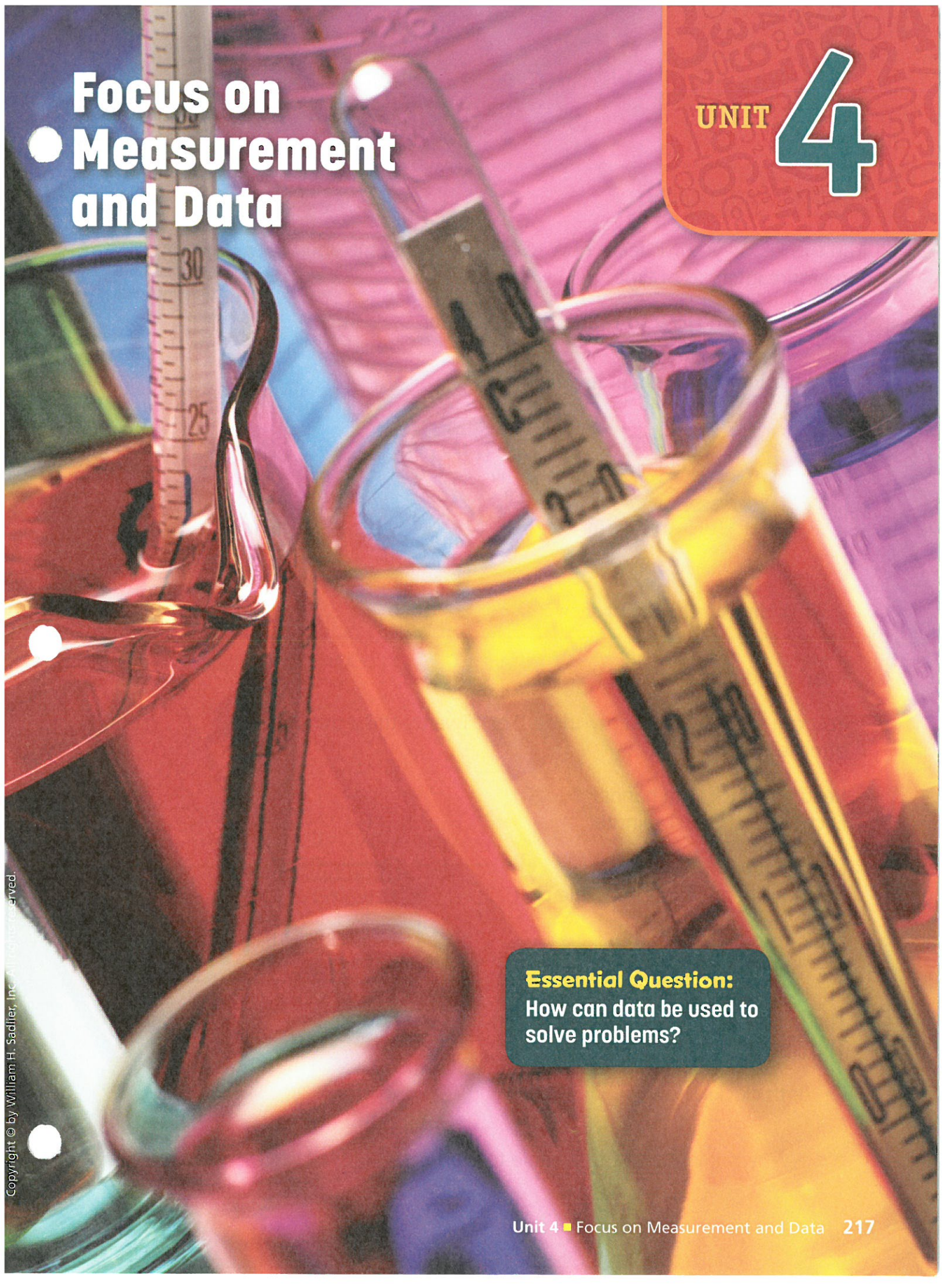
Focus on Measurement and Data

UNIT 4



Essential Question:
How can data be used to solve problems?

Lesson
24 Problem Solving: Time

Essential Question:
How can you solve problems involving tim.
3.MD.1

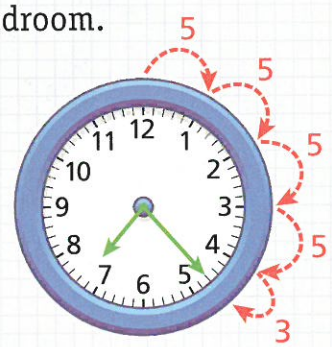
Words to Know:
time
minute
elapsed time
time interval
hour

Guided Instruction

In this lesson you will learn how to tell and write time and measure intervals of time.

Understand: How to tell and write time

Trisha has two clocks in her bedroom.



What time do the clocks show?

Read the digital clock. 7:23

You can say, "Seven twenty-three." or "Twenty-three minutes after seven."

Read the clock with hands.
Each mark shows 1 minute.

Look at the hour hand.
The hour hand points at a little past 7.

Look at the minute hand.
5 + 5 + 5 + 5 = 20
20 + 3 = 23
The minute hand points at 23 minutes past the hour.
The clock shows 7:23.

Remember!
The hour hand moves from one number to the next in 60 minutes.
The minute hand moves from one number to the next in 5 minutes.

▶ Both clocks show 7:23.

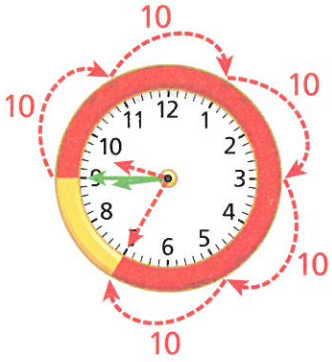
✎ Why is it important to be able to read both kinds of clocks?

Guided Instruction

Understand: How to measure intervals of time

Aaron swam from 8:45 A.M. to 9:35 A.M.
How long did Aaron swim?

You need to find the amount of time Aaron swam. The difference from one time to another time is called elapsed time.

