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.

Favorite Pets				
◯ ◯ ◯ ◯ ◯ ◯				
Cats	**Turtles**	**Fish**	**Dogs**	**Lizards**

Each ◯ represents 1 student.
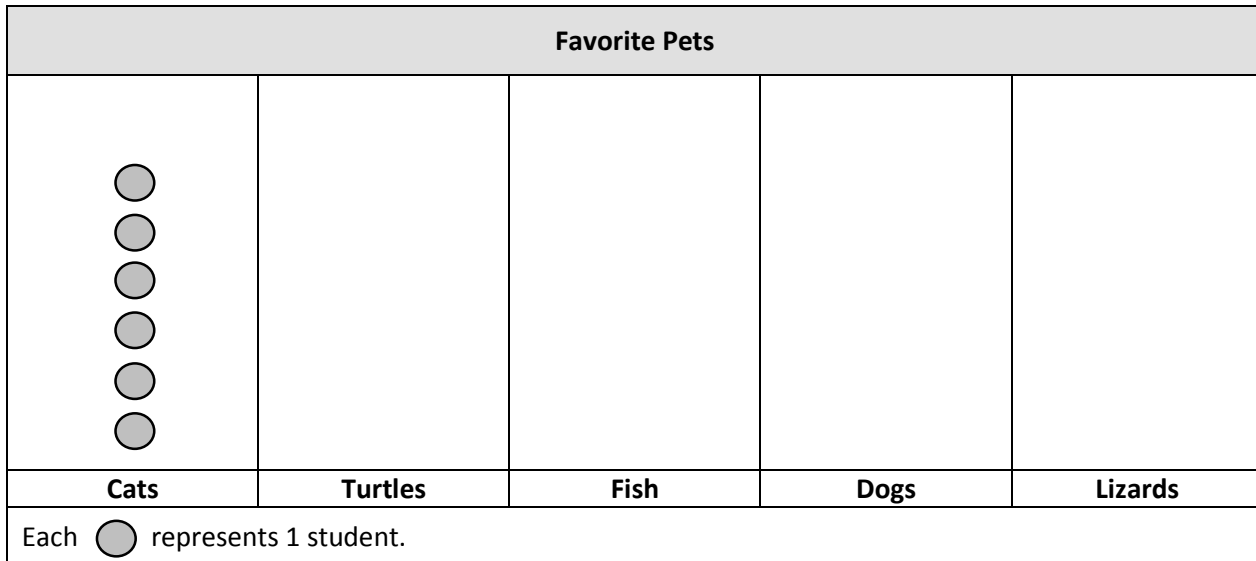
a. The same number of students picked _____ and _____ as their favorite pet.

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.

Favorite Pets				
Cats	**Turtles**	**Fish**	**Dogs**	**Lizards**

Each ⬜ represents 2 students.
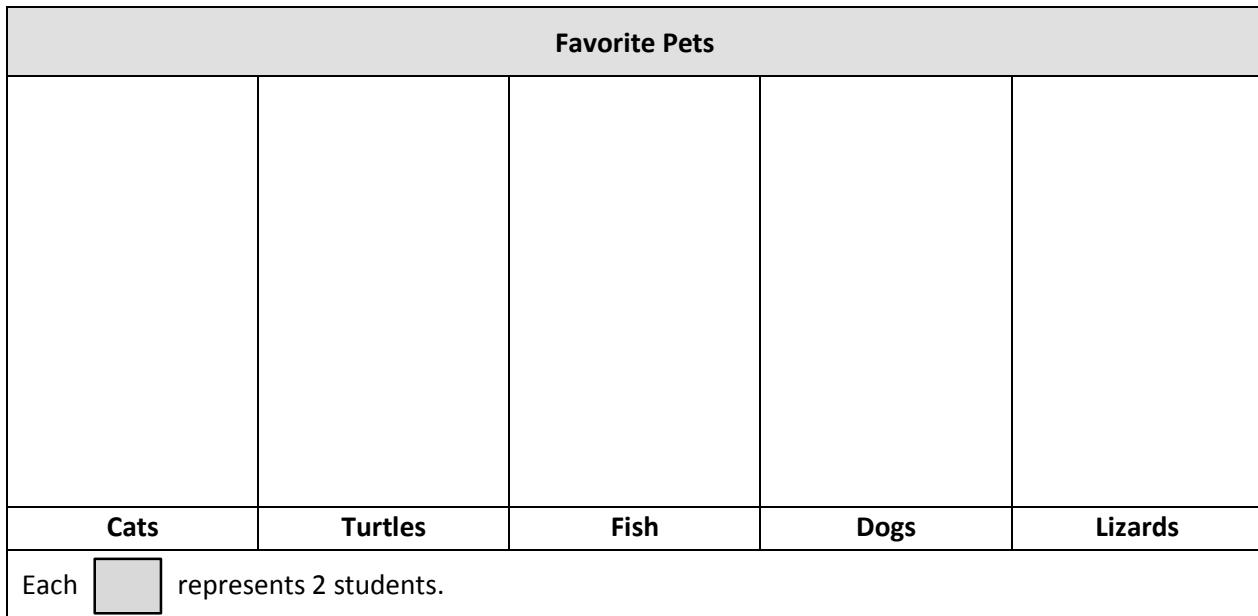
a. What does each ⬜ represent?

