

# A Story of Units<sup>®</sup>

## Eureka Math<sup>™</sup>

### Grade 3, Module 6

## Student File\_A

*Contains copy-ready classwork and homework*

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Name \_\_\_\_\_

Date \_\_\_\_\_

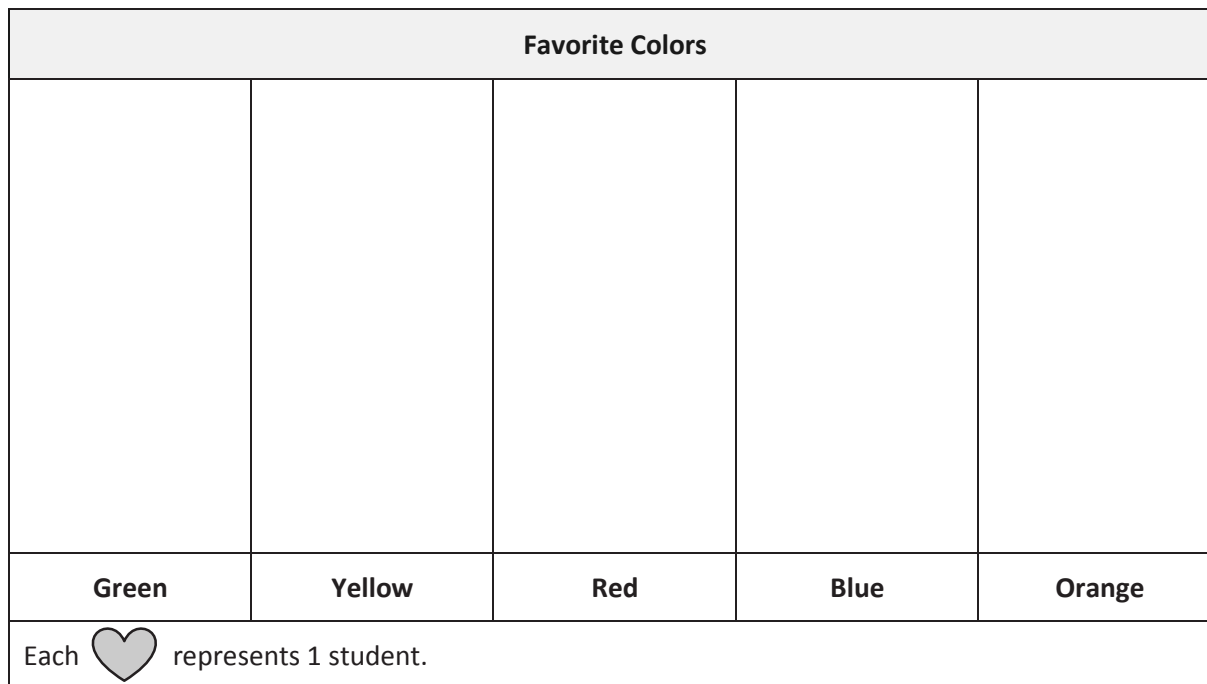
1. “What is your favorite color?” Survey the class to complete the tally chart below.

Favorite Colors	
Color	Number of Students
Green	
Yellow	
Red	
Blue	
Orange	

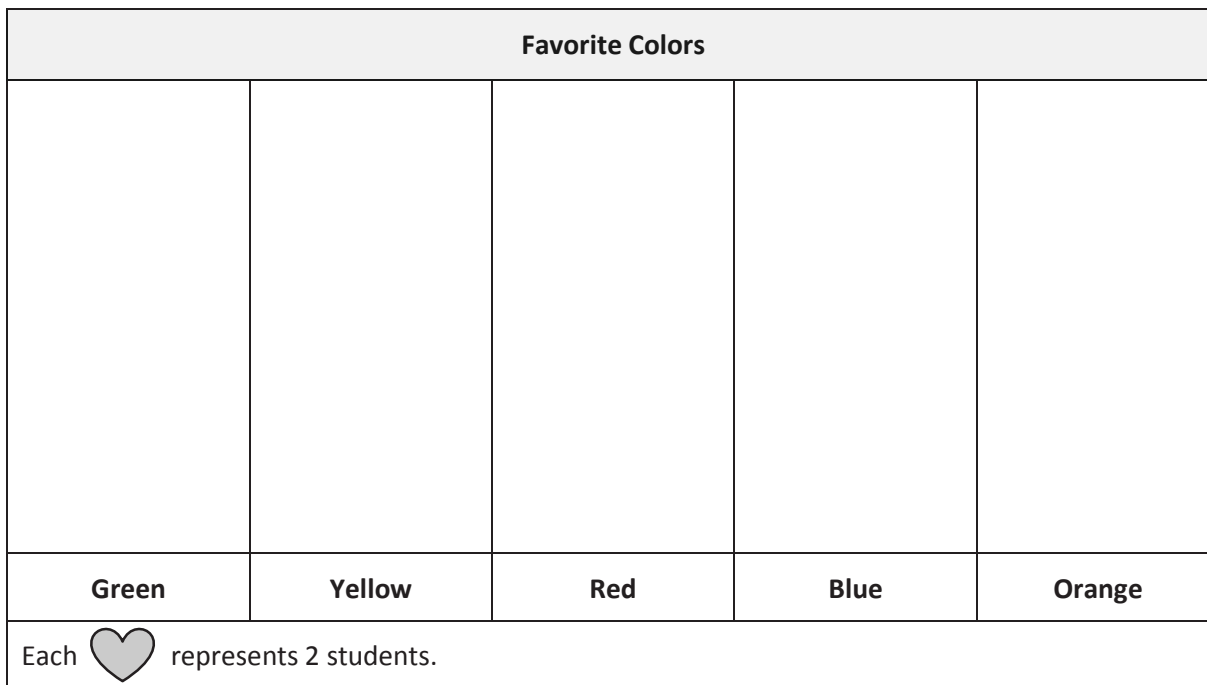
2. Use the tally chart to answer the following questions.
- How many students chose orange as their favorite color?
  - How many students chose yellow as their favorite color?
  - Which color did students choose the most? How many students chose it?
  - Which color did students choose the least? How many students chose it?
  - What is the difference between the number of students in parts (c) and (d)? Write a number sentence to show your thinking.
  - Write an equation to show the total number of students surveyed on this chart.

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


a.



b.




4. Use the picture graph in Problem 3(b) to answer the following questions.

a. What does each  represent?

b. Draw a picture and write a number sentence to show how to represent 3 students in your picture graph.

c. How many students does  represent? Write a number sentence to show how you know.

d. How many more  did you draw for the color that students chose the most than for the color that students chose the least? Write a number sentence to show the difference between the number of votes for the color that students chose the most and the color that students chose the least.

Name \_\_\_\_\_

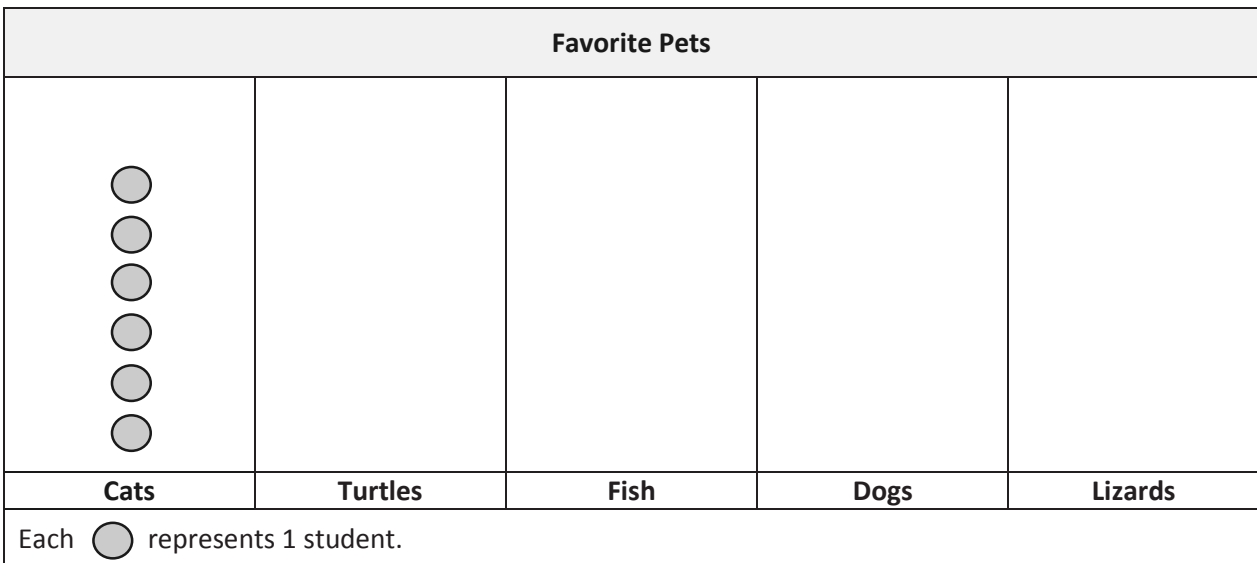
Date \_\_\_\_\_

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

Favorite Pets	
Pets	Number of Pets
Cats	### /
Turtles	////
Fish	//
Dogs	### ///
Lizards	//