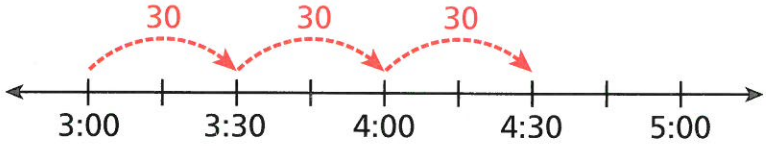


To find the elapsed time, look at the minute hand for 8:45. Count time intervals of 10 minutes to 9:35.
10 + 10 + 10 + 10 + 10 = 50

➡ Aaron swam for 50 minutes.

A soccer team practiced from 3:00 P.M. to 4:30 P.M.
How long did the team practice?

Use a number line.



Remember!
60 minutes is 1 hour.

Count time intervals of 30 minutes.
30 + 30 + 30 = 90

1 hour + 30 = 1 hour 30 minutes

➡ The team practiced for 90 minutes, or 1 hour 30 minutes.

✏ What other time intervals could you count to find how long the team practiced?

Guided Instruction

Connect: Problem solving and elapsed time

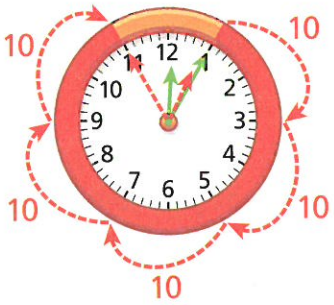
Lunch starts at 12:05 P.M. and lasts for 50 minutes.
When does lunch end?

Step 1

Start at 12:05.
Decide what time interval you will count.
Try 10 minutes.

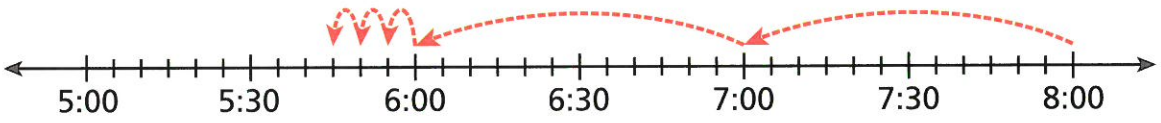
Step 2

You can add time intervals by counting on.
Count ahead by time intervals of 10 minutes.
After 50 minutes, the minute hand points to 11.



➡ Lunch ends at 12:55.

A movie ends at 8 P.M. The movie lasts 2 hours 15 minutes.
When does the movie start?



Step 1

You can subtract time intervals by counting back.
Start at 8:00.
Count back 2 hours. 8:00 → 7:00 → 6:00

Step 2

Count back 15 more minutes.
Count back by intervals of 5 minutes. 6:00 → 5:55 → 5:50 → 5:45

➡ The movie started at _____ P.M.

Guided Practice

Write the time shown by each clock.

1. 

_____

2. 

_____

3. 

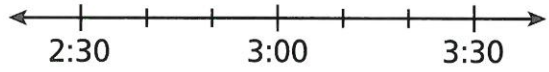
_____

Solve the problems.

4. Maria leaves for school at 7:25 A.M. She arrives at school at 7:50 A.M. How long does it take her to get to school?

____ minutes

5. Mr. Landon put a loaf of oatmeal bread in the oven at 2:30 P.M. He takes the bread out at 3:20 P.M. How long is the bread in the oven?



____ minutes

6. Henry works on a project for 40 minutes. If he started at 4:45 P.M., when did he finish?

_____ P.M.

7. A cat wakes at 10:10 A.M. It slept for 1 hour 20 minutes. When did it go to sleep?

_____ A.M.

Think•Pair•Share

MP4 8. A dinosaur movie starts at 12:30 P.M. The movie lasts 1 hour 30 minutes. Luis counts by intervals of 30 minutes to find when the movie ends. Sara counts by intervals of 10 minutes. Do Luis and Sara find the same answer to the problem? Explain your thinking.

Independent Practice

Write the time shown by each clock.

1. 

_____

2. 

_____

3. 

_____

4. 

_____

5. 

_____

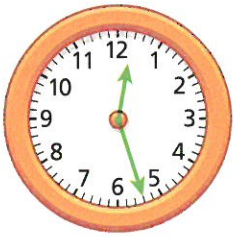
6. 

_____

7. Which clock shows 12:22?

a. 

b. 

c. 

d. 

8. The clocks show when Nelson starts and finishes washing his mother's car. How long does it take Nelson to wash the car?

Starts

Finishes

Answer _____

_____

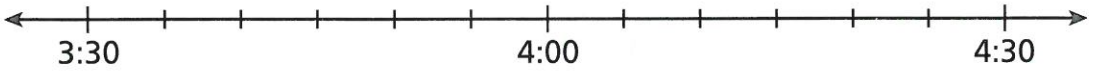
Independent Practice

Solve the problems.

MP2 **9.** Anna rides her bike to the library. The clocks show the time she leaves for the library and the time she arrives there. How long is Anna's ride.

Time Anna Leaves

Time Anna Arrives



_____

MP1 **10.** Mr. Cruz drives to the grocery store. He returns at 7:20 P.M. after being gone for 45 minutes. What time did Mr. Cruz leave for the store?

Time Mr. Cruz Leaves

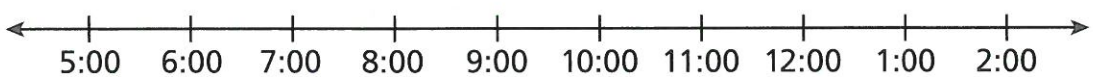
Time Mr. Cruz Returns

Answer _____

MP7 **11.** Jenna starts reading a story book at 6:10 P.M. She reads for 50 minutes. Then her mother tells her to set the dinner table. When does Jenna stop reading?

Answer _____

MP4 **12.** Ray and his dad go fishing. They leave the house at 5:45 A.M. They are gone for 7 hours 30 minutes. When do they come home?



Answer _____

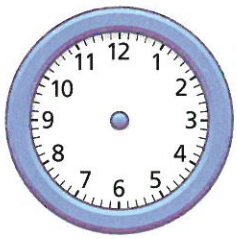
Independent Practice

MP8 **13.** Basketball practice starts at 3:15 P.M. and lasts 1 hour 30 minutes. Explain how to find when basketball practice will end.