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.
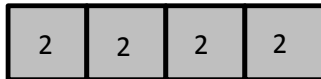
Name _____   Date _____

1. 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: | 2 | 2 | 2 | 2 |

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.

| 2 |
| 2 |
| 2 |
| 2 |

Banana   Apple   Strawberry   Peach

b.

| 4 |
| 4 |

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?

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Lesson 2:   Rotate tape diagrams vertically.

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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.

Favorite Subjects
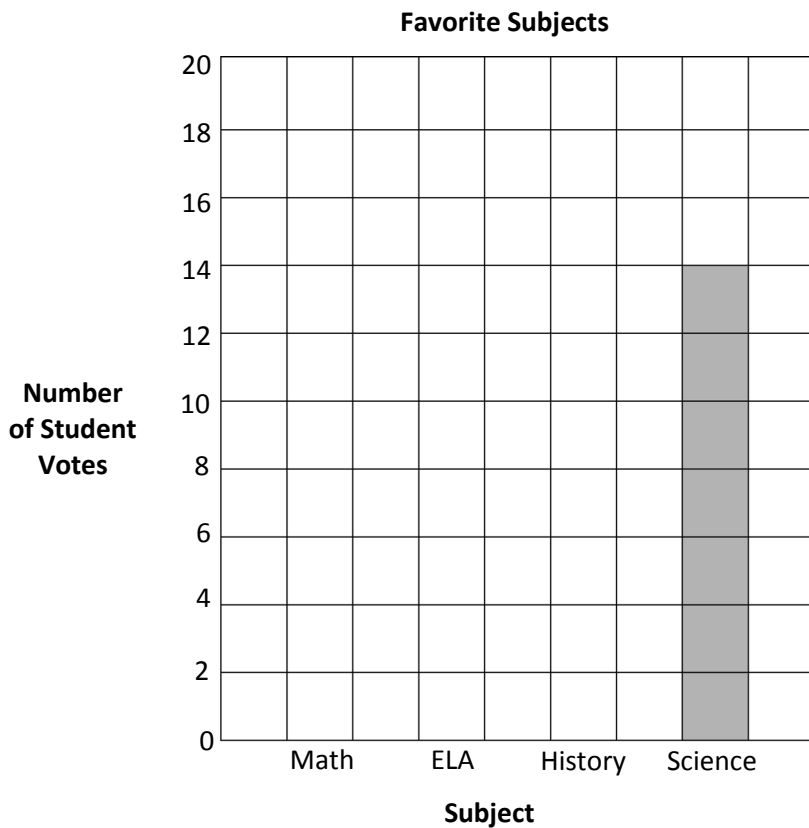
a. How many students voted for science?

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

c. 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.

Liters of Water Skyler Uses

Week

Number of Liters
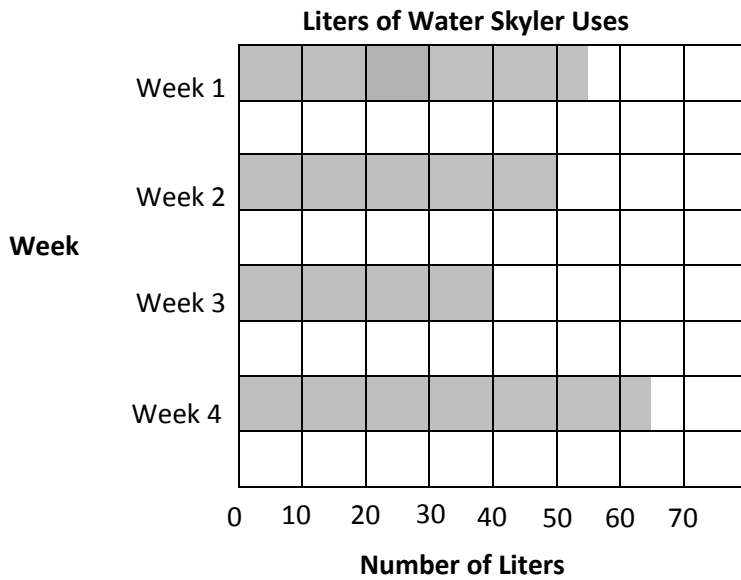
a. During which week does Skyler use the most water? _____
The least? _____

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

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

d. How many liters does Skyler use in 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.