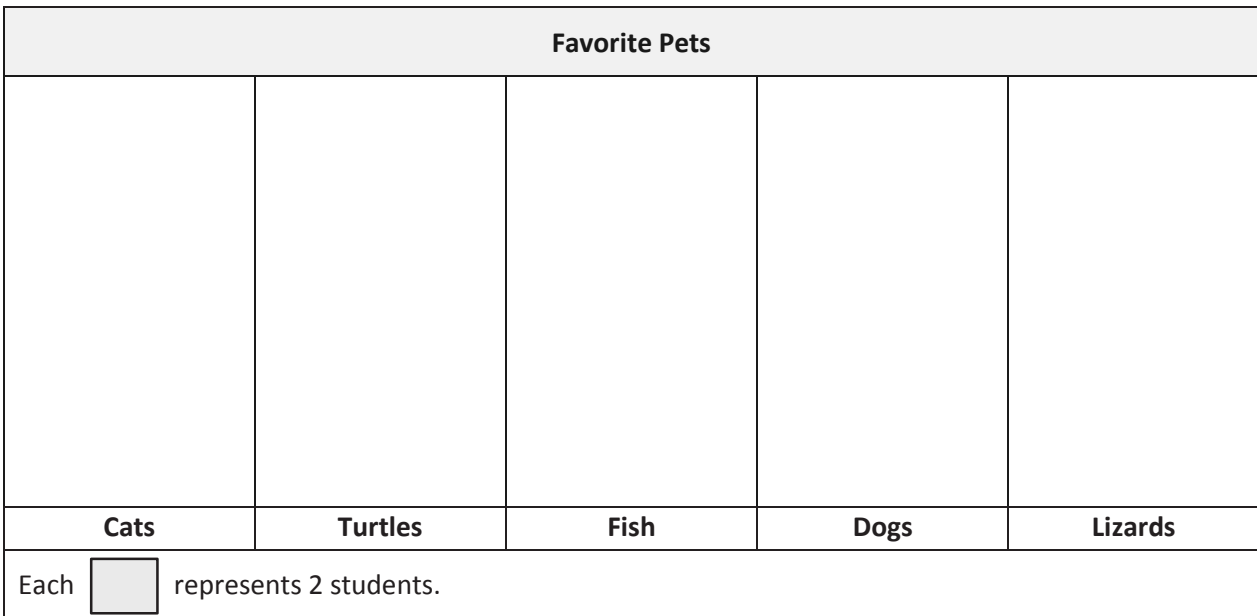
The chart shows a total of \_\_\_\_\_ students.

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 \_\_\_\_\_ and \_\_\_\_\_ as their favorite pet.
- b. How many students picked dogs as their favorite pet?
- c. How many more students chose cats than turtles as their favorite pet?

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

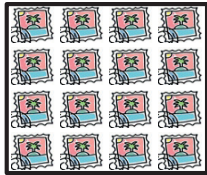


- a. What does each  represent?
- b. How many students does      represent? Write a number sentence to show how you know.
- c. How many more  did you draw for dogs than for fish? Write a number sentence to show how many more students chose dogs than fish.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Find the total number of stamps each student has. Draw tape diagrams with a unit size of 4 to show the number of stamps each student has. The first one has been done for you.



Dana




Tanisha



Raquel



Anna

Each  represents 1 stamp.

Dana:



Tanisha:

Raquel:

Anna:

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

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?
- d. How many total units of 4 are in the vertical tape diagrams in Problem 3(a)?
- e. How many total units of 8 are in the vertical tape diagrams in Problem 3(b)?
- f. Compare your answers to parts (d) and (e). Why does the number of units change?
- g. Mattaeus looks at the vertical tape diagrams in Problem 3(b) and finds the total number of Anna's and Raquel's stamps by writing the equation  $7 \times 8 = 56$ . Explain his thinking.



Name \_\_\_\_\_

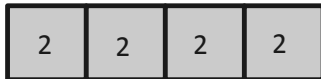
Date \_\_\_\_\_

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.

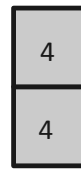
3. Complete the vertical tape diagrams below using the data from Problem 1.

a.



Banana      Apple      Strawberry      Peach

b.



Banana      Apple      Strawberry      Peach

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

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?

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

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

g. What changes in your multiplication number sentences in Problems 3(e) and (f)? Why?

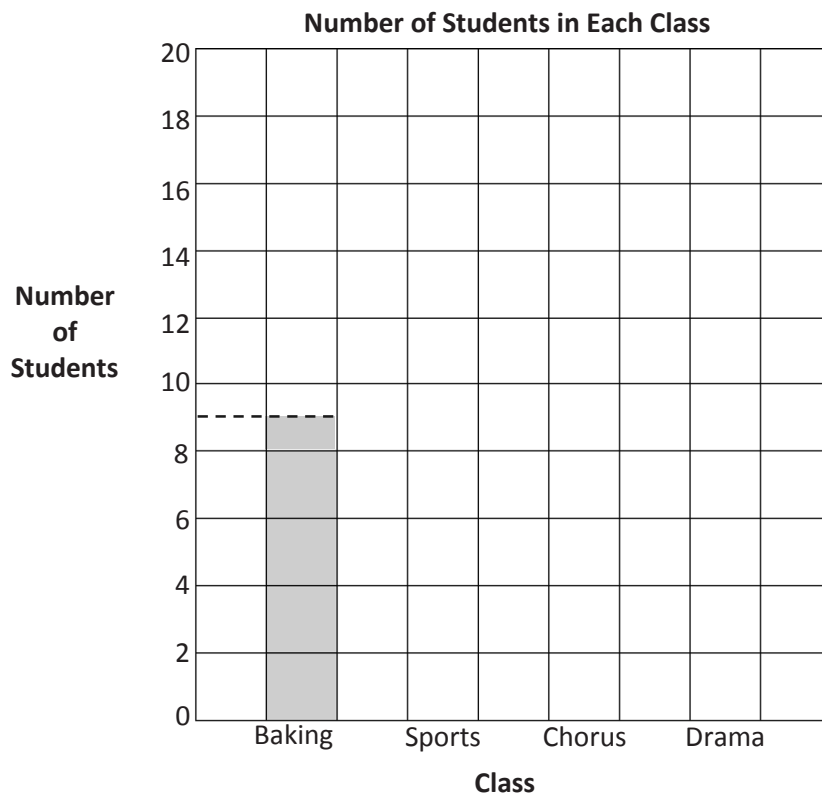
Name \_\_\_\_\_

Date \_\_\_\_\_

1. This table shows the number of students in each class.

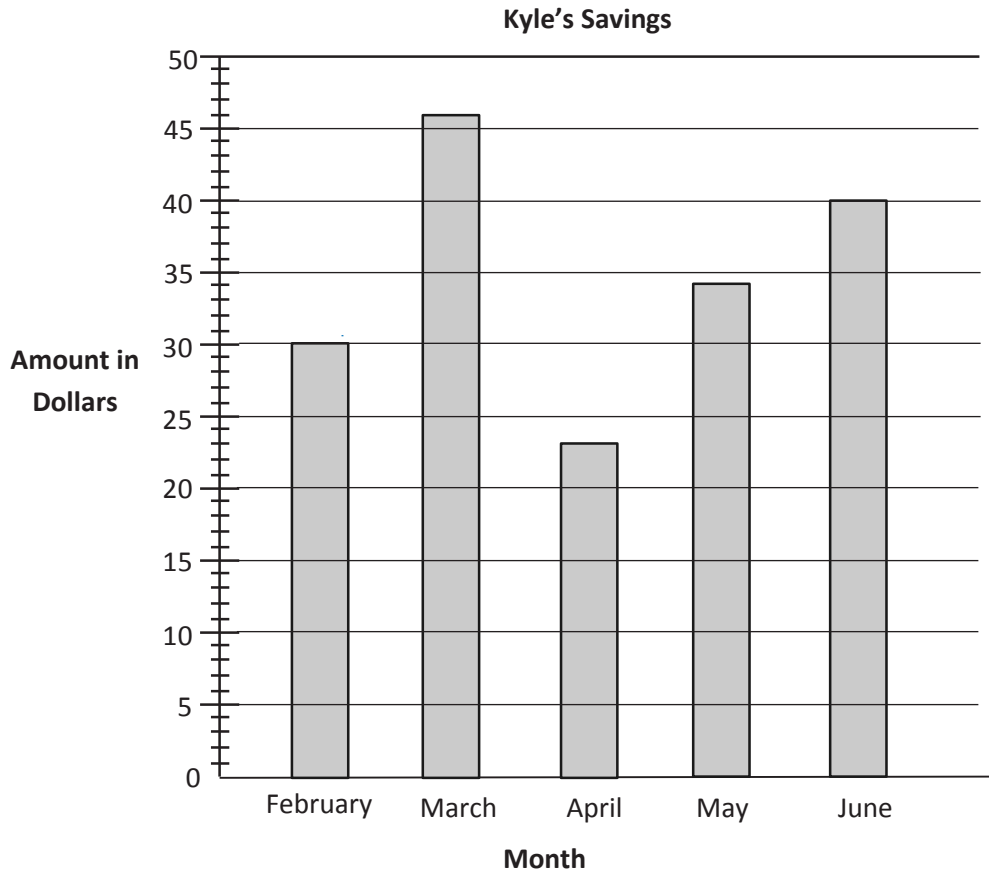
Number of Students in Each Class	
Class	Number of Students
Baking	9
Sports	16
Chorus	13
Drama	18

Use the table to color the bar graph. The first one has been done for you.



