

1

Purposeful Design

MATHEMATICS

THIRD EDITION

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Chapter 10

LM

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LM 10.1A Chapter 10 Parent Letter



Dear Parents,

This chapter is designed to give first graders an introduction to graphs. Students will practice sorting sets using Venn diagrams. Then, they will learn to create tables and read pictographs, bar graphs, and simple coordinate graphs. Students will also learn how to calculate area and how to use coordinates to find specific locations on a map.

Assist your child in learning these new math concepts. Point out graphs that you see in news articles or on television news broadcasts. Compare the areas of two rooms in your home. Include your child in any map reading you do while on vacation.

Teach your child about map features and show him intersecting lines on a map. You may also point out lines on a globe and show your child the equator and the North and South Poles. If you have a GPS device in your car or on your smartphone, show your child how the GPS calculates the route. Let your child see where your car is on the GPS screen. If you map out a route on the computer, show the map to your child and point out the roadways and streets you will be taking to your destination.

Your child is well on the way to learning about the world through math.



LM 10.1B Project: Animal Graph Description

- The following project can be used at any time during Chapter 10 as an additional activity or an informal assessment.
- Print and distribute **LM 10.1C Project: Animal Graph** as a checklist for students to make a floor graph using stuffed animals.
- Have students bring in stuffed animals, but limit the number of categories of animals to three or four, such as *bears*, *cats*, *dogs*, and *other*. Use painter's tape or masking tape to make a large grid on the classroom floor. Each square on the grid should be large enough to hold a stuffed animal.
- Once students have brought in their stuffed animals, direct students to work together to sort the animals into sets. Then, have students place the animals in rows on the grid, one row per set, making a large pictograph. Ask students a variety of questions related to the pictograph to assist them in learning how to read a graph. Examples of questions to ask are: How many bears are there? Is the number of bears greater than or less than the number of cats? What would the total number of bears and cats be?
- After the pictograph has been made and discussed, remove the animals and replace them with pieces of colored construction paper to mimic the bars of a bar graph. Then, draw the bar graph on the board. This will show students how a pictograph and a bar graph are two ways to show the same information.
- Have students work together to complete the project and then use the rubric on LM 10.1C for self-assessment.
- Use the teacher portion of the rubric to assess student work and then send it home.



Name _____

LM 10.1C Project: Animal Graph

- Bring a stuffed animal from home to make a floor graph.
- Work with your classmates to sort the animals into sets. You may have a set of dogs, bears, cats, or other animals.
- Place the animals on the graph. Each set of animals has its own row on the graph. Each animal has its own square in that row.
- Count the animals in each row. Are there more dogs than bears? More bears than cats?

Use the following as a checklist for your project. When you have checked all the boxes in the first column, you are finished!

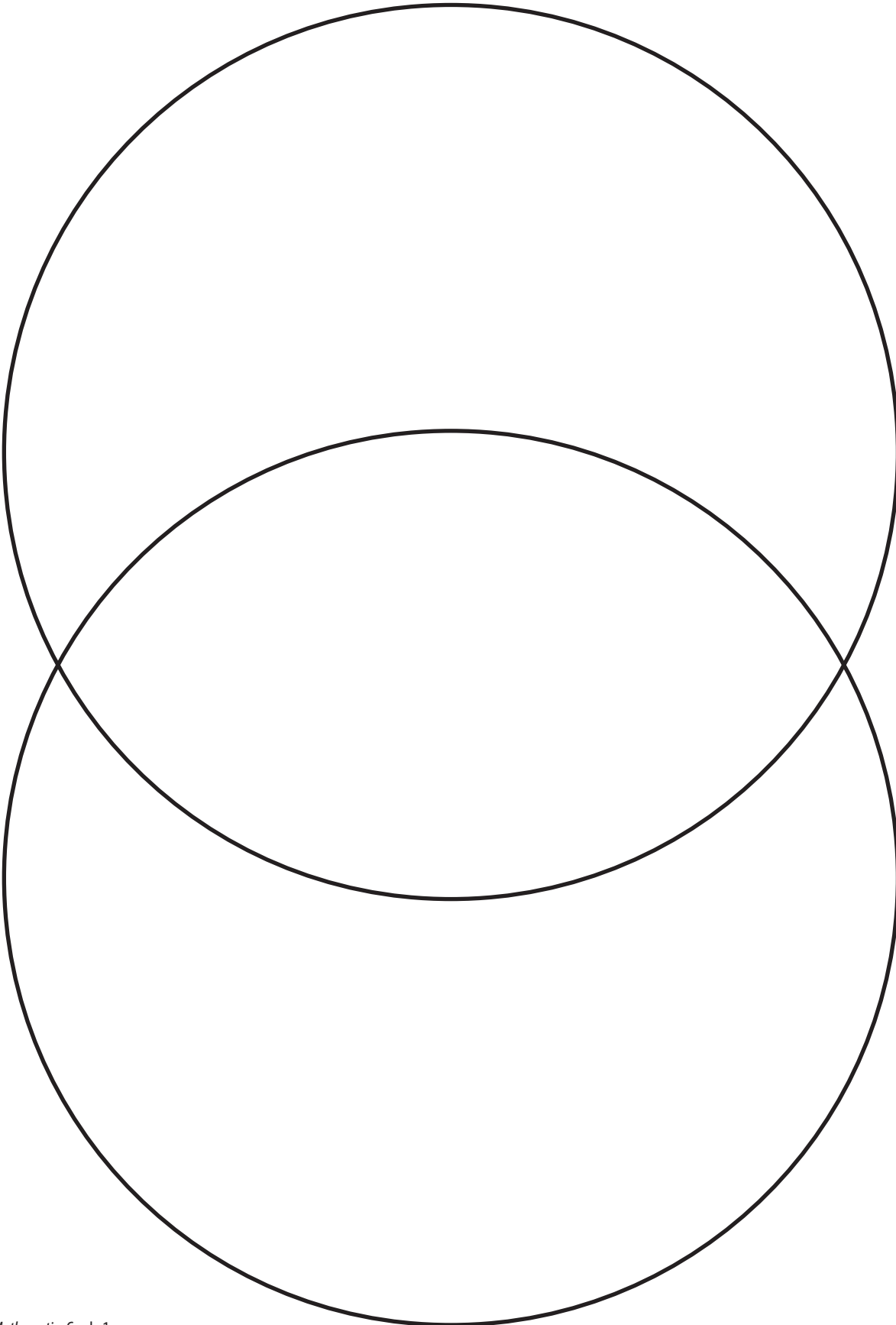
student		teacher
☐	I brought a stuffed animal to class.	☐
☐	I worked with my classmates to sort the animals into sets.	☐
☐	I helped place the animals on the graph.	☐
☐	I answered questions about the number of animals.	☐
	Total	☐

Scoring Guide: 4 Excellent 3 Well done 2 Good 1 Needs work

Teacher Comments:



LM 10.1D Venn Diagram



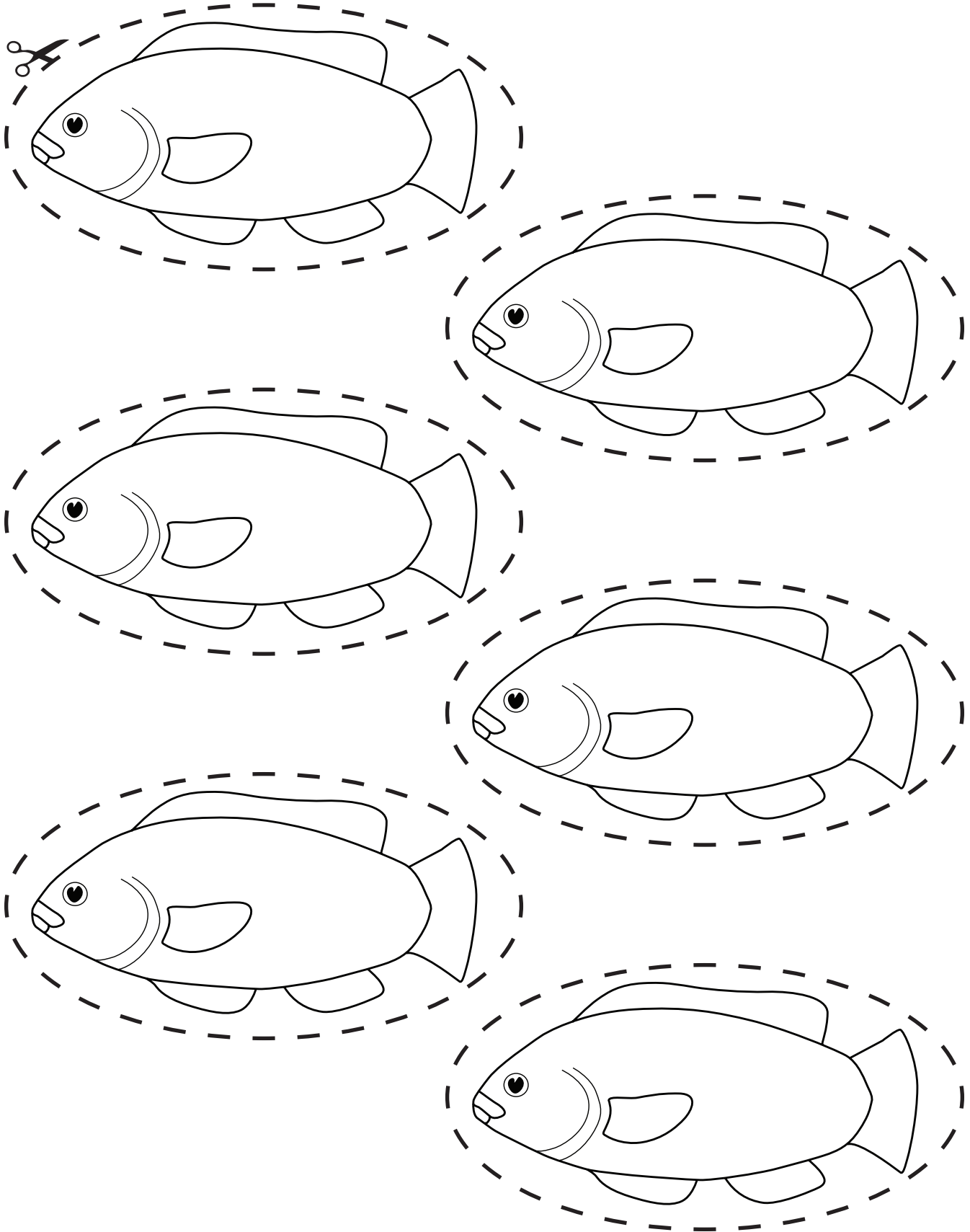


Name _____

LM 10.2A Pattern Block Graph



LM 10.3A Fish Patterns



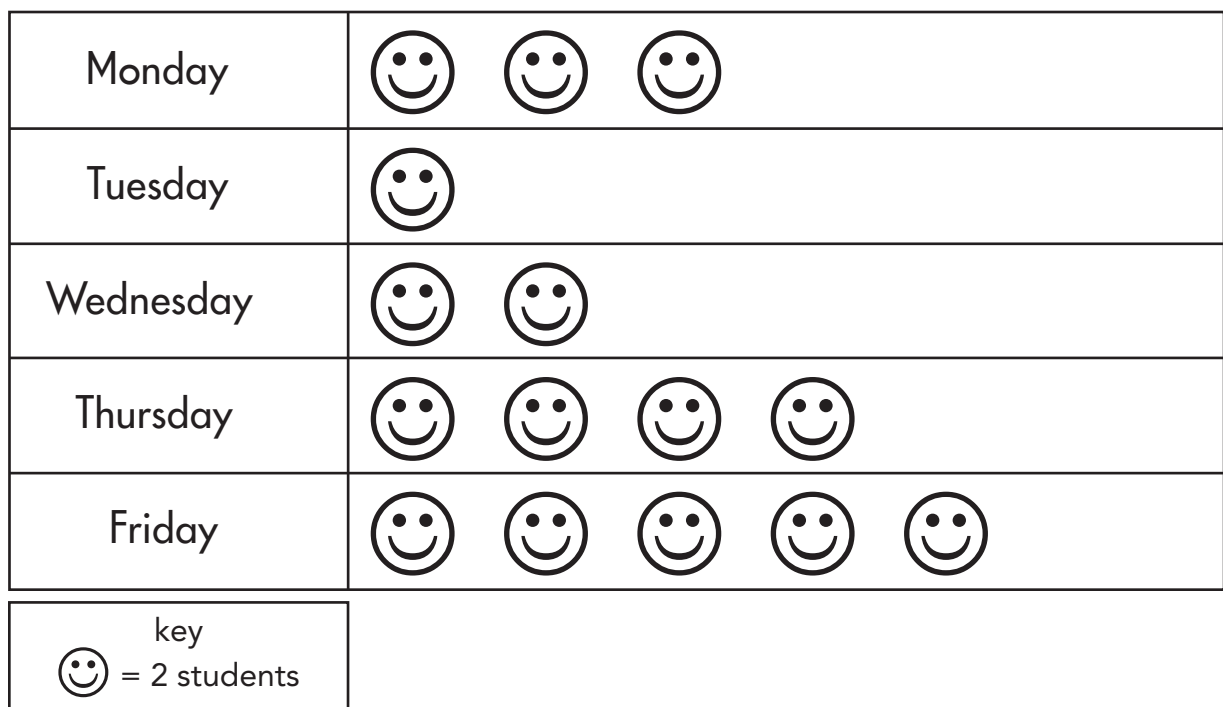
Name _____

LM 10.3B Pictograph

Mrs. Jones' students like to use the puppet theater in their classroom. Mrs. Jones lets 2 students play in the theater at a time. She made a pictograph to show the number of students who used the theater last week.

Look at this pictograph. Then, answer the questions.

Students at the Puppet Theater



- How many students used the puppet theater on Monday?
☐ 3 ☐ 2 ☐ 6
- Did more students use the theater on Monday or Wednesday?
☐ on Monday ☐ on Wednesday
- On which day did just 2 students use the puppet theater?
☐ Friday ☐ Tuesday ☐ Wednesday
- How many more students used the theater on Friday than on Monday?
☐ 4 ☐ 10 ☐ 3

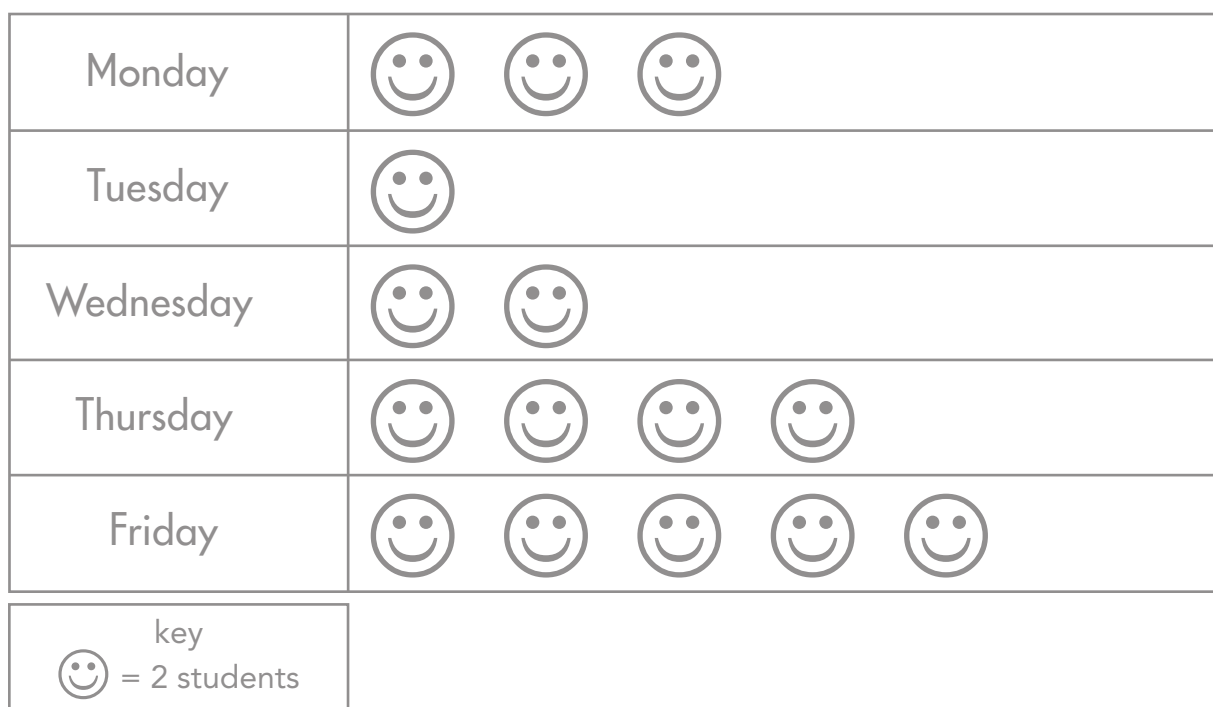


LM 10.3B Pictograph

Mrs. Jones' students like to use the puppet theater in their classroom. Mrs. Jones lets 2 students play in the theater at a time. She made a pictograph to show the number of students who used the theater last week.

Look at this pictograph. Then, answer the questions.