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

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.
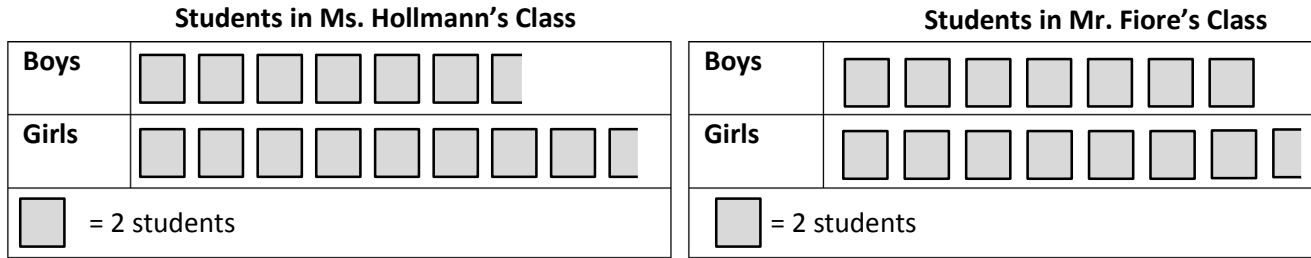
Coins in Maria's Piggy Bank		
Coin	**Tally**	**Number of Coins**
Penny	ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ///	
Nickel	ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ //	
Dime	ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ //	
Quarter	ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ⳣⳣⳣ ////	

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

Coins in Maria's Piggy Bank

Number of Coins

10

0

Penny   Nickel   Dime   Quarter
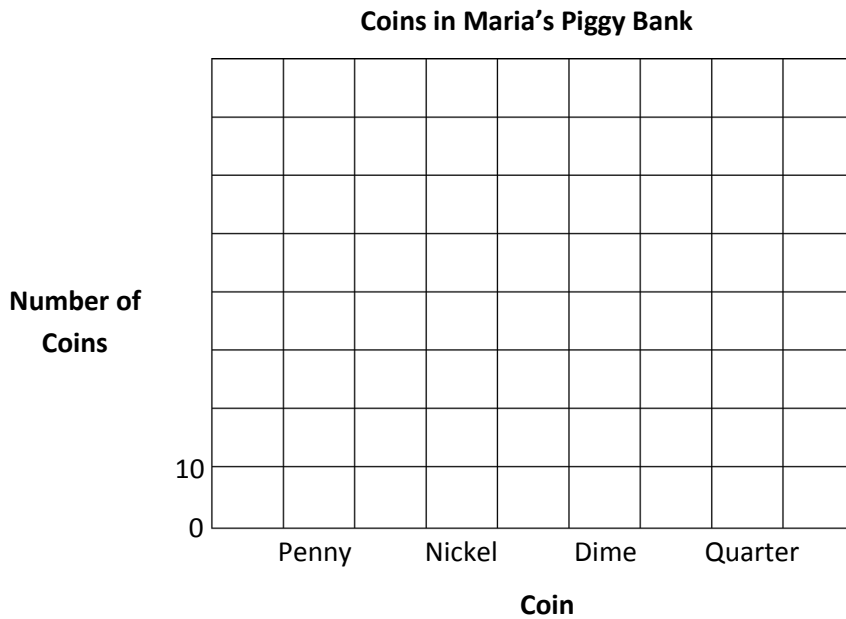
Coin

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.

Lesson 4:   Solve one- and two-step problems involving graphs.

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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

Boys	☐ ☐ ☐ ☐ ☐ ☐ ☐
Girls	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ = 2 students

Students in Mr. Fiore's Class

Boys	☐ ☐ ☐ ☐ ☐ ☐ ☐
Girls	☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ = 2 students

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

b. It costs $2 for each student to attend the field trip. How much money does it cost for all 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 should there be when the 2 classes eat lunch?

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Lesson 4: Solve one- and two-step problems involving graphs.