- What is the value of each square in the bar graph?
- Write a number sentence to find how many total students are enrolled in classes.
- How many fewer students are in sports than in chorus and baking combined? Write a number sentence to show your thinking.

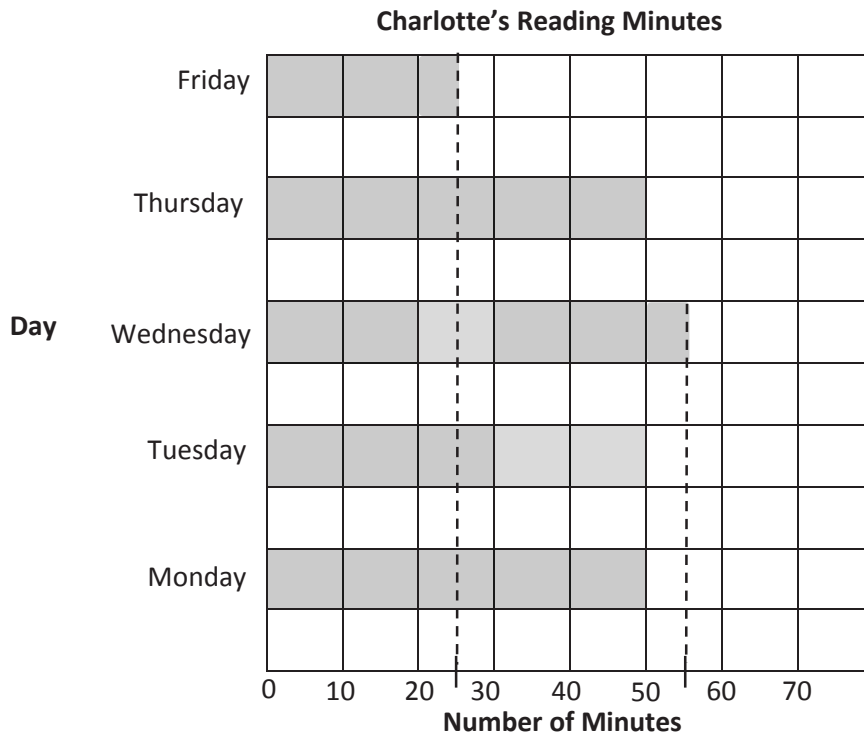
2. This bar graph shows Kyle’s savings from February to June. Use a straightedge to help you read the graph.



- How much money did Kyle save in May?
  - In which months did Kyle save less than \$35?
  - How much more did Kyle save in June than April? Write a number sentence to show your thinking.
  - The money Kyle saved in \_\_\_\_\_ was half the money he saved in \_\_\_\_\_.
3. Complete the table below to show the same data given in the bar graph in Problem 2.

<b>Months</b>	February				
<b>Amount Saved in Dollars</b>					

This bar graph shows the number of minutes Charlotte read from Monday through Friday.



4. Use the graph's lines as a ruler to draw in the intervals on the number line shown above. Then plot and label a point for each day on the number line.
5. Use the graph or number line to answer the following questions.
  - a. On which days did Charlotte read for the same number of minutes? How many minutes did Charlotte read on these days?
  - b. How many more minutes did Charlotte read on Wednesday than on Friday?

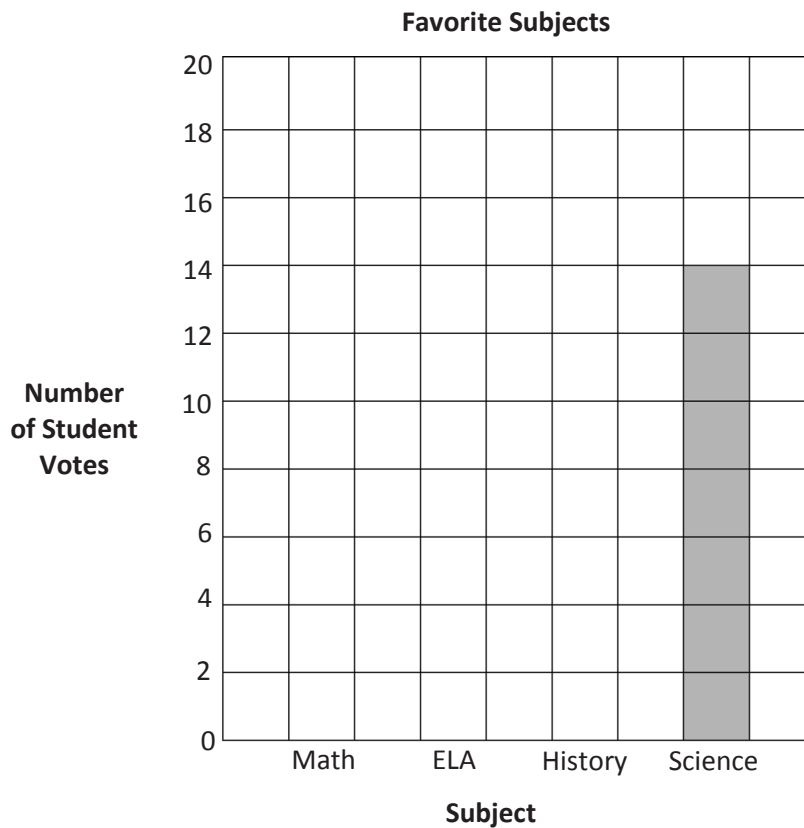
Name \_\_\_\_\_

Date \_\_\_\_\_

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

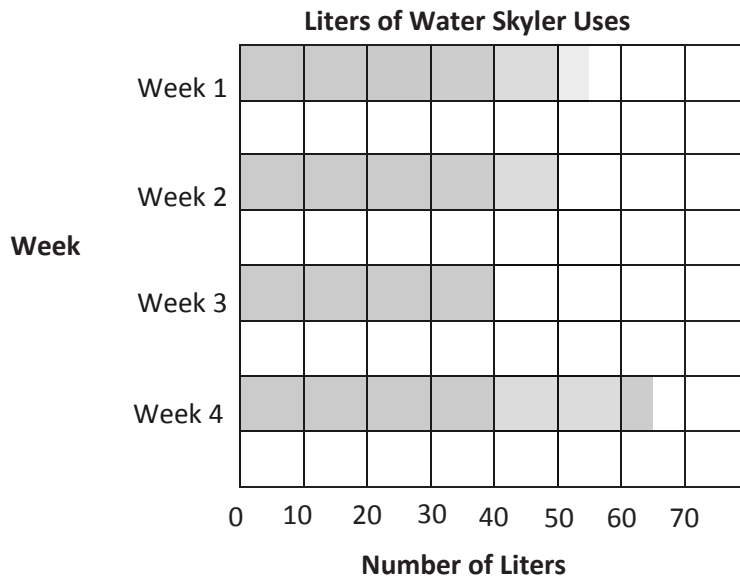
Favorite Subjects	
Subject	Number of Student Votes
Math	18
ELA	13
History	17
Science	?

Use the table to color the bar graph.



- How many students voted for science?
- How many more students voted for math than for science? Write a number sentence to show your thinking.
- Which gets more votes, math and ELA together or history and science together? Show your work.

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

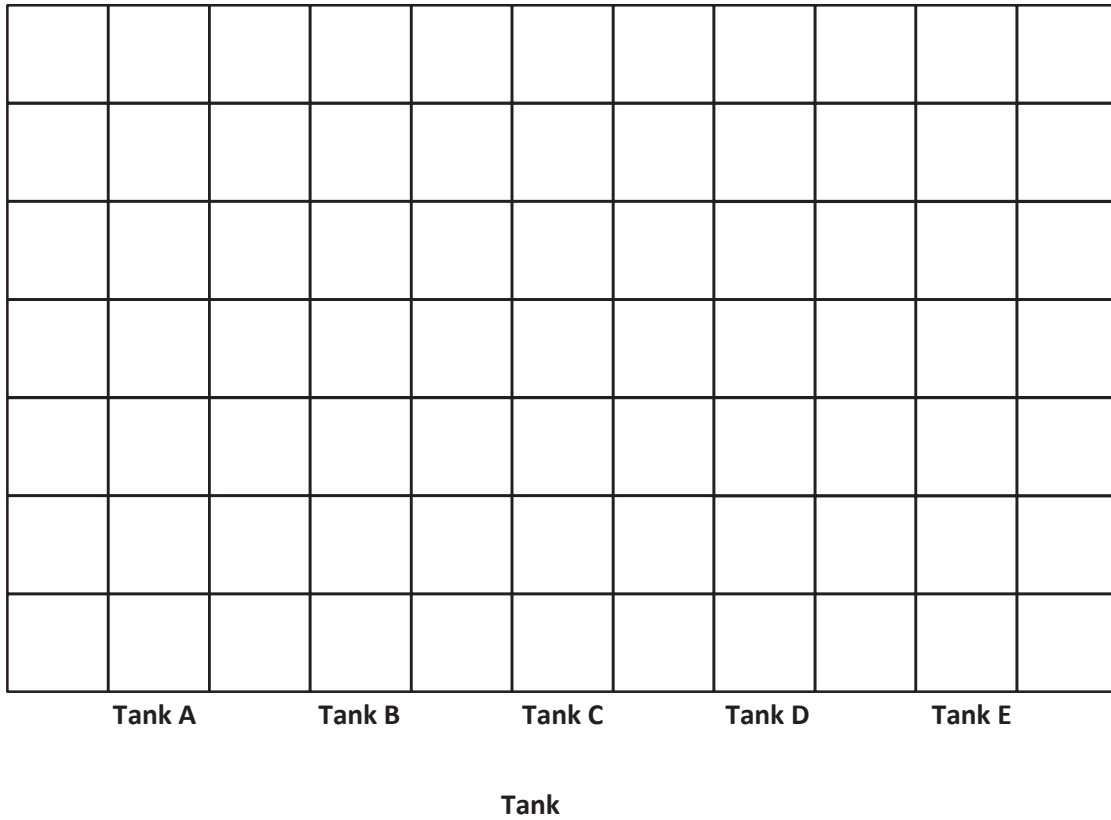


- During which week does Skyler use the most water? \_\_\_\_\_  
The least? \_\_\_\_\_
- How many more liters does Skyler use in Week 4 than Week 2?
- Write a number sentence to show how many liters of water Skyler uses during Weeks 2 and 3 combined.
- How many liters does Skyler use in total?
- If Skyler 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.