Students at the Puppet Theater

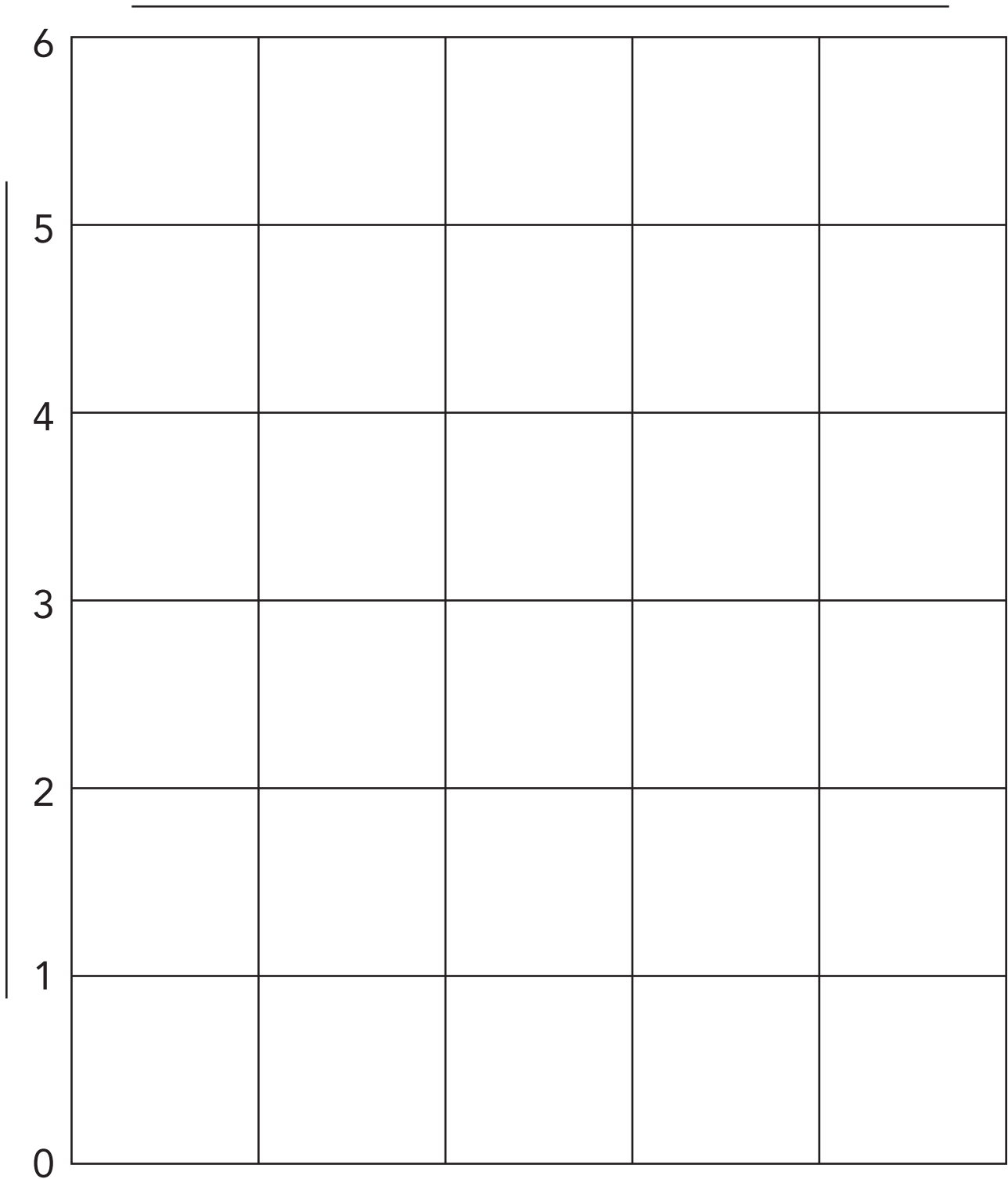


- How many students used the puppet theater on Monday?
☐ 3 ☐ 2 ☒ 6
- Did more students use the theater on Monday or Wednesday?
☒ on Monday ☐ on Wednesday
- On which day did just 2 students use the puppet theater?
☐ Friday ☒ Tuesday ☐ Wednesday
- How many more students used the theater on Friday than on Monday?
☒ 4 ☐ 10 ☐ 3



Name _____

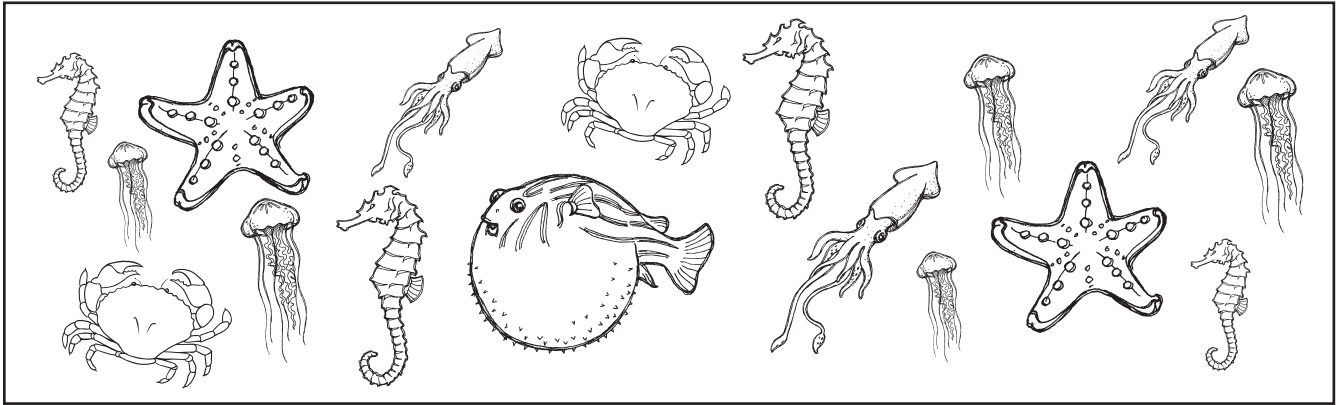
LM 10.4A Blank Graph



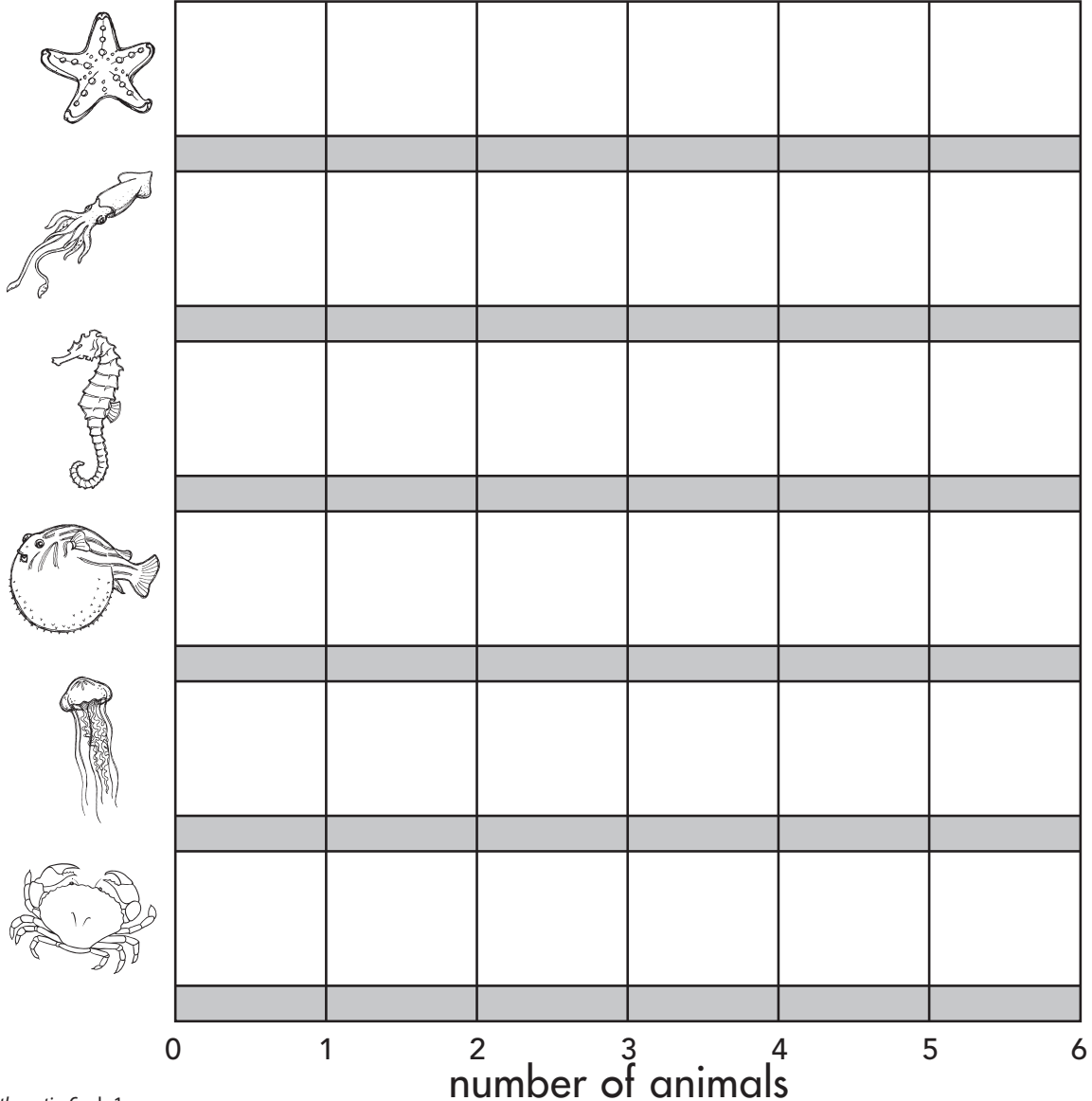
Name_____

LM 10.5A Sort and Graph Sea Animals

Count the sea animals. Color one box for each animal to make a graph.



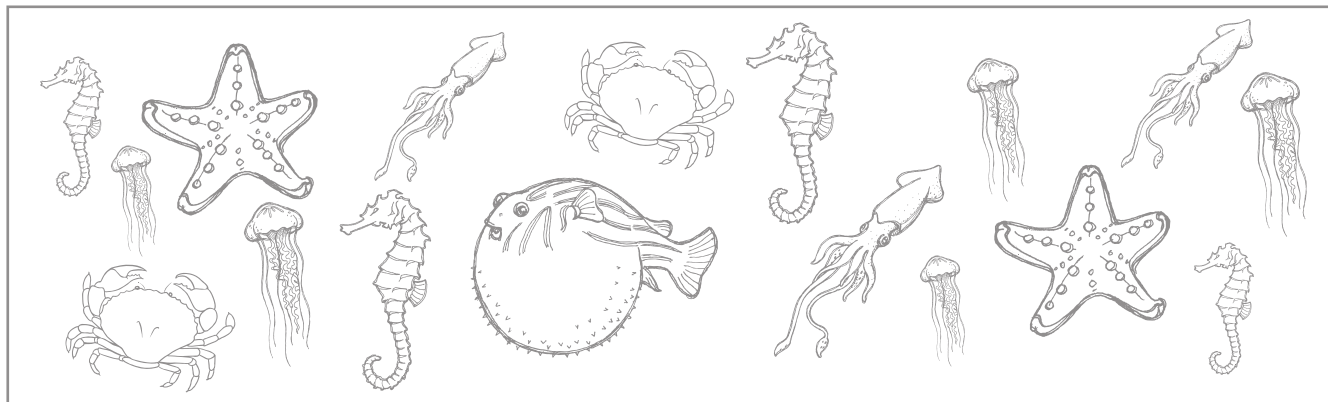
Sea Animals



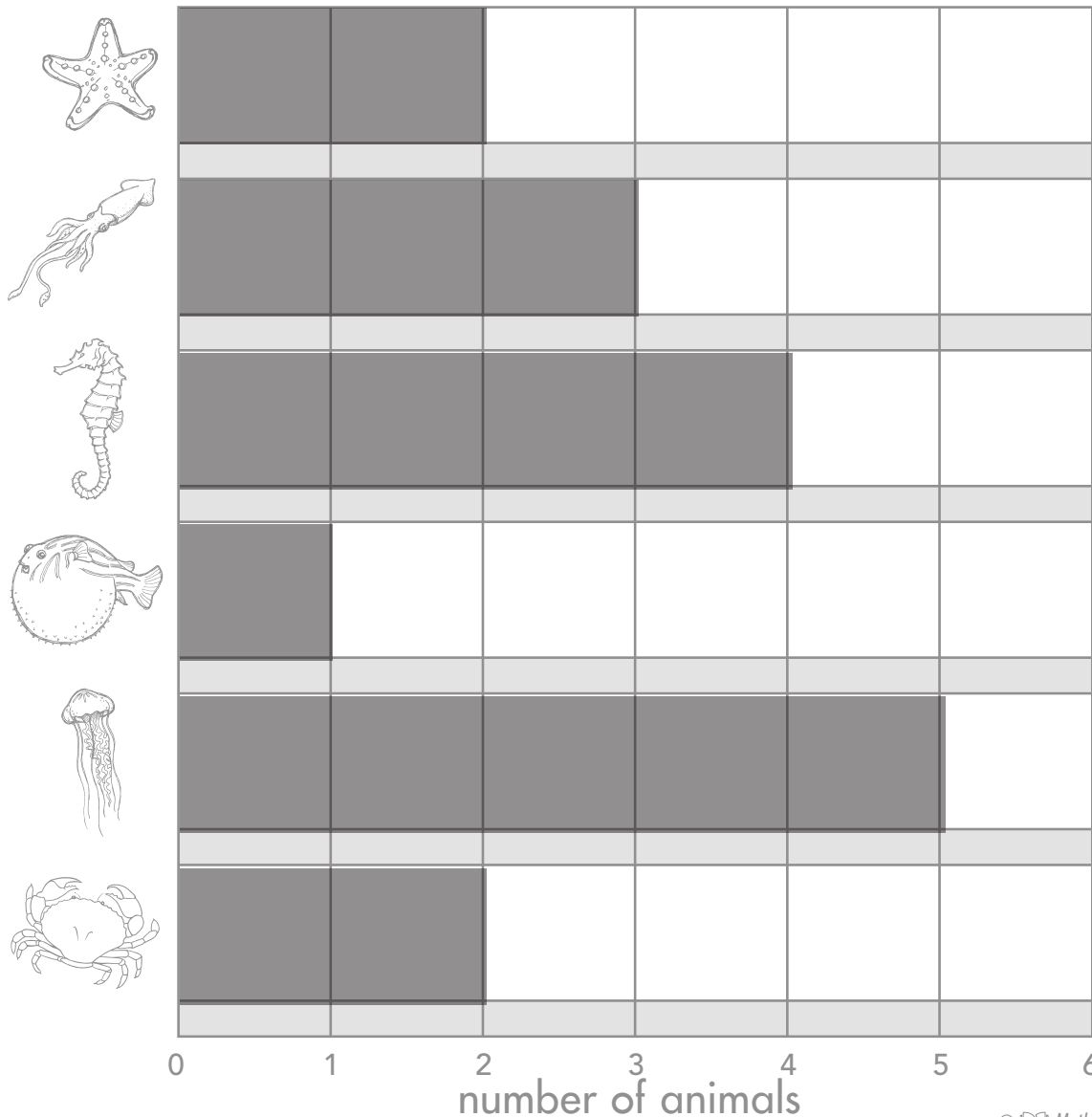


LM 10.5A Sort and Graph Sea Animals

Count the sea animals. Color one box for each animal to make a graph.



Sea Animals

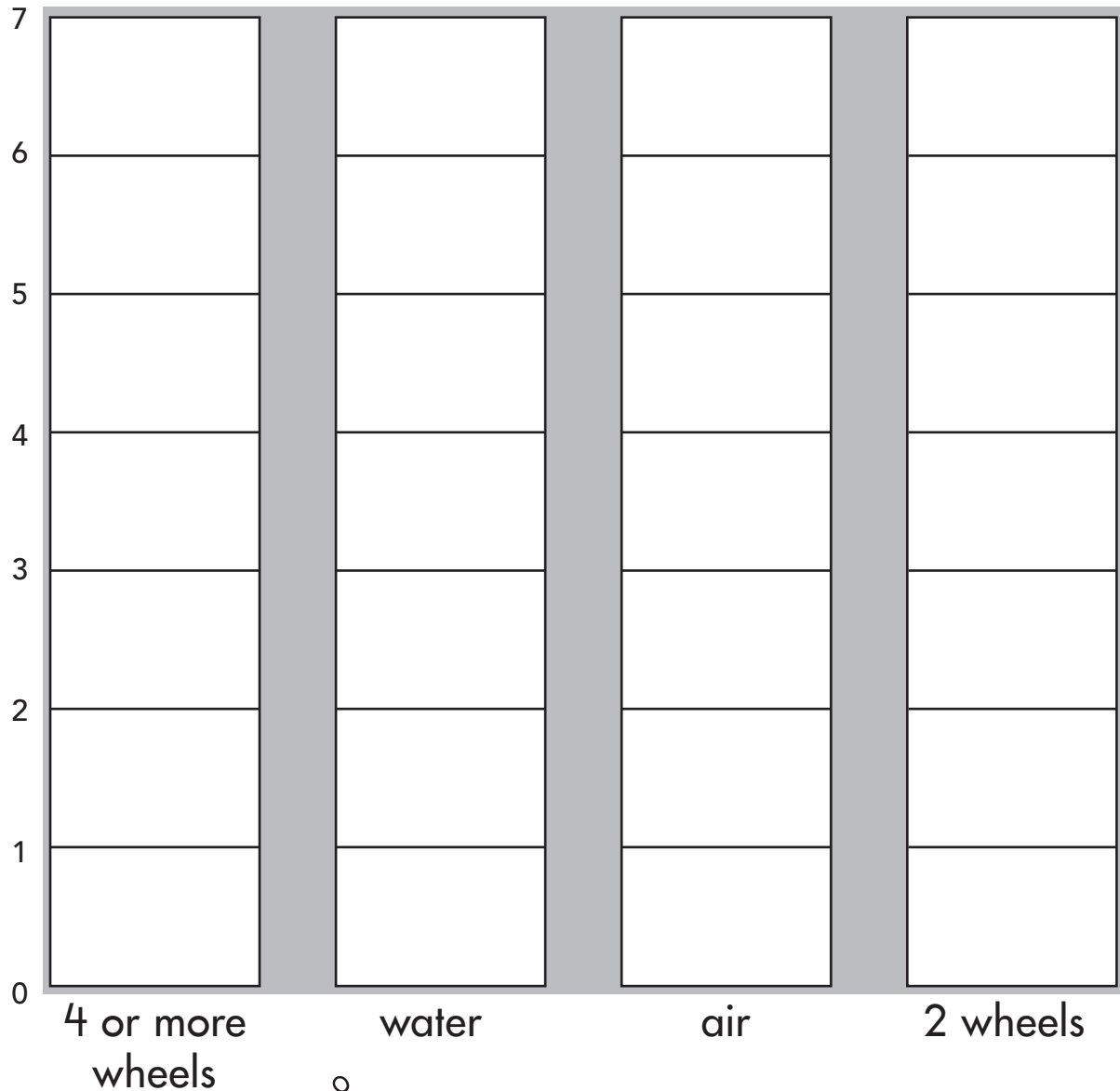


Name _____

LM 10.5B Sort and Graph Transportation

Cut out the objects. Sort them and glue them on the graph where they belong.

