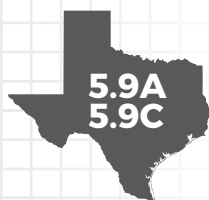


# USING DOT PLOTS



The student is expected to 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.

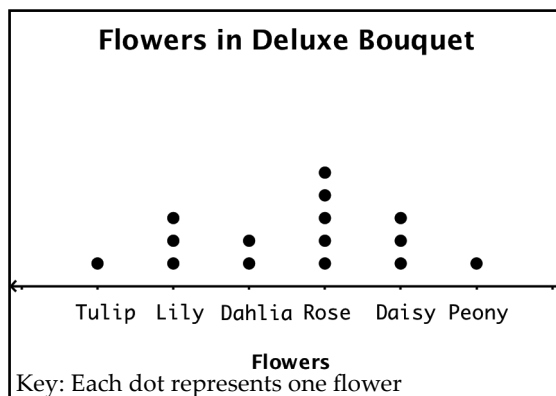
The student is expected to solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot.



## TELL ME MORE...

Like a bar graph, a **dot plot** is a graphical display used to represent frequencies within categorical data.

- A dot plot uses a number line labeled with numerical values or categories.
- A dot plot has dots or X marks above each value or label on the number line to indicate the number or frequency of each item.
- The dots or X marks may represent one or more counts as noted in a key.



A dot plot organizes frequencies or counts of categorical data and allows for easy visual comparison of counted quantities. When solving problems using a dot plot:

- Determine the count each dot or mark above the number line represents.
- Use the number of dots or marks above the number line to determine the count in each category or labeled item.
- Use operations as necessary to compare quantities or to combine quantities.



## EXAMPLES

**EXAMPLE 1:** The frequency table below shows the number of points scored by each 5<sup>th</sup> grade homeroom as part of a school math contest. Construct a dot plot to represent the data. Use a scale of each dot representing 2 points.

**STEP 1** Determine the number of categories needed for the plot and the number of counts for each category.

Homeroom teacher	Points
Adams	
Barera	
Daniel	
McMichael	
Robinson	

- There are 5 homeroom teachers listed which form the categories along the number line on the plot.
- There are a total of 48 data values in the frequency table.

**There are 5 categories along the number line for the homeroom teachers.**

**Adams has 8 points, Barera has 6 points, Daniel has 12 points, McMichael has 8 points, and Robinson has 14 points.**

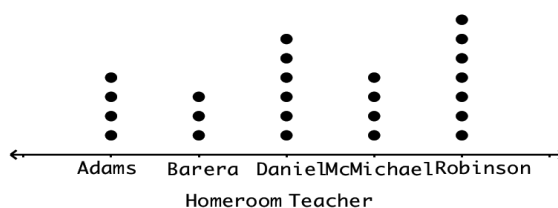
**STEP 2** Determine the number of dots to be plotted for each category.

- Note that each dot on the plot should represent 2 points each.
- Count the number of tally marks for each homeroom teacher and divide by 2 for the number of dots needed on the plot.

**Adams uses 4 dots, Barera uses 3 dots, Daniel uses 6 dots, McMichael uses 4 dots, and Robinson uses 7 dots.**

**STEP 3** Plot the dots above each category label along the number line and label the dot plot.

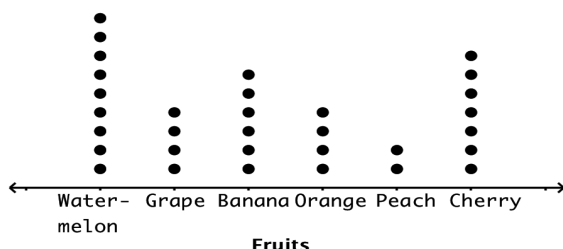
Math Contest Points



\*Each dot = 2 people

**EXAMPLE 2:** Burt's Snow Cones surveyed customers to learn their favorite snow cone fruit flavorings. The dot plot shows the results with each dot on the plot representing 4 customers. What fraction of the customers surveyed prefer the two most popular flavors according to the data?

Favorite Fruit Flavor



Each dot = 4 customers

**STEP 1** Determine the number of customers surveyed.

- Count 32 dots in the plot.
- Multiply the number of dots by 4 customers for each dot.
- $32 \times 4 = 128$

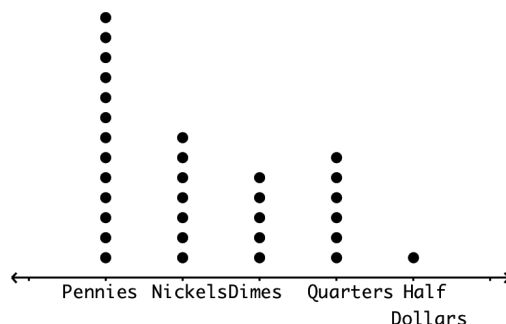
**The dot plot represents 128 customers.**

**STEP 2** Determine the number of customers preferring the two most popular flavors.

- The tallest dot stacks are above the watermelon and cherry flavors.
- Since these flavors were preferred the most, they represent the two most popular flavors.
- There are 9 dots above watermelon and 7 dots above cherry.