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

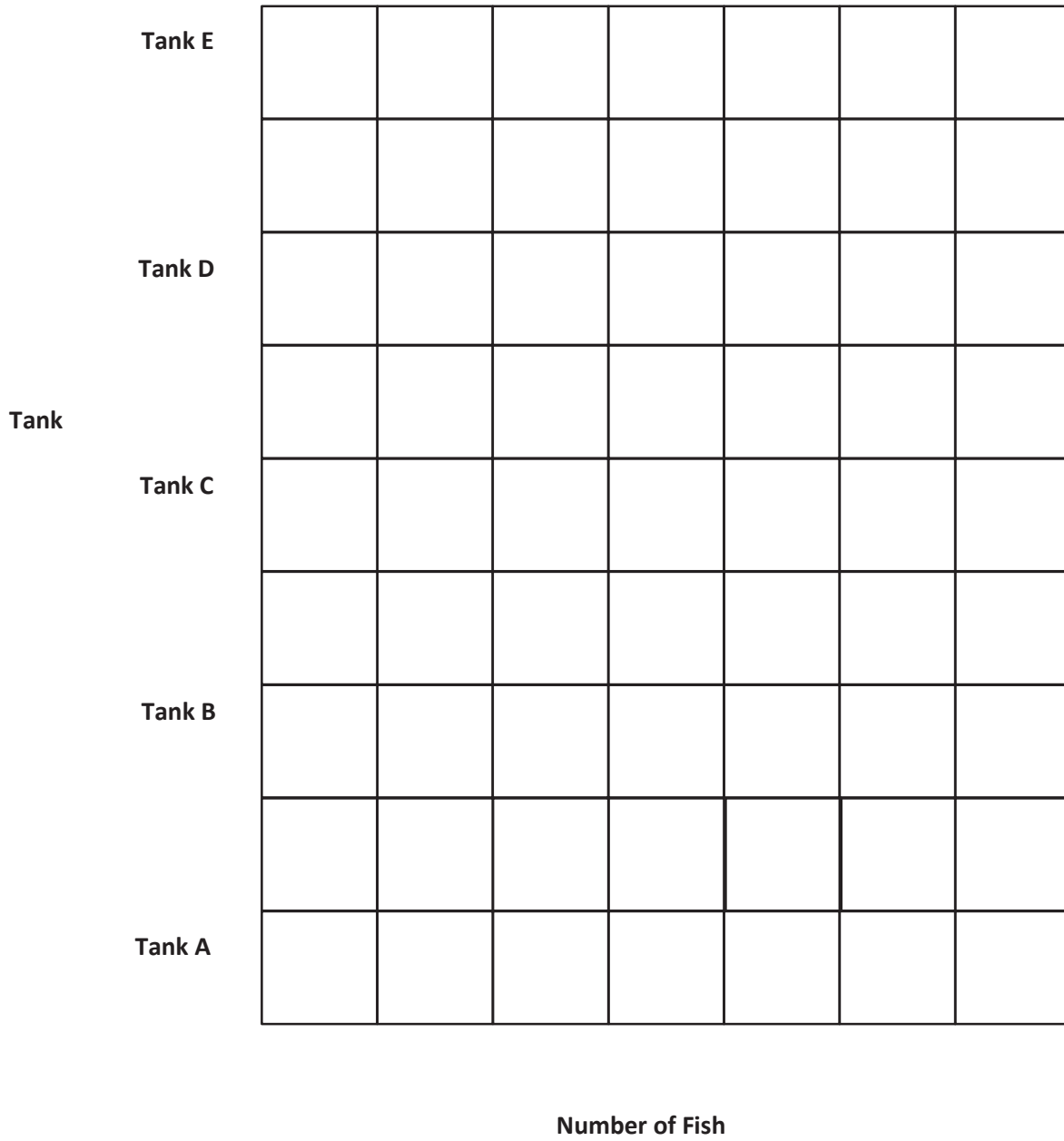




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graph A

Number of Fish at Sal's Pet Store



graph B

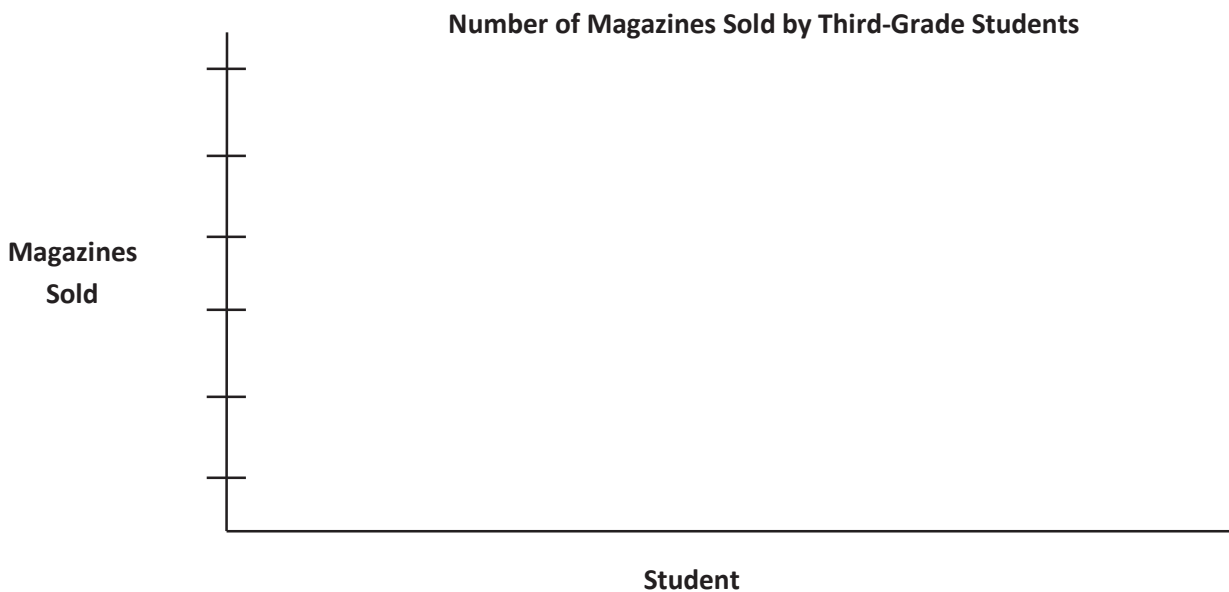
Name \_\_\_\_\_

Date \_\_\_\_\_

1. The chart below shows the number of magazines sold by each student.

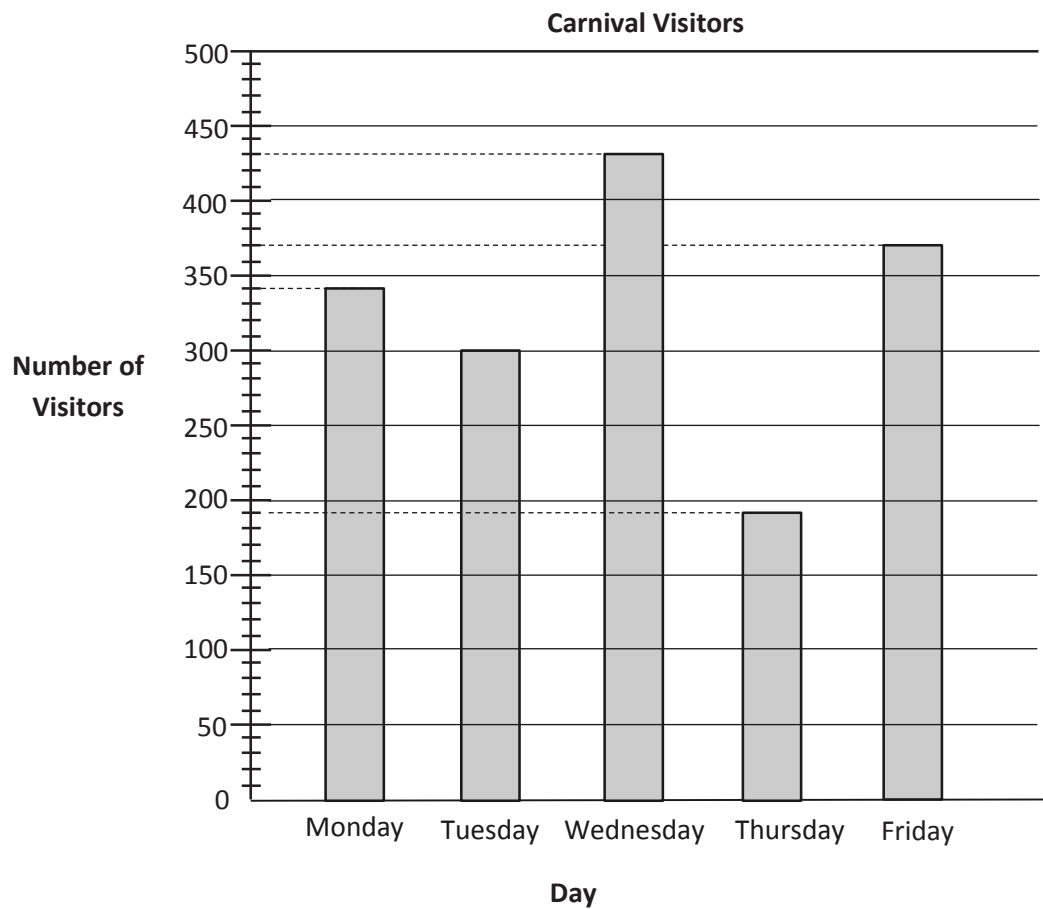
Student	Ben	Rachel	Jeff	Stanley	Debbie
Magazines Sold	300	250	100	450	600

- a. Use the chart to draw a bar graph below. Create an appropriate scale for the graph.



- b. Explain why you chose the scale for the graph.
- c. How many fewer magazines did Debbie sell than Ben and Stanley combined?
- d. How many more magazines did Debbie and Jeff sell than Ben and Rachel?

2. The bar graph shows the number of visitors to a carnival from Monday through Friday.



- a. How many fewer visitors were there on the least busy day than on the busiest day?
- b. How many more visitors attended the carnival on Monday and Tuesday combined than on Thursday and Friday combined?

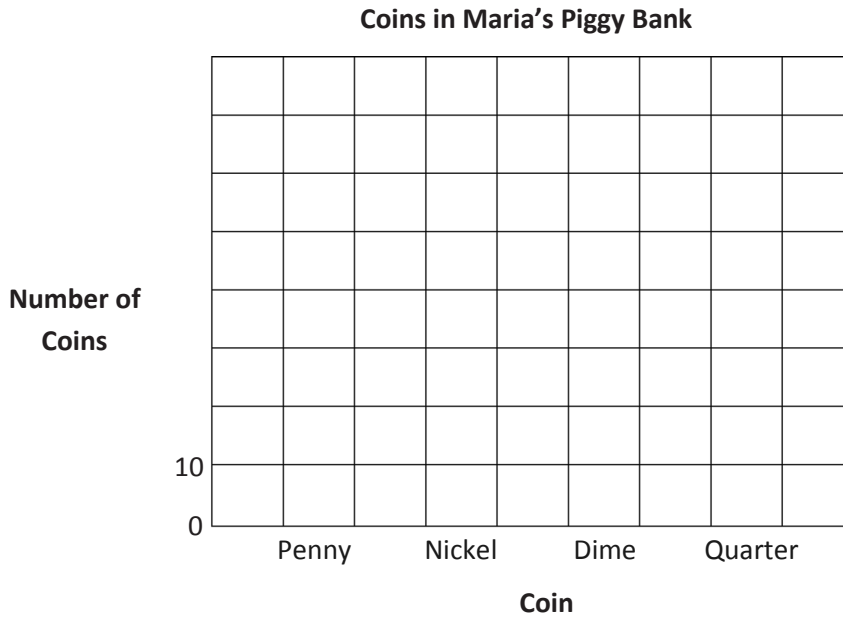
Name \_\_\_\_\_

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.

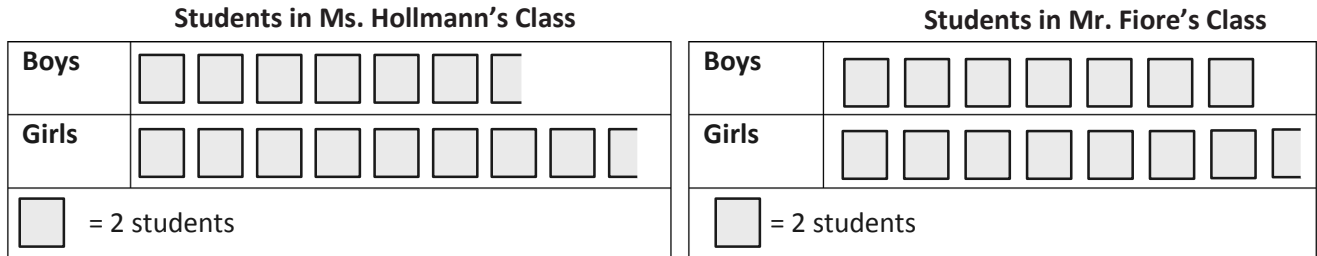
Coins in Maria's Piggy Bank		