MP7 **14.** Dan leaves the dentist office at 2:20 P.M. He was at the office for 50 minutes. How can Dan figure out when he arrived at the office?

MP2 **15.** Sue practices her violin each day for 45 minutes. Today she starts practicing at 4:55 P.M. When does she finish?

Show your work.



Answer _____

MP1 **16.** A plane arrives at an airport at 7:10 A.M. The flight lasted 2 hours 20 minutes. When did the plane take off?

Show your work.

Answer _____

Independent Practice

MP5 **17.** Lucy walks to the bus stop, waits for the bus, and then takes the bus to school. She walks 10 minutes. She waits 5 minutes. And the bus trip lasts 25 minutes. If Lucy leaves her home at 7:15 A.M., when does she arrive at school?

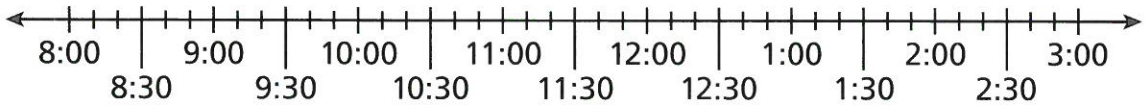
· Show your work.

Answer _____

MP4 **18.** At Culver Elementary, the school day lasts 6 hours 30 minutes. The first bell rings at 8:00 A.M. When does the last bell ring?

Answer _____

· Justify your answer using words, drawings, or numbers.



MP2 **19.** Marcy's mother takes a roast out of the oven at 7:35 P.M. The roast was in the oven for 1 hour 45 minutes. When did Marcy's mother put the roast in the oven?

Answer _____

· Justify your answer using words, drawings, or numbers.

Lesson 25

Problem Solving: Liquid Volumes and Masses

Essential Question:
How can you solve problems involving volume and mass?

3.MD.2

Words to Know:
liquid volume
liter (L)
mass
gram (g)
kilogram (kg)

Guided Instruction

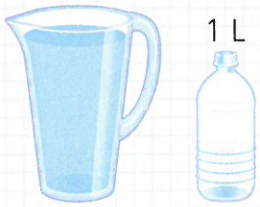
In this lesson you will learn about liquid volume and mass.

Understand: How to estimate liquid volume

Liquid volume is the amount of liquid a container can hold.

Fred filled a pitcher with juice.

Which is the best estimate of the liquid volume of the pitcher?



less than 1 liter **1 liter** **more than 1 liter**

Use a benchmark to get an idea of how much 1 liter is. A tall water bottle has a liquid volume of 1 liter. Compare the amount of juice in the pitcher with the amount of water that would fill a 1-liter bottle.

▶ The liquid volume of the pitcher is more than 1 liter.

Understand: How to solve problems involving liquid volume

Teresa has a fish tank that holds 25 liters of water.
She takes out 9 liters of water to clean the tank.
How many liters of water are still in the tank?

Write a subtraction equation for the problem.

$25 - 9 = w$

Solve the subtraction equation.

$25 - 9 = 16$

▶ 16 liters of water are still in the tank.

✎ Write an addition equation you could use to solve the problem.

Guided Instruction

Understand: How to estimate mass

Mass is the amount of matter an object contains.

Betty found a robin feather.

Which is the best estimate of the feather's mass?

about 1 gram **about 10 grams** **about 100 grams**

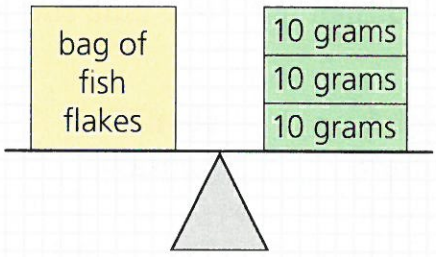
Use a benchmark. Look at the chart. Which of the benchmark objects has about the same mass as a feather? A pencil is too heavy, so use a paper clip. A paper clip has a mass of about 1 gram.

Benchmarks	
Object	Mass
Paper clip	1 gram
Pencil	10 grams
Cell phone	100 grams
1-liter bottle of water	1000 grams

▶ The feather has a mass of about 1 gram.

Understand: How to solve problems involving mass

At the aquarium, Henry filled 6 small paper bags with fish food flakes. He made this drawing of his balance to show how he measured the mass of 1 filled bag.



What is the mass of the fish flakes Henry used to fill the 6 small bags?

Start by using the drawing to find the mass of 1 bag.

The drawing shows that the mass of 1 bag of fish flakes is about 30 grams.

Hint: A bag has very little mass, so do not worry about including the mass of a bag.

Then use this information to write an equation.

$f = 6 \times 30$
$f = 180$

▶ Six bags of fish flakes have a mass of about 180 grams.

Guided Instruction

Connect: Solving problems involving liquid volumes and masses

The Fielder family is having a party. Mr. Fielder makes a large batch of punch. He mixes together 5 liters of lemon-lime soda, 2 liters of orange juice, and 4 liters of grape juice. How much punch does Mr. Fielder make in all?

Step 1

Use a drawing to write an equation.

$5 + 2 + 4 = p$

liters of punch in all		
5 liters	2 liters	4 liters

Step 2

Solve the equation.

$5 + 2 + 4 = 11$

▶ Mr. Fielder makes 11 liters of punch in all.

A kilogram is a unit used to measure mass. 1 kg = 1000 g

Tina has a softball bat. Help Tina find the best estimate of the mass of the bat.

about 1 kilogram **about 3 kilograms** **about 5 kilograms**

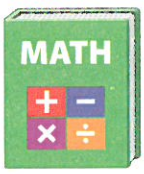
Step 1

Use a benchmark.
Look at the chart.
Which of the benchmark objects has about the same mass as a bat?
A brick is too heavy, so it is a math book.

Benchmarks	
Object	Mass
Math book	1 kilogram
Brick	3 kilograms
Medium size cat	5 kilograms

Step 2

A math book has a mass of about 1 kilogram.



▶ The bat has a mass of about ____ kilogram.

