



Family Letter

Content Overview

Dear Family,

In this unit, students explore ways to measure things using the customary and metric systems of measurement.

The units of measure we will be working with include:

U.S. Customary System

| Length |
|---------------------------------|
| 1 foot (ft) = 12 inches (in.) |
| 1 yard (yd) = 3 feet (ft) |
| 1 mile (mi) = 5,280 feet (ft) |
| Capacity |
| 1 cup (c) = 8 fluid ounces (oz) |
| 1 pint (pt) = 2 cups (c) |
| 1 quart (qt) = 2 pints (pt) |
| 1 gallon (gal) = 4 quarts (qt) |
| Weight |
| 1 pound (lb) = 16 ounces (oz) |

Metric System

| Length |
|--|
| 1 meter (m) = 10 decimeters (dm) |
| 1 meter (m) = 100 centimeters (cm) |
| 1 decimeter (dm) = 10 centimeters (cm) |
| Capacity |
| 1 liter (L) = 1,000 milliliters (mL) |
| Mass |
| 1 kilogram (kg) = 1,000 grams (g) |

Students will solve problems that involve liquid volumes or masses given in the same unit by adding, subtracting, multiplying, or dividing and by using a drawing to represent the problem.

Students will also generate measurement data with halves and fourths of an inch such as hand spans and lengths of standing broad jumps and graph their data in a line plot.

You can help your child become familiar with these units of measure by working with measurements together. For example, you might estimate and measure the length of something in inches. You might use a measuring cup to explore how the cup can be used to fill pints, quarts, or gallons of liquid.

Thank you for helping your child learn important math skills. Please call if you have any questions or comments.

Sincerely,
Your child's teacher



CA CC

Unit 3 addresses the following standards from the *Common Core State Standards for Mathematics with California Additions*: 3.OA.3, 3.NBT.2, 3.MD.1, 3.MD.2, 3.MD.3, 3.MD.4, and for all Mathematical Practices.



Carta a la familia

Un vistazo general al contenido

Estimada familia:

En esta unidad los niños estudian cómo medir cosas usando el sistema usual de medidas y el sistema métrico decimal.

Las unidades de medida con las que trabajaremos incluirán:

Sistema usual

| |
|-------------------------------------|
| Longitud |
| 1 pie (ft) = 12 pulgadas (pulg) |
| 1 yarda (yd) = 3 pies (ft) |
| 1 milla (mi) = 5,280 pies (ft) |
| Capacidad |
| 1 taza (tz) = 8 onzas líquidas (oz) |
| 1 pinta (pt) = 2 tazas (tz) |
| 1 cuarto (ct) = 2 pintas (pt) |
| 1 galón (gal) = 4 cuartos (ct) |
| Peso |
| 1 libra (lb) = 16 onzas (oz) |

Sistema métrico decimal

| |
|--|
| Longitud |
| 1 metro (m) = 10 decímetros (dm) |
| 1 metro (m) = 100 centímetros (cm) |
| 1 decímetro (dm) = 10 centímetros (cm) |
| Capacidad |
| 1 litro (L) = 1,000 mililitros (mL) |
| Masa |
| 1 kilogramo (kg) = 1,000 gramos (g) |

Los estudiantes resolverán problemas relacionados con volúmenes de líquido o masas, que se dan en la misma unidad, sumando, restando o dividiendo, y usando un dibujo para representar el problema.

También generarán datos de medidas, usando medios y cuartos de pulgada, de cosas tales como el palmo de una mano y la longitud de saltos largos, y representarán los datos en un diagrama de puntos.

Puede ayudar a que su niño se familiarice con estas unidades de medida midiendo con él diversas cosas. Por ejemplo, podrían estimar y medir la longitud de algo en pulgadas. Podrían usar una taza de medidas para aprender cómo se pueden llenar pintas, cuartos o galones con líquido.

Gracias por ayudar a su niño a aprender destrezas matemáticas importantes. Si tiene alguna duda o algún comentario, por favor comuníquese conmigo.

*Atentamente,
El maestro de su niño*



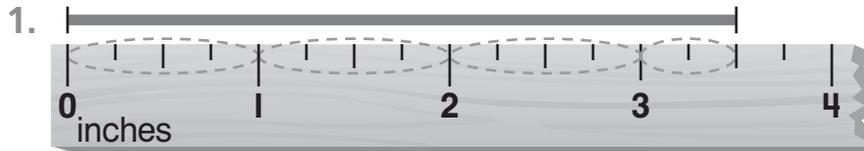
CA CC

En la Unidad 3 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: 3.OA.3, 3.NBT.2, 3.MD.1, 3.MD.2, 3.MD.3, 3.MD.4 y todos los de prácticas matemáticas.

© Houghton Mifflin Harcourt Publishing Company

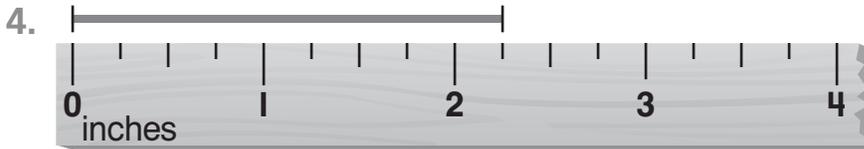
► Units of Length

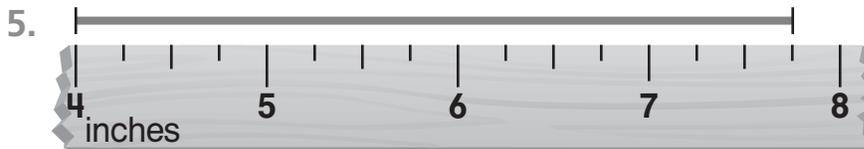
Circle length units and fractions of units to show the length of the line segment. Write the length.











6. Why is this ruler wrong?





VOCABULARY
inch (in.)

► Estimate and Measure Length

Estimate the length of each line segment in inches.
Then measure it to the nearest $\frac{1}{2}$ inch.



Estimate: _____ Actual: _____



Estimate: _____ Actual: _____

Estimate the length of each line segment in inches.
Then measure it to the nearest $\frac{1}{4}$ inch.



Estimate: _____ Actual: _____

► Draw Line Segments

Draw a line segment that has the given length.

10. 5 inches

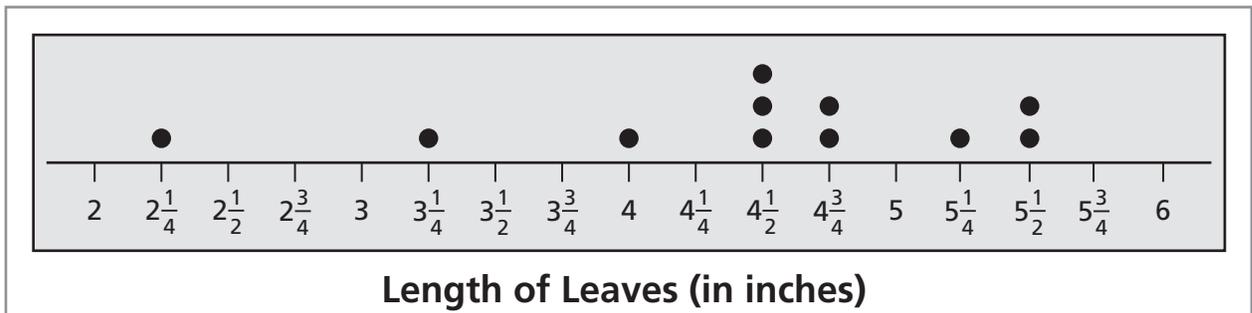
11. $4\frac{1}{2}$ inches

12. $4\frac{3}{4}$ inches

13. Use a straightedge to draw a line segment that you think will measure $2\frac{1}{2}$ inches long. Then use a ruler to measure your line segment to the nearest $\frac{1}{4}$ inch.

► Line Plots with Fractions

A **line plot** shows the frequency of data on a number line. In science class, students measured the lengths of leaves in a leaf collection. They measured the lengths to the nearest $\frac{1}{4}$ inch. The line plot shows the results.



