EUREKA MATH PUSD

A Story of Units

Pleasanton UNIFIED SCHOOL DISTRICT Mathematics Curriculum

Solutions

GRADE 3 • MODULE 6

Collecting and Displaying Data

Solutions

Homework

Video tutorials: http://bit.ly/eurekapusd
Info for parents: http://bit.ly/pusdmath

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GRADE 3 • MODULE 6

Collecting and Displaying Data

For video tutorials on many of these problems, please visit http://EMBARC.online

Eureka Math

DISCLAIMER: EngageNY is regularly updating their curriculum, so some problems in my answer key may no longer match future versions of this module.

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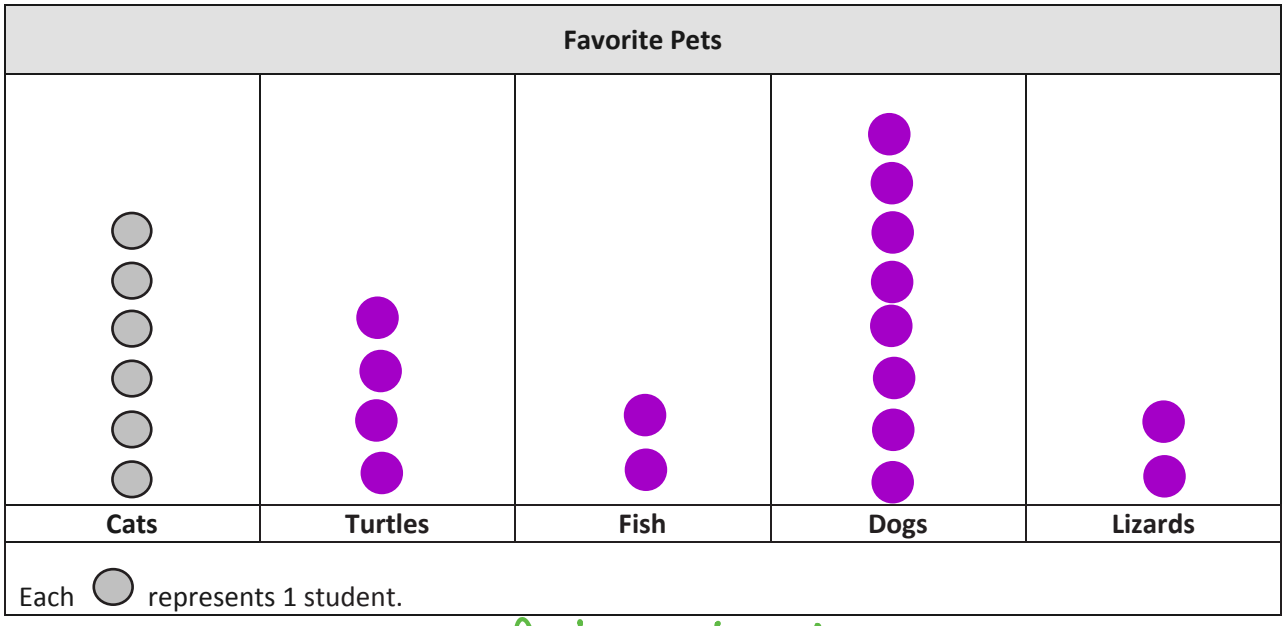
Name _____ Date _____

1. The tally chart below shows a survey of students' favorite pets. Each tally mark represents 1 student.

Favorite Pets	Number of Students
Cats	~~////~~ /
Turtles	////
Fish	//
Dogs	~~////~~ ///
Lizards	//

The chart shows a total of 22 students.

2. Use the tally chart in Problem 1 to complete the picture graph below. The first one has been done for you.

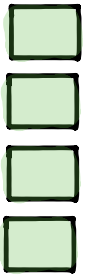


a. The same number of students picked fish and lizards as their favorite pet.

b. How many students picked dogs as their favorite pet? 8 students picked dogs

c. How many more students chose cats than turtles as their favorite pet? 2 more students

3. Use the tally chart in Problem 1 to complete the picture graph below.

Favorite Pets				
				
Cats	**Turtles**	**Fish**	**Dogs**	**Lizards**
Each ☐ represents 2 students.				

a. What does each ☐ represent?

Each square represents two students.

b. How many does ☐☐☐☐☐ represent? Write a number sentence to show how you know.

5 squares represents 10 students because $5 \times 2 = 10$.

c. How many more ☐ did you draw for dogs than for fish? Write a number sentence to show how many more students chose dogs than fish.

I drew 3 more squares. This represents 6 students because $3 \times 2 = 6$.