Coin	Tally	Number of Coins
Penny	### ### ### ### ### ### ### ### ### ### ### ### ###	
Nickel	### ### ### ### ### ### ### ### ### ### ### ###	
Dime	### ### ### ### ### ### ### ### ### ### ###	
Quarter	### ### ### ###	

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

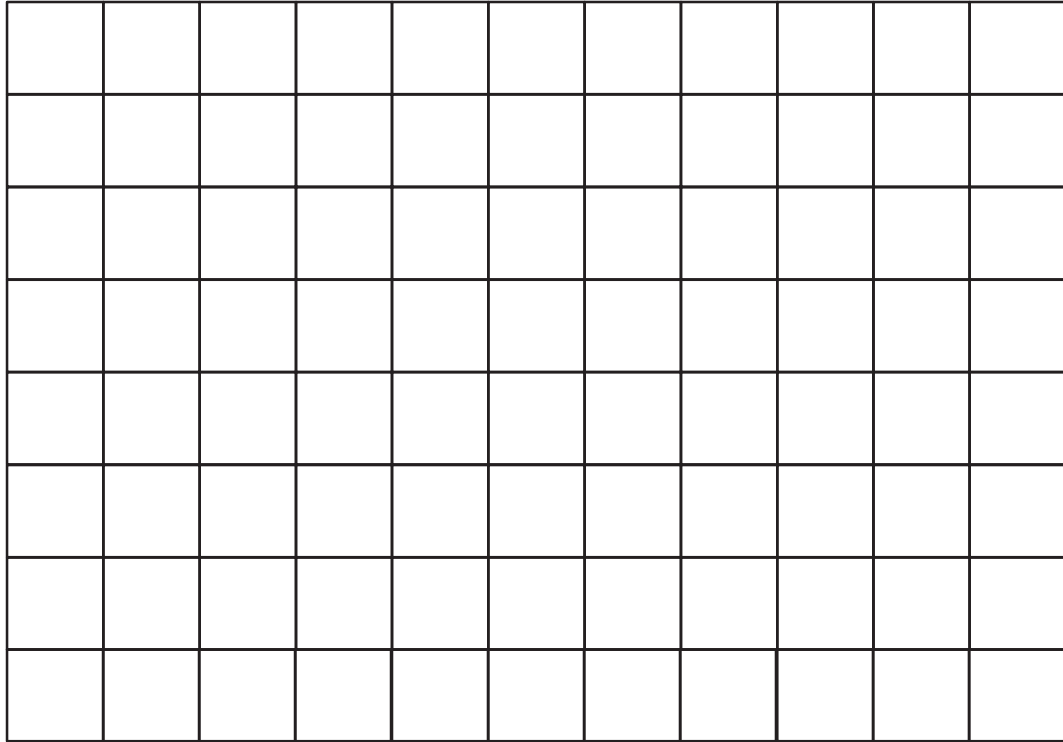


- b. How many more pennies are there than dimes?
- c. Maria donates 10 of each type of coin to charity. How many total coins does she have left? Show your work.

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.



- How many fewer boys are on the trip than girls?
- It costs \$2 for each student to attend the field trip. How much money does it cost for all students to attend?
- The cafeteria in the planetarium has 9 tables with 8 seats at each table. Counting students and teachers, how many empty seats should there be when the 2 classes eat lunch?



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graph

Name \_\_\_\_\_

Date \_\_\_\_\_

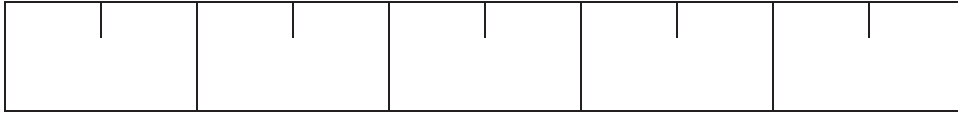
1. Use the ruler you made to measure different classmates' straws to the nearest inch,  $\frac{1}{2}$  inch, and  $\frac{1}{4}$  inch. Record the measurements in the chart below. Draw a star next to measurements that are exact.