Guided Practice

Circle the best estimate of the liquid volume.

1.

1 liter 10 liters 50 liters

2.

1 liter 10 liters 20 liters

Circle the best estimate of the mass.

3.

1 kilogram 10 kilograms 100 kilograms

4.

1 gram 25 grams 50 grams

Solve each problem.

5. Ms. Lewis makes 6 mini bran muffins. Each muffin has a mass of 20 grams. What is the total mass of the bran muffins?

____ grams

6. Jerry's two fish tanks have liquid volumes of 90 liters and 38 liters. How many fewer liters of water does the smaller tank hold than the larger tank?

____ liters

Think•Pair•Share

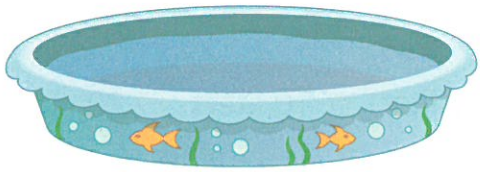
MP1 7. Abu wants to estimate the mass of two nickels. He knows that the mass of a pencil is about 10 grams and the mass of a cell phone is about 100 grams. He estimates that the two nickels have a mass of about 100 grams. What mistake did Abu make? Explain.

Independent Practice

Draw a line connecting each object with the best estimate of its liquid volume.

1. 

6 liters

2. 

1 liter

3. 

500 liters

4. 

20 liters

Circle the best estimate of the mass of each object.

5. 

a. 15 grams b. 150 grams
c. 500 grams d. 1000 grams

6. 

a. 1 kilogram b. 2 kilograms
c. 10 kilograms d. 50 kilograms

7. 

a. 5 grams b. 5 kilograms
c. 50 kilograms d. 500 kilograms

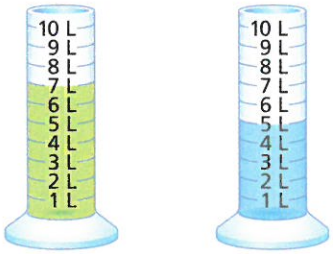
8. 

a. 1 gram b. 20 grams
c. 40 grams d. 100 grams

Independent Practice

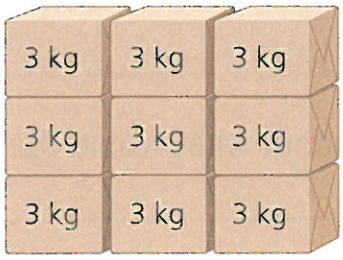
Solve the problems.

9. In science class, Ms. Franklin wants to combine two liquids. How big of a container does she need?



____-liter container

10. Ed takes 9 packages to the post office. Each package has the same mass. What is the mass of the packages?



____ kilograms

11. BriAnna has a bag of pebbles. She puts an equal amount of pebbles into each of 5 flowerpots. If she uses all the pebbles, how much does she put in each pot?

____ grams of pebbles

12. Steve fills a bucket with water. He pours 12 liters of the water into a trough for his horse. How much water is left in the bucket?

____ liters of water

Circle the correct answer.

13. Mr. Neil buys a piece of cheese that has a mass of 1000 grams. After he slices off some cheese, the piece has a mass of 680 grams. How much cheese does he slice off?

a. 320 grams **b.** 480 grams

c. 620 grams **d.** 1680 grams

14. Samantha has 8 tomato plants. She waters them with a can that holds 4 liters. If she gives each plant a full can of water, how much water does she use?

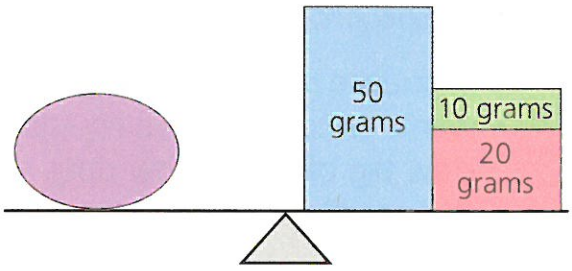
a. 15 liters **b.** 24 liters

c. 32 liters **d.** 36 liters

Independent Practice

Solve the problems.

MP4 **15.** Trent made a drawing to show how he measured the mass of 1 plum.



a. About what is the mass of 1 plum?

_____

b. About what would the mass of 6 plums be?

_____

MP2 **16.** Ms. Rivera has two goldfish ponds. The first pond holds 190 liters of water. The second pond holds 28 fewer liters than the first pond. How can she find the liquid volume of the second pond?

MP1 **17.** Helen buys a fish tank. She puts in 65 liters of water on Monday. She adds 42 liters of water on Tuesday and 83 liters of water on Wednesday to fill the tank. What is the liquid volume of the tank?

Show your work.

Answer _____

MP2 **18.** Dave has a sack of concrete. The mass of the concrete is 24 kilograms. When he pours equal amounts of concrete into some buckets, he empties the sack. Each bucket has 3 kilograms of concrete. How many buckets does he use?

Show your work.

Answer _____

Independent Practice

MP6 **19.** A box contains 80 crackers. Each cracker has a mass of 5 grams. What is the total mass of the crackers?

· **Show your work.**

Answer _____

MP1 **20.** Ms. Thomson puts 480 liters of water in a wading pool. Her children and their friends play in the pool. Now the pool has 393 liters of water. How much water do the children and their friends splash out?

Answer _____

· **Justify your answer using words, drawings, or numbers.**

MP2 **21.** Sam makes a regular veggie burger and a super veggie burger. He uses mustard from a 250-gram jar in the veggie burgers. The regular veggie burger has a mass of 140 grams. The super veggie burger has a mass of 235 grams. What is the total mass of the veggie burgers?

Answer _____

· **Justify your answer using words, drawings, or numbers.**

Lesson 26

Draw Graphs to Represent Categorical Data

Essential Question:
How can I draw graphs to show data?

3.MD.3

Words to Know:
picture graph
data
key
bar graph
scale

Guided Instruction

In this lesson you will learn about picture graphs and bar graphs.

Understand: How to draw picture graphs

A picture graph shows data, or information.