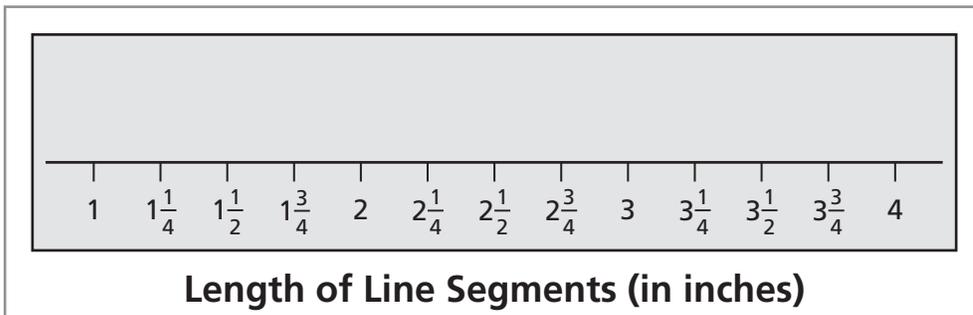
Use the line plot to answer the questions.

14. How many leaves have a length of $4\frac{1}{2}$ inches? _____
15. How many leaves have a length that is less than 5 inches? _____
16. Write a question that can be answered using the line plot.

► Make a Line Plot

Your teacher will ask each student to read his or her actual measure for the line segments you and your classmates drew with a straightedge on Student Activity Book page 168. Record the measures in the box below.

17. Use the measurement data from the box above to complete the line plot below.



18. How many of the line segments have a measure of $2\frac{1}{2}$ inches?

19. Which length appears the most often on the line plot?

VOCABULARY

| | |
|---------------|------------------------|
| liquid volume | cup (c) |
| pint (pt) | quart (qt) |
| gallon (gal) | fluid ounce (fl oz) |

► Choose the Unit

Choose the best unit to use to measure the liquid volume. Write *cup*, *pint*, *quart*, or *gallon*.

1. a carton of heavy cream

2. a flower vase

3. a swimming pool

4. a wash tub

► What's the Error?

Dear Math Students,

Today I had to choose the best unit to use to measure how much water is needed to fill a kitchen sink. I said the best unit to use is cups. Is my answer correct? If not, please correct my work and tell me what I did wrong.

Your friend,
Puzzled Penguin



5. Write an answer to Puzzled Penguin.

6. **Math Journal** Think of a container. Choose the unit you would use to measure its capacity. Draw the container and write the name of the unit you chose. Explain why you chose that unit.

► Estimate Customary Units of Liquid Volume

Ring the better estimate.



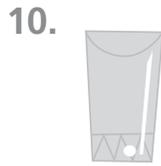
- 2 cups
- 2 quarts



- 5 cups
- 5 gallons



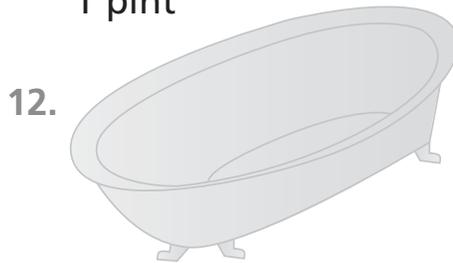
- 1 pint
- 1 gallon



- 1 cup
- 1 pint



- 1 cup
- 1 gallon



- 30 cups
- 30 gallons

Solve.

13. Jamie makes a shopping list for a picnic with his four friends. He estimates that he'll need 5 quarts of lemonade for the group to drink. Do you think his estimate is reasonable? Explain.

► Use Drawings to Solve Problems

Use the drawing to represent and solve the problem.

14. A painter mixed 5 pints of yellow and 3 pints of blue paint to make green paint. How many pints of green paint did he make?



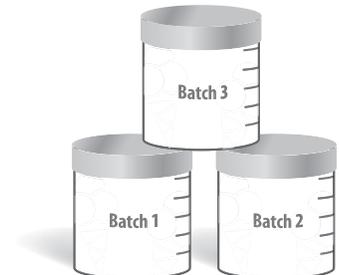
15. Ryan bought a bottle of orange juice that had 16 fluid ounces. He poured 6 fluid ounces in a cup. How many fluid ounces are left in the bottle?



16. A restaurant made 8 quarts of tea. They used all the tea to fill pitchers that hold 2 quarts each. How many pitchers were filled with tea?



17. An ice cream machine makes 5 pints of ice cream in a batch. If 3 batches were made, how many pints of ice cream were made?



18. Fran has a water jug that holds 24 quarts of water. She fills it with a container that holds 4 quarts. How many times must she fill the 4-quart container and pour it into the jug to fill the jug with 24 quarts?



► Solve Problems

Use the drawing to represent and solve the problem.

19. Shanna bought 8 juice boxes filled with her favorite juice. Each box holds 10 fluid ounces. How many fluid ounces of her favorite juice did Shanna buy?
- _____

Show Your Work.



20. Juana filled her punch bowl with 12 cups of punch. She gave some of her friends each a cup of punch. There are 7 cups of punch left in the bowl. How many cups did she give to friends?
- _____



21. Mrs. Chavez made 20 quarts of pickles. She made 4 quarts each day. How many days did it take her to make the pickles?
- _____



22. The sandwich shop began the day with 24 pints of apple cider. They sold 18 pints in the morning and the rest in the afternoon. How many pints of cider did they sell in the afternoon?
- _____



23. A mid-sized aquarium holds 25 gallons of water and a large aquarium holds 35 gallons of water. How many gallons of water is needed to fill both aquariums?
- _____



VOCABULARY

liquid volume
milliliter (mL)
liter (L)

► Choose the Appropriate Unit

Choose the unit you would use to measure the liquid volume of each. Write *mL* or *L*.

1. a kitchen sink _____
2. a soup spoon _____
3. a teacup _____
4. a washing machine _____

Circle the better estimate.

5. a juice container 1 L 1 mL
6. a bowl of soup 500 L 500 mL

► Use Drawings to Represent Problems

Use the drawing to represent and solve the problem.

7. There were 900 milliliters of water in a pitcher. Terri poured 500 milliliters of water into a bowl. How many milliliters of water are left in the pitcher?



8. Mr. Rojo put 6 liters of fuel into a gas can that can hold 10 liters. Then he added more liters to fill the can. How many liters of fuel did he add to the can?



9. Shelby needs to water each of her 3 plants with 200 milliliters of water. How many milliliters of water does she need?





► Make Sense of Problems Involving Liquid Volume

Use the drawing to represent and solve the problem.

10. The deli sold 24 liters of lemonade in 3 days. The same amount was sold each day. How many liters of lemonade did the deli sell each day?



11. Tim has a bucket filled with 12 liters of water and a bucket filled with 20 liters of water. What is the total liquid volume of the buckets?



12. Bella made a smoothie and gave her friend 250 milliliters. There are 550 milliliters left. How many milliliters of smoothie did Sara make?



Solve. Use a drawing if you need to.

13. Diane has 36 cups of lemonade to divide equally among 4 tables. How many cups should she put at each table?
14. Mr. Valle filled 7 jars with his famous barbeque sauce. Each jar holds 2 pints. How many pints of sauce did he have?

VOCABULARY
 weight
 pound (lb)
 ounce (oz)

► Choose the Appropriate Unit

Choose the unit you would use to measure the weight of each. Write *pound* or *ounce*.

1. a backpack full of books

2. a couch

3. a peanut

4. a pencil

Circle the better estimate.

5. a student desk 3 lb 30 lb

6. a television 20 oz 20 lb

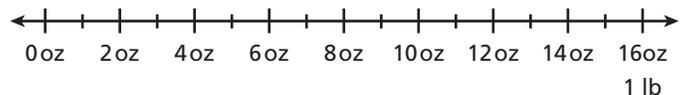
7. a hamster 5 oz 5 lb

8. a slice of cheese 1 lb 1 oz

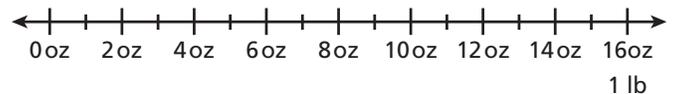
► Use Drawings to Represent Problems

Use the drawing to represent and solve the problem.

9. Selma filled each of 3 bags with 5 ounces of her favorite nuts. How many ounces of nuts did she use altogether to fill the bags?



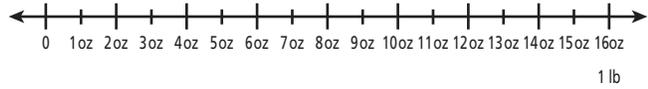
10. Two apples together weigh 16 ounces. If one apple weighs 9 ounces, how much does the other apple weigh?



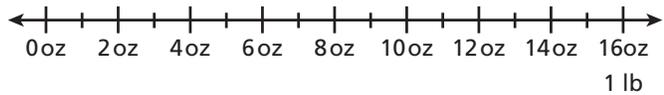
► Use Drawings to Represent Problems (continued)

Use the drawing to represent and solve the problem.