Name ______________________________ Date ________________

1. Adi surveys third graders to find out their favorite fruits. The results are in the table below.

Favorite Fruits of Third Graders	
Fruit	**Number of Student Votes**
Banana	8
Apple	16
Strawberry	12
Peach	4

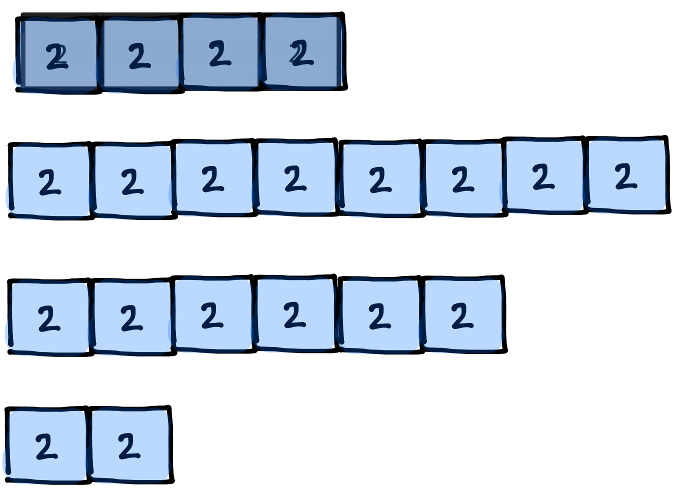
Draw units of 2 to complete the tape diagrams to show the total votes for each fruit. The first one has been done for you.

Banana:

Apple:

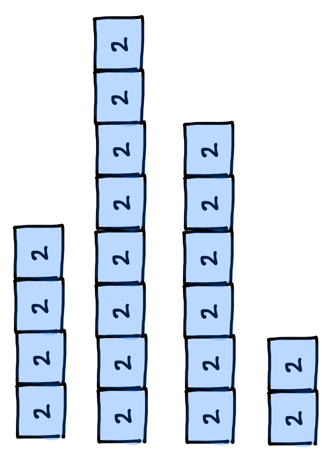
Strawberry:

Peach:



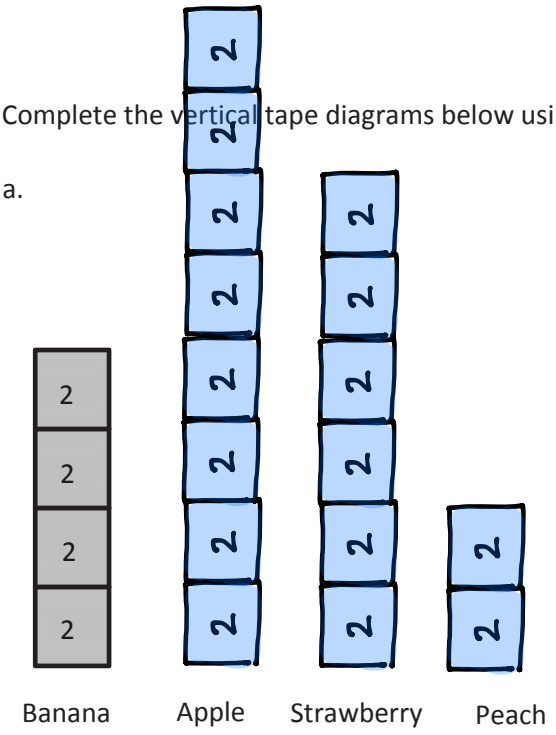
2. Explain how you can create vertical tape diagrams to show this data.

We would rotate each tape 90°.

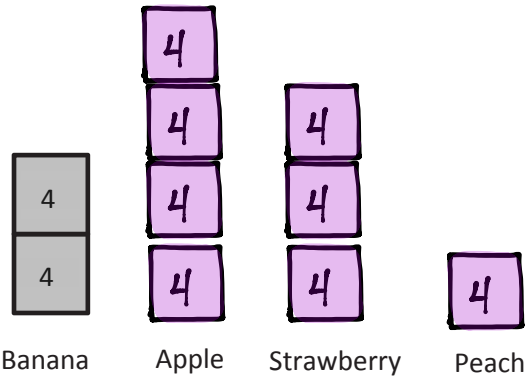


3. Complete the vertical tape diagrams below using the data from Problem 1.

a.



b.



c. What is a good title for the vertical tape diagrams?

Favorite Fruits of Third Graders

d. Compare the number of units used in the vertical tape diagrams in Problems 3(a) and 3(b). Why does the number of units change?

There are fewer units in 3(b) because each unit is worth more.

e. Write a multiplication number sentence to show the total number of votes for strawberry in the vertical tape diagram in Problem 3(a).

$6 \times 2 = 12$

f. Write a multiplication number sentence to show the total number of votes for strawberry in the vertical tape diagram in Problem 3(b).

$3 \times 4 = 12$

g. What changes in your multiplication number sentences in (e) and (f)? Why?