The data in the tally chart to the right show the favorite fruits of students in a third-grade class. How many students chose peaches as their favorite fruit?

Favorite Fruit	
Peaches	𝍸 𝍸
Strawberries	𝍸 |
Bananas	||||
Oranges	𝍸 |||

▶ Ten students chose peaches as their favorite fruit.

You can use the data from the tally chart to make a picture graph. Each picture or symbol represents a number of data.

Look at the row for Peaches in the tally chart.
Ten students chose peaches as their favorite fruit.

Look at the row for Peaches in the picture graph.
There are 5 🪣 symbols. Look at the key.
The key tells what each symbol represents.
Each 🪣 symbol represents 2 students.
$5 \times 2 = 10$

Favorite Fruit	
Peaches	🪣 🪣 🪣 🪣 🪣
Strawberries	🪣 🪣 🪣
Bananas	🪣 🪣
Oranges	🪣 🪣 🪣 🪣
Key: 🪣 = 2 students	

✎ Explain why the picture graph shows the data for oranges correctly.

Guided Instruction

Understand: How to draw bar graphs

A bar graph is another way to represent data.

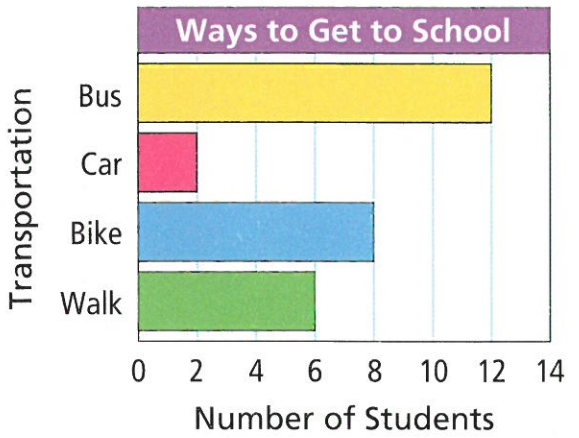
The tally chart shows how students in a third-grade class get to school. How many students ride their bikes to school?

Ways to Get to School	
Bus	𝍸 𝍸 ||
Car	||
Bike	𝍸 |||
Walk	𝍸 |

Eight students ride their bikes to school.

You can use the data from the tally chart to make a bar graph.

Each bar represents a row of data from the tally chart. The length of the bar shows the number of students.



Choose a scale that will work for the data: 12, 2, 8, 6

The scale tells how many for the length of a bar.

Look at the bike data in the tally chart.
Eight students ride their bikes to school.

Look at the bike bar in the bar graph.
Read the scale below the end of the bar.
The end of the bar is at 8.

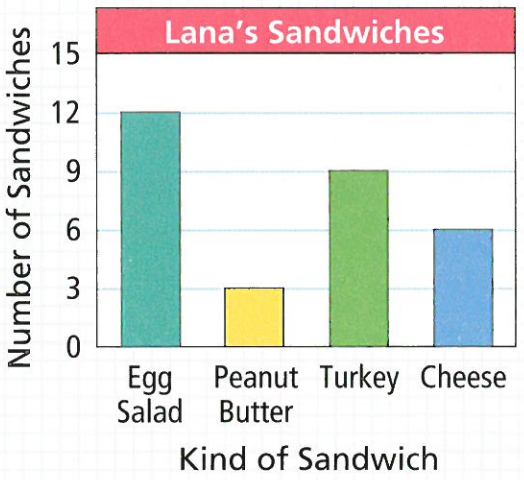
How can you tell whether the car data in the bar graph is the same as the car data in the tally chart?

Guided Instruction

Connect: What you know about graphs to solve problems

The bar graph shows the kinds of sandwiches Lana ate for lunch last month.

How many more egg salad sandwiches did Lana eat than cheese sandwiches?



Step 1

Find the number of egg salad sandwiches.
Read the scale on the left side of the graph.
The end of the egg salad bar is at 12.
Lana ate 12 egg salad sandwiches.

Step 2

Find the number of cheese sandwiches.
Read the scale to find the number Lisa ate.
The end of the cheese bar is at 6.
Lana ate 6 cheese sandwiches.

Step 3

Write and solve a subtraction equation.
$12 - 6 = n$

$12 - 6 =$ ____

Lana ate 6 more egg salad sandwiches than cheese sandwiches.

Write an addition equation you can use to solve the problem.

Guided Practice

Use data from the tally chart.

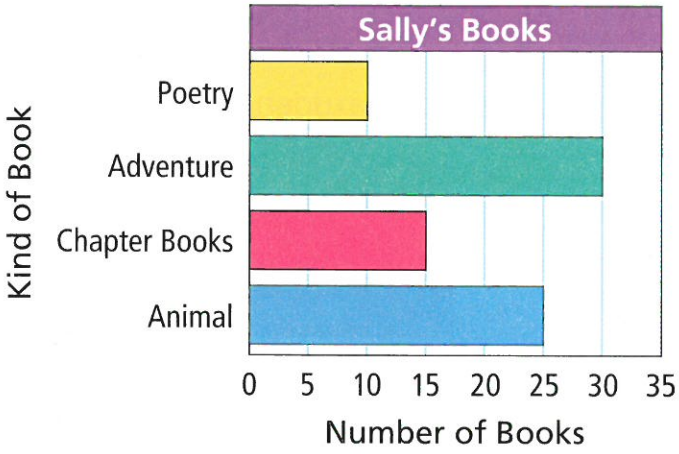
Plants in Will's Garden	
Melon	𝍸
Tomato	𝍸 |||
Squash	𝍸 𝍸
Carrot	𝍸 𝍸 ||

Plants in Will's Garden	
Melon	● ●
Tomato	
Squash	● ● ● ● ●
Carrot	
Key: ● = 2 plants	

1. Draw ● symbols in the picture graph to represent Will's tomato plants.

2. Draw ● symbols in the picture graph to represent Will's carrot plants.

Use the bar graph to answer exercises 3–5.



3. How many fewer poetry books does Sally have than animal books?

_____

4. How many more adventure books does Sally have than animal books?

_____

Think•Pair•Share

MP2 5. Sally gets 10 more Chapter Books. Explain how she should change the bar graph.