11. Noah bought 16 ounces of turkey meat. If he uses 4 ounces to make a turkey patty, how many patties can he make?



12. A package of silver beads weighs 6 ounces and a package of wooden beads weighs 7 ounces more. How much does the package of wooden beads weigh?



► Solve Word Problems

Solve. Use a drawing if you need to.

13. Ted and his dog together weigh 88 pounds. If Ted weighs 70 pounds, how much does his dog weigh?

14. Emma has 20 ounces of popcorn kernels in a bag. If she pops 4 ounces of kernels at a time, how many times can Emma pop corn?

15. Susan mailed 3 packages. Each package weighed 20 ounces. What was the total weight of the 3 packages?

16. Bailey caught two fish. The smaller fish weighs 14 ounces and the larger fish weighs 6 ounces more. How much does the larger fish weigh?

VOCABULARY

mass
gram (g)
kilogram (kg)

► Choose the Appropriate Unit

Choose the unit you would use to measure the mass of each. Write *gram* or *kilogram*.

17. an elephant

18. a crayon

19. a stamp

20. a dog

Circle the better estimate.

21. a pair of sunglasses 150 g

150 kg

22. a horse 6 kg

600 kg

23. a watermelon 40 g

4 kg

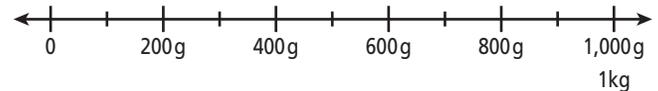
24. a quarter 500 g

5 g

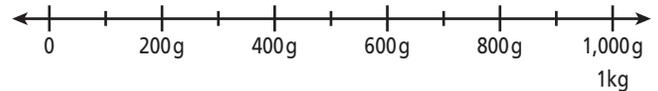
► Use Drawings to Represent Problems

Use the drawing to represent and solve the problem.

25. Zach wants to buy 900 grams of pumpkin seed. The scale shows 400 grams. How many more grams does he need?



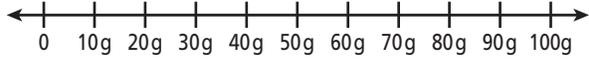
26. Laura had 800 grams of fruit snacks. She put an equal amount into each of 4 containers. How many grams did she put in each container?



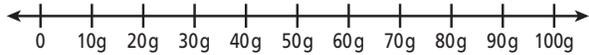
► Solve Word Problems

Use the drawing to represent and solve the problem.

27. Nancy used 30 grams of strawberries and 45 grams of apples in her salad. How many grams of fruit altogether did she put in her salad?



28. Three people each donated a 20-kilogram bag of dog food to the animal shelter. How many kilograms of dog food was donated altogether?



Solve. Use a drawing if you need to.

29. Barry weighs 40 kilograms and his younger brother weighs 25 kilograms. How much more does Barry weigh?

30. Jolie made 3 necklaces that have a total weight of 180 grams. If each necklace weighs the same, how much would each necklace weigh?

31. Dan bought 6 small bags of treats for his dog. Each bag has a weight of 40 grams. What is the total weight of all the bags?

32. Carrie has a dog and a cat. Together they have a mass of 21 kilograms. If the cat has a mass of 9 kilograms, what is the mass of Carrie's dog?

► What's the Error?

Dear Math Students,

Today I had to solve this problem: *Toby bought 3 bags of chips. Each bag of chips weighs 50 grams. What is the weight of all 3 bags of chips?* Here is how I solved the problem.

$$50 + 3 = 53; 53 \text{ grams}$$

Is my answer correct? If not, please correct my work and tell me what I did wrong. How do you know my answer is wrong?

Your friend,
Puzzled Penguin



33. Write an answer to the Puzzled Penguin.

Solve.

Show your work.

34. A tennis ball weighs 60 grams. A golf ball weighs 45 grams. How many grams do the tennis ball and golf ball weigh altogether?

35. How many more grams does the tennis ball weigh than the golf ball?

36. Gary bought 10 slices of ham at the deli. Each slice weighed 2 ounces. How many ounces of ham did Gary buy?

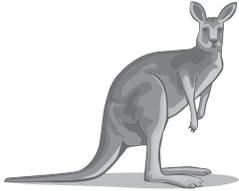
37. Sadie had 40 grams of sunflower seeds. She divided the seeds evenly among her 5 friends. How many grams did each friend get?



► Choose the Better Estimate

Circle the better estimate.

38.



200 grams

200 kilograms

39.



10 kilograms

10 grams

40.



3 ounces

3 pounds

41.



100 pounds

10 ounces

42.



100 pounds

1 ton

43.



1 kilogram

10 kilograms

Solve.

44. Suzie estimated the weights of objects and ordered them by the estimates of their weights. She explained that estimating them was easy since the smallest objects weighed the least and the largest objects weighed the most. Do you agree with Suzie?
-

► Make Sense of Problems About Liquid Volume

Solve. Use drawings if you need to.

Show your work.

1. Fran works in a science lab. She poured 80 milliliters of liquid into each of 4 test tubes. How many milliliters of liquid did Fran pour into the test tubes altogether?

2. Nicholas wants to buy a bottle of shampoo. A large bottle has 375 milliliters of shampoo and a small bottle has 250 milliliters of shampoo. How many more milliliters of shampoo is in the larger bottle?

3. Allison used two containers of water to fill her aquarium. She used a container filled with 18 liters of water and another with 12 liters of water. What is the total liquid volume of the aquarium?

4. The coffee shop sold 28 liters of hot chocolate. If the same amount is sold each hour for 4 hours, how many liters of hot chocolate did the coffee shop sell each hour?

5. A recipe calls for 50 milliliters of milk. Eva has a spoon that holds 10 milliliters. How many times will Eva need to fill the spoon to follow the recipe?

► Make Sense of Problems About Masses

Solve. Use drawings if you need to.

Show your work.

6. A bag of green beans has a mass of 335 grams. A bag of peas has a mass of 424 grams. What is the total mass of both bags?
- _____
7. An average sized chicken egg has a mass of 60 grams. What would be the total mass of a half dozen eggs?
- _____
8. A kangaroo and her joey together have a mass of 75 kilograms. If the mother kangaroo has a mass of 69 kilograms, what is the mass of the joey?
- _____
9. Liam and 2 of his friends have backpacks. The backpacks have masses of 6 kilograms, 4 kilograms, and 5 kilograms. What is the total mass of the three backpacks?
- _____
10. Graham bought 4 bags of sunflower seeds. Each bag has 60 grams of seeds. Luke bought 3 bags of pumpkin seeds. Each bag has 80 grams of seeds. Who bought more grams of seeds, Graham or Luke? Explain.
- _____



Family Letter

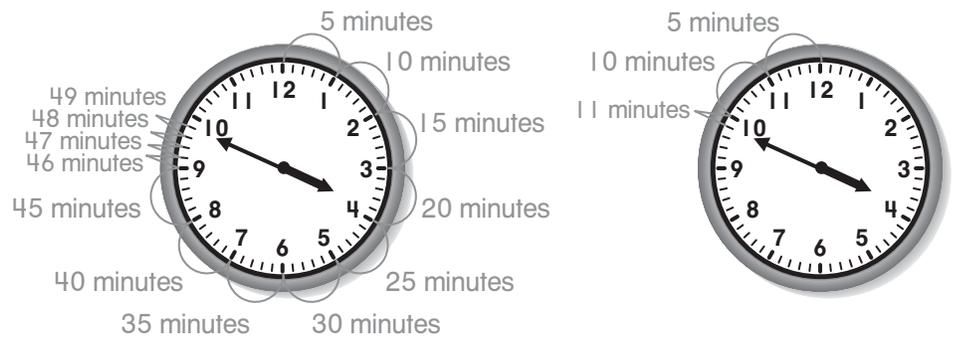
Content Overview

Dear Family,

In math class, your child is beginning lessons about time. This topic is directly connected to home and community and involves skills your child will use often in everyday situations.

Students are reading time to the hour, half-hour, quarter-hour, five minutes, and minute, as well as describing the time before the hour and after the hour.

For example, you can read 3:49 both as after and before the hour.



Forty-nine minutes after three

Eleven minutes before four

Students will be using clocks to solve problems about elapsed time.

Help your child read time and find elapsed time. Ask your child to estimate how long it takes to do activities such as eating a meal, traveling to the store, or doing homework. Have your child look at the clock when starting an activity and then again at the end of the activity. Ask how long the activity took.

Your child will also learn to add and subtract time on a number line.