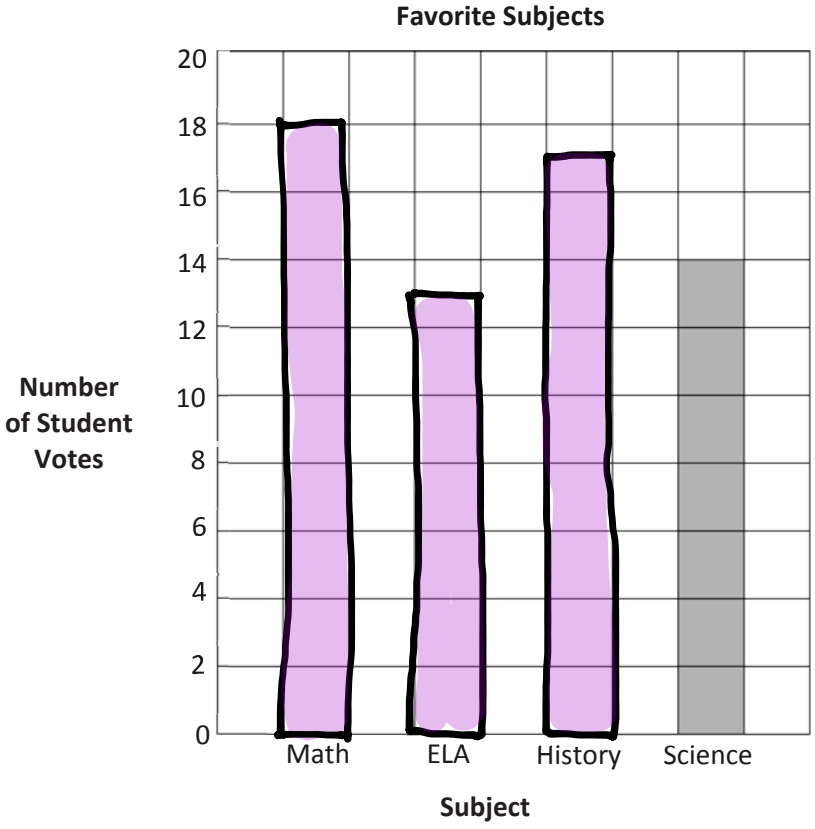
The number of units and the value of each unit. The answer stays the same.

Name _____ Date _____

1. This table shows the favorite subjects of third graders at Cayuga Elementary.

Favorite Subjects	
Subject	Number of Student Votes
Math	18
ELA	13
History	17
Science	?

Use the table to color the bar graph.



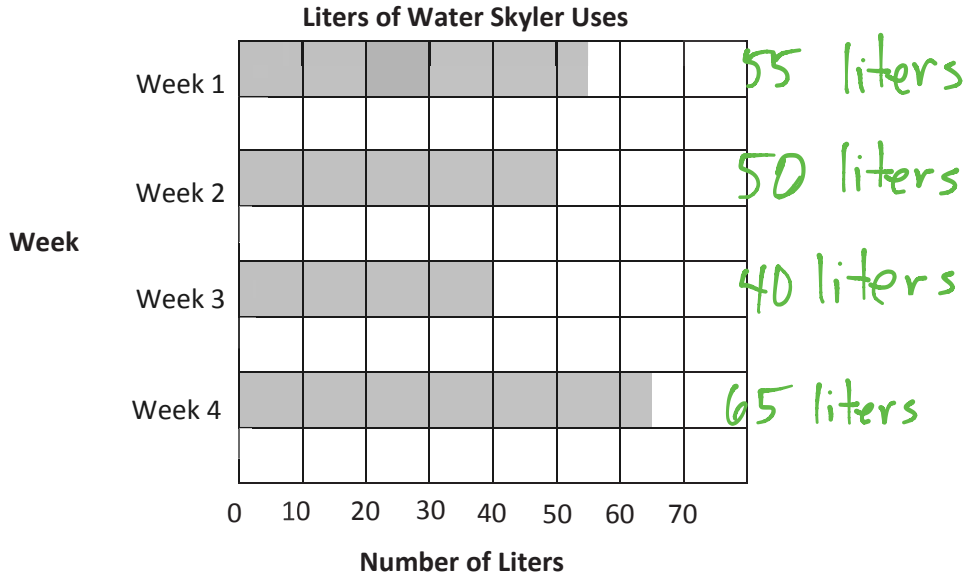
a. How many students voted for science? 14 voted for science.

b. How many more students voted for math than for science? Write a number sentence to show your thinking. 4 more students voted for math. 2 x 2 = 4

c. Which gets more votes, math and ELA together, or history and science together? Show your work.

M+E: 18+13 = 31 H+S: 17+14 = 31 They are equal.

2. This bar graph shows the number of liters of water Skyler uses this month.



a. During which week does Skyler use the most water? Week 4
The least? Week 3

b. How many more liters does Skyler use in Week 4 than Week 2?

15 more liters

c. Write a number sentence to show how many liters of water Skyler uses during Weeks 2 and 3 combined.

9 x 10 = 90 or 50 + 40 = 90

d. How many liters does Skyler use in total?

55 + 50 + 40 + 65 = 210 liters total

e. If Skyler uses 60 liters in each of the 4 weeks next month, will she use more or less than she uses this month? Show your work.

4 x 60 = 240 liters

She will use more liters of water.