Transportation

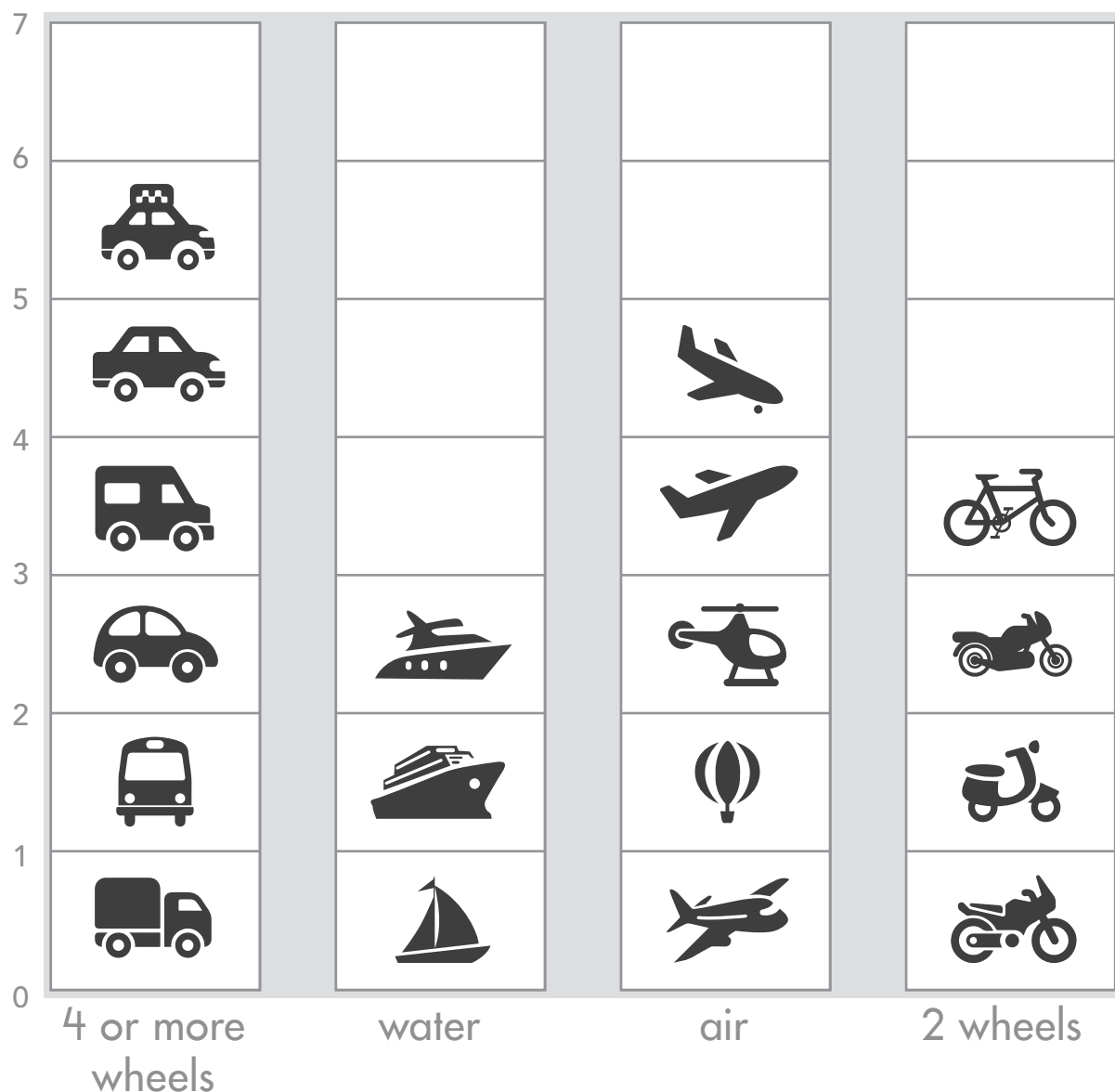




LM 10.5B Sort and Graph Transportation

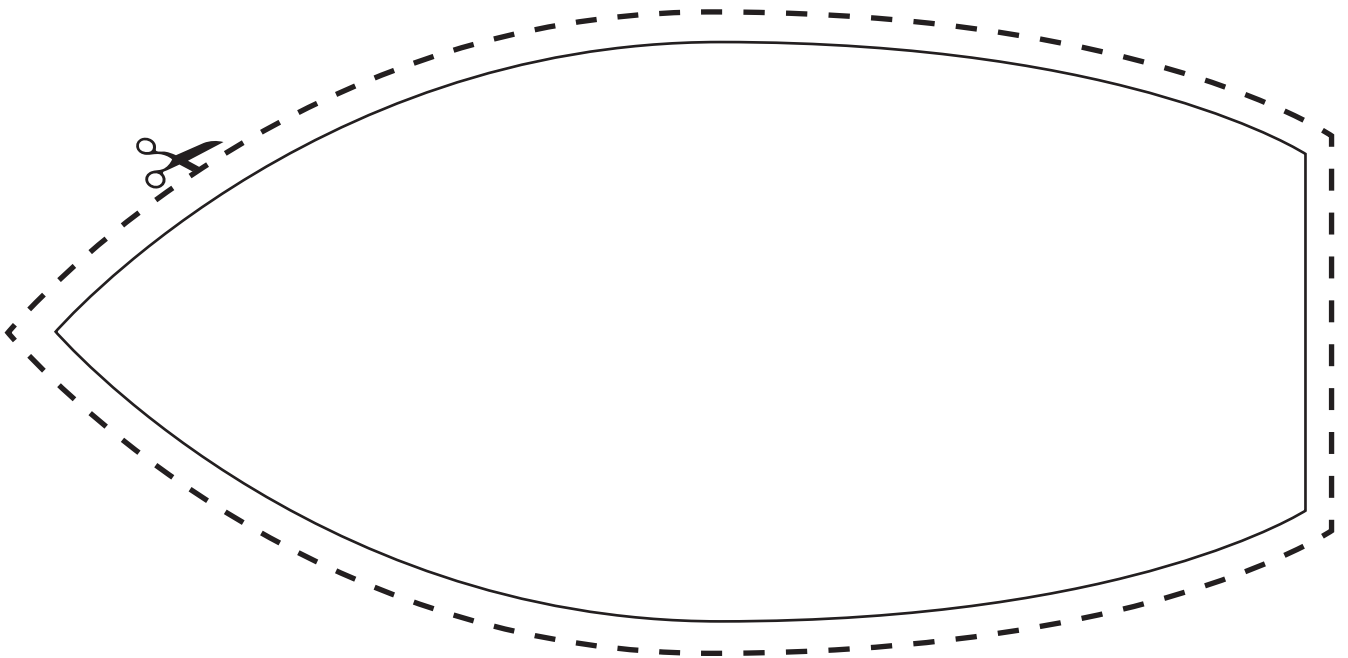
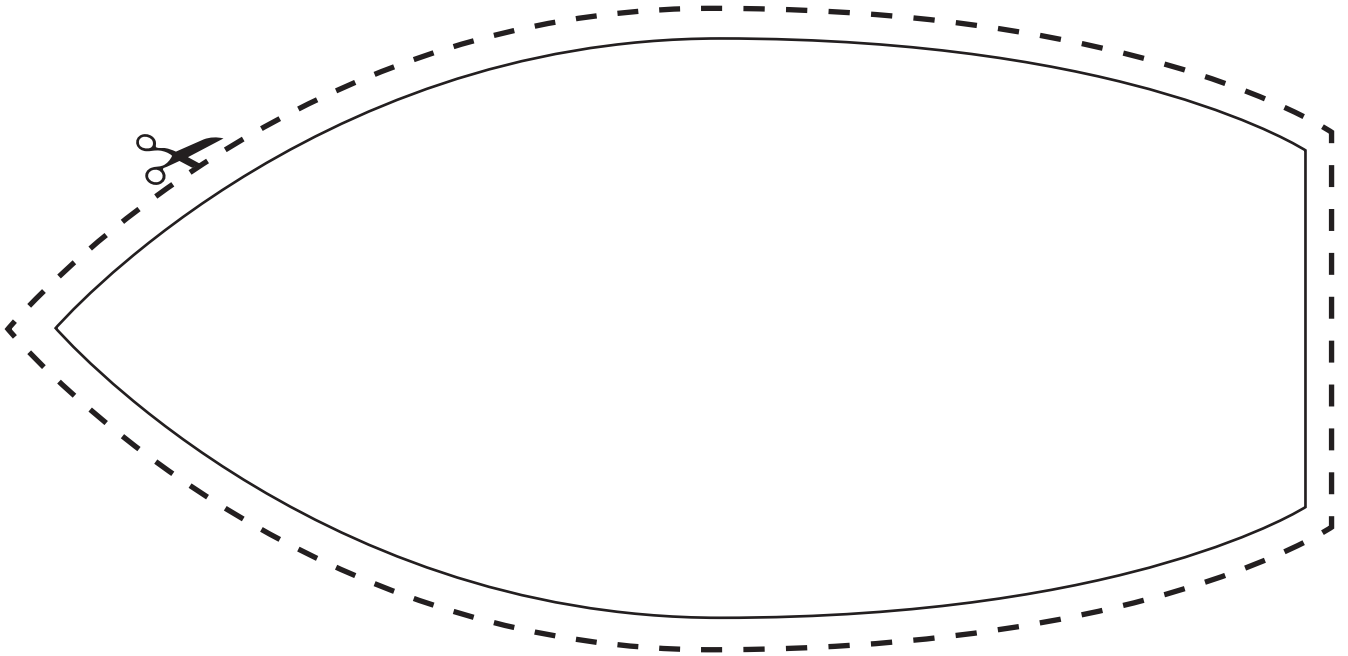
Cut out the objects. Sort them and glue them on the graph where they belong.

Transportation



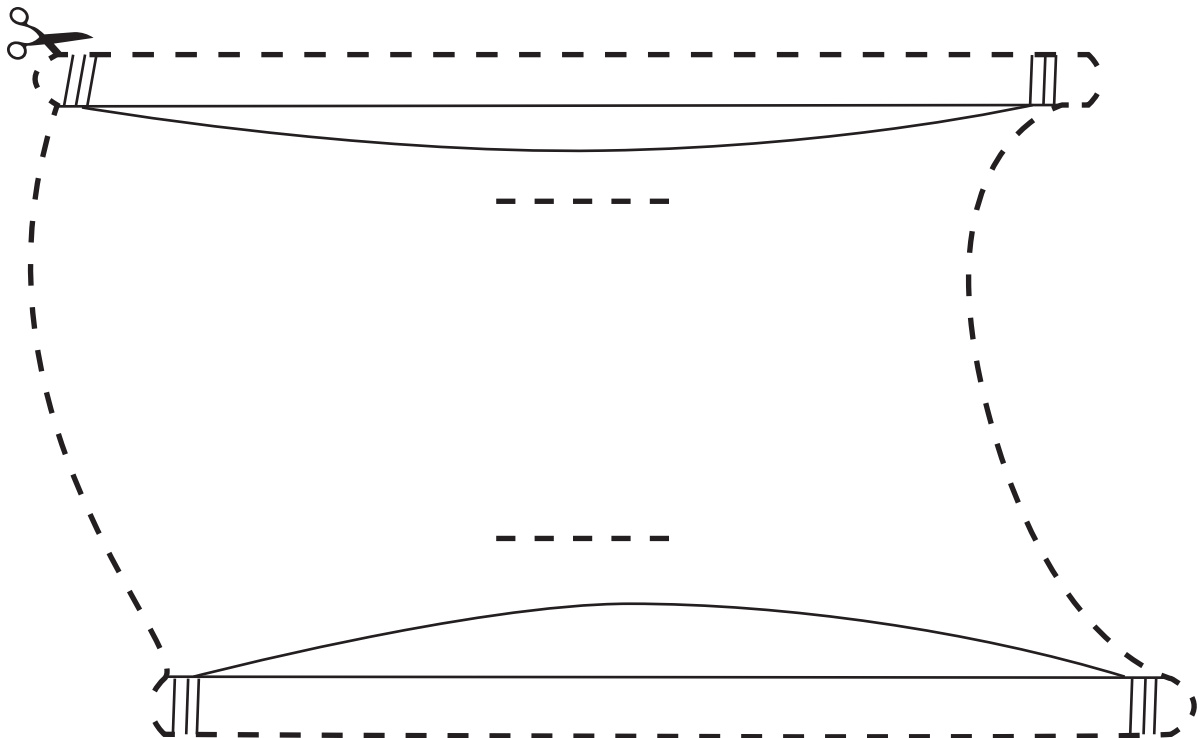
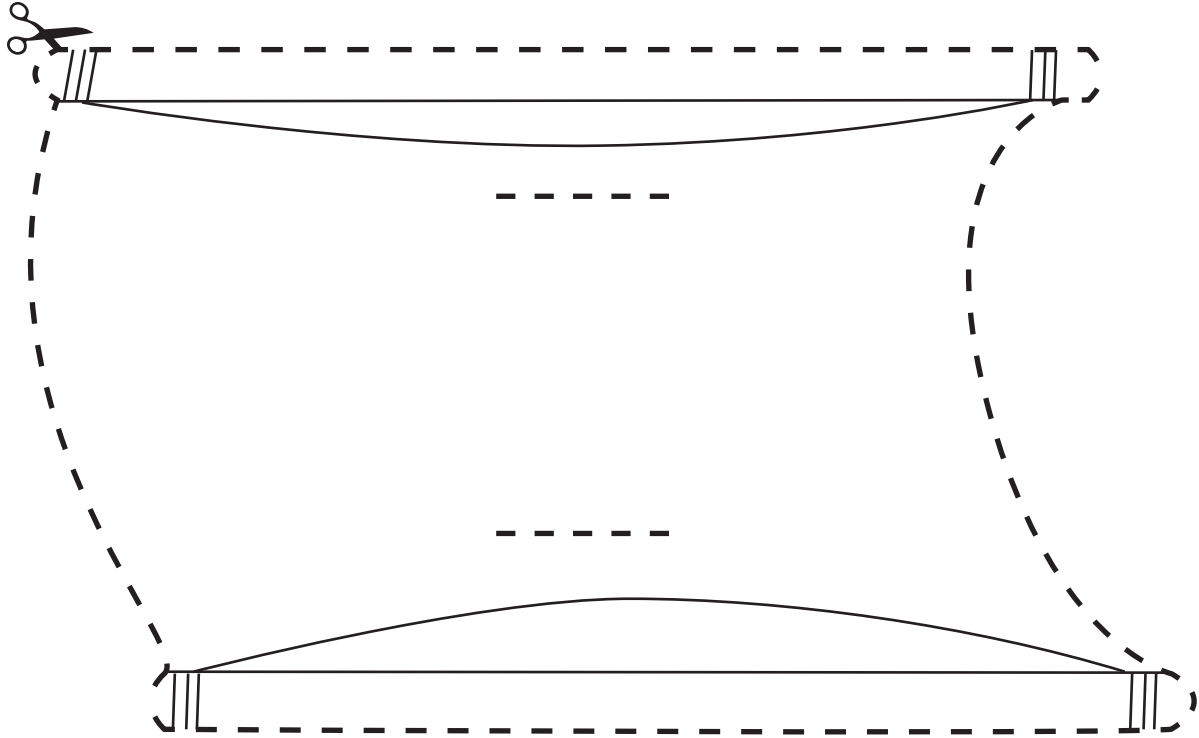


LM 10.6A Boat





LM 10.6B Sail





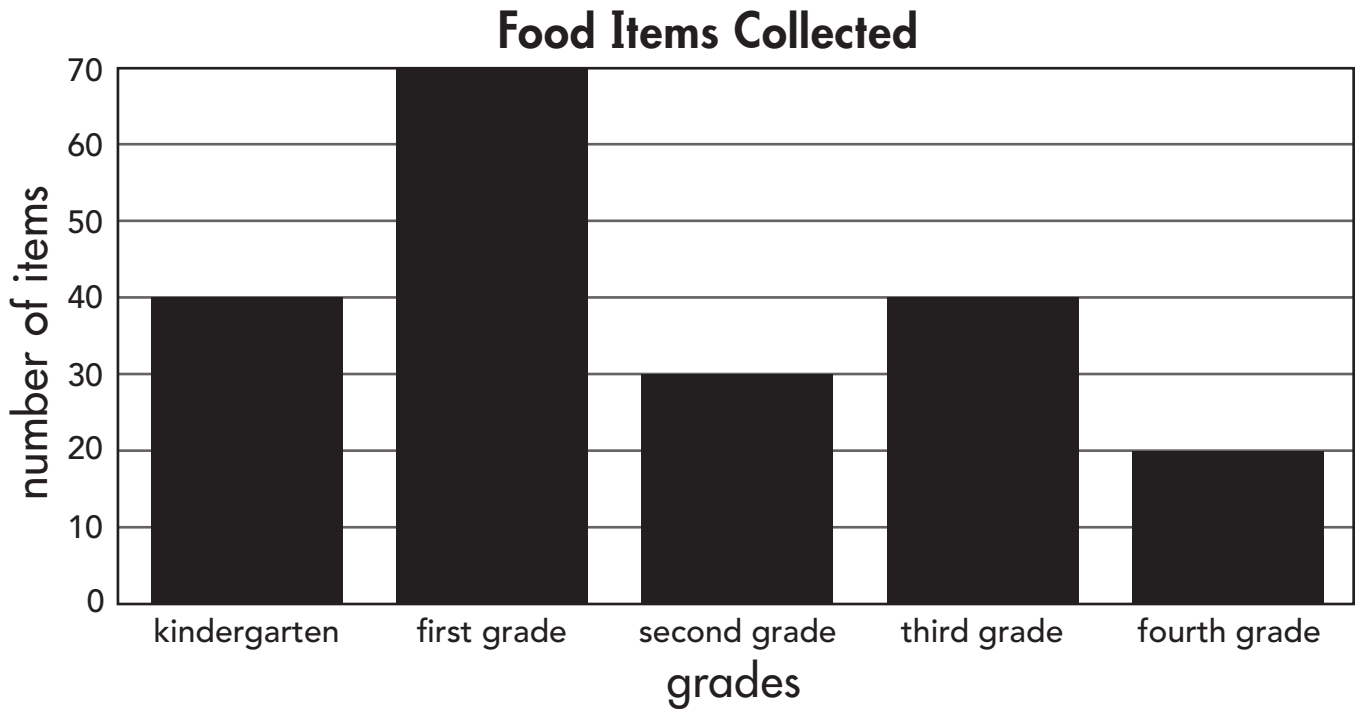
Name _____

LM 10.6C Blank Table

item	tallies	number

Name _____

LM 10.7A Reading Graphs



Students at Faith Christian School collected food for a food bank. Use the graph to solve the word problems.