If you have any questions or comments, please call or write to me.

Sincerely,
Your child's teacher





Carta a la familia

Un vistazo general al contenido

Estimada familia:

En la clase de matemáticas su niño está comenzando lecciones que le enseñan sobre la hora. Este tema se relaciona directamente con la casa y la comunidad, y trata de destrezas que su niño usará a menudo en situaciones de la vida diaria.

Los estudiantes leerán la hora, la media hora, el cuarto de hora, los cinco minutos y el minuto; también describirán la hora antes y después de la hora en punto.

Por ejemplo, 3:49 se puede leer de dos maneras:



Las tres y cuarenta y nueve

Once para las cuatro

Los estudiantes usarán relojes para resolver problemas acerca del tiempo transcurrido en diferentes situaciones.

Ayude a su niño a leer la hora y hallar el tiempo transcurrido. Pídale que estime cuánto tiempo tomarán ciertas actividades, tales como comer una comida completa, ir a la tienda o hacer la tarea. Pida a su niño que vea el reloj cuando comience la actividad y cuando la termine. Pregúntele cuánto tiempo tomó la actividad.

Su niño también aprenderá a sumar y restar tiempo en una recta numérica.

Si tiene alguna pregunta o algún comentario, por favor comuníquese conmigo.

*Atentamente,
El maestro de su niño*

© Houghton Mifflin Harcourt Publishing Company

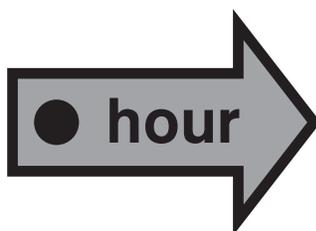
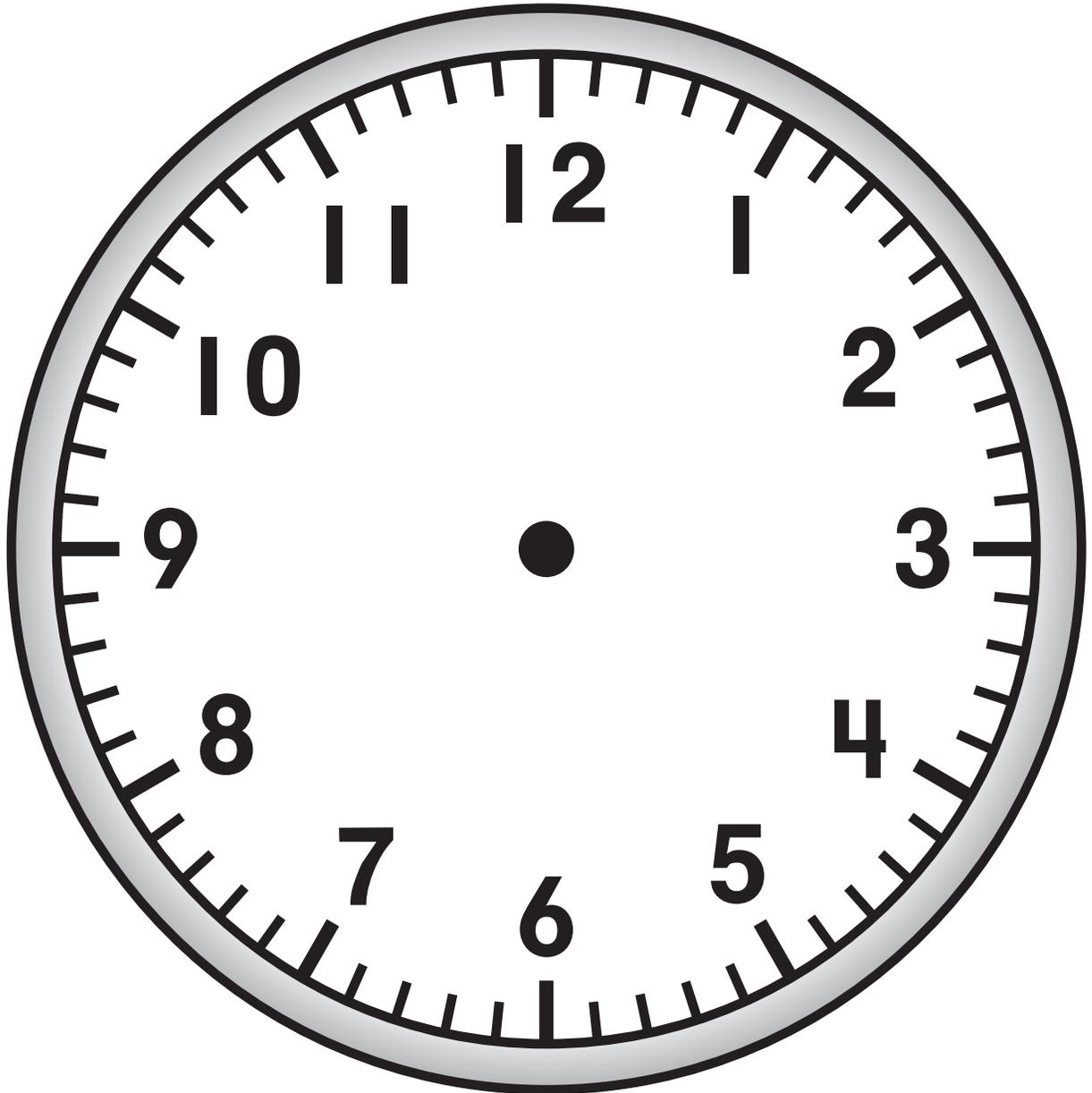


CA CC

En la Unidad 3 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: 3.OA.3, 3.NBT.2, 3.MD.1, 3.MD.2, 3.MD.3, 3.MD.4 y todos los de prácticas matemáticas.

► Make an Analog Clock

Attach the clock hands to the clock face using a prong fastener.

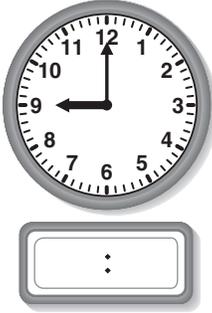




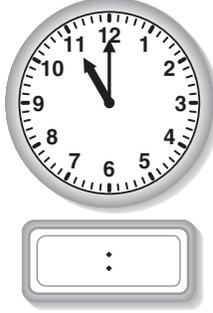
► Time to 15 Minutes

Write the time on the digital clock. Then write how to say the time.

1.



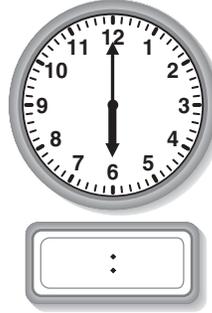
2.



3.

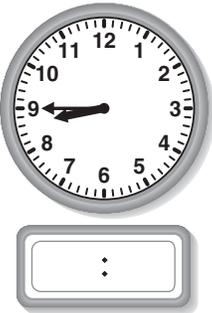


4.



Write the time on the digital clock. Write two ways to say the time.

5.



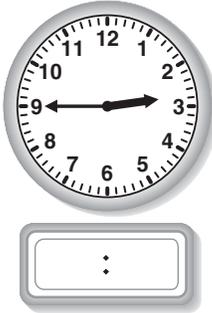
6.



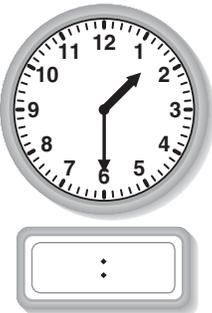
7.



8.



9.



10.



11.



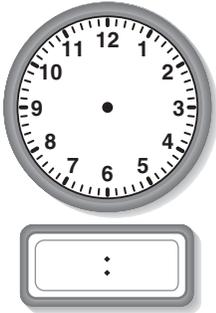
12.



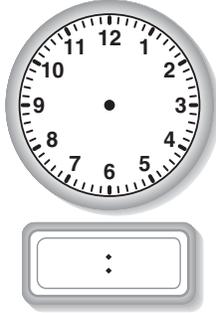
► Show Time to 15 Minutes

Draw the hands on the analog clock. Write the time on the digital clock.