3. Complete the table below to show the data displayed in the bar graph in Problem 2.

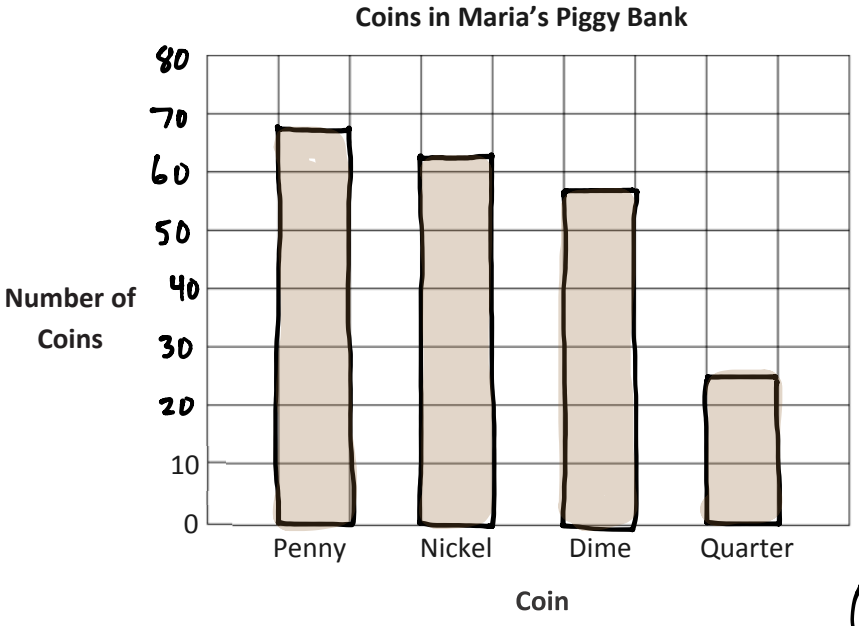
Liters of Water Skyler Uses	
Week	Liters of Water
1	55
2	50
3	40
4	65

Name _____ Date _____

1. Maria counts the coins in her piggy bank and records the results in the tally chart below. Use the tally marks to find the total number of each coin.

Coins in Maria's Piggy Bank		
Coin	**Tally**	**Number of Coins**
Penny	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ///	68
Nickel	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 //	62
Dime	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 //	57
Quarter	𝍸 𝍸 𝍸 𝍸 ////	24

a. Use the tally chart to draw a bar graph below. The scale is given.



b. How many more pennies are there than dimes?

11 more pennies.

68 − 57 = 11

c. Maria donates 10 of each type of coin to charity. How many total coins does she have left? Show your work.

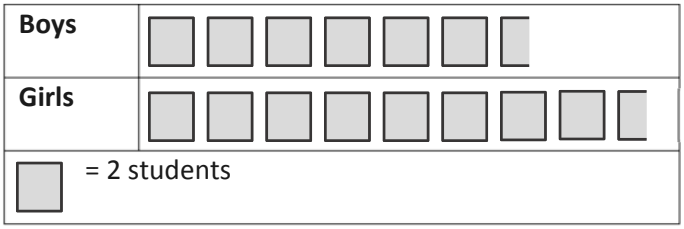
(68 + 62 + 57 + 24) − 40

211 − 40 = 171

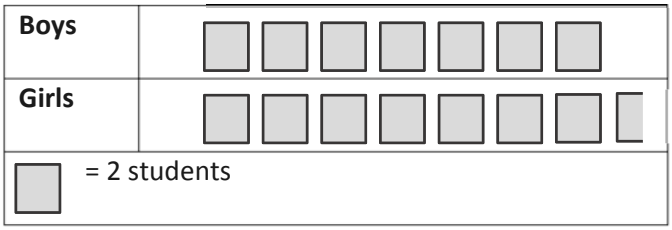
171 coins are left

2. Ms. Hollmann's class goes on a field trip to the planetarium with Mr. Fiore's class. The number of students in each class is shown in the picture graphs below.

Students in Ms. Hollmann's Class



Students in Mr. Fiore's Class



a. How many fewer boys are on the trip than girls?

Boys: 13 + 14 = 27

Girls: 17 + 15 = 32

$$\begin{array}{r} 32 \\ -27 \\ \hline 5 \end{array}$$

There are 5 fewer boys.

b. It costs $2 for each student to attend the field trip. How much money will it cost for all students to attend?

27 + 32 = 59 students

59 x 2 = 118

It will cost $118 for all the students to attend.

c. The cafeteria in the planetarium has 9 tables with 8 seats at each table. Counting students and teachers, how many empty seats will there be when the 2 classes eat lunch?

9 x 8 = 72 seats

59 students + 2 adults = 61 people

$$\begin{array}{r} 72 \\ -61 \\ \hline 11 \end{array}$$

there will be 11 empty seats.

Name _____ Date _____

1. Travis measured 5 different-colored pencils to the nearest inch, $\frac{1}{2}$ inch, and $\frac{1}{4}$ inch. He records the measurements in the chart below. He draws a star next to measurements that are exact.