Independent Practice

Use the tally chart and picture graph.

Students' Favorite Colors	
Green	𝍸 IIII
Red	𝍸 𝍸 II
Blue	𝍸 I
Orange	III

Students' Favorite Colors	
Green	
Red	▲ ▲ ▲ ▲
Blue	▲ ▲
Orange	
Key: ▲ = 3 students	

1. How many students are represented by each ▲ symbol in the picture graph?

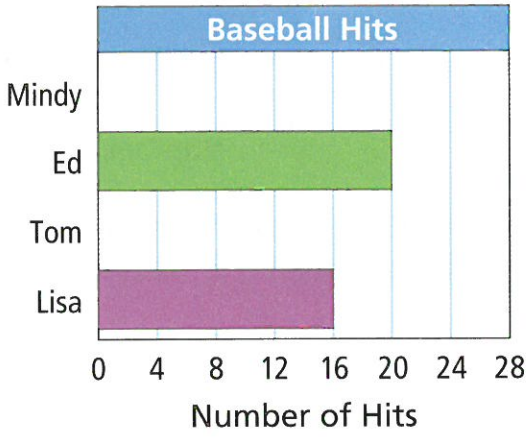
   ____ students

2. Draw ▲ symbols in the picture graph to represent students whose favorite color is green.

3. Draw ▲ symbols in the picture graph to represent students whose favorite color is orange.

Use the tally chart and bar graph.

Baseball Hits	
Mindy	𝍸 𝍸 𝍸 𝍸 IIII
Ed	𝍸 𝍸 𝍸 𝍸
Tom	𝍸 III
Lisa	𝍸 𝍸 𝍸 I



4. What does each distance between two vertical lines in the bar graph represent?

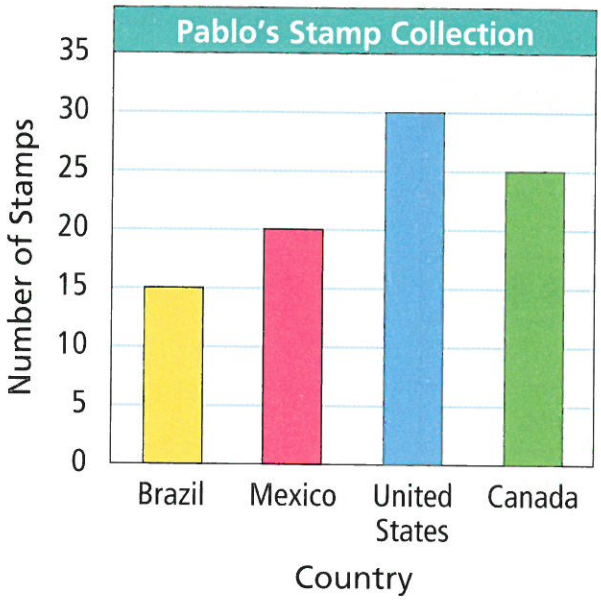
   _____

5. Draw the bar for Mindy.

6. Draw the bar for Tom.

Independent Practice

Use the bar graph to answer exercises 7–12.



Circle the correct answer.

7. How many more stamps from Canada does Pablo have than stamps from Brazil?

a. 2 stamps **b.** 5 stamps

c. 10 stamps **d.** 12 stamps

8. How many fewer stamps from Brazil does Pablo have than stamps from the United States?

a. 15 stamps **b.** 10 stamps

c. 5 stamps **d.** 3 stamps

9. How many more stamps from Brazil and Mexico does Pablo have than stamps from the United States?

a. 4 stamps **b.** 5 stamps

c. 10 stamps **d.** 15 stamps

10. How many fewer stamps from Mexico does Pablo have than stamps from the United States and Canada?

a. 15 stamps **b.** 20 stamps

c. 35 stamps **d.** 40 stamps

11. How many more stamps from Mexico and Canada does Pablo have than stamps from the United States?

a. 30 stamps **b.** 25 stamps

c. 20 stamps **d.** 15 stamps

12. How many fewer stamps from Canada does Pablo have than stamps from Mexico and Brazil?

a. 0 stamps **b.** 5 stamps

c. 10 stamps **d.** 20 stamps

Independent Practice

Use the picture graph to answer exercises 13–16.

Show your work.

Ms. Brown's Fruit	
Bananas	♦♦
Pears	♦♦♦
Apples	♦♦♦♦♦
Mangos	♦
Key: ♦ = 2 fruits	

MP4 **13.** How many more bananas than mangos does Ms. Brown have?

Answer _____

MP2 **14.** How many fewer bananas than apples does Ms. Brown have?

Answer _____

MP1 **15.** Ms. Brown gives 4 pears to her neighbor. How many pears does Ms. Brown have left?

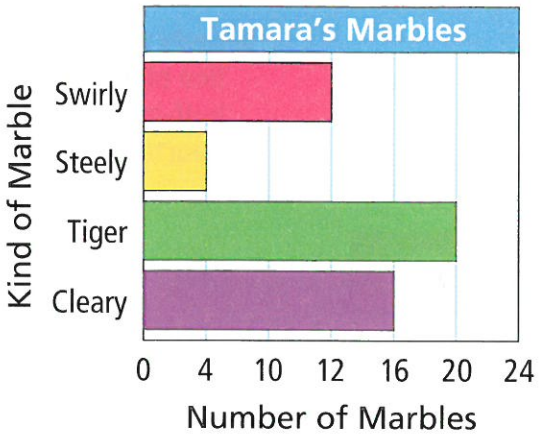
Answer _____

MP6 **16.** Ms. Brown has 3 children. She gives each child an apple each day. How many apples does she have after 3 days?

Answer _____

Independent Practice

Use the bar graph to answer exercises 17–19.



MP2 **17.** How many fewer swirly and steely marbles does Tamara have than tiger and cleary marbles?

Show your work.

Answer _____

MP7 **18.** Does Tamara have more than 40 marbles in all?

Answer _____

Justify your answer using words, drawings, or numbers.