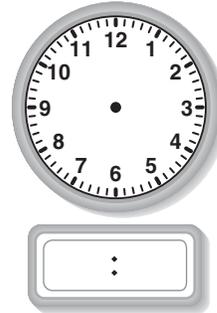
13. nine fifteen



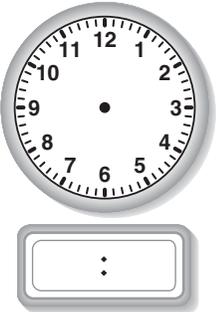
14. half past seven



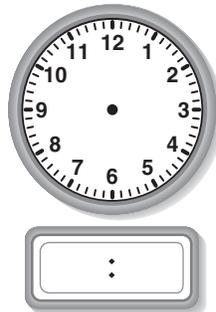
15. three o'clock



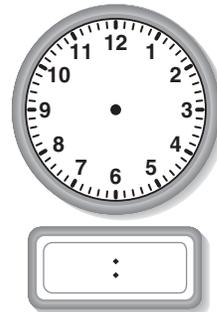
16. seven thirty



17. one forty-five



18. fifteen minutes after two



► Times of Daily Activities

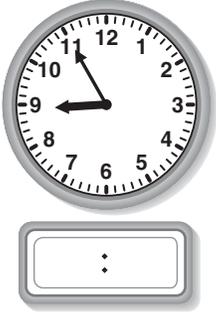
19. Complete the table.

| Time | Light or Dark | Part of the Day | Activity |
|-----------|---------------|-----------------|----------|
| 3:15 A.M. | | | |
| 8:00 A.M. | | | |
| 2:30 P.M. | | | |
| 6:15 P.M. | | | |
| 8:45 P.M. | | | |

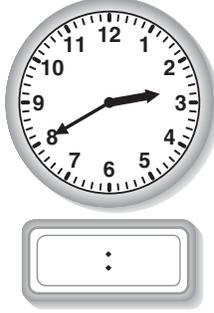
► Time to 5 Minutes

Write the time on the digital clock. Then write how to say the time.

20.



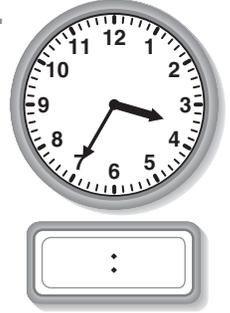
21.



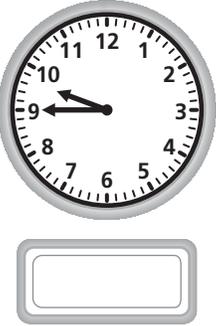
22.



23.



24.



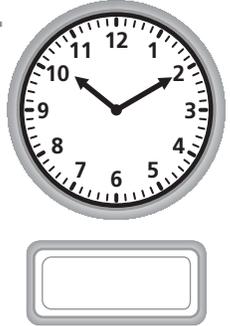
25.



26.



27.



Write the time on the digital clock.

28. ten minutes after eight



31. six forty



29. seven twenty-five



32. five minutes after three



30. eleven fifty



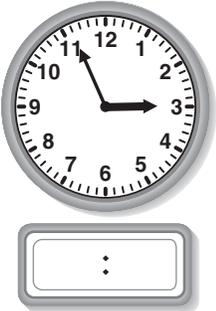
33. four fifty-five



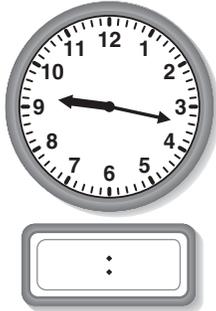
► Time to 1 Minute

Write the time on the digital clock. Then write how to say the time.

34.



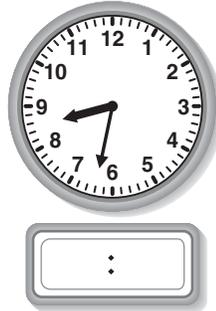
35.



36.



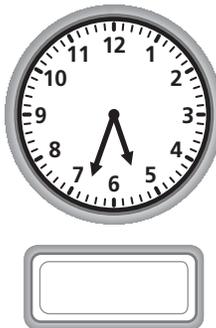
37.



38.



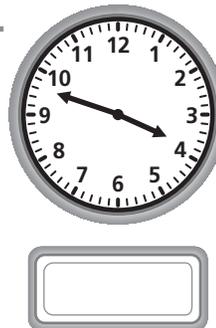
39.



40.



41.



Write the time on the digital clock.

42. ten fourteen



45. nine thirty-one

43. fifty-two minutes
after eight46. forty-six minutes
after eleven44. seven
twenty-eight47. thirty-seven
minutes after 5

► Times Before and After the Hour to 5 Minutes

Write the time as minutes *after* an hour and minutes *before* an hour.

1.



2.



3.



4.



5.



6.



7.



8.

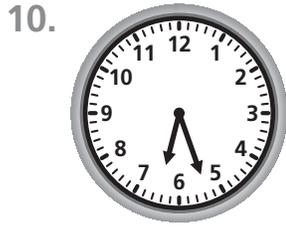


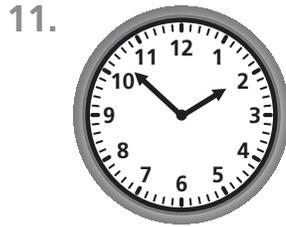
9.



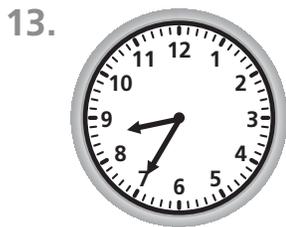
► Times Before and After the Hour to 1 Minute

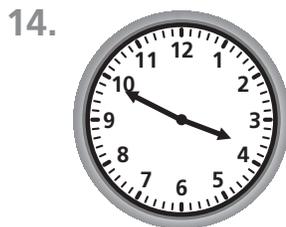
Write the time as minutes *after* an hour and minutes *before* an hour.





















► Elapsed Time in Minutes and Hours

1. Find the elapsed time.

| Start Time | End Time | Elapsed Time |
|------------|-----------|--------------|
| 4:00 P.M. | 7:00 P.M. | |
| 7:45 A.M. | 8:15 A.M. | |
| 2:17 P.M. | 7:17 P.M. | |
| 11:00 A.M. | 2:00 P.M. | |
| 11:55 A.M. | 4:25 P.M. | |

2. Find the end time.

| Start Time | Elapsed Time | End Time |
|------------|-----------------------|----------|
| 1:00 P.M. | 2 hours | |
| 4:15 A.M. | 4 hours | |
| 4:55 P.M. | 18 minutes | |
| 2:15 A.M. | 1 hour and 15 minutes | |
| 11:55 A.M. | 2 hours and 5 minutes | |

3. Find the start time.

| Start Time | Elapsed Time | End Time |
|------------|------------------------|------------|
| | 3 hours | 4:15 P.M. |
| | 15 minutes | 2:45 P.M. |
| | 2 hours and 35 minutes | 11:55 A.M. |
| | 1 hour and 20 minutes | 3:42 A.M. |

► Solve Problems About Elapsed Time on a Clock

Solve. Use your clock if you need to.

Show your work.

4. Loretta left her friend’s house at 3:45 P.M. She had been there for 2 hours and 20 minutes. What time did she get there?

5. Berto spent from 3:45 P.M. to 4:15 P.M. doing math homework and from 4:30 P.M. to 5:10 P.M. doing social studies homework. How much time did he spend on his math and social studies homework?

6. Ed arrived at a biking trail at 9:00 A.M. He biked for 1 hour and 45 minutes. He spent 20 minutes riding home. What time did he get home?

7. Vasco cleaned his room on Saturday. He started at 4:05 P.M. and finished at 4:30 P.M. For how long did he clean his room?

8. Mario finished swimming at 10:45 A.M. He swam for 1 hour and 15 minutes. What time did he start?

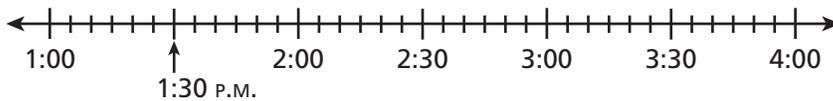
9. Eric has basketball practice from 3:30 P.M. to 4:15 P.M. He has violin practice at 5:30 P.M. Today basketball practice ended 30 minutes late and it takes Eric 15 minutes to walk to violin practice. Will he be on time? Explain.

► Add Time

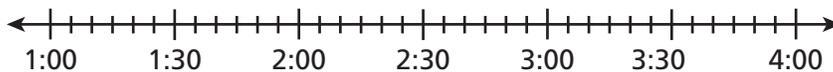
Solve using a number line.

Show your work.

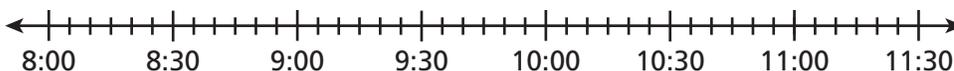
- Keisha went into a park at 1:30 P.M. She hiked for 1 hour 35 minutes. Then she went to the picnic area for 45 minutes and left the park. What time did Keisha leave the park?