Colored Pencil	Measured to the nearest inch	Measured to the nearest $\frac{1}{2}$ inch	Measured to the nearest $\frac{1}{4}$ inch
Red	7	$6\frac{1}{2}$	$6\frac{3}{4}$
Blue	5	5	$5\frac{1}{4}$
Yellow	6	$5\frac{1}{2}$ ☆	$5\frac{1}{2}$ ☆
Purple	5	$4\frac{1}{2}$	$4\frac{3}{4}$
Green	2	3	$1\frac{3}{4}$

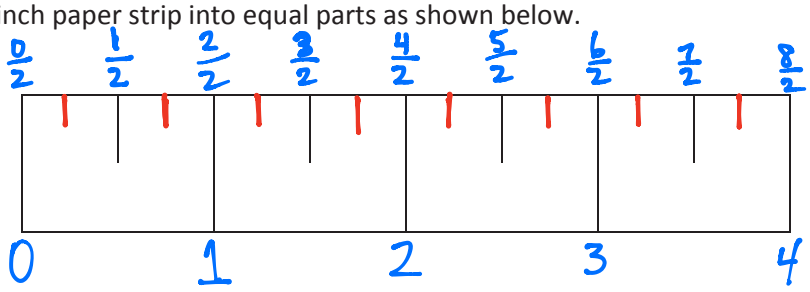
a. Which colored pencil is the longest? Red

It measures $6\frac{1}{2}$ inches.

b. Look carefully at Travis's data. Which colored pencil most likely needs to be measured again? Explain how you know.

The green pencil should be measured again because the "3" is an answer that doesn't make sense.

2. Evelyn marks a 4-inch paper strip into equal parts as shown below.



a. Label the whole and half inches on the paper strip.

b. Estimate to draw the $\frac{1}{4}$ inch marks on the paper strip. Then, fill in the blanks below.

1 inch is equal to 2 half inches.

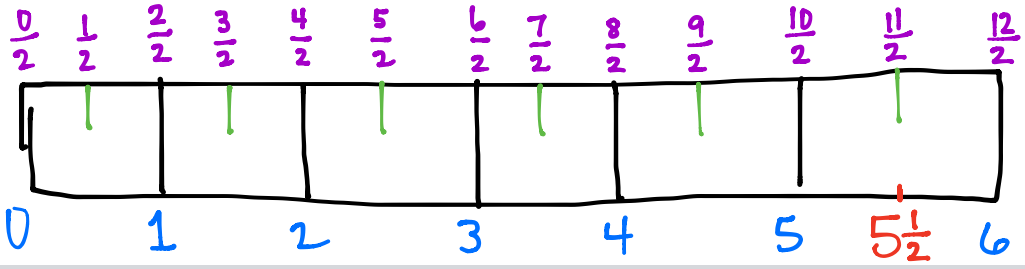
1 inch is equal to 4 quarter inches.

1 half inch is equal to 2 quarter inches.

2 quarter inches are equal to 1 half inch.

3. Travis says his yellow pencil measures $5\frac{1}{2}$ inches. Ralph says that's the same as 11 half inches. Explain how they are both correct.

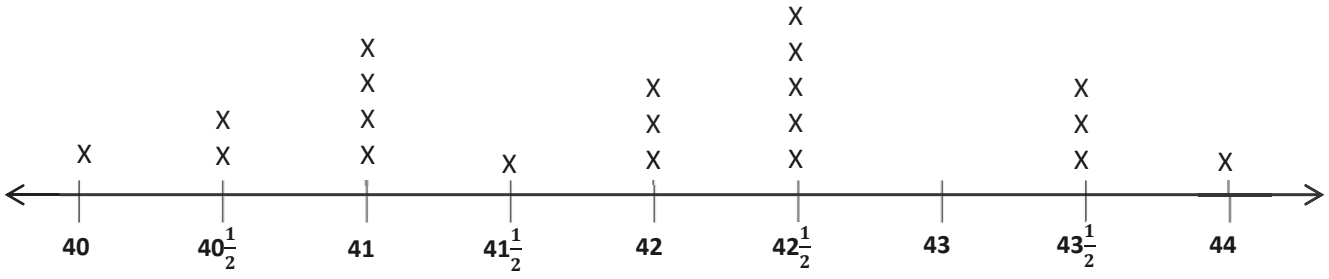
They are both correct because $5\frac{1}{2}$ inches and 11 half inches are at the same place on a ruler.



Name _____ Date _____

1. Ms. Leal measures the heights of the students in her kindergarten class. The heights are shown on the line plot below.

Heights of Students in Ms. Leal's Kindergarten Class



a. How many students in Ms. Leal's class are 41 inches tall?

4 students

b. How many students are in Ms. Leal's class? How do you know?

There are 20 students because there are 20 X's.

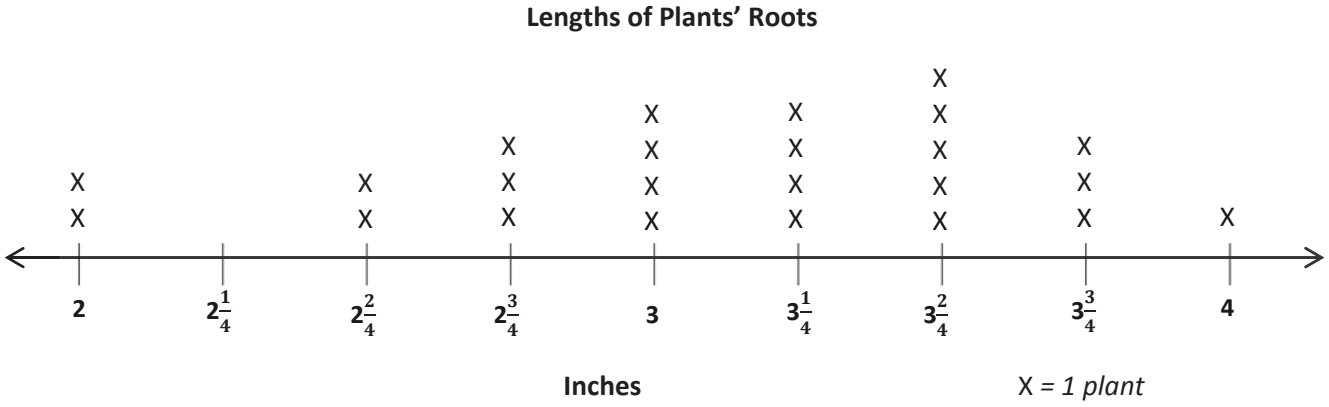
c. How many students in Ms. Leal's class are more than 42 inches tall?