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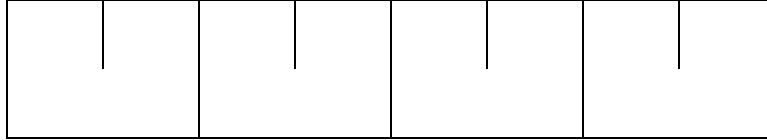
Colored Pencil	Measured to the nearest inch	Measured to the nearest $\frac{1}{2}$ inch	Measured to the nearest $\frac{1}{4}$ inch
Red	7	$6\frac{1}{2}$	$6\frac{3}{4}$
Blue	5	5	$5\frac{1}{4}$
Yellow	6	$5\frac{1}{2}$ ☆	$5\frac{1}{2}$ ☆
Purple	5	$4\frac{1}{2}$	$4\frac{3}{4}$
Green	2	3	$1\frac{3}{4}$

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.

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Lesson 5: Create ruler with 1-inch, ½-inch, and ¼-inch intervals, and generate measurement data.
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2. Evelyn marks a 4-inch paper strip into equal parts as shown below.
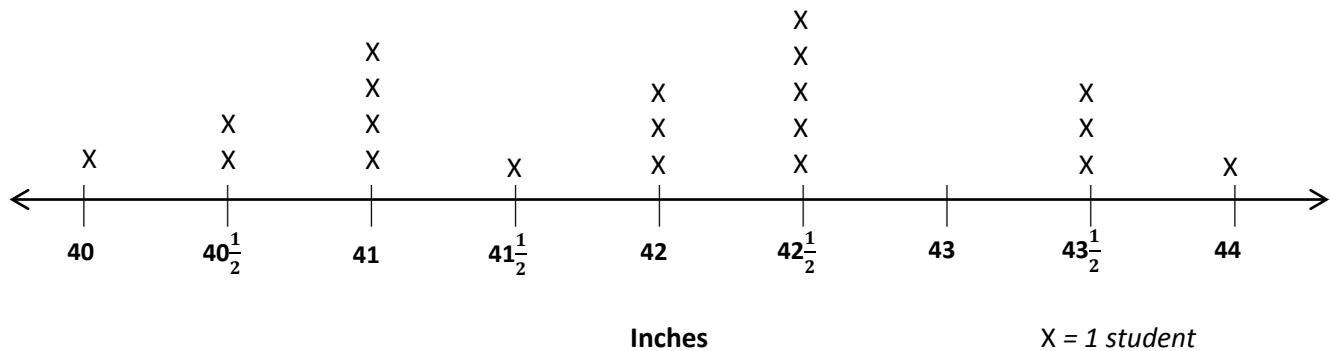

    a. Label the whole and half inches on the paper strip.

    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.

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Lesson 5:   Create ruler with 1-inch, ½-inch, and ¼-inch intervals, and generate measurement data.

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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

```
                                                    X
                       X                            X
                       X                 X          X                    X
                  X    X                 X          X                    X
         X        X    X        X        X          X                    X        X
    ←————+————————+————+————————+————————+——————————+—————————+——————————+————————+————→
        40      40½    41      41½       42        42½       43        43½       44
```

                                    Inches   X = 1 student

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

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

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

    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 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.

Lengths of Plants' Roots

Inches   X = 1 plant
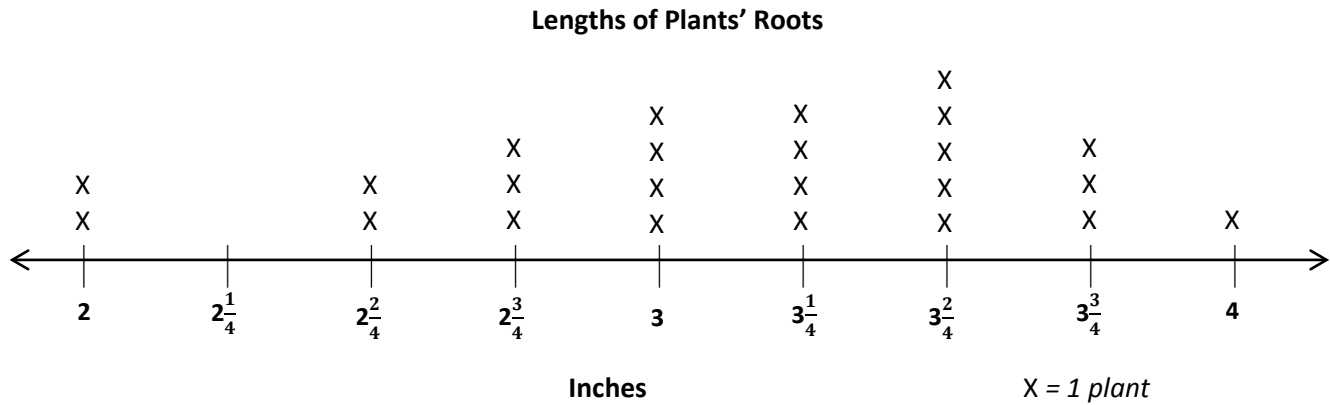
a. How many roots did Mr. Stein's class measure? How do you know?