- Loren arrived at the children’s museum at 1:15 P.M. First, he spent 30 minutes looking at the dinosaur exhibit. Next, he watched a movie for 20 minutes. Then he spent 15 minutes in the museum gift shop. What time did Loren leave the museum? How long was he in the museum?



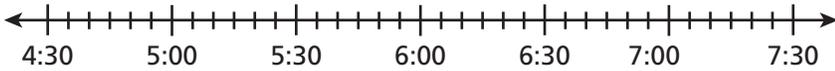
- Caleb started working in the yard at 8:45 A.M. He raked for 1 hour 45 minutes and mowed for 45 minutes. Then he went inside. What time did he go inside? How long did he work in the yard?



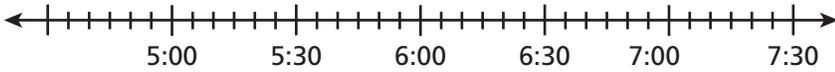
► Subtract Time

Solve using a number line.

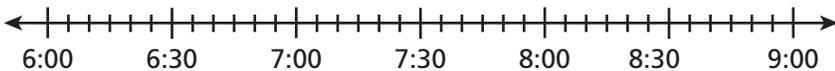
4. Hank finished bowling at 7:15 P.M. He bowled for 2 hours 35 minutes. At what time did he start bowling?



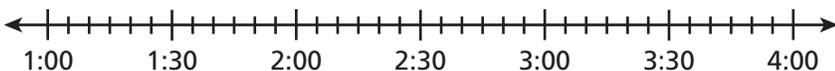
5. Miguel has a job walking dogs. He finished walking the dogs at 7:10 P.M. He walked the dogs for 2 hours and 40 minutes. What time did Miguel start walking the dogs?



6. The school music program ended at 8:35 P.M. It lasted for 1 hour 50 minutes. What time did the program start?



7. Lia took bread out of the oven at 3:15 P.M. It baked for 35 minutes. She spent 15 minutes measuring the ingredients and 15 minutes mixing the batter. What time did Lia start making the bread?



► Make Sense of Word Problems Involving Time Intervals

Solve. Use a clock or sketch a number line diagram if you need to.

Show your work.

1. Cory caught a train at 1:45 P.M. to go to his grandparents. The train trip lasted 35 minutes. Then he spent 10 minutes waiting for a cab and another 15 minutes riding in the cab. What time did Cory get to his grandparents' house?

2. Hirva left home at 9:45 A.M. and returned home at 11:20 A.M. She spent 55 minutes at the gym and the rest of the time at the library. How much time did Hirva spend at the library?

3. Diego arrived at soccer practice at 8:45 A.M. Practice lasted 45 minutes and then it took him 10 minutes to walk home. What time did Diego get home?

4. Jan started working on her homework at 6:25 P.M. and she finished at 7:30 P.M. She spent 45 minutes on a book report and the rest of the time on math. How long did Jan spend on math?

5. Shanna finished her chores at 4:25 P.M. She spent 35 minutes cleaning her room, 20 minutes bathing her dog, and 15 minutes folding clothes. What time did Shanna begin her chores?



► What's the Error?

Dear Math Students,

Today I was asked to find the time Jim got to the doctor's office if he woke up at 7:55 A.M., spent 45 minutes getting dressed, and then drove 20 minutes to the doctor's office.

Here is how I solved the problem.

From 7:55 on a clock, I counted up 45 minutes to 8:45, then I counted up 20 minutes to 9:05. Jim got to the doctor's office at 9:05 A.M.

Is my answer correct? If not, please correct my work and tell me what I did wrong. How do you know my answer is wrong?

Your friend,
Puzzled Penguin



6. Write an answer to the Puzzled Penguin.

Solve.

7. Wayne left home at 3:50 P.M. to go to the park. It took 30 minutes to drive to the park. He spent 45 minutes at the park. What time did he leave the park?

8. Leslie finished her project at 11:05 A.M. She spent 1 hour 10 minutes making a poster and 35 minutes writing a report. What time did Leslie start her project?



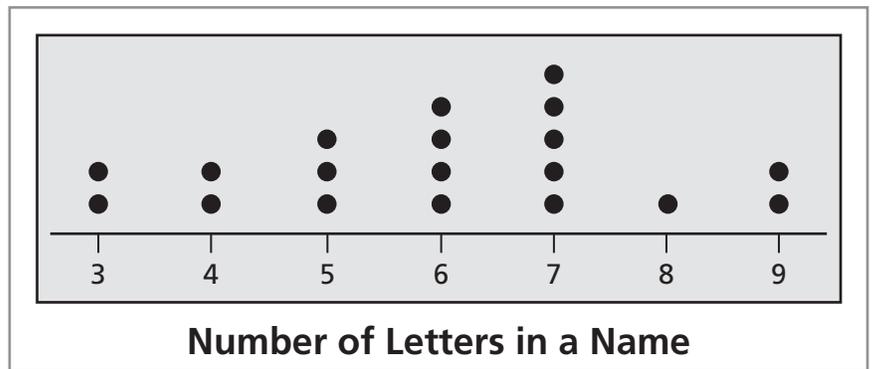
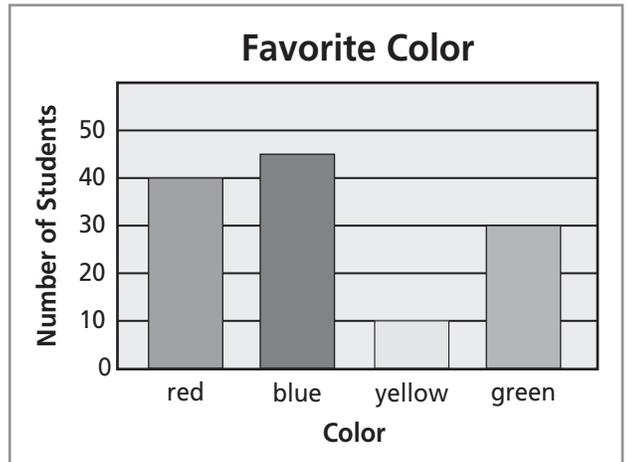
Family Letter

Content Overview

Dear Family,

In the rest of the lessons in this unit, your child will be learning to show information in various ways. Students will learn to read and create pictographs and bar graphs. They will organize and display data in frequency tables and line plots. Students will also learn how to use graphs to solve real world problems.

Examples of pictographs, bar graphs, and line plots are shown below.



Your child is learning how graphs are used in the world around us. You can help your child learn by sharing graphs that appear in newspapers, magazines, or online.

Thank you for helping your child learn how to read, interpret, and create graphs.

Sincerely,
Your child's teacher



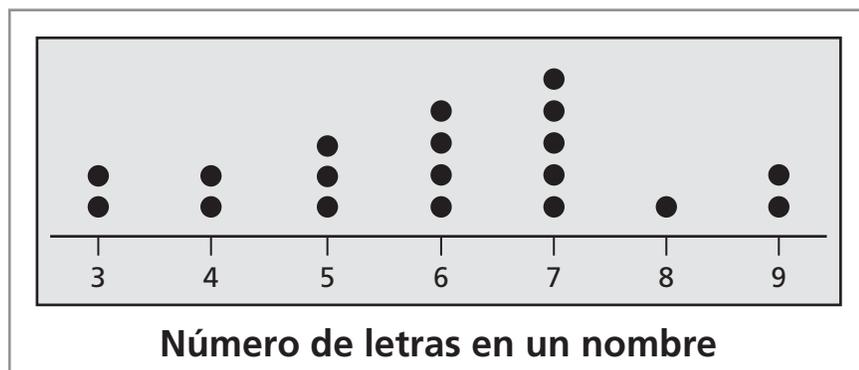
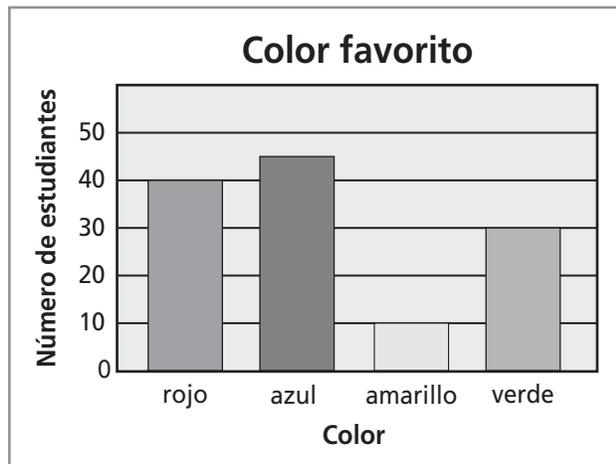
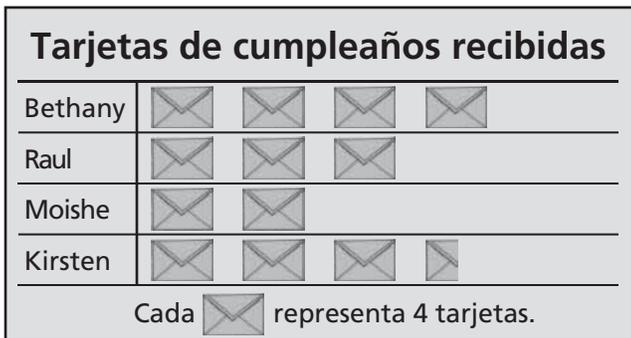