9 students are taller than 42 inches.

d. Ms. Leal says that for the class picture students in the back row must be at least $42\frac{1}{2}$ inches tall. How many students will be in the back row?

9 students will be in the back row.

2. Mr. Stein's class is studying plants. They plant seeds in clear plastic bags and measure the lengths of the roots. The lengths of the roots in inches are shown in the line plot below.



a. How many roots did Mr. Stein's class measure? How do you know?

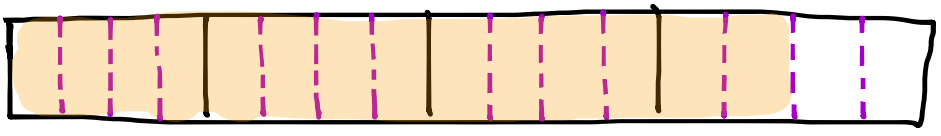
They measured 24 roots because there are 24 X's.

b. Teresa says that the 3 most frequent measurements in order from shortest to longest are $3\frac{1}{4}$ inches, $3\frac{2}{4}$ inches, and $3\frac{3}{4}$ inches. Do you agree? Explain your answer.

I disagree with Teresa. It should be 3, $3\frac{1}{4}$, and $3\frac{2}{4}$. $3\frac{3}{4}$ is not one of the three most common measurements.

c. Gerald says that the most common measurement is 14 quarter inches. Is he right? Why or why not?

Gerald is correct, $3\frac{2}{4}$ is the most common measurement. $3\frac{2}{4}$ is equal to 14 quarter inches.



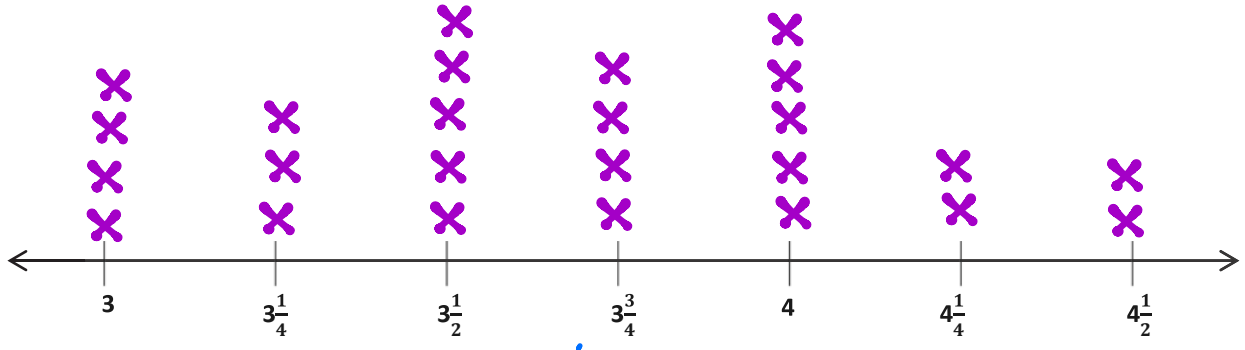
Name _____ Date _____

Mrs. Felter's students build a model of their school's neighborhood out of blocks. The students measure the heights of the buildings to the nearest $\frac{1}{4}$ inch and record the measurements as shown below.

Heights of Buildings (in Inches)				
$3\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$3\frac{1}{2}$
4	3	$3\frac{3}{4}$	3	$4\frac{1}{2}$
3	$3\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{1}{2}$	4
$3\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$3\frac{3}{4}$
3	$4\frac{1}{4}$	4	$3\frac{1}{4}$	4

a. Use the data to complete the line plot below.

Title: Heights of Buildings



Label: Inches X =

b. How many buildings are $4\frac{1}{4}$ inches tall? 2

c. How many buildings are less than $3\frac{1}{2}$ inches? 7

d. How many buildings are in the class model? How do you know?

There are 25 buildings in the class model. We know this because there are 25 X's. Also, the data is in a table with 5 columns and 5 rows.

e. Brook says most buildings in the model are at least 4 inches tall. Is she correct? Explain your thinking.

