies

CHOICE	COUNT
Trees	4
Flowers	5
Grass	3
Total	12

TASK 2

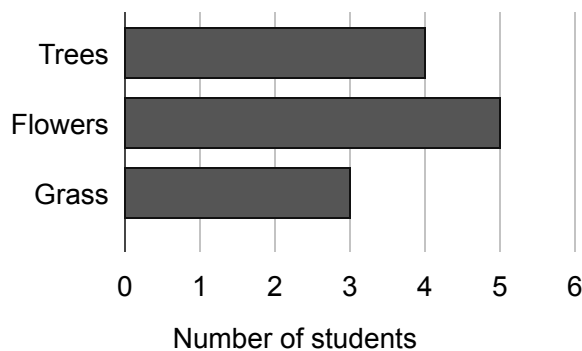
Dots: 1.2(1), 1.3(2), 1.4(1), 1.6(3), 1.8(1). Key: one dot = one shoot. Horizontal axis: Length (metres).

Garden shoot lengths

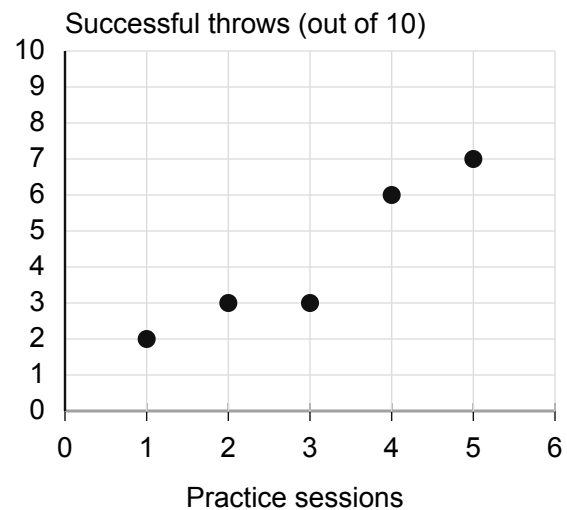
Key: one dot = one shoot

TASK 3

Bars end at Trees 4, Flowers 5, Grass 3. Number axis: Number of students.

Garden choices**TASK 4**

Plot (1,2), (2,3), (3,3), (4,6), (5,7). Horizontal: Practice sessions; vertical: Successful throws (out of 10).

Practice and successful throws

TASK 5

Three measured 1.6 m. $2 + 3 = 5$ measured 1.3 or 1.6 m; $5 - 1 = 4$ more than measured 1.8 m. Use the named data and scale.

TASK 6

$7 - 3 = 4$ more. The two-step calculation is $2 + 6 = 8$; $8 - 3 = 5$ successful throws. Show numerical evidence.

TASK 7

The bar graph compares category counts; the dot plot shows measurements and repeats; the scatterplot preserves each student's paired counts. More practice sessions generally go with more successful throws in this small dataset, but this does not prove practice caused the difference.