Un vistazo general al contenido

Estimada familia:

Durante el resto de las lecciones de esta unidad, su niño aprenderá a mostrar información de varias maneras. Los estudiantes aprenderán a leer y a crear pictografías y gráficas de barras. Organizarán y mostrarán datos en tablas de frecuencia y en diagramas de puntos. También aprenderán cómo usar las gráficas para resolver problemas cotidianos.

Debajo se muestran ejemplos de pictografías, gráficas de barras y diagramas de puntos.



Su niño está aprendiendo cómo se usan las gráficas en la vida cotidiana. Puede ayudarlo mostrándole gráficas que aparezcan en periódicos, revistas o Internet.

Gracias por ayudar a su niño a aprender cómo leer, interpretar y crear gráficas.

*Atentamente,
El maestro de su niño*

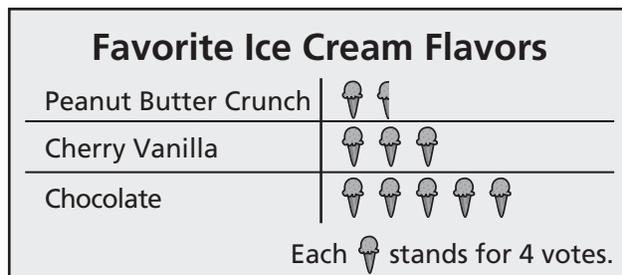


CA CC

En la Unidad 3 se aplican los siguientes estándares auxiliares, contenidos en los *Estándares estatales comunes de matemáticas con adiciones para California*: 3.OA.3, 3.NBT.2, 3.MD.1, 3.MD.2, 3.MD.3, 3.MD.4 y todos los de prácticas matemáticas.

► Read a Pictograph

A **pictograph** is a graph that uses pictures or symbols to represent data. The pictograph below shows the number of votes for favorite ice cream flavors. The **key** tells that each ice cream cone symbol stands for the way 4 students voted.



Use the pictograph above to answer the questions.

- How many votes were there for chocolate?

- How many people in all voted for their favorite ice cream flavor?

- How many votes were there for Cherry Vanilla?

- How many people did not vote for chocolate?

- How many fewer votes were there for Peanut Butter Crunch than Chocolate?

- How many more people voted for Chocolate than for Peanut Butter Crunch and Cherry Vanilla combined?



► Make a Pictograph

7. Use the data about Kanye's CDs to make your own pictograph.

| Kanye's CDs | |
|-------------|---------------|
| Type | Number of CDs |
| Jazz | 12 |
| Rap | 16 |
| Classical | 4 |

| | |
|--|--|
| | |
| | |
| | |

Each ____ stands for ____.

8. How many CDs in all does Kanye have?

9. How many more rap CDs does Kanye have than classical?

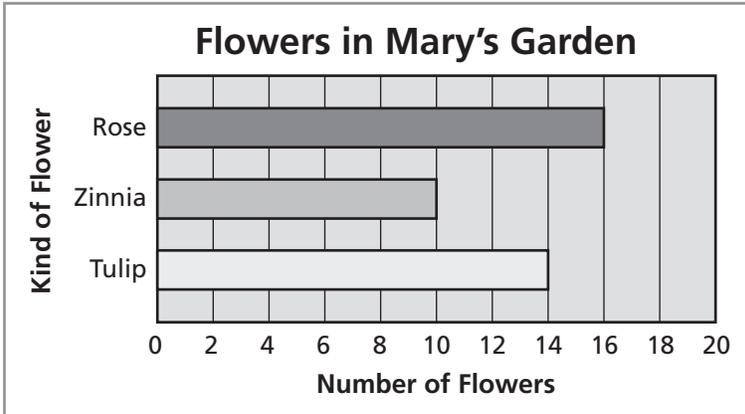
10. How many fewer jazz CDs does Kanye have than rap?

11. How many pictures would you draw to show that Kanye has 9 Country and Western CDs?

VOCABULARY
horizontal bar graph
vertical bar graph

► Read Bar Graphs

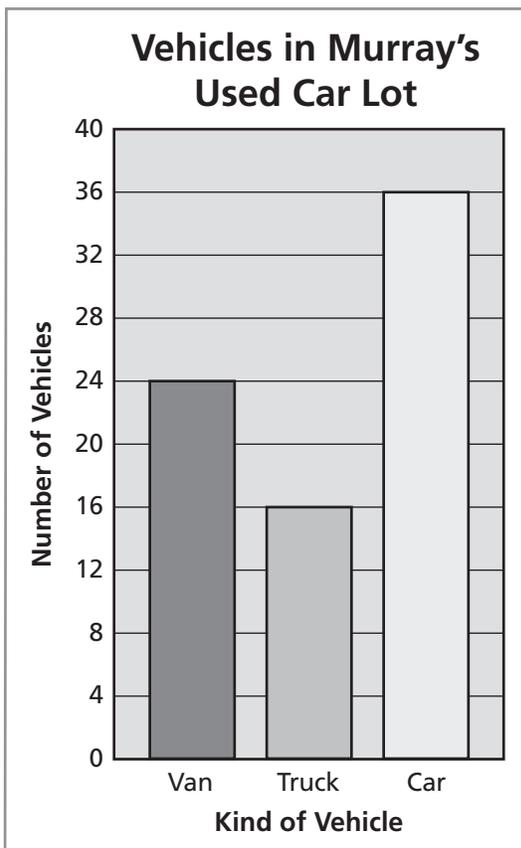
Look at this horizontal bar graph and answer the questions.



12. What do the bars represent?

13. How many tulips are in Mary's garden?

Look at this vertical bar graph and answer the questions.



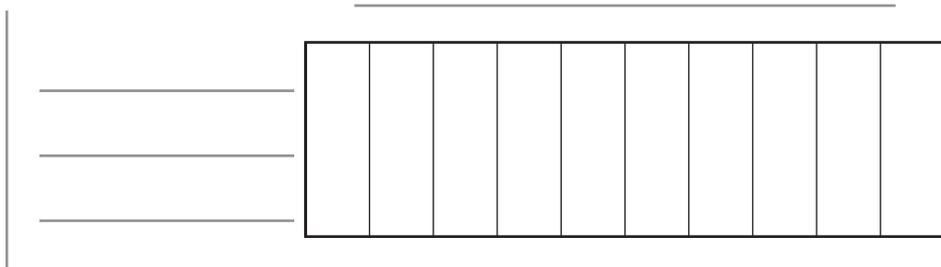
14. What do the bars represent?

15. How many more vans than trucks are on Murray's Used Car Lot?

► **Create Bar Graphs**

16. Use the information in this table to complete the horizontal bar graph.

| Favorite Way to Exercise | |
|--------------------------|--------------------|
| Activity | Number of Students |
| Biking | 12 |
| Swimming | 14 |
| Walking | 10 |



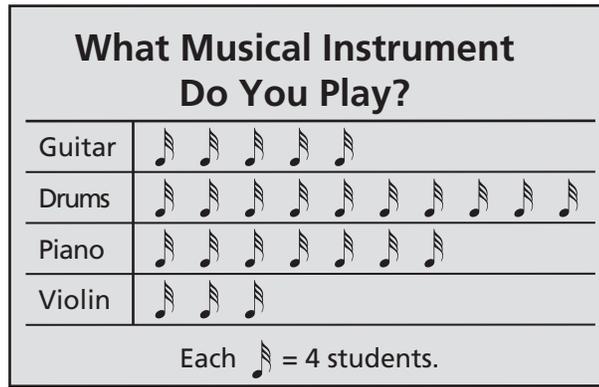
17. Use the information in this table to complete the vertical bar graph.

| Favorite Team Sport | |
|---------------------|--------------------|
| Sport | Number of Students |
| Baseball | 35 |
| Soccer | 60 |
| Basketball | 40 |



► Solve Comparison Problems Using Data in Pictographs

Use the pictograph below to answer the questions.