1. Which grade collected the greatest number of items? _____

2. Which grade collected the least number? _____

3. What is the difference between the number collected by the first grade and the number collected by the fourth grade? Write a number sentence.

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ food items}$$

4. Which two grades collected the same amount?

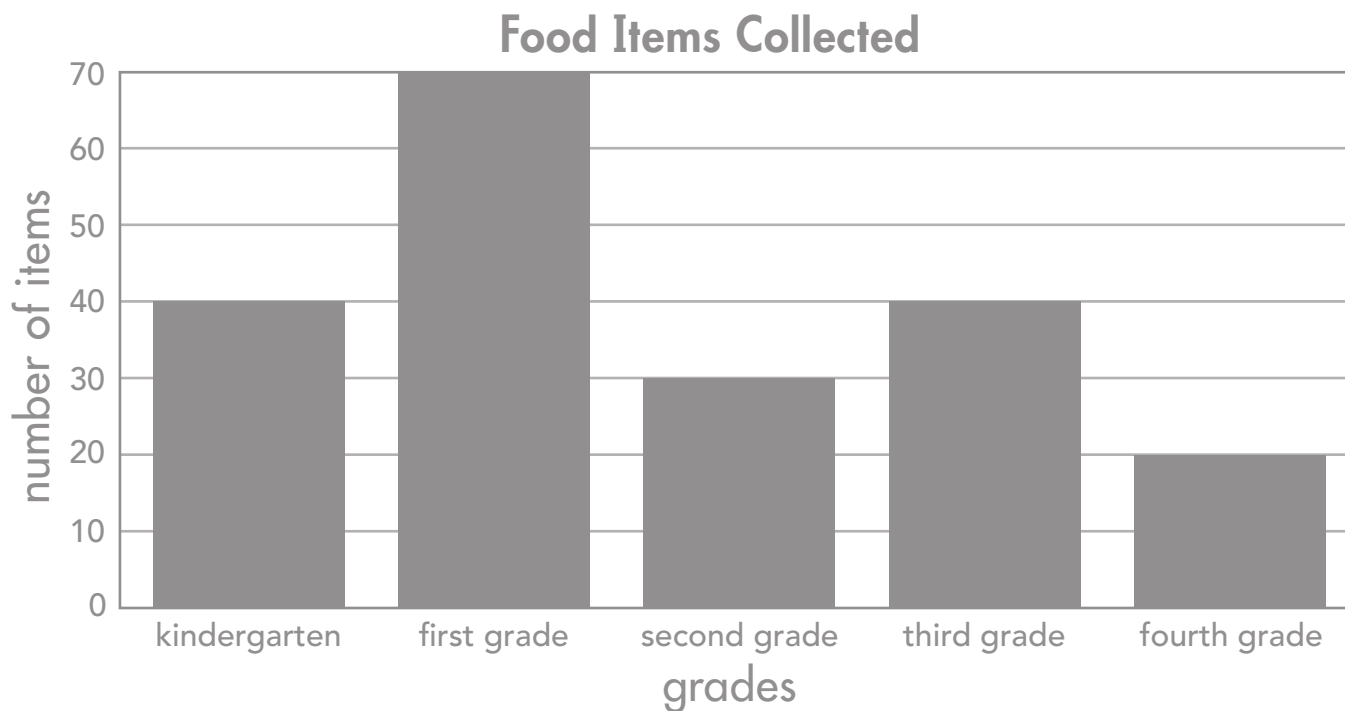
5. Would the total of these two grades be greater or less than the first grade?

$$\begin{array}{c} \boxed{} \\ + \\ \boxed{} \\ \hline \end{array} \quad \begin{array}{c} \curvearrowright \\ \end{array} \quad \begin{array}{c} \bigcirc \\ \hline \end{array} \quad \begin{array}{c} 70 \\ \hline \end{array}$$

(> or <)



LM 10.7A Reading Graphs



Students at Faith Christian School collected food for a food bank. Use the graph to solve the word problems.

1. Which grade collected the greatest number of items? first

2. Which grade collected the least number? fourth

3. What is the difference between the number collected by the first grade and the number collected by the fourth grade? Write a number sentence.

$$\underline{70} - \underline{20} = \underline{50} \text{ food items}$$

4. Which two grades collected the same amount?

kindergarten and third grade

5. Would the total of these two grades be greater or less than the first grade?

$$\begin{array}{r}
 40 \\
 + 40 \\
 \hline
 80
 \end{array}
 \quad \rightarrow \quad
 \underline{80} \quad \bigcirc \quad \underline{70}$$

(> or <)



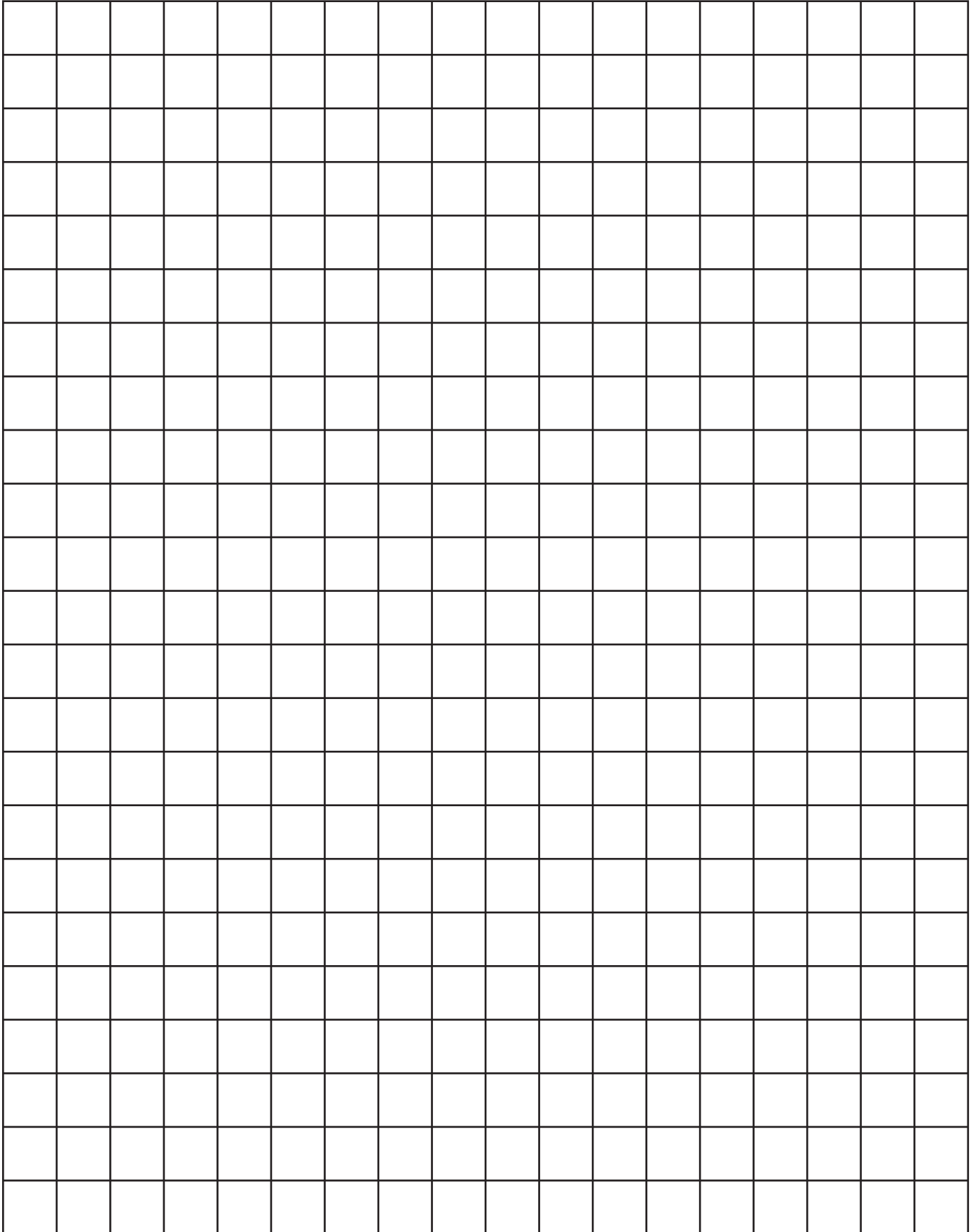
Name _____

LM 10.8A Square Inch Grid



Name _____

LM 10.8B Square Centimeter Grid

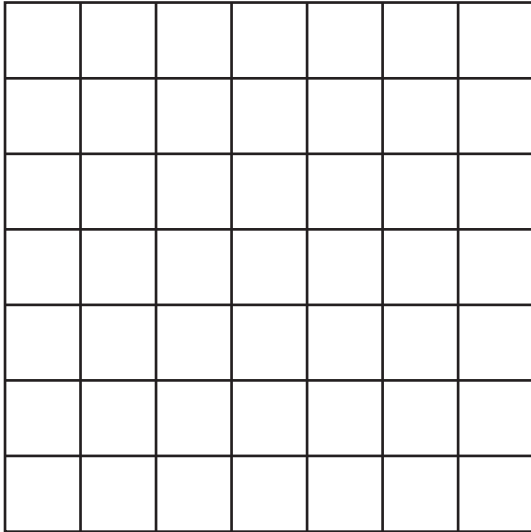


Name _____

LM 10.8C Area

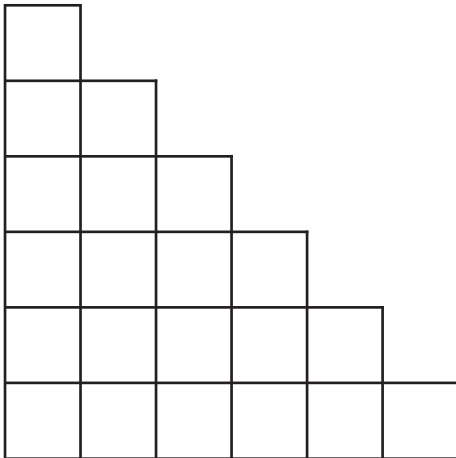
Count the squares. Write the area. Color each shape.

1.



_____ square centimeters

2.

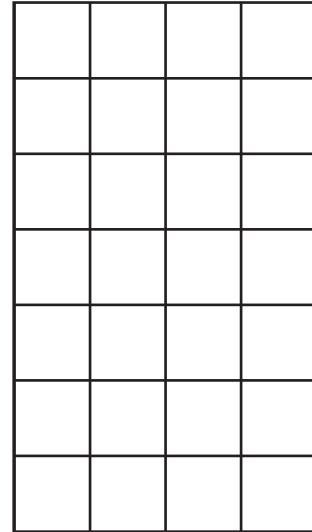


_____ square centimeters

5. Find the area of the truck.

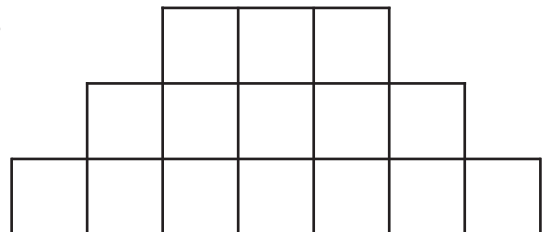
_____ square centimeters

3.

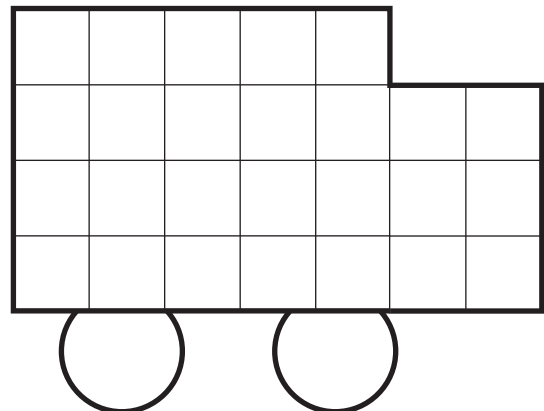


_____ square centimeters

4.



_____ square centimeters

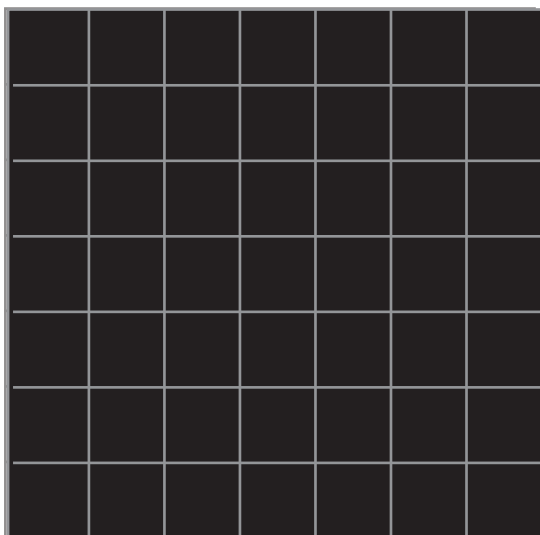




LM 10.8C Area

Count the squares. Write the area. Color each shape.

1.



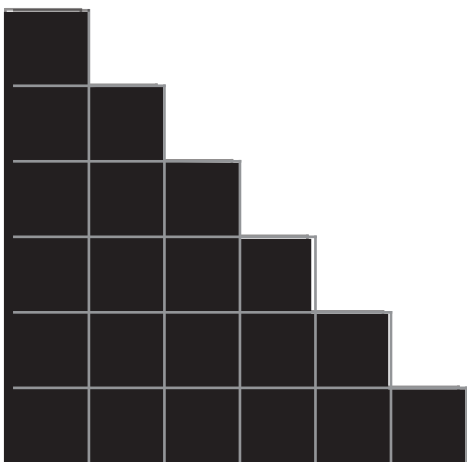
49 square centimeters

3.



28 square centimeters

2.



21 square centimeters

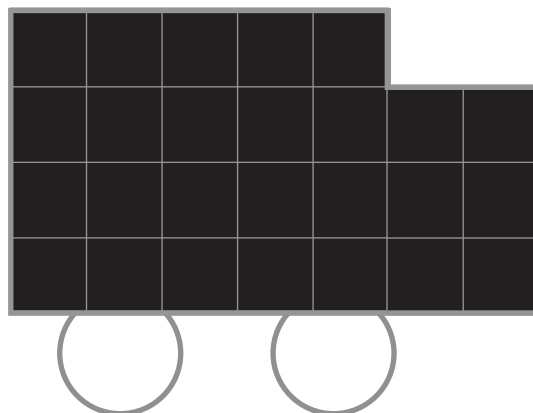
4.



15 square centimeters

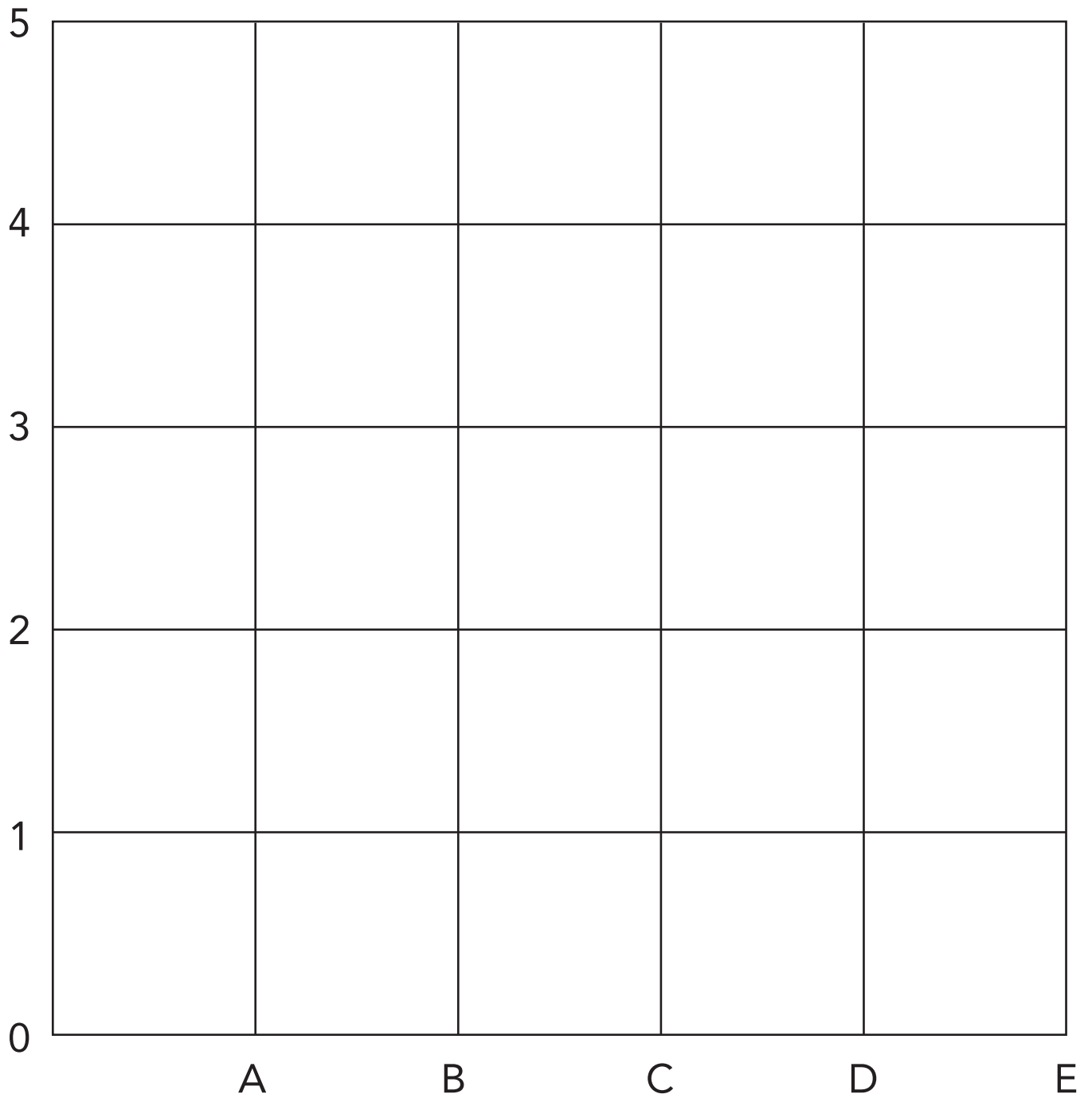
5. Find the area of the truck.