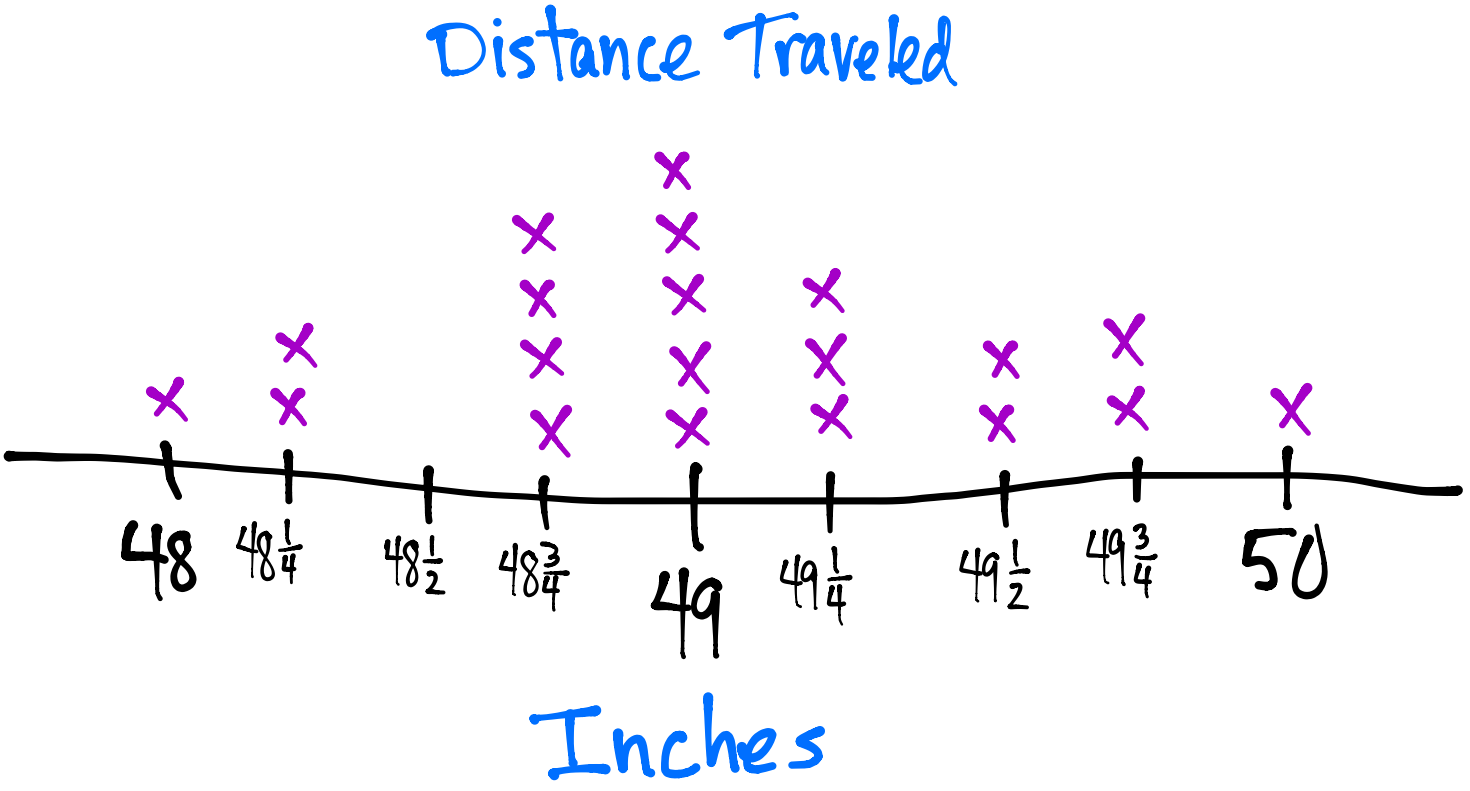
The line plot shows that more buildings are less than 4 inches tall, rather than being 4 inches or taller.

Name _____ Date _____

Mrs. Leah's class uses what they learned about simple machines to build marshmallow launchers. They record the distances their marshmallows travel in the chart below.

Distance Traveled (in Inches)				
$48\frac{3}{4}$	49	$49\frac{1}{4}$	50	$49\frac{3}{4}$
$49\frac{1}{2}$	$48\frac{1}{4}$	$49\frac{1}{2}$	$48\frac{3}{4}$	49
$49\frac{1}{4}$	$49\frac{3}{4}$	48	$49\frac{1}{4}$	$48\frac{1}{4}$
49	$48\frac{3}{4}$	49	49	$48\frac{3}{4}$

a. Use the data to create a line plot below.



b. Explain the steps you took to create the line plot.

(Answers will vary.)

Responses will include:

- include title and label
- choose minimum and maximum for line plot
- place X's on line plot

c. How many more marshmallows traveled $48\frac{3}{4}$ inches than $48\frac{1}{4}$ inches?

2 more

d. Find the three most frequent measurements on the line plot. What does this tell you about the distance that most of the marshmallows traveled?