Straw Owner	Measured to the nearest inch	Measured to the nearest $\frac{1}{2}$ inch	Measured to the nearest $\frac{1}{4}$ inch
My straw			

- a. \_\_\_\_\_'s straw is the shortest straw I measured. It measures \_\_\_\_\_ inch(es).
- b. \_\_\_\_\_'s straw is the longest straw I measured. It measures \_\_\_\_\_ inches.
- c. Choose the straw from your chart that was most accurately measured with the  $\frac{1}{4}$ -inch intervals on your ruler. How do you know the  $\frac{1}{4}$ -inch intervals are the most accurate for measuring this straw?



2. Jenna marks a 5-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 \_\_\_\_\_ half inches.
- 1 inch is equal to \_\_\_\_\_ quarter inches.
- 1 half inch is equal to \_\_\_\_\_ quarter inches.
- c. Describe how Jenna could use this paper strip to measure an object that is longer than 5 inches.
3. Sari says her pencil measures 8 half inches. Bart disagrees and says it measures 4 inches. Explain to Bart why the two measurements are the same in the space below. Use words, pictures, or numbers.

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? \_\_\_\_\_

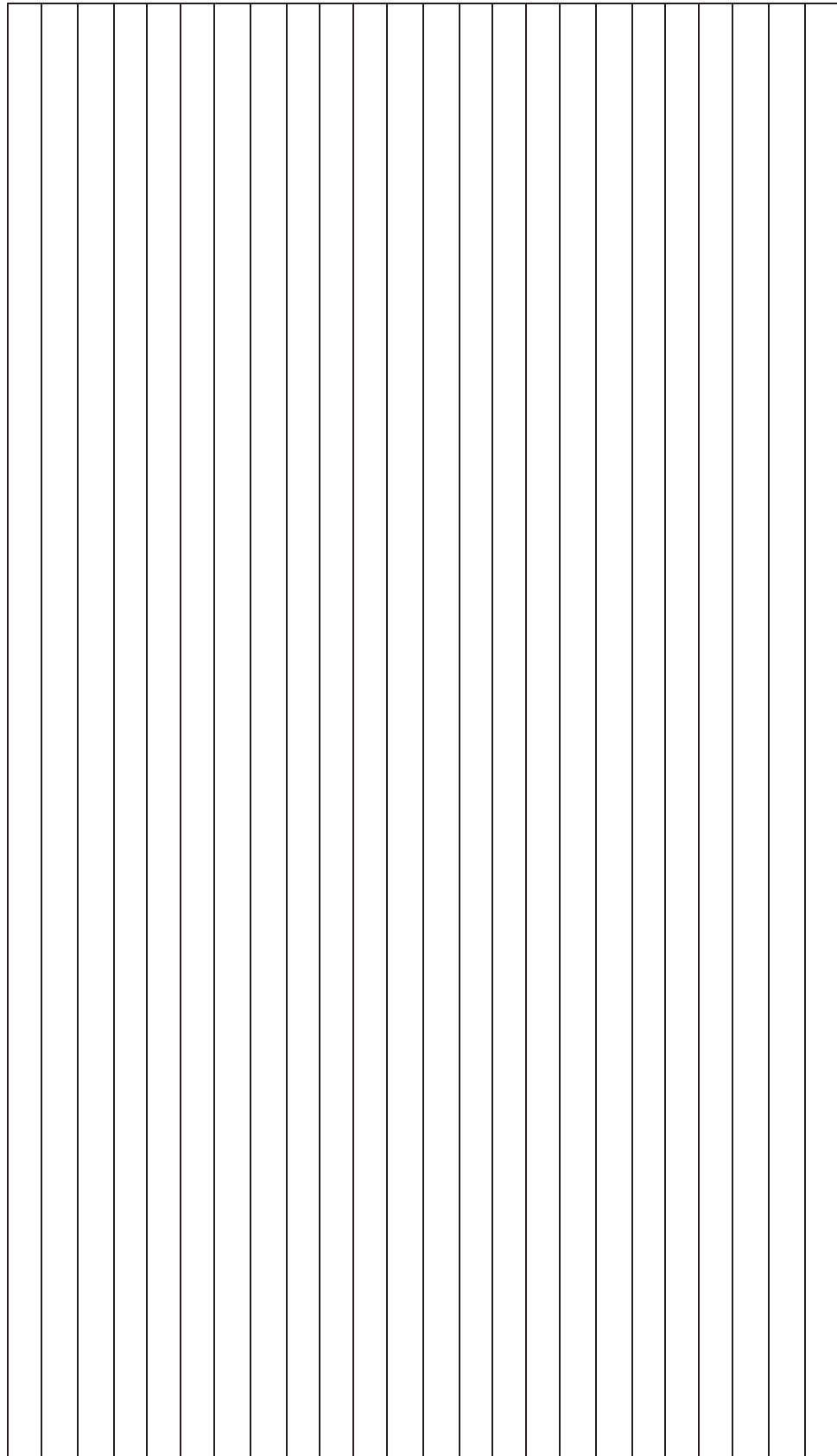
It measures \_\_\_\_\_ inches.

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

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 \_\_\_\_\_ half inches.
- 1 inch is equal to \_\_\_\_\_ quarter inches
- 1 half inch is equal to \_\_\_\_\_ quarter inches.
- 2 quarter inches are equal to \_\_\_\_\_ half inch.
3. Travis says his yellow pencil measures  $5\frac{1}{2}$  inches. Ralph says that is the same as 11 half inches. Explain how they are both correct.



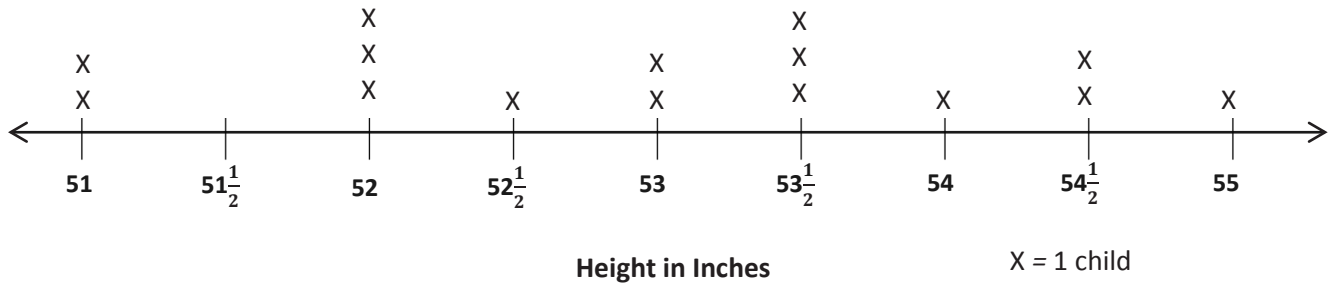
lined paper

Name \_\_\_\_\_

Date \_\_\_\_\_

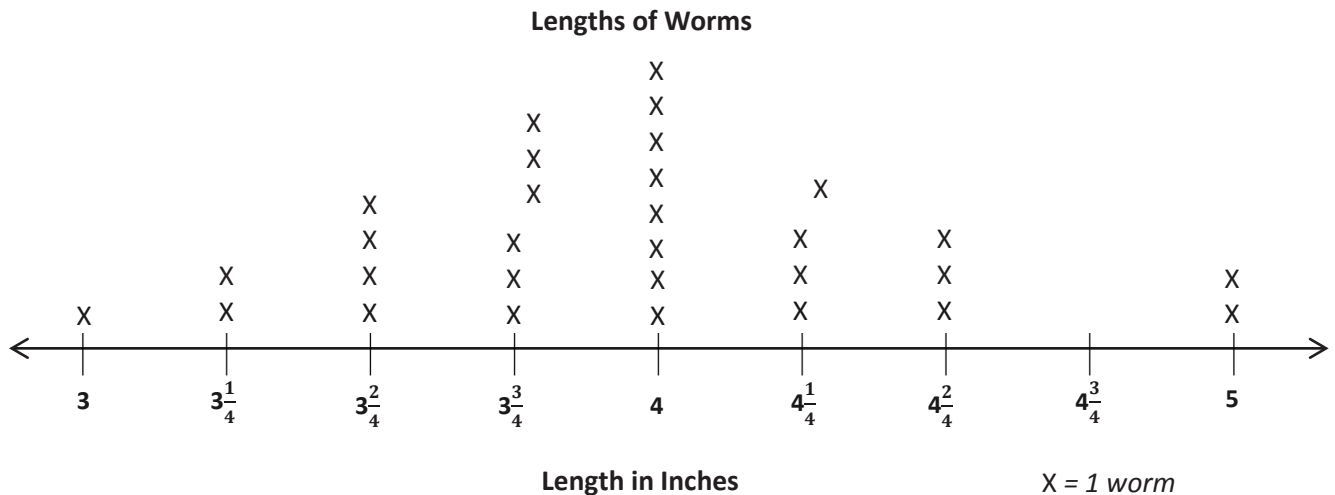
1. Coach Harris measures the heights of the children on his third-grade basketball team in inches. The heights are shown on the line plot below.