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?

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: _____

3      $3\frac{1}{4}$ $3\frac{1}{2}$ $3\frac{3}{4}$ 4 $4\frac{1}{4}$ $4\frac{1}{2}$
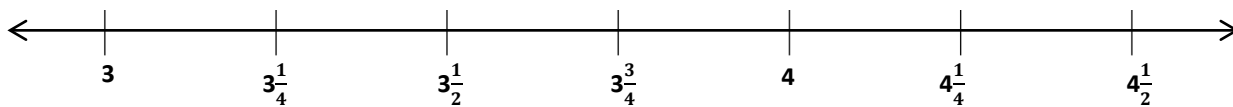
Label: _____ X =

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.

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.

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Lesson 8:   Represent measurement data with line plots.

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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?
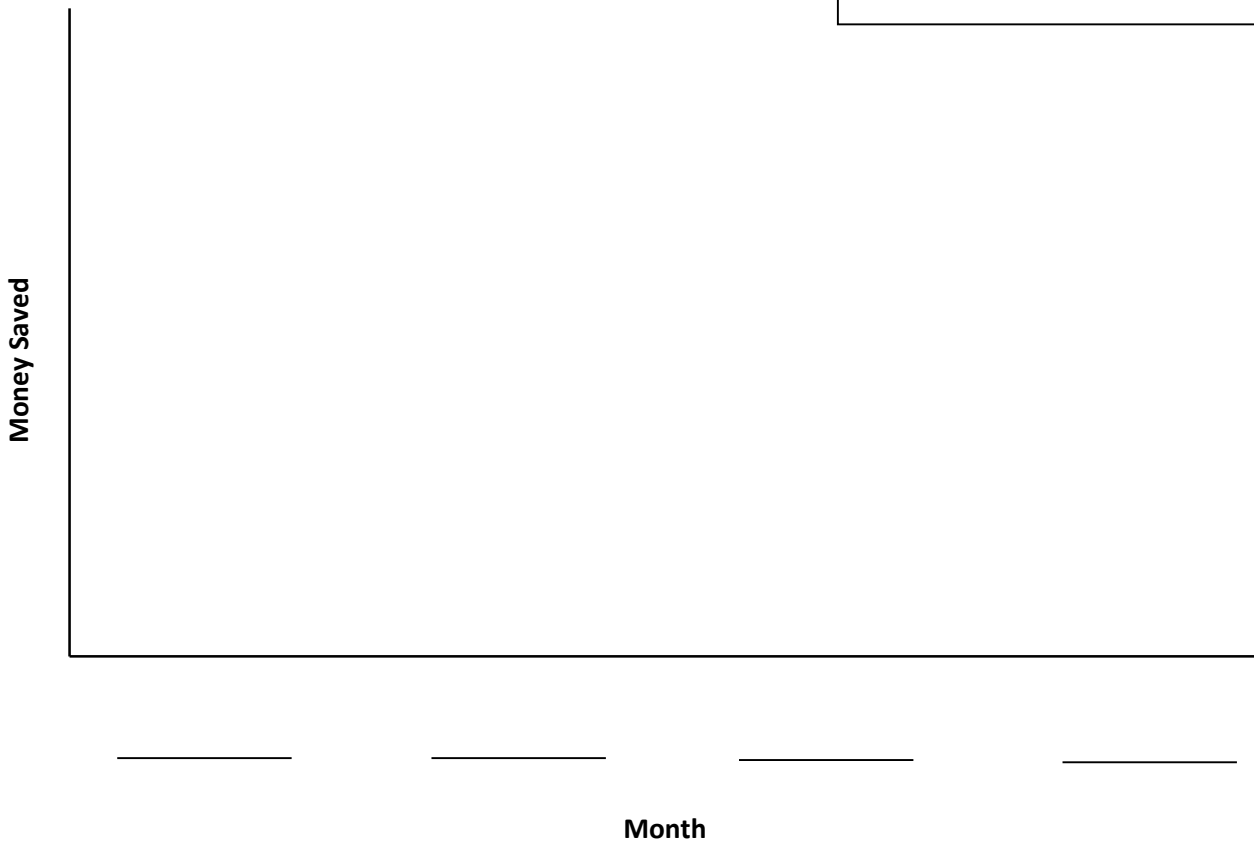
Name _____   Date _____

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.

Money Danielle Saves

= _____ Dollars

Money Saved

_____ _____ _____ _____

Month

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

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

   b. How much more money does Danielle save 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?

   d. 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?

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