Three most frequent: $48\frac{3}{4}$, 49, $49\frac{1}{4}$

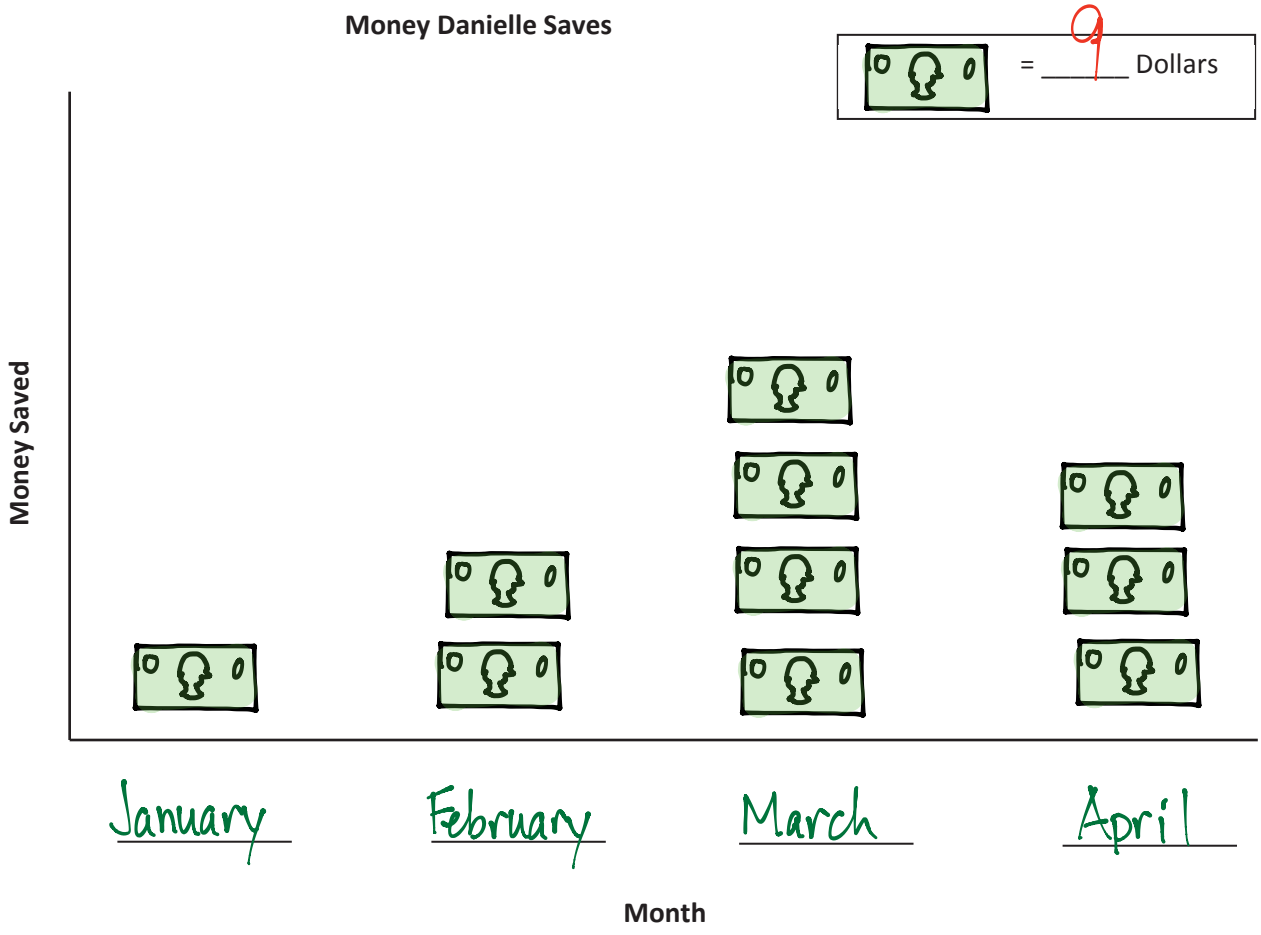
Most marshmallows traveled around 49 inches.

Name _____ Date _____

1. The table below shows the amount of money Danielle saves for four months.

Month	Money Saved
January	$9
February	$18
March	$36
April	$27

Create a picture graph below using the data in the table.



2. Use the table or graph to answer the following questions.

   a. How much money does Danielle save in four months?

Danielle saved $90.

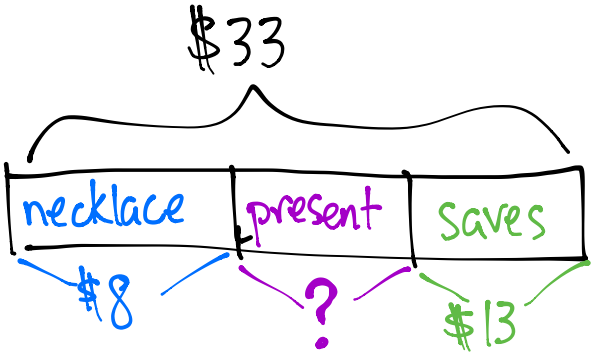
   b. How much more money does Danielle save in March and April than in January and February?

She saved $36 in March and April than in January and February.

   c. Danielle combines her savings from March and April to buy books for her friends. Each book costs $9. How many books can she buy?

She can buy 7 books.

   d. Danielle earns $33 in January. She buys a necklace for $8, and a birthday present for her brother. She saves the $13 she has left. How much does the birthday present cost?



8+13=21

33-21=12

The present costs $12

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