MP3 **19.** Tamara wants to change the scale on her bar graph. She decides to make the distance between vertical lines represent 3 marbles. Is that a good choice?

Answer _____

Justify your answer using words, drawings, or numbers.

Lesson 27

Generate and Graph Measurement Data

Essential Question:
How can I draw line plots to show measurement data?

3.MD.4

Words to Know:
line plot
half-inch
quarter-inch

Guided Instruction

In this lesson you will learn about line plots.

Understand: How to draw line plots

Anya gathers data by pulling some carrots from her garden. She measures the length of each carrot. She records the data in a tally chart.

For homework she has to use the tally chart to make a line plot of the data. Then she has to write a question about her data.

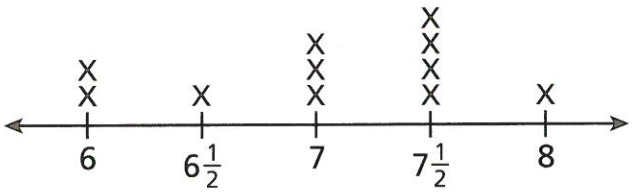
What question can she write?

Lengths of Carrots (in.)	
Length (in.)	Tally
6	||
$6\frac{1}{2}$	|
7	|||
$7\frac{1}{2}$	||||
8	|

To make a line plot, she draws a number line that includes all her data. She uses half-inch intervals on the scale.

She draws an X for each carrot length above that number.

Carrot Lengths (in.) ← A line plot needs a title.



When you need more than 1 X for a number, put the Xs in a stack.

Anya decides to ask a question about carrots that are less than $7\frac{1}{2}$ inches long.

➡ She can write this question: How many carrots are less than $7\frac{1}{2}$ inches long?

To answer, use the line plot to count the Xs to the left of $7\frac{1}{2}$ inches. There are 6 carrots less than $7\frac{1}{2}$ inches long.

✏ What are some other questions Anya could write?

Guided Instruction

Connect: Drawing line plots to show measurement data

Dan measures the lengths of his toy cars. He records the data in a chart.

Use the chart to make a line plot of the measurement data.

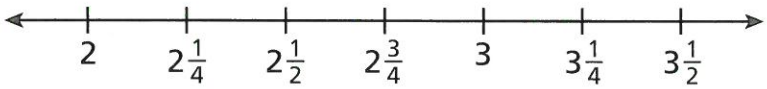
Find how many toy cars are 3 inches or longer.

Lengths of Toy Cars (in.)

$2\frac{1}{4}$	3	$2\frac{1}{2}$
$2\frac{3}{4}$	$3\frac{1}{4}$	3
$2\frac{1}{2}$	$2\frac{1}{2}$	3
$2\frac{3}{4}$	$3\frac{1}{2}$	$2\frac{1}{2}$

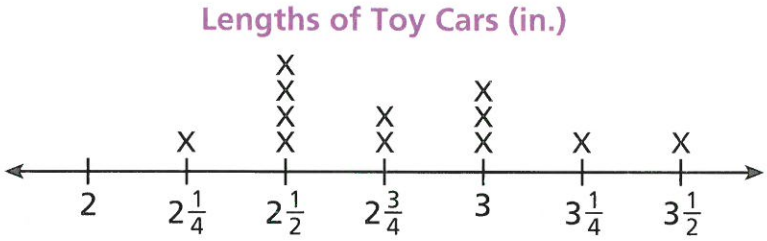
Step 1

Draw a number line. Show inches, half-inches, and quarter-inches on the scale.



Step 2

Draw an X for each toy car above its length. Write a title for the line plot.



To find how many toy cars are 3 inches or longer, look at the line plot.

Count the Xs above 3 inches. ____ Xs

Count the Xs to the right of 3 inches. ____ Xs

3 + 2 = ____

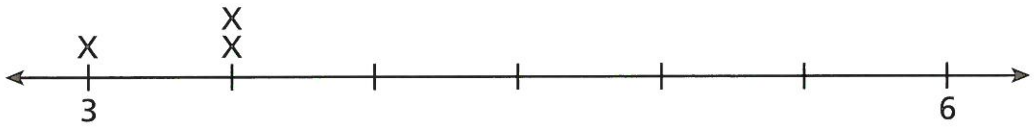
There are 5 toy cars that are 3 inches or longer.

Guided Practice

Use the chart to complete the line plot of the measurement data.

Earthworm Lengths (in.)

5	4	$4\frac{1}{2}$
$5\frac{1}{2}$	3	4
$3\frac{1}{2}$	$5\frac{1}{2}$	$5\frac{1}{2}$
4	5	$3\frac{1}{2}$



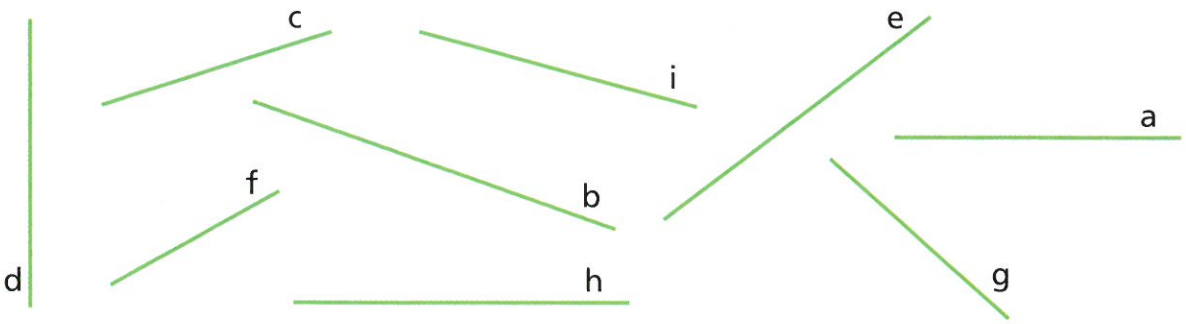
1. Complete the scale of the number line.
2. Draw an X for each earthworm that is 4 inches long.
3. Draw an X for each earthworm that is $4\frac{1}{2}$ inches long.
4. Draw an X for each earthworm that is 5 inches long.
5. Draw an X for each earthworm that is $5\frac{1}{2}$ inches long.
6. Write a title for the line plot.
7. How many earthworms are less than 5 inches long?