26 square centimeters



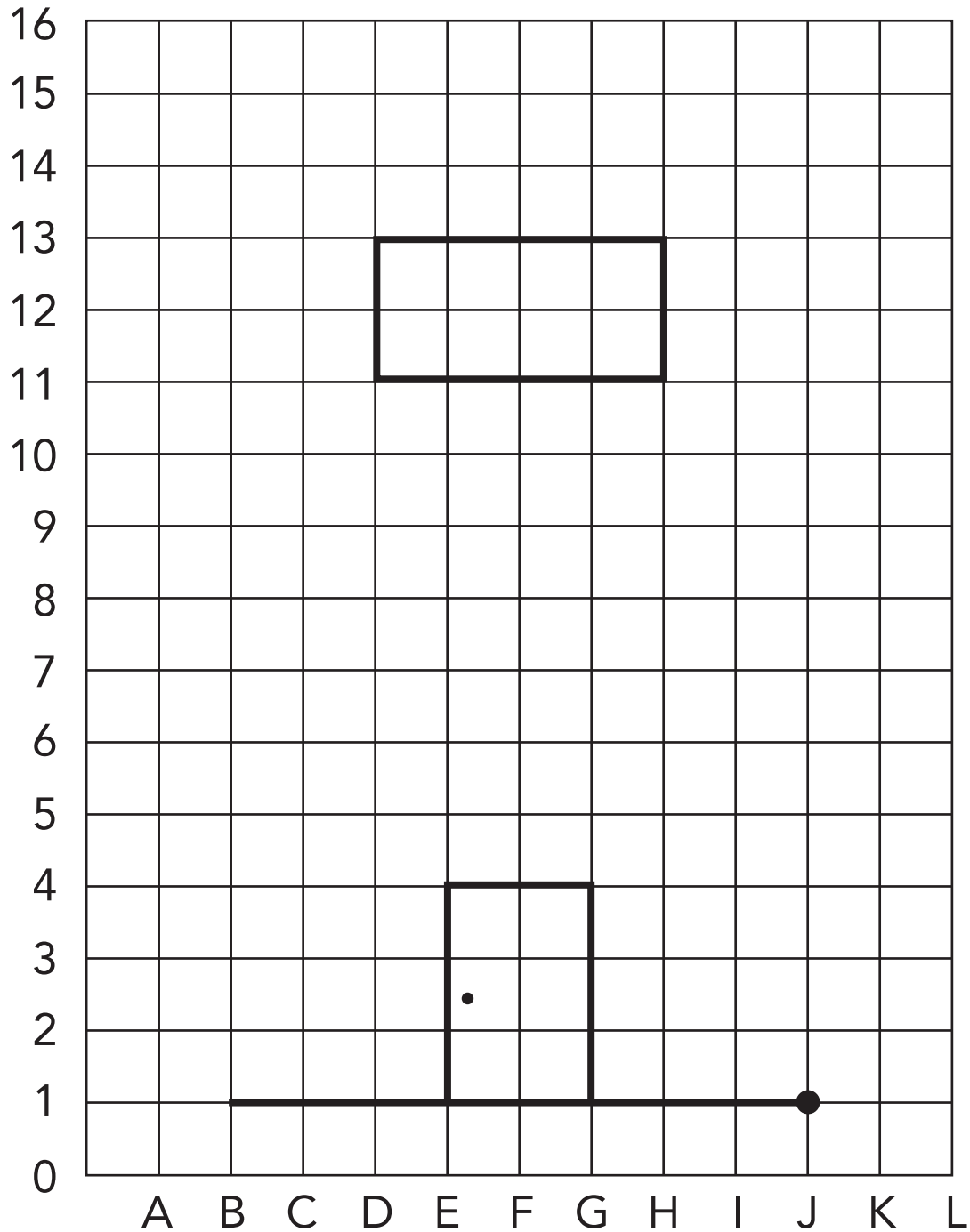


LM 10.10A Game Board: Coordinate Shapes



Name _____

LM 10.10B Mystery Dot to Dot

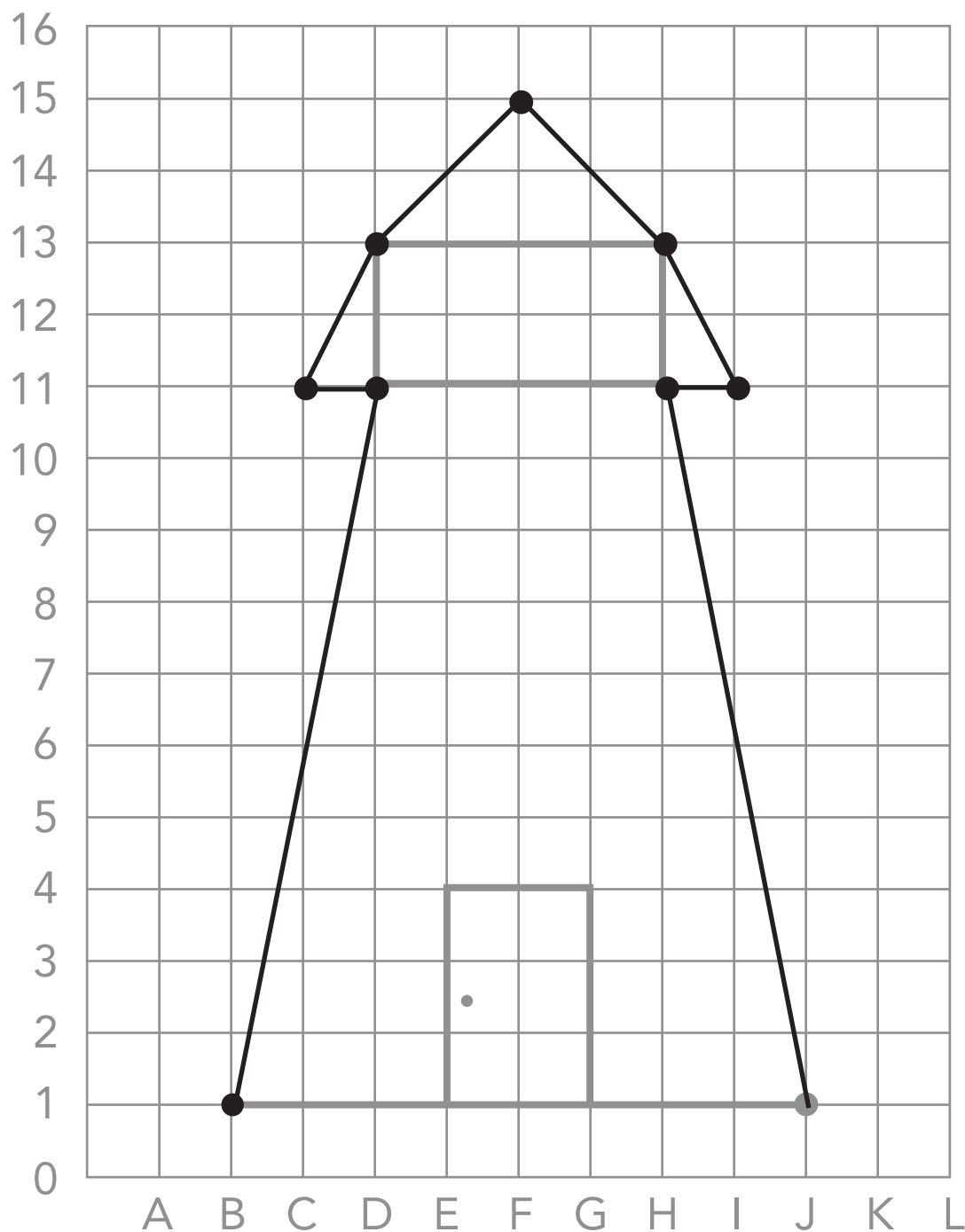


Make a dot at each coordinate. Use a ruler to connect the dots in order.

B1 → D11 → C11 → D13 → F15 → H13 → I11 → H11 → J1



LM 10.10B Mystery Dot to Dot

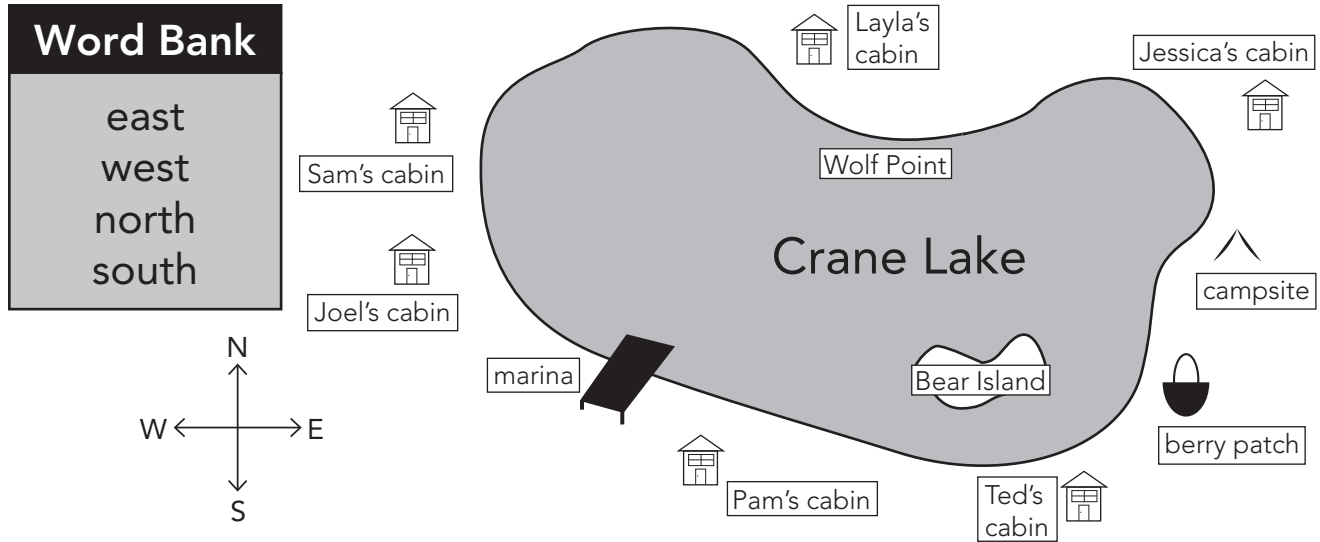


Make a dot at each coordinate. Use a ruler to connect the dots in order.

B1 → D11 → C11 → D13 → F15 → H13 → I11 → H11 → J1

Name _____

LM 10.11A Map Skills



Choose a word from the Word Bank to fill in the blank.

1. The marina is _____ of the berry patch.
2. Wolf Point is _____ of Bear Island.
3. Jessica's cabin is _____ of Sam's cabin.
4. Pam's cabin is _____ of Layla's cabin.

Answer the questions.

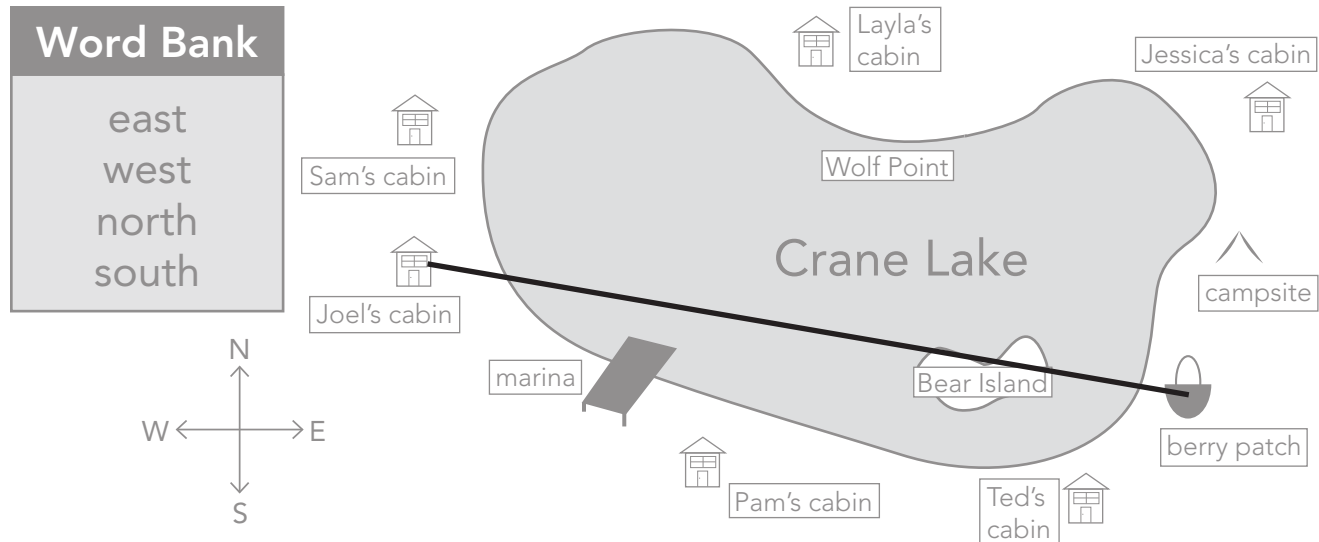
5. How many cabins are around the lake? _____ cabins
6. Draw a straight line from Joel's cabin to the berry patch. What is between Joel's cabin and the berry patch?

7. Whose cabin is south of Sam's cabin? _____

8. Is the campsite closer to the berry patch or to the marina?



LM 10.11A Map Skills



Choose a word from the Word Bank to fill in the blank.

1. The marina is west of the berry patch.
2. Wolf Point is north of Bear Island.
3. Jessica's cabin is east of Sam's cabin.
4. Pam's cabin is south of Layla's cabin.

Answer the questions.

5. How many cabins are around the lake? 6 cabins
6. Draw a straight line from Joel's cabin to the berry patch. What is between Joel's cabin and the berry patch?

Bear Island

7. Whose cabin is south of Sam's cabin? Joel's

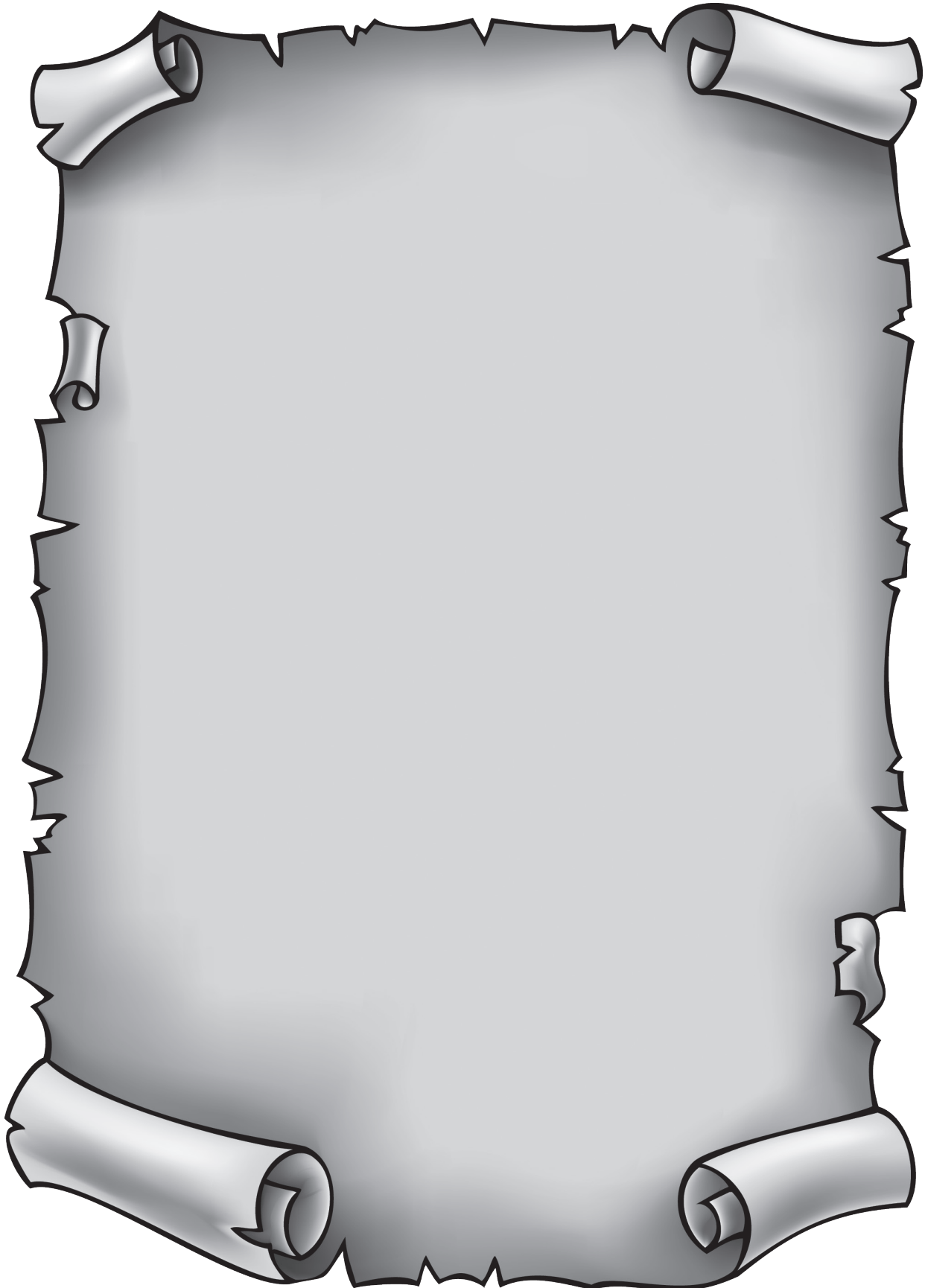
8. Is the campsite closer to the berry patch or to the marina?