### YOU TRY IT!

The dot plot represents the number of each type of coin that Carl has in his pocket. How many more pennies does Carl have than dimes and quarters combined?



Each dot = 1 coin

Number of each coin:

Pennies \_\_\_\_\_

Dimes \_\_\_\_\_

Quarters \_\_\_\_\_

Dimes + Quarters = \_\_\_\_\_

Difference between the number of pennies and combined dimes and quarters: \_\_\_\_\_

- $9 + 7 = 16$ , so there are 16 dots for the two most popular flavors.
- Multiply 16 dots for watermelon and cherry by 4 customers per dot;  $16 \times 4 = 64$ .

**64 customers preferred watermelon or cherry, the two most popular flavors.**

**STEP 3** Create a fraction using the number of customers who prefer watermelon and cherry as the numerator and the total number of customers in the dot plot as the denominator. Reduce to lowest terms.

$$\frac{\text{Customers Preferring Watermelon or Cherry}}{\text{Total Customers}} = \frac{64 \div 64}{128 \div 64} = \frac{1}{2}$$

**Of the fruit flavors at Burt's Snow Cones,  $\frac{1}{2}$  of surveyed customers prefer cherry or watermelon.**



## PRACTICE

Use the following information for questions 1 - 3.

The table shows the number of students of different ages attending a soccer camp for 8 to 13 year olds.

Age	Number
8	4
9	3
10	6
11	8
12	5
13	4

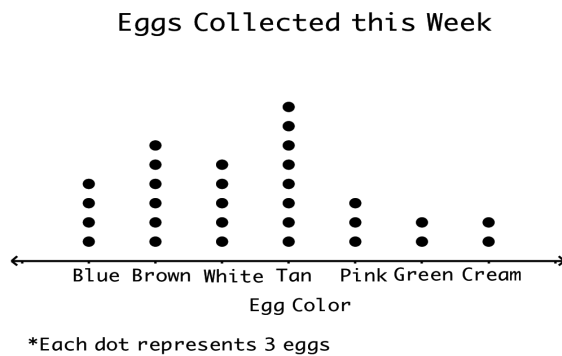
- 3.** Use the number line below to make the dot plot to represent the soccer camp data.



1. If each dot represents one student, how many dots will be on the dot plot?
2. How many categories will be labeled on the number line? What will the categories be?

Use the information below for questions 4 - 5.

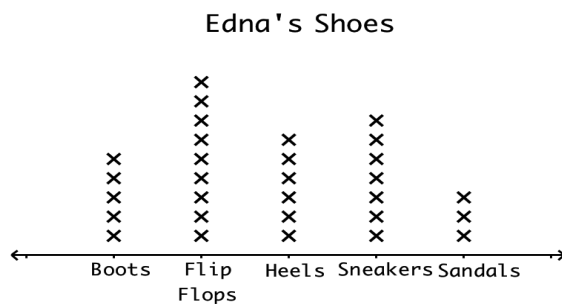
Different types of chickens lay different colored eggs. The plot below shows the numbers of eggs a farmer gathered from her hens in a week by egg color.



4. What fraction represents the portion of the collected eggs that were white?

5. How many fewer eggs of blue, pink, and green were collected compared to the other colors of eggs?

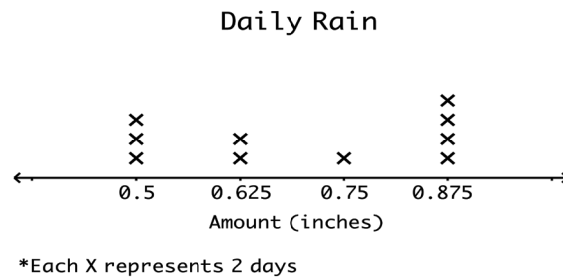
6. The plot shows the numbers of shoes Edna has in her closet by type of shoe. How many times greater is the quantity of boots, heels, and sneakers in Edna's closet compared to the quantity of flip-flops and sandals?



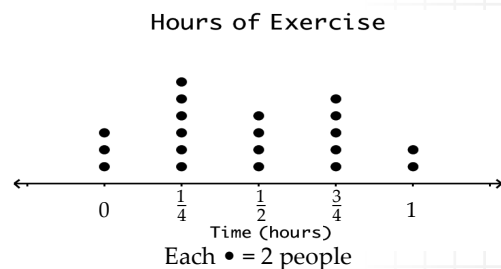
Key: Each X represents one pair of shoes

Use the information below for questions 7 - 8.

The plot below shows the rainfall data for the month of April in a Texas city.



7. What fraction of the days in April did the city receive rainfall?
8. How much rainfall did the city receive in the month of April?
9. Martín conducted a survey to learn the amount of exercise time, in hours, people reported getting each day. He created the dot plot shown below.



How many more people report exercising for at least 30 minutes each day compared to those reporting fewer than 30 minutes per day?

- A 4  
B 11  
C 9  
D 2

10. The frequency table shows the results of a student survey to help choose a new mascot.

Animal	Frequency
Hawk	
Eagle	
Falcon	
Pelican	

Which dot plot best represents these data?