   ____ earthworms
8. How many earthworms are more than 5 inches long?

   ____ earthworms

Guided Practice

9. Measure each line segment. Record each length in the chart.



Line Segment Lengths (in.)

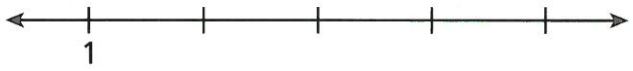
a:	b:	c:
d:	e:	f:
g:	h:	i:

Use your chart to make a line plot of your measurement data.

10. Complete the scale of the number line. _____

11. Draw an X for each line segment above its measurement.

12. Write a title for your line plot.



13. Which length has the most line segments? _____

Think•Pair•Share

MP4 **14.** Why is it not necessary to make a tally chart first when you make a line plot?

Independent Practice

Ines and Marco find a frog in the garden. They measure the lengths of its hops. They record the data in a chart.

Use the chart to make a line plot of the measurement data.

Frog Hops (in.)

8	7	$8\frac{1}{2}$
$8\frac{1}{2}$	9	7
8	$9\frac{1}{2}$	$8\frac{1}{2}$
$9\frac{1}{2}$	$8\frac{1}{2}$	8

1. Complete the scale of the number line.
2. Draw an X for each hop above its measurement.
3. Write a title for the line plot.

Circle the correct answer.

4. How many of the frog's hops are longer than 9 inches?
   - a. 1 hop
   - b. 2 hops
   - c. 3 hops
   - d. 4 hops

5. How many of the frog's hops are 8 inches or shorter?
   - a. 2 hops
   - b. 4 hops
   - c. 5 hops
   - d. 10 hops

6. Which frog hop length occurs most often?
   - a. $7\frac{1}{2}$ inches
   - b. $8\frac{1}{2}$ inches
   - c. $9\frac{1}{2}$ inches
   - d. 10 inches

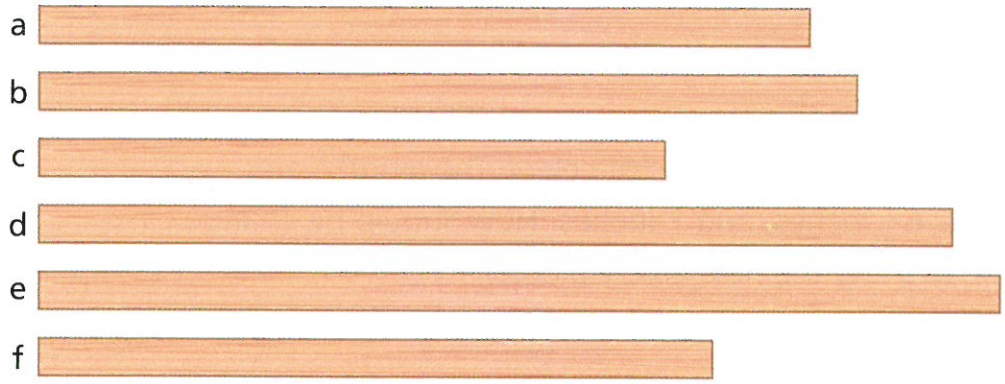
7. Which lengths, in inches, had no frog hops?
   - a. 7 and $7\frac{1}{2}$
   - b. 8 and 9
   - c. 9 and $9\frac{1}{2}$
   - d. $7\frac{1}{2}$ and 10

Independent Practice

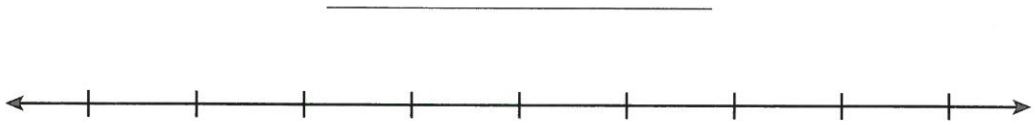
8. Heidi cut some little boards to make a model barn. Measure each board. Record each length in the chart.

Board Lengths (in.)

a:	b:	c:
d:	e:	f:



Use your chart to make a line plot of the measurement data.



9. Write a scale for the number line.

10. Draw an X for each board above its measurement.

11. Write a title for your line plot.

Circle the correct answer.

12. How many boards are $4\frac{1}{2}$ inches long?

a. 0 boards **b.** 1 board

c. 2 boards **d.** 3 boards

13. How many boards are at least $4\frac{1}{4}$ inches long?

a. 2 boards **b.** 3 boards

c. 4 boards **d.** 5 boards

Independent Practice

MP3 **14.** Stan measures 9 pieces of celery. He records his data in a chart. He wants to make a line plot of the data. What scale should he use? Explain.

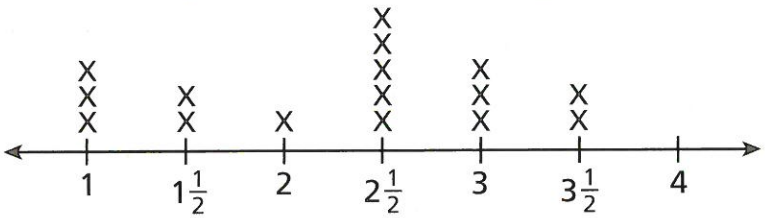
Celery Lengths (in.)

$7\frac{1}{2}$	$7\frac{1}{2}$	6
$6\frac{1}{2}$	8	$6\frac{1}{2}$
8	7	$6\frac{1}{2}$

MP1 **15.** Stan measures 3 more pieces of celery. The lengths are $7\frac{3}{4}$ inches, $6\frac{1}{4}$ inches, and 7 inches. How should he change his scale to show the new celery pieces?

Use the line plot to answer exercises 16 and 17.

Lengths of Chicken Footsteps (in.)



MP6 **16.** How many chicken footsteps are $1\frac{1}{2}$ inches or shorter?

Show your work.

Answer _____

MP7 **17.** How many chicken footsteps are measured in all?

Show your work.

Answer _____