berry patch



Name _____

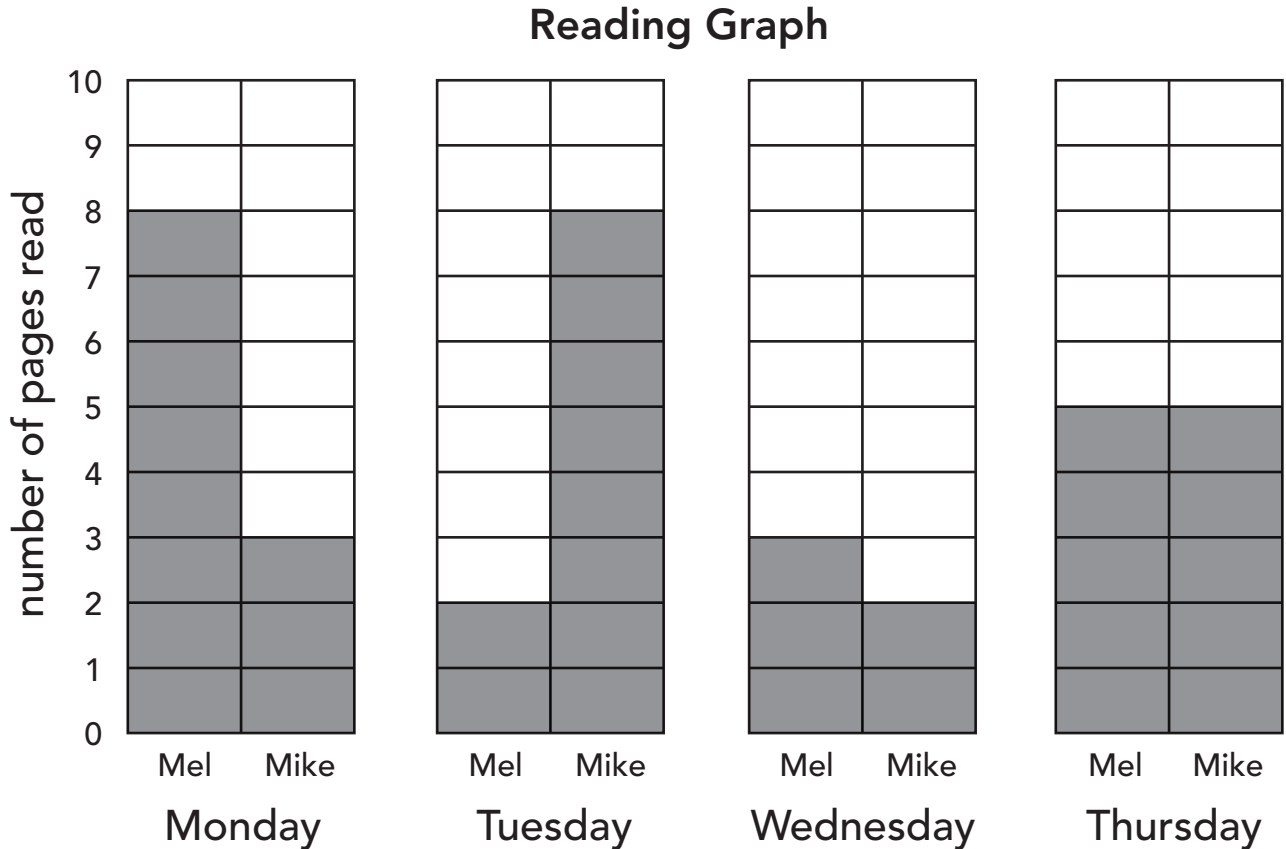
LM 10.12A Scroll



Name _____

LM 10.13A Comparison Bar Graph

Mel and Mike are twins. They like to read books. The graph shows how many pages the twins read each day.



Use the graph to answer the questions.

1. Who read more pages on Monday?

- ☐ Mel ☐ Mike

2. Who read more pages on Tuesday?

- ☐ Mel ☐ Mike

3. On which day did the boys read the same number of pages?

- ☐ Monday ☐ Wednesday ☐ Thursday

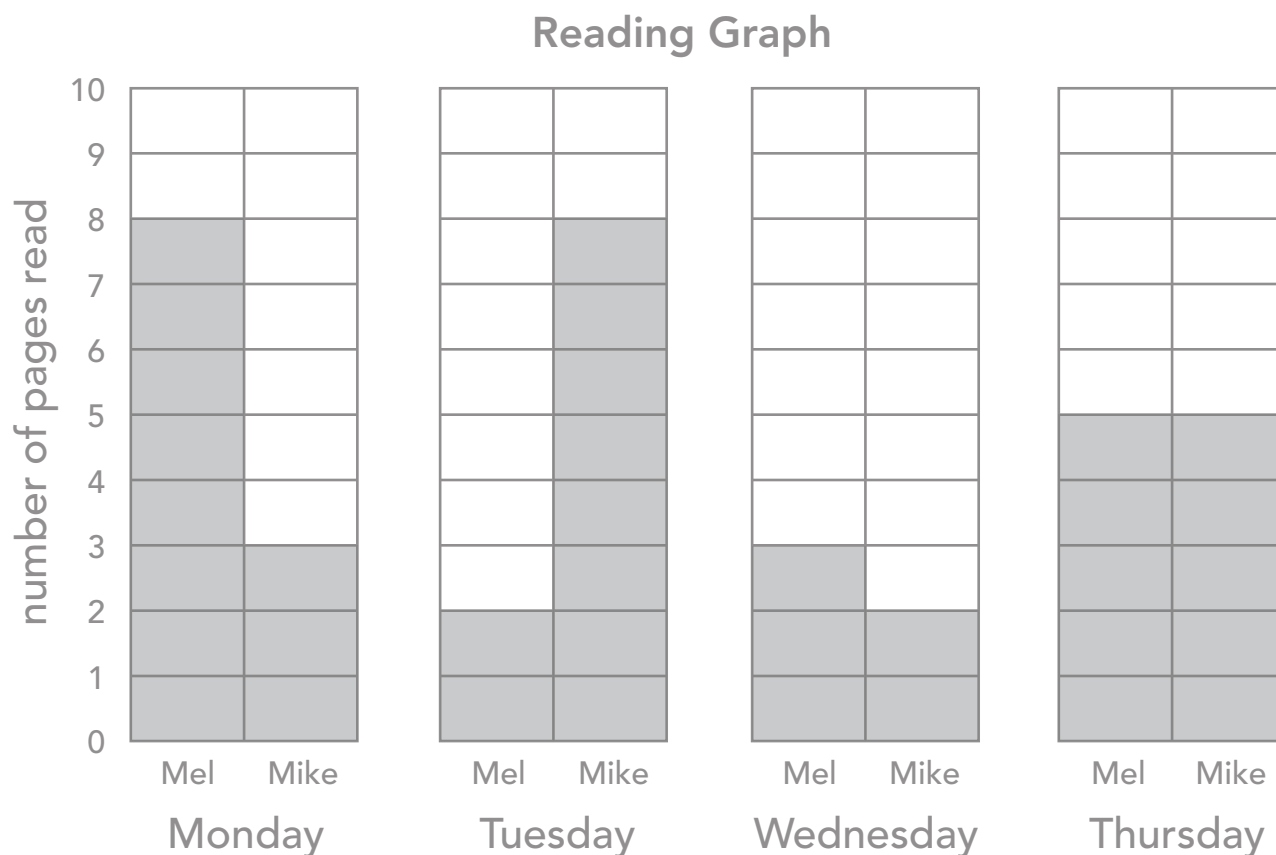
4. How many pages did the boys read on Wednesday?

- ☐ 7 ☐ 10 ☐ 5 ☐ 8



LM 10.13A Comparison Bar Graph

Mel and Mike are twins. They like to read books. The graph shows how many pages the twins read each day.



Use the graph to answer the questions.

1. Who read more pages on Monday?

☒ Mel ☐ Mike

2. Who read more pages on Tuesday?

☐ Mel ☒ Mike

3. On which day did the boys read the same number of pages?

☐ Monday ☐ Wednesday ☒ Thursday

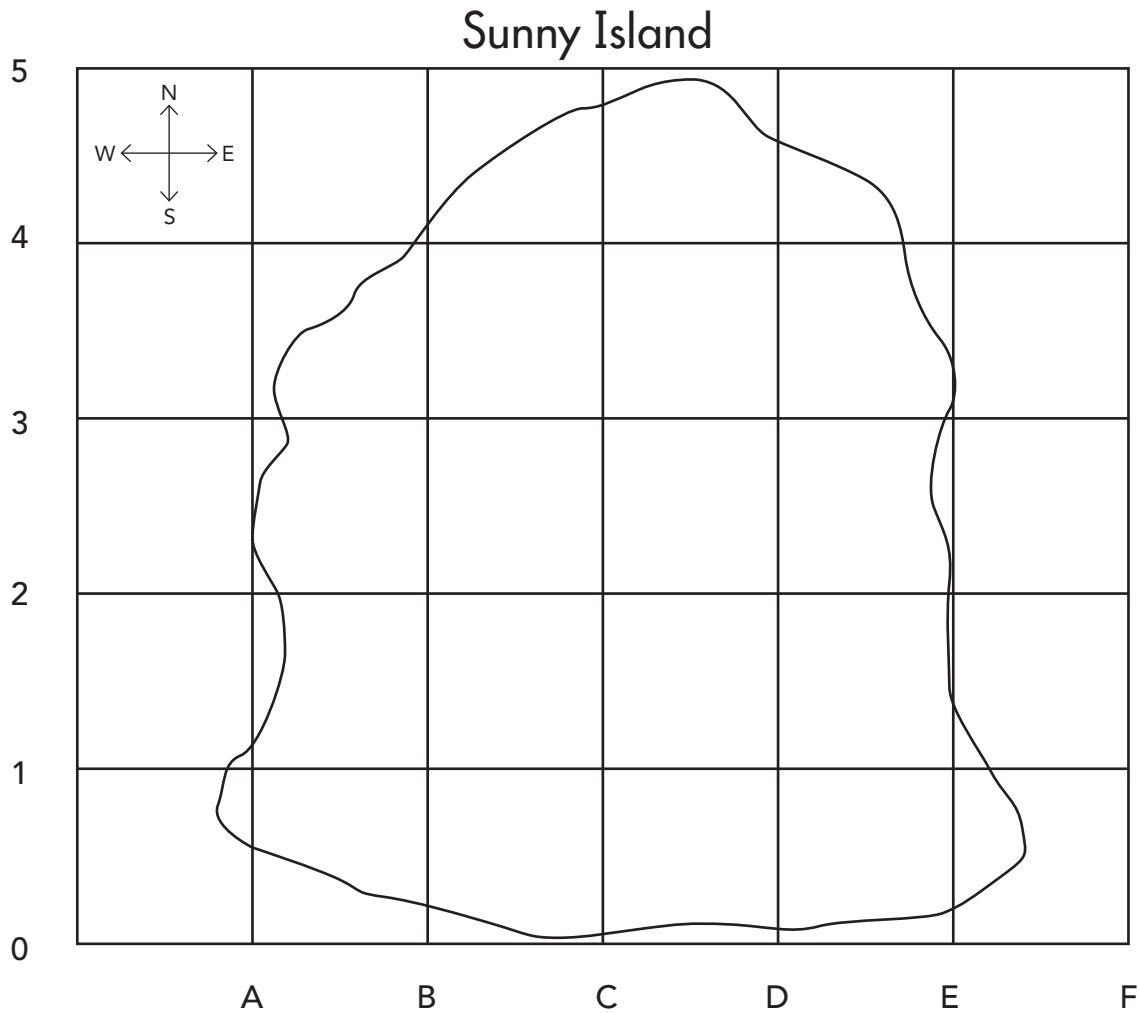
4. How many pages did the boys read on Wednesday?

☐ 7 ☐ 10 ☒ 5 ☐ 8

Name _____

LM 10.14A Sunny Island

Follow the directions. Then, color the island.



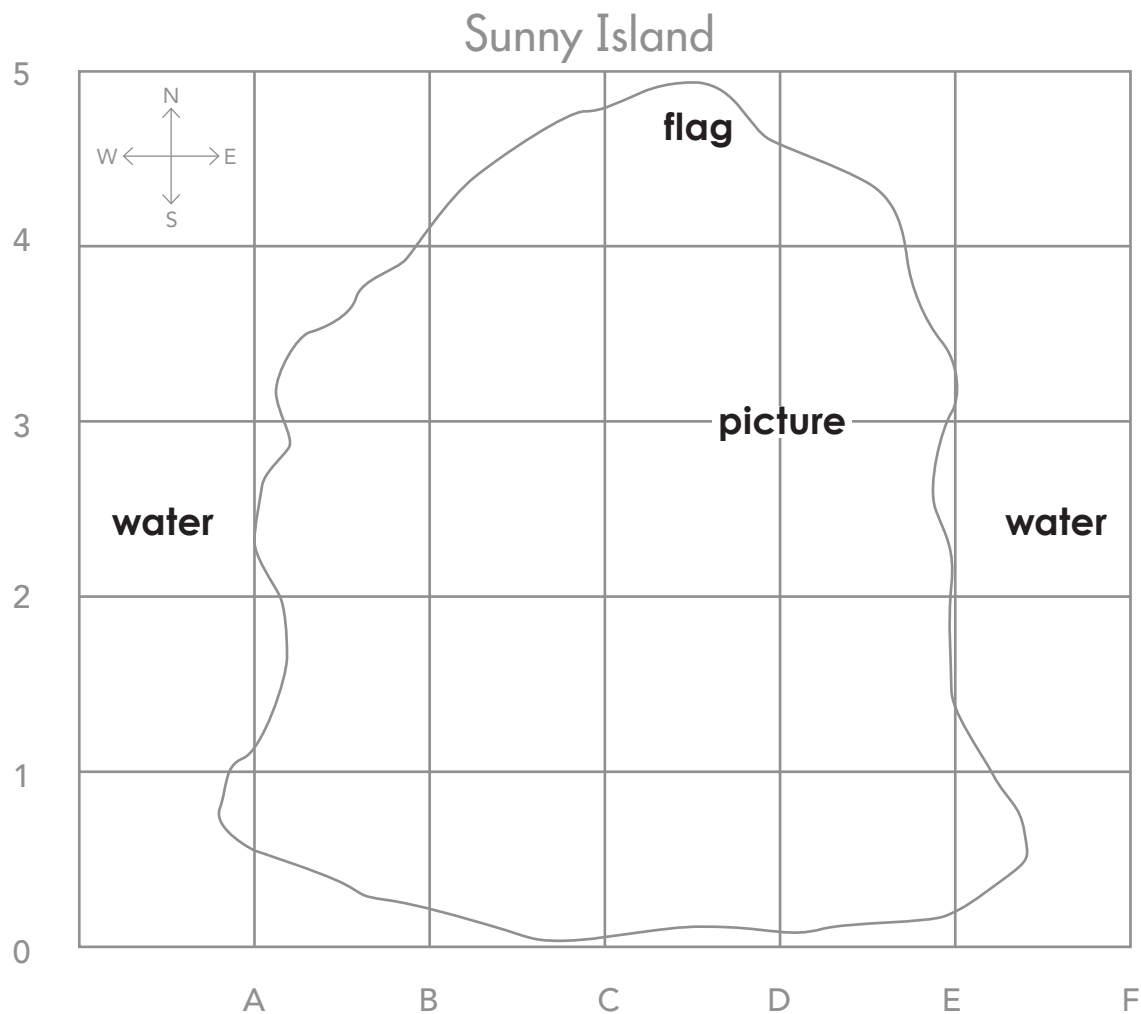
1. Color the water around the island blue.
2. Make a flag on the north tip of the island.
3. Put a picture of yourself at D3.
4. Use color tiles to cover only the island, not the water. About how many square inches is the area of the island?

about _____ square inches



LM 10.14A Sunny Island

Follow the directions. Then, color the island.



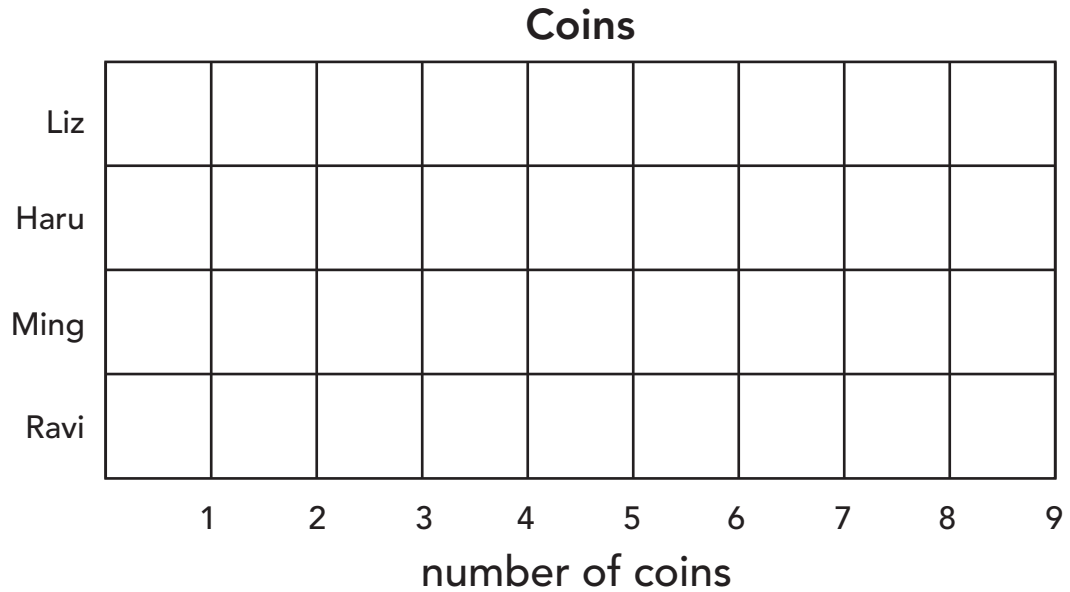
1. Color the water around the island blue.
2. Make a flag on the north tip of the island.
3. Put a picture of yourself at D3.
4. Use color tiles to cover only the island, not the water. About how many square inches is the area of the island?

about **16** square inches

Name _____

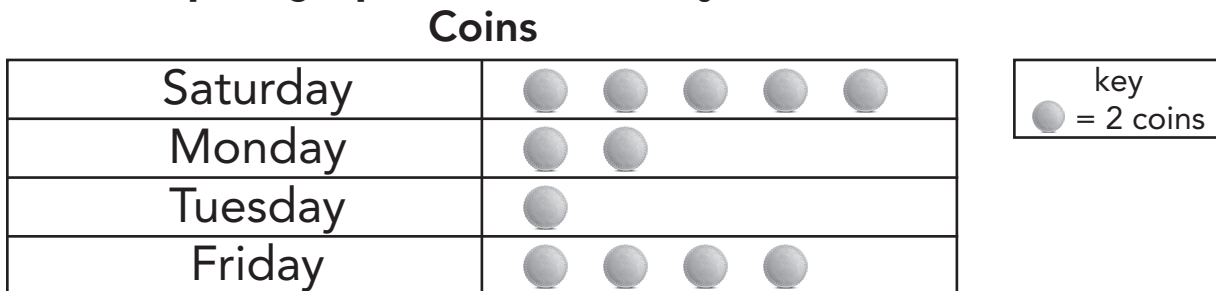
LM 10.14B Chapter 10 Test

Color the bar graph to show that Liz found 6 gold coins. Haru found 2 coins. Ming and Ravi found 4 each. Answer the questions.