Heights of Children on Third-Grade Basketball Team



- How many children are on the team? How do you know?
- How many children are less than 53 inches tall?
- Coach Harris says that the most common height for the children on his team is  $53\frac{1}{2}$  inches. Is he right? Explain your answer.
- Coach Harris says that the player who does the tip-off in the beginning of the game has to be at least 54 inches tall. How many children could do the tip-off?

2. Miss Vernier's class is studying worms. The lengths of the worms in inches are shown in the line plot below.



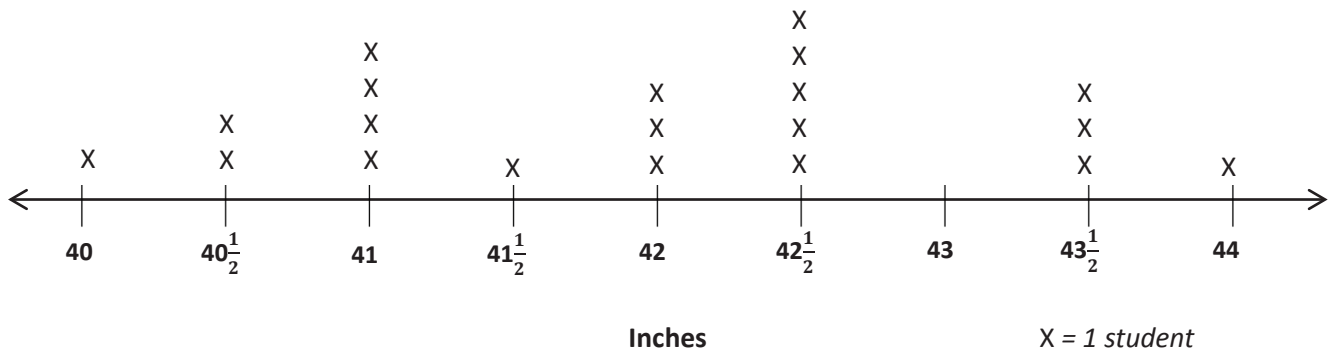
- a. How many worms did the class measure? How do you know?
- b. Cara says that there are more worms  $3\frac{3}{4}$  inches long than worms that are  $3\frac{2}{4}$  and  $4\frac{1}{4}$  inches long combined. Is she right? Explain your answer.
- c. Madeline finds a worm hiding under a leaf. She measures it, and it is  $4\frac{3}{4}$  inches long. Plot the length of the worm on the line plot.

Name \_\_\_\_\_

Date \_\_\_\_\_

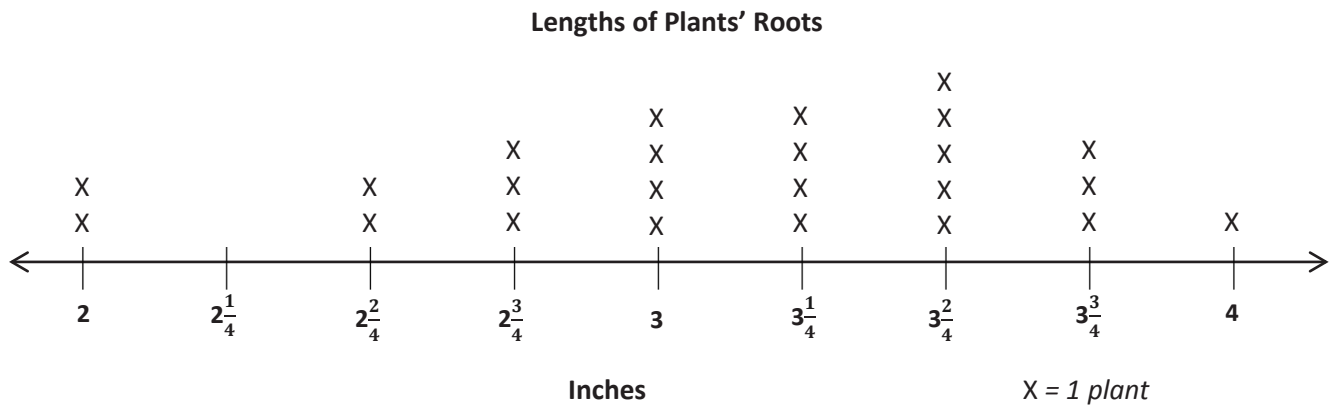
1. Ms. Leal measures the heights of the students in her kindergarten class. The heights are shown on the line plot below.

Heights of Students in Ms. Leal's Kindergarten Class



- How many students in Ms. Leal's class are exactly 41 inches tall?
- How many students are in Ms. Leal's class? How do you know?
- How many students in Ms. Leal's class are more than 42 inches tall?
- 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 should be in the back row?

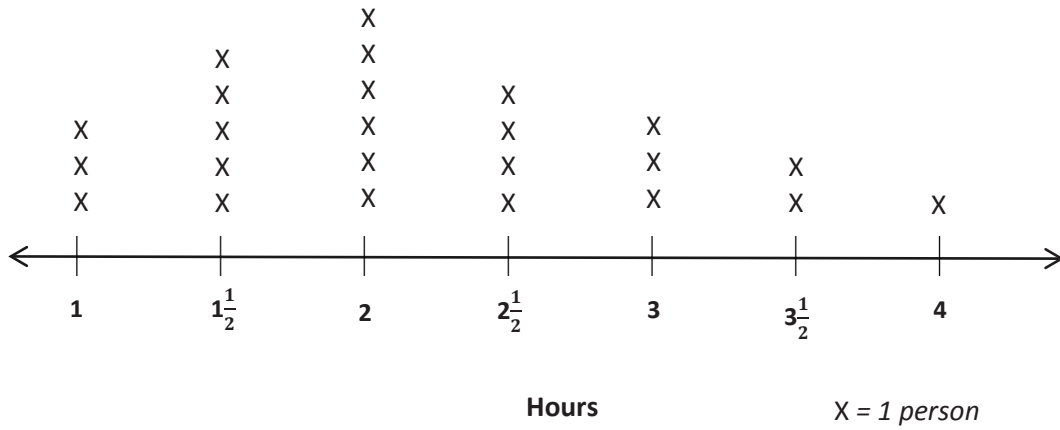
2. Mr. Stein's class is studying plants. They plant seeds in clear plastic bags and measure the lengths of the roots. The lengths of the roots in inches are shown in the line plot below.



- a. How many roots did Mr. Stein's class measure? How do you know?
- 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.
- c. Gerald says that the most common measurement is 14 quarter inches. Is he right? Why or why not?



Time Spent Outside Over the Weekend



time spent outside line plot

Name \_\_\_\_\_

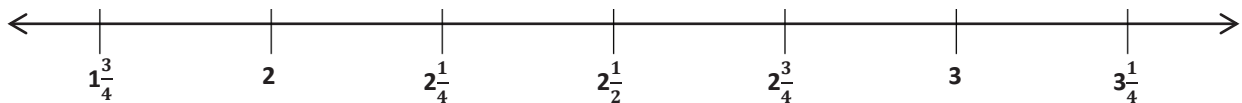
Date \_\_\_\_\_

Mrs. Weisse's class grows beans for a science experiment. The students measure the heights of their bean plants to the nearest  $\frac{1}{4}$  inch and record the measurements as shown below.

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

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

Title: \_\_\_\_\_



Label: \_\_\_\_\_

X =

- b. How many bean plants are at least  $2\frac{1}{4}$  inches tall?
- c. How many bean plants are taller than  $2\frac{3}{4}$  inches?
- d. What is the most frequent measurement? How many bean plants were plotted for this measurement?
- e. George says that most of the bean plants are at least 3 inches tall. Is he right? Explain your answer.
- f. Savannah was absent the day the class measured the heights of their bean plants. When she returns, her plant measures  $2\frac{2}{4}$  inches tall. Can Savannah plot the height of her bean plant on the class line plot? Why or why not?

Name \_\_\_\_\_

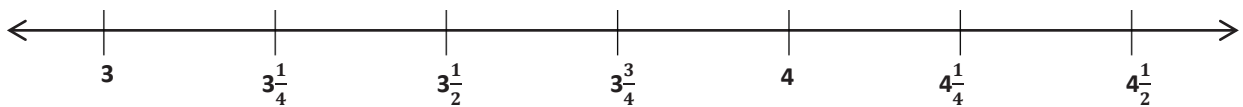
Date \_\_\_\_\_

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: \_\_\_\_\_



Label: \_\_\_\_\_ X =

- b. How many buildings are  $4\frac{1}{4}$  inches tall?
- c. How many buildings are less than  $3\frac{1}{2}$  inches?
- d. How many buildings are in the class model? How do you know?
- e. Brook says most buildings in the model are at least 4 inches tall. Is she correct? Explain your thinking.

Straw Lengths (in Inches)				
3	4	$4\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{3}{4}$
$3\frac{3}{4}$	$4\frac{1}{2}$	$3\frac{1}{4}$	4	$4\frac{3}{4}$
$4\frac{1}{4}$	5	3	$3\frac{1}{2}$	$4\frac{1}{2}$
$4\frac{3}{4}$	4	$3\frac{1}{4}$	5	$4\frac{1}{4}$



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straw lengths

Name \_\_\_\_\_

Date \_\_\_\_\_

Delilah stops under a silver maple tree and collects leaves. At home, she measures the widths of the leaves to the nearest  $\frac{1}{4}$  inch and records the measurements as shown below.