- Who found the least number of gold coins?
☐ Liz ☐ Haru ☐ Ravi ☐ Ming
- Who found the greatest number of gold coins?
☐ Liz ☐ Haru ☐ Ravi ☐ Ming
- How many gold coins did Ming and Ravi find altogether?
☐ 7 ☐ 6 ☐ 8 ☐ 10

Read the pictograph. Answer the questions.

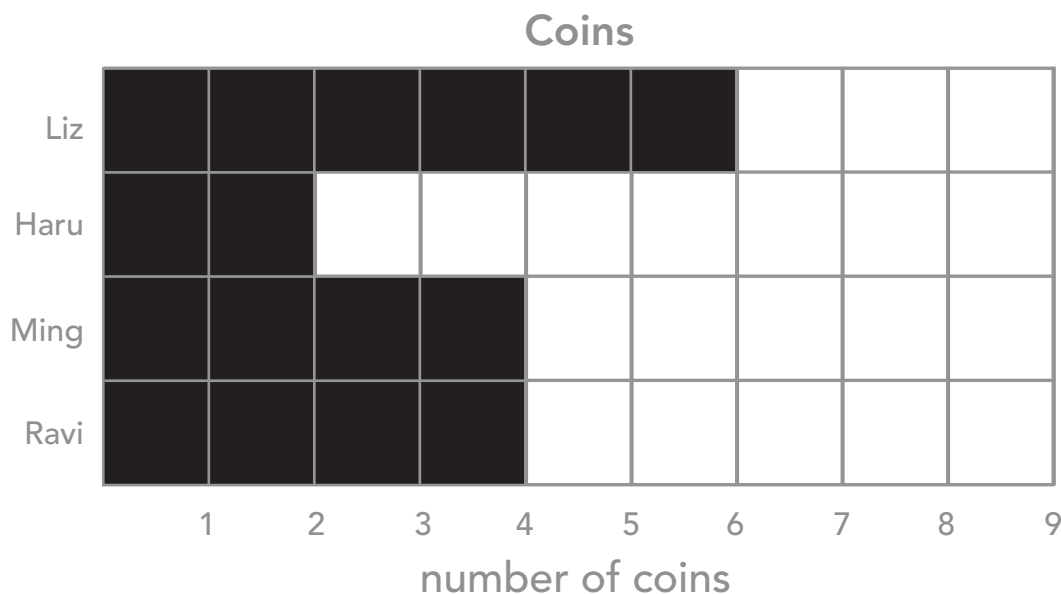


- On which day did the children find 10 gold coins?
☐ Monday ☐ Friday ☐ Saturday ☐ Tuesday



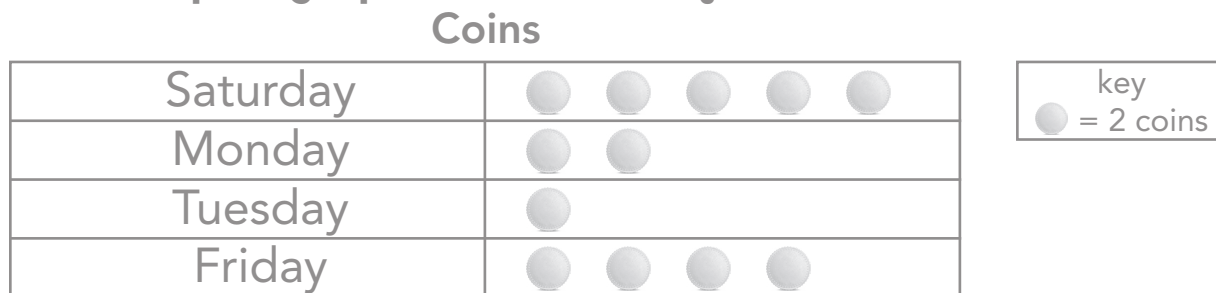
LM 10.14B Chapter 10 Test

Color the bar graph to show that Liz found 6 gold coins. Haru found 2 coins. Ming and Ravi found 4 each. Answer the questions.



- Who found the least number of gold coins?
☐ Liz ☒ Haru ☐ Ravi ☐ Ming
- Who found the greatest number of gold coins?
☒ Liz ☐ Haru ☐ Ravi ☐ Ming
- How many gold coins did Ming and Ravi find altogether?
☐ 7 ☐ 6 ☒ 8 ☐ 10

Read the pictograph. Answer the questions.

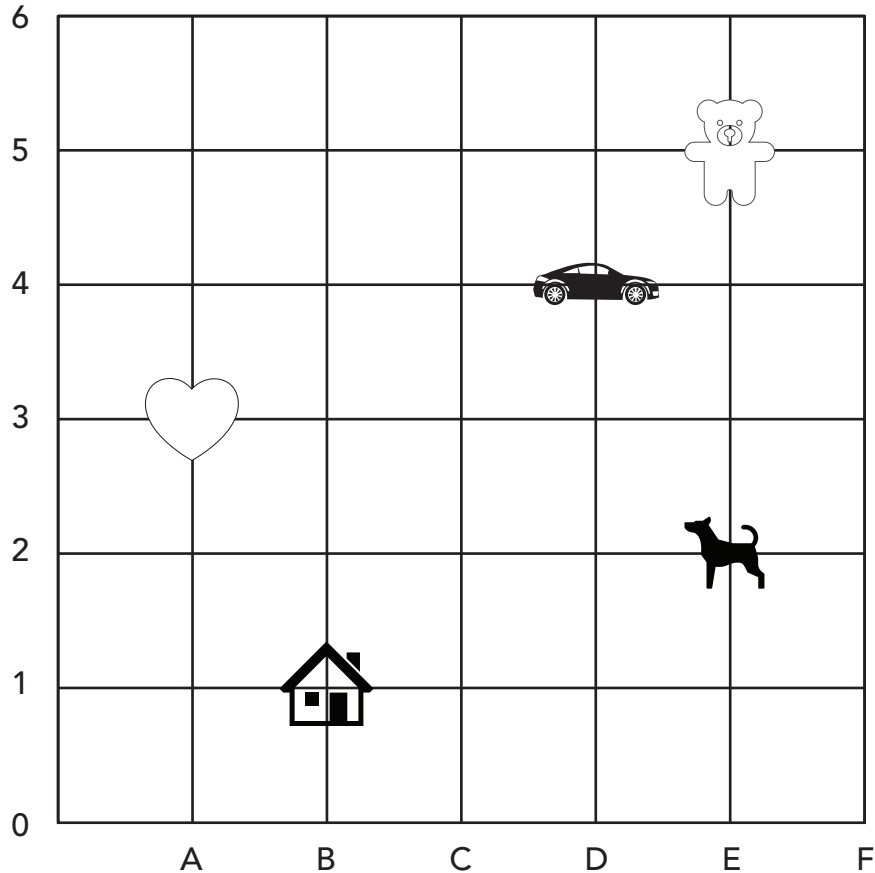


- On which day did the children find 10 gold coins?
☐ Monday ☐ Friday ☒ Saturday ☐ Tuesday

Name _____

LM 10.14C Chapter 10 Test

Complete the exercises.



5. What is at E2? _____

6. Where is the heart? _____

7. Draw a star at C2.

8. Where is the car? _____

9. Draw a circle at B5.

10. Where is the house?

☐ B6

☐ E2

☐ B1

☐ E5

11. What is at E5?

☐ teddy bear

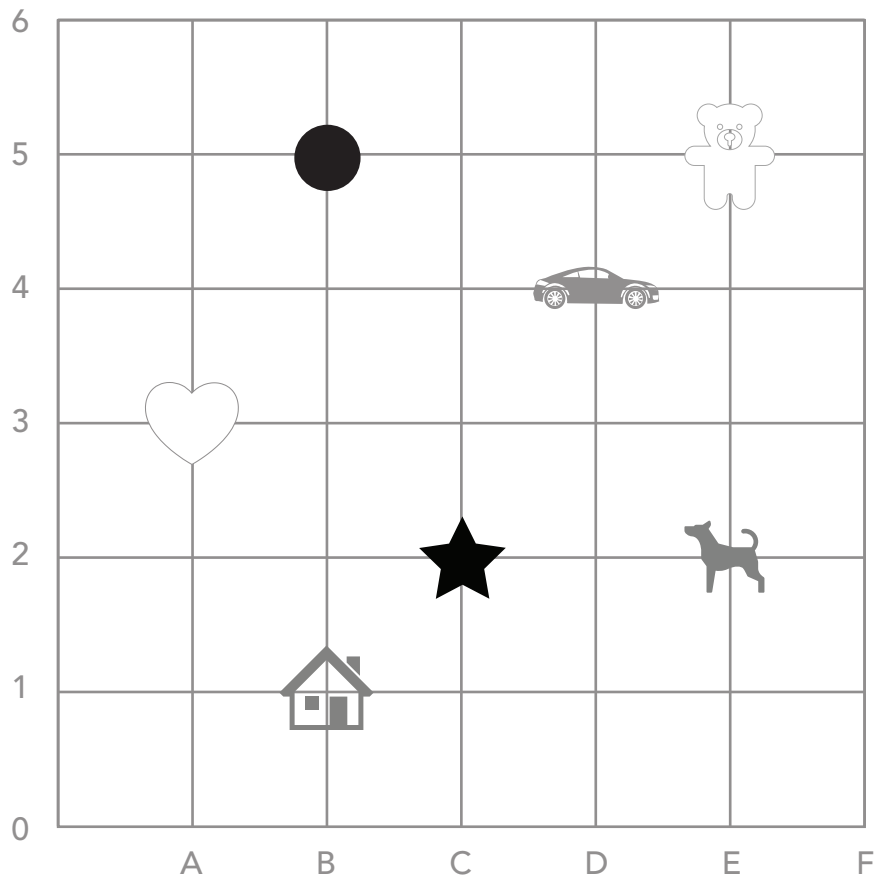
☐ heart

☐ car



LM 10.14C Chapter 10 Test

Complete the exercises.



5. What is at E2? dog

6. Where is the heart? A3

7. Draw a star at C2.

8. Where is the car? D4

9. Draw a circle at B5.

10. Where is the house?

☐ B6

☐ E2

☒ B1

☐ E5

11. What is at E5?

☒ teddy bear

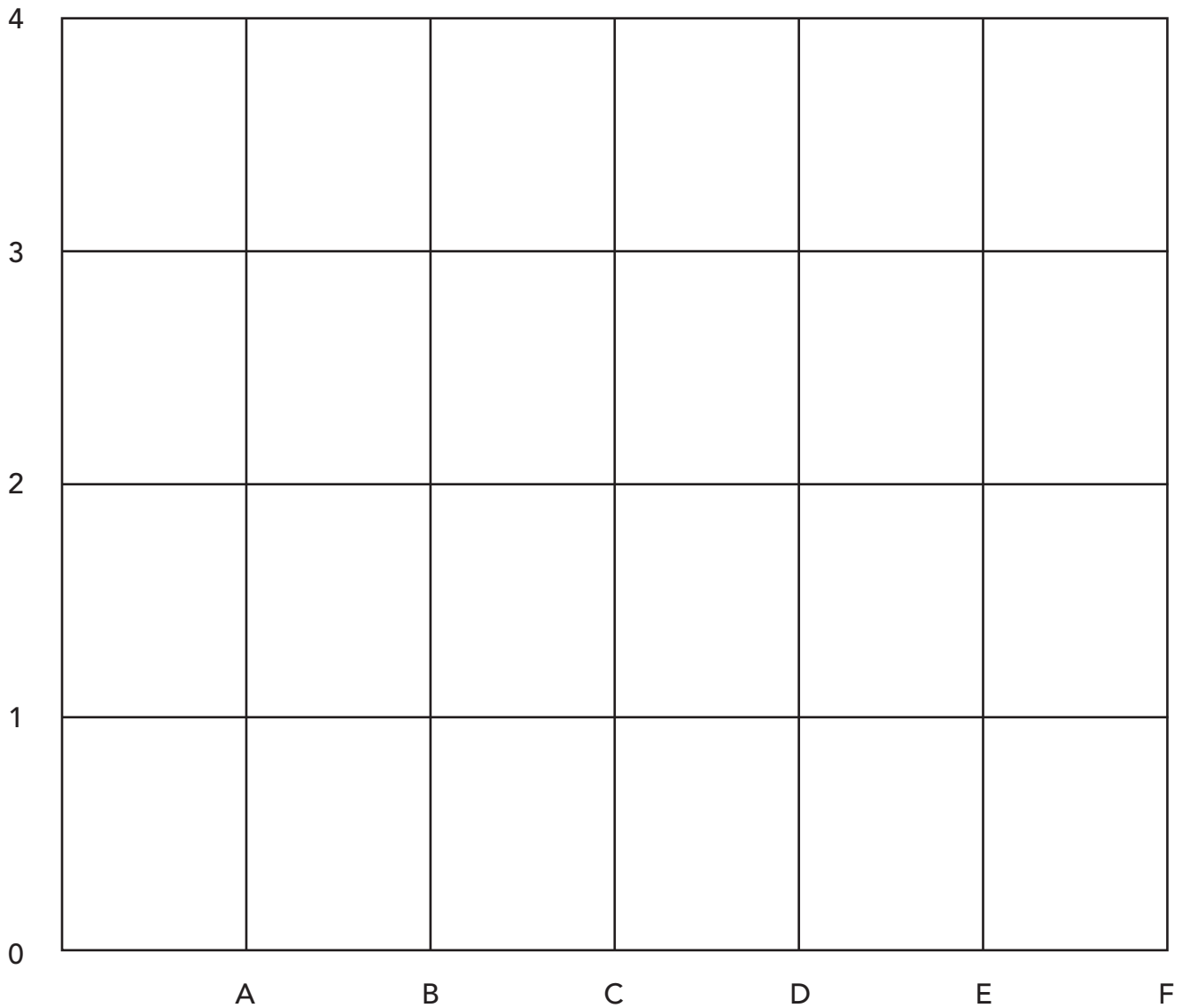
☐ heart

☐ car

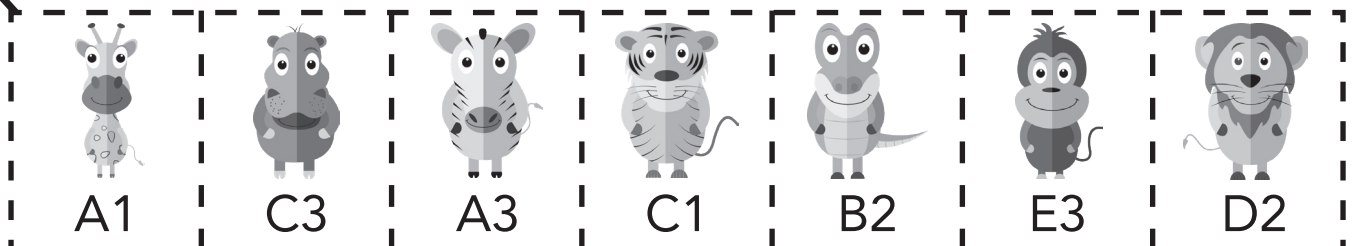
Name _____

LM 10.14D Build a Zoo

The Zoo



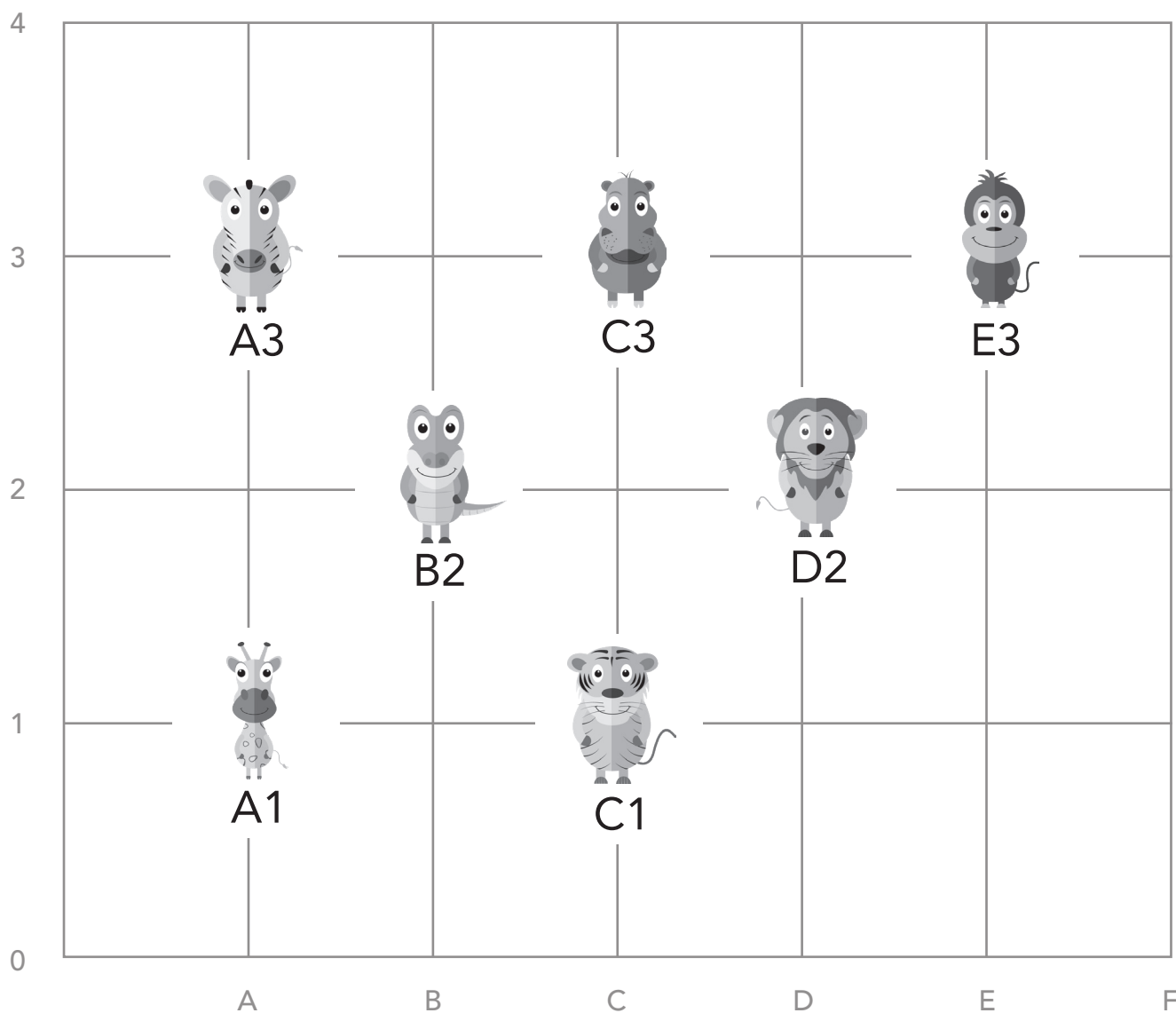
The zoo animals are out! Put them back in their cages. Glue each picture in its location.