Widths of Silver Maple Tree Leaves (in Inches)				
$5\frac{3}{4}$	6	$6\frac{1}{4}$	6	$5\frac{3}{4}$
$6\frac{1}{2}$	$6\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{3}{4}$	6
$6\frac{1}{4}$	6	6	$6\frac{1}{2}$	$6\frac{1}{4}$
$6\frac{1}{2}$	$5\frac{3}{4}$	$6\frac{1}{4}$	6	$6\frac{3}{4}$
6	$6\frac{1}{4}$	6	$5\frac{3}{4}$	$6\frac{1}{2}$

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

- b. Explain the steps you took to create the line plot.
- c. How many more leaves were 6 inches wide than  $6\frac{1}{2}$  inches wide?
- d. Find the three most frequent measurements on the line plot. What does this tell you about the typical width of a silver maple tree leaf?



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

Mrs. Schaut measures the heights of the sunflower plants in her garden. The measurements are shown in the chart below.

Heights of Sunflower Plants (in Inches)				
61	63	62	61	$62\frac{1}{2}$
$61\frac{1}{2}$	$61\frac{1}{2}$	$61\frac{1}{2}$	62	60
64	62	$60\frac{1}{2}$	$63\frac{1}{2}$	61
63	$62\frac{1}{2}$	$62\frac{1}{2}$	64	$62\frac{1}{2}$
$62\frac{1}{2}$	$63\frac{1}{2}$	63	$62\frac{1}{2}$	$63\frac{1}{2}$
62	$62\frac{1}{2}$	62	63	$60\frac{1}{2}$

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heights of sunflower plants chart

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Four children went apple picking. The chart shows the number of apples the children picked.

Name	Number of Apples Picked
Stewart	16
Roxanne	_____
Trisha	12
Philip	20
<b>Total:</b>	72

- a. Find the number of apples Roxanne picked to complete the chart.
- b. Create a picture graph below using the data in the table.



2. Use the chart or graph to answer the following questions.
- How many more apples did Stewart and Roxanne pick than Philip and Trisha?
  - Trisha and Stewart combine their apples to make apples pies. Each pie takes 7 apples. How many pies can they make?
3. Ms. Pacho's science class measured the lengths of blades of grass from their school field to the nearest  $\frac{1}{4}$  inch. The lengths are shown below.

Lengths of Blades of Grass (in Inches)					
$2\frac{1}{4}$	$2\frac{3}{4}$	$3\frac{1}{4}$	3	$2\frac{1}{2}$	$2\frac{3}{4}$
$2\frac{3}{4}$	$3\frac{3}{4}$	2	$2\frac{3}{4}$	$3\frac{3}{4}$	$3\frac{1}{4}$
3	$2\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{3}{4}$	3
$3\frac{1}{4}$	$2\frac{1}{4}$	$3\frac{3}{4}$	3	$3\frac{1}{4}$	$2\frac{3}{4}$

- a. Make a line plot of the grass data. Explain your choice of scale.
- b. How many blades of grass were measured? Explain how you know.
- c. What was the length measured most frequently on the line plot? How many blades of grass had this length?
- d. How many more blades of grass measured  $2\frac{3}{4}$  inches than both  $3\frac{3}{4}$  inches and 2 inches combined?

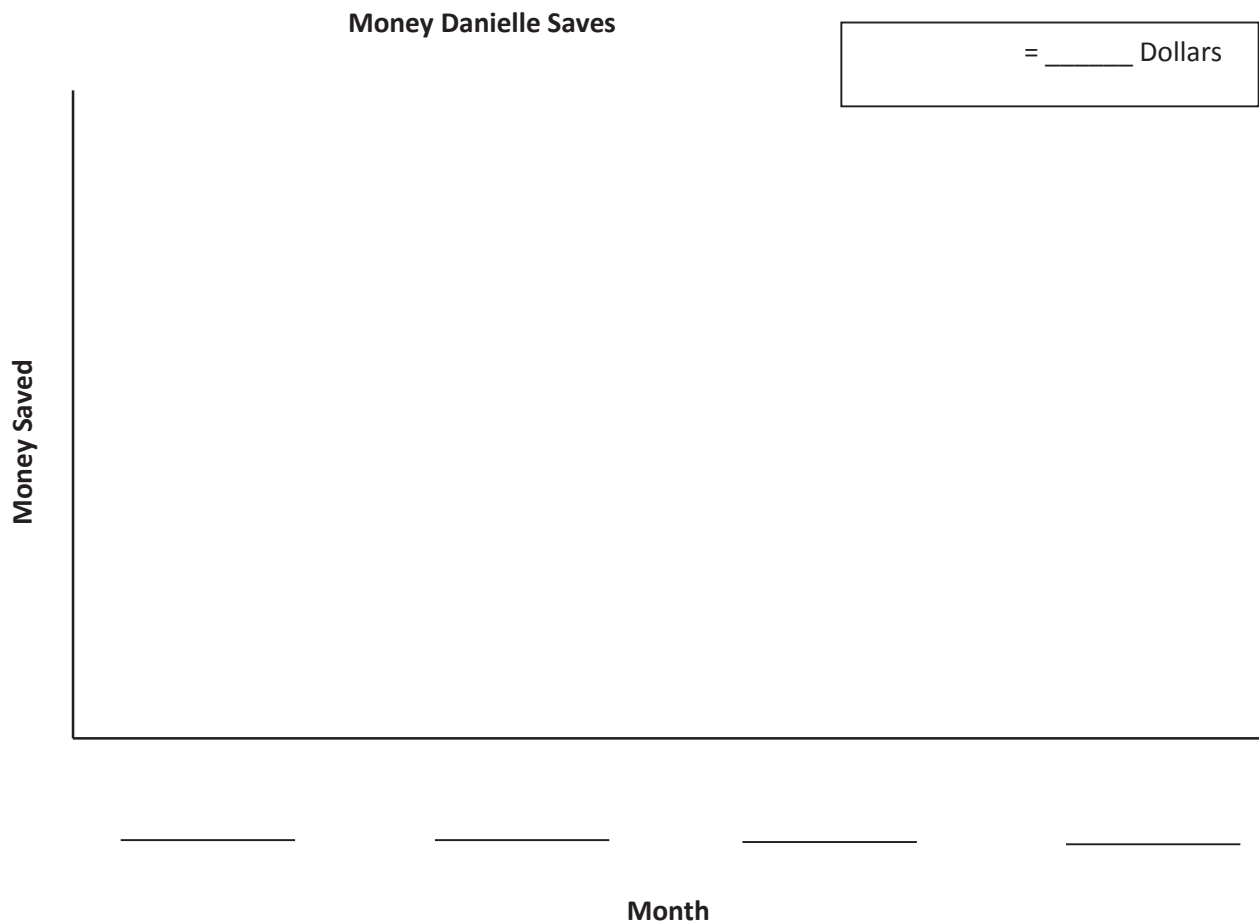
Name \_\_\_\_\_

Date \_\_\_\_\_

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

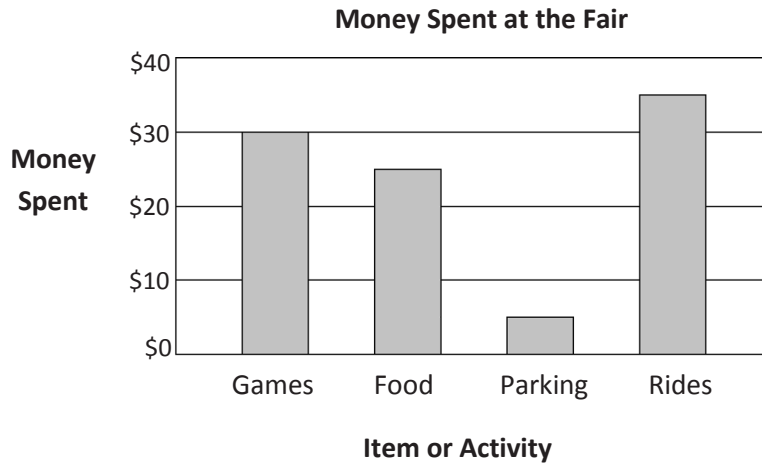
Month	Money Saved
January	\$9
February	\$18
March	\$36
April	\$27

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

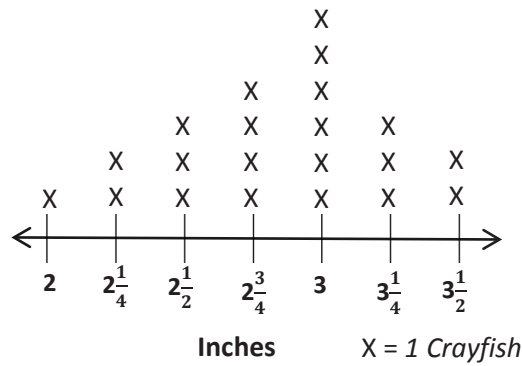


2. Use the table or graph to answer the following questions.
- How much money does Danielle save in four months?
  - How much more money does Danielle save in March and April than in January and February?
  - Danielle combines her savings from March and April to buy books for her friends. Each book costs \$9. How many books can she buy?
  - Danielle earns \$33 in June. 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?





**Crayfish Lengths from Mr. Nye’s Class**



bar graph and line plot