LM 10.14D Build a Zoo

The Zoo



The zoo animals are out! Put them back in their cages. Glue each picture in its location.



Weather Graph

Month _____



sunny



cloudy



rainy



foggy



windy



snowy

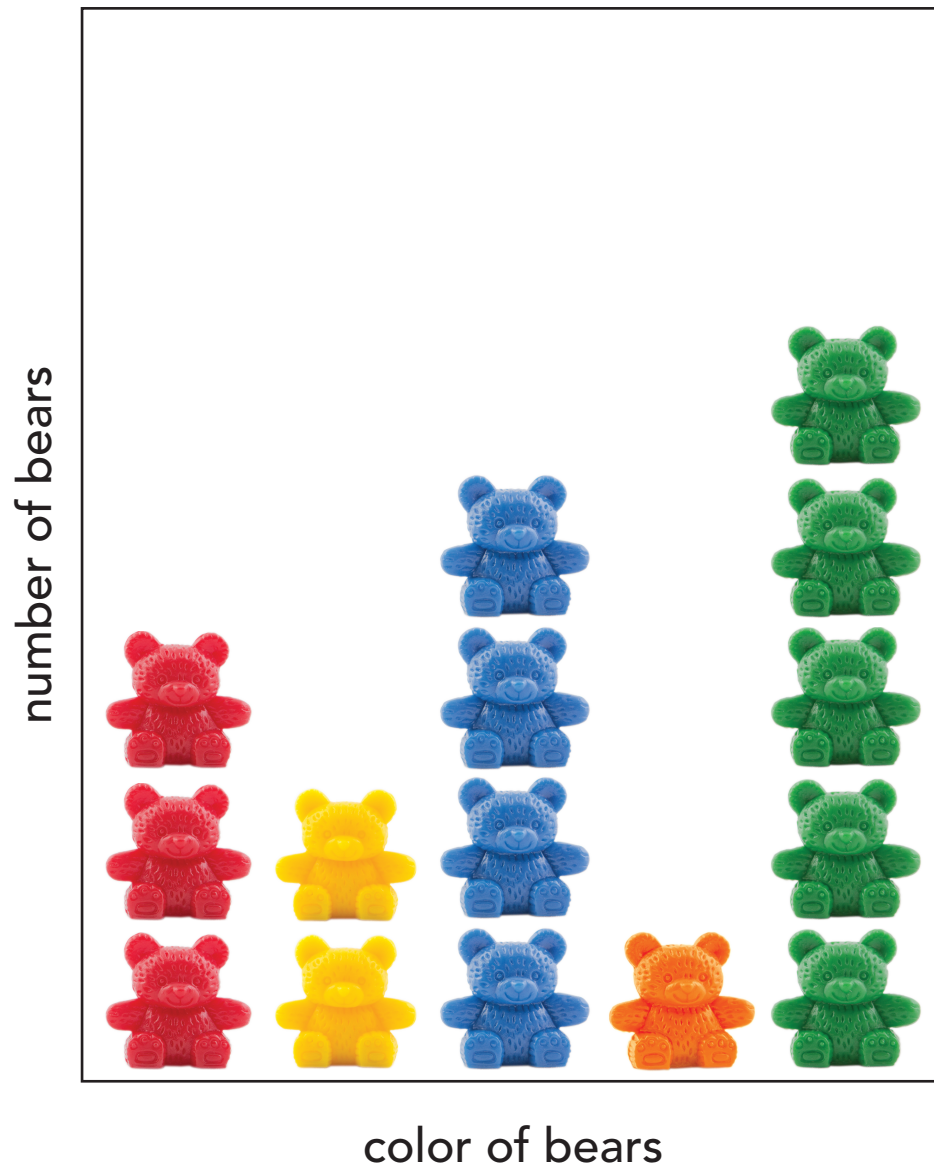
other



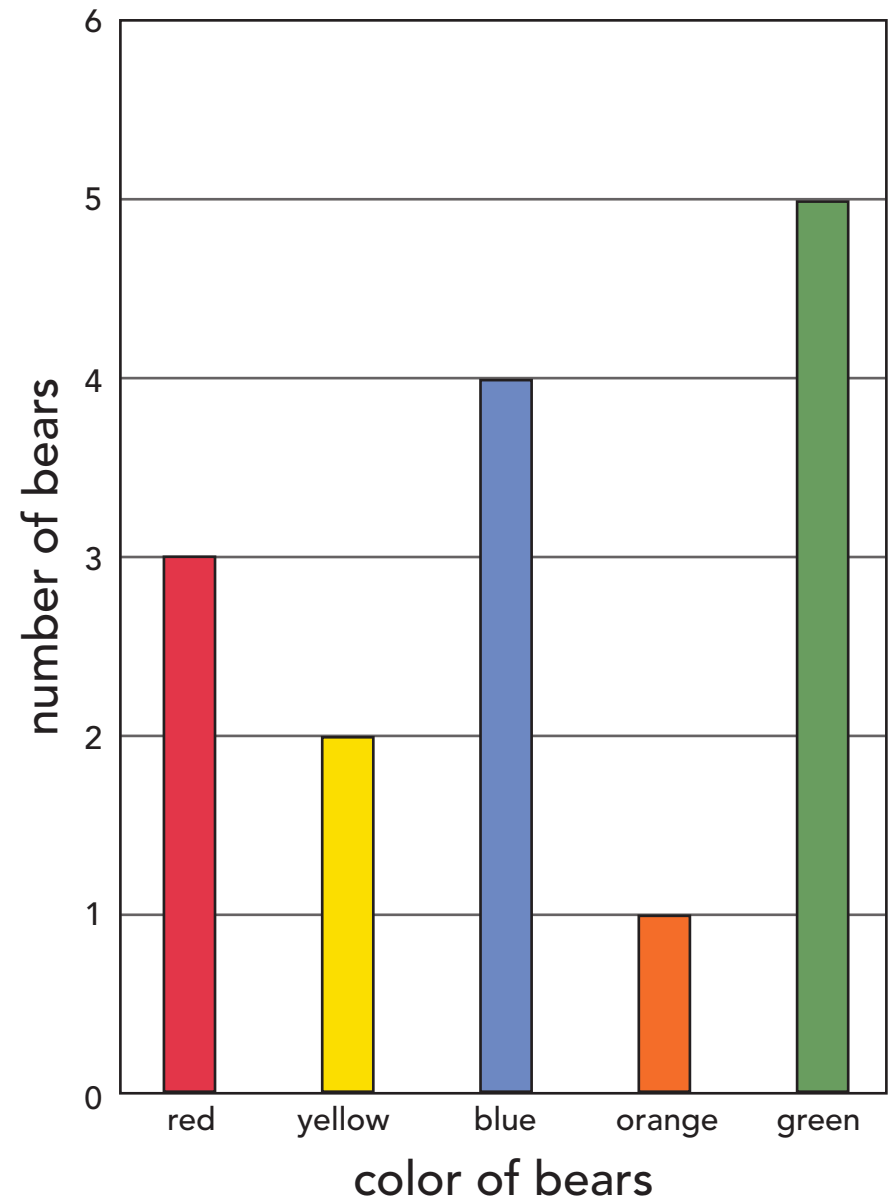
DM 10.4A

Pictograph and Bar Graph

Bear Counters



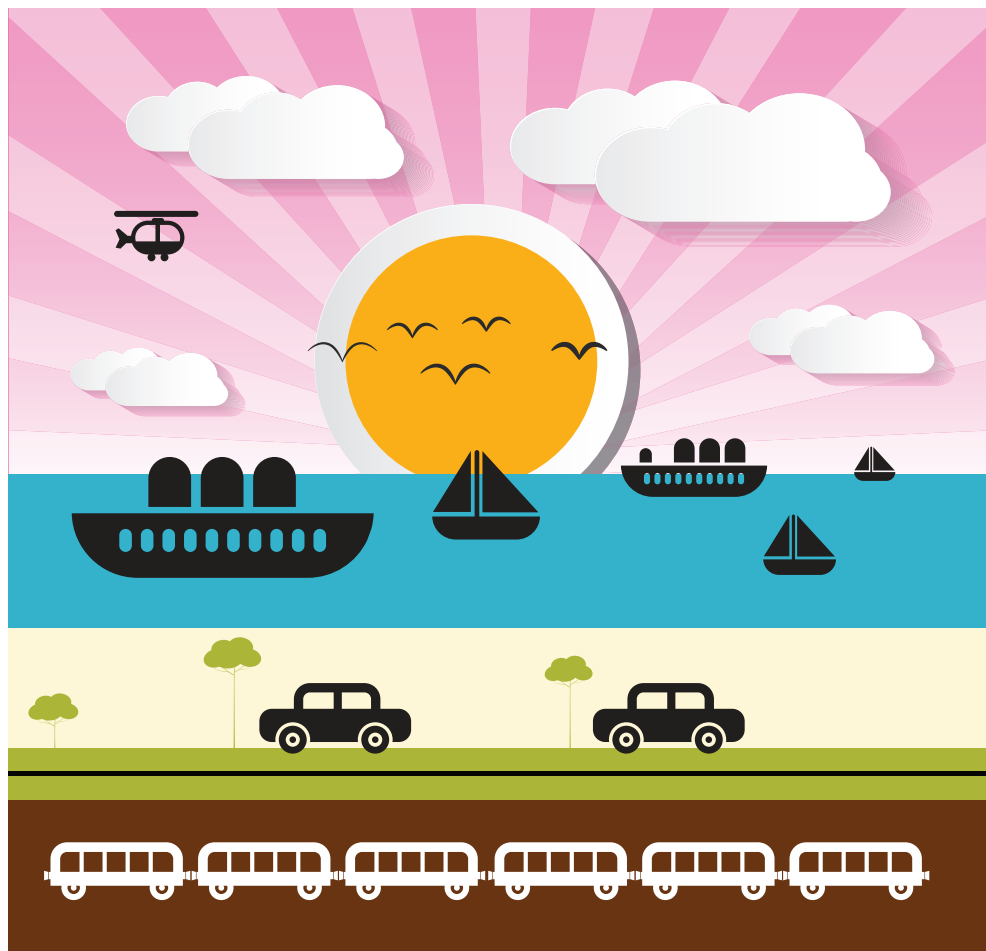
Bear Counters



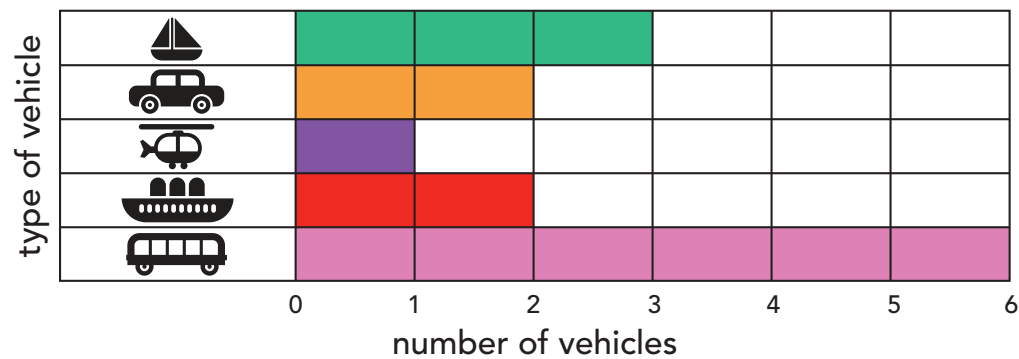


DM 10.5A

Bar Graph: Sorting



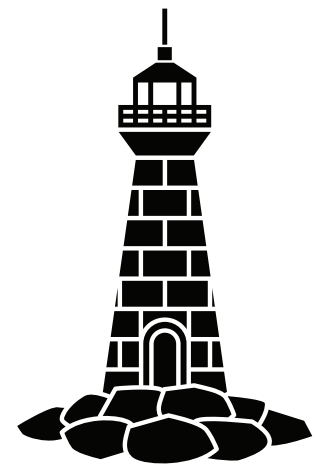
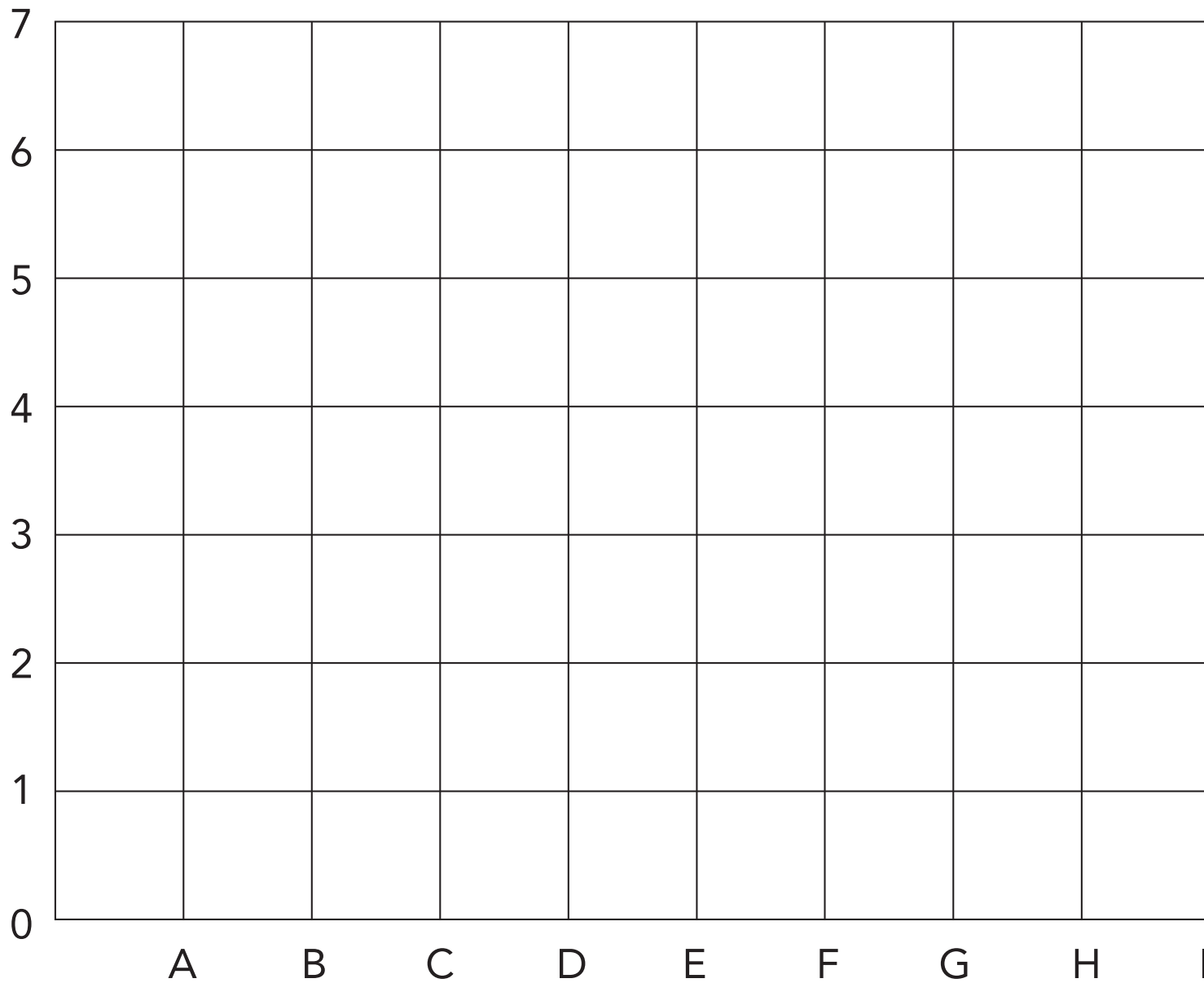
Transportation





DM 10.10A

Coordinate Graph





DM 10.13A

Comparison Bar Graph