18. How many more students play guitar than violin?

19. How many students do not play drums?

20. Do more students play drums or guitar and violin combined?

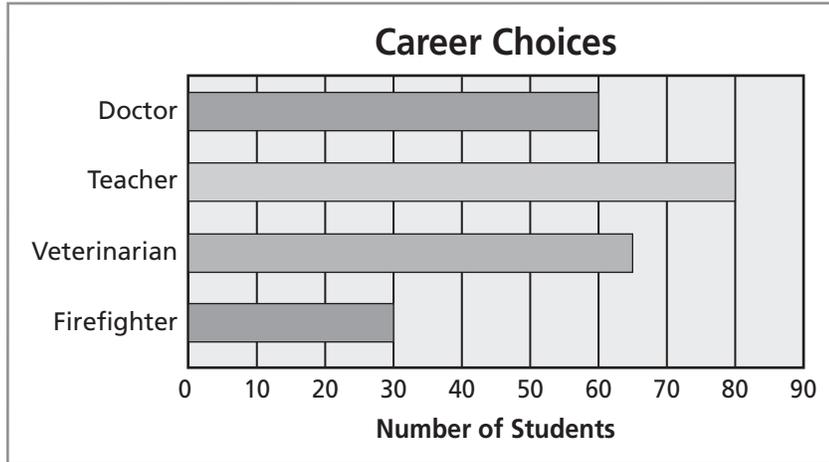
21. How many more students play guitar and piano combined than drums?

22. Twelve fewer students play this instrument than drums.

23. How many students in all were surveyed?

► Solve Comparison Problems Using Data in Bar Graphs

Use the bar graph below to answer the questions.



24. Twenty fewer students chose this career than teacher.

25. Did more students choose veterinarian and firefighter combined or teacher?

26. How many more students chose doctor than firefighter?

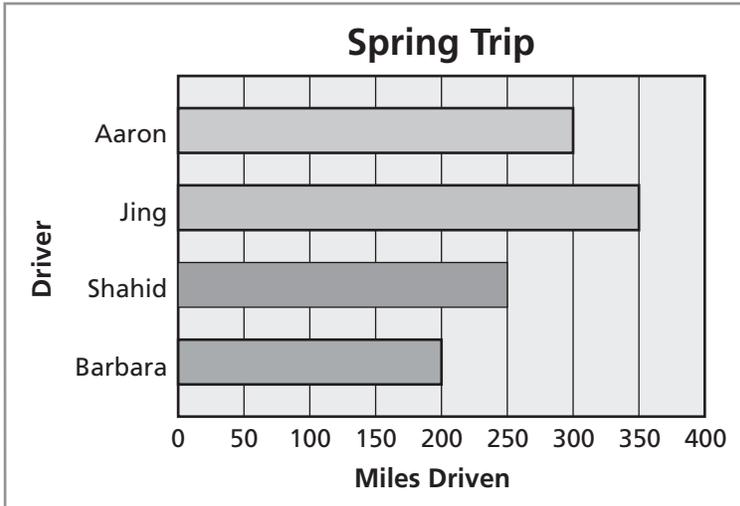
27. How many students did not choose teacher?

28. How many students in all were surveyed?

29. How many more students chose doctor and firefighter combined than veterinarian?

► Horizontal Bar Graphs with Multidigit Numbers

Use this horizontal bar graph to answer the questions below.



- How many miles did Shahid drive?

- Who drove 100 more miles than Barbara?

- How many more miles did Aaron and Barbara combined drive than Jing?

- How many more miles did Shahid and Aaron combined drive than Barbara?

- How many fewer miles did Barbara drive than Jing?

- Write another question that can be answered by using the graph.

► Vertical Bar Graphs with Multidigit Numbers

Use the vertical bar graph at the right to answer the questions below.

7. How many cans of peas are at Turner's Market?

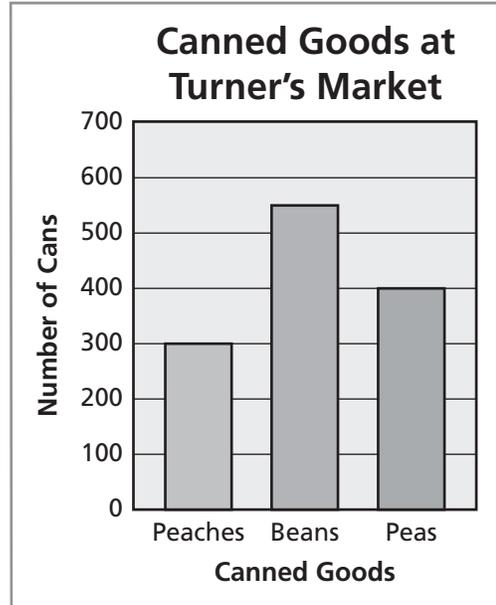
8. Are there more cans of beans or of peas and peaches combined?

9. How many cans of beans and peaches are there altogether?

10. How many more cans of beans are there than peas?

11. How many fewer cans of peaches are there than peas and beans combined?

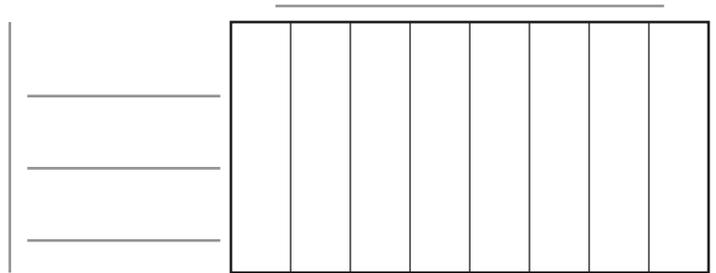
12. Write another question that can be answered by using the graph.



► Create Bar Graphs with Multidigit Numbers

13. Use the information in this table to make a horizontal bar graph.

| Joe's DVD Collection | |
|----------------------|------|
| Type | DVDs |
| Comedy | 60 |
| Action | 35 |
| Drama | 20 |



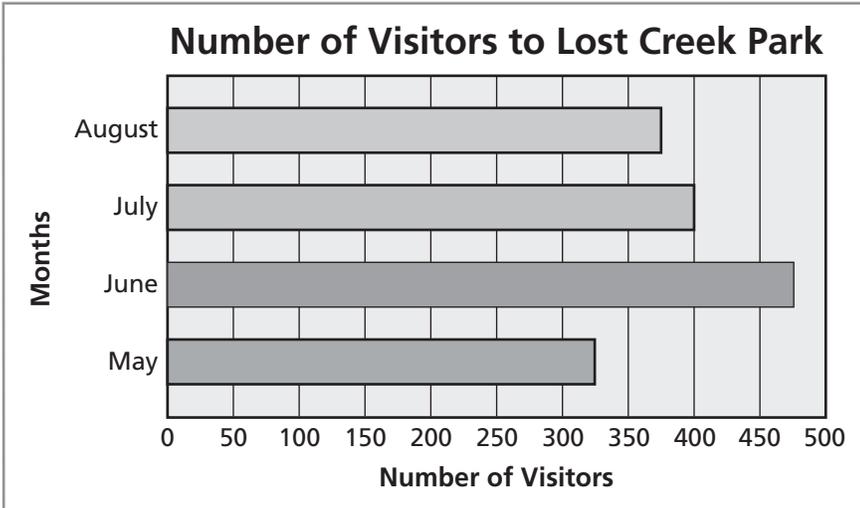
14. Use the information in this table to make a vertical bar graph.

| Summer Bike Sales | |
|-------------------|-------------|
| Type of Bike | Number Sold |
| Road Bike | 200 |
| Mountain Bike | 600 |
| Hybrid Bike | 450 |



► Solve Problems Using Bar Graphs

Use the horizontal bar graph to answer the questions below.



15. There were how many more visitors to Lost Creek Park in June than in May?

16. How many visitors did the park have during the months of May and June combined?

17. The park had how many more visitors in July than in August?

18. Were there more visitors to the park in June or in May and August combined?

19. Write another question that can be answered by using the graph.

VOCABULARY
tally chart
frequency table
line plot

► Frequency Tables and Line Plots

The ages of some players on a basketball team can be shown in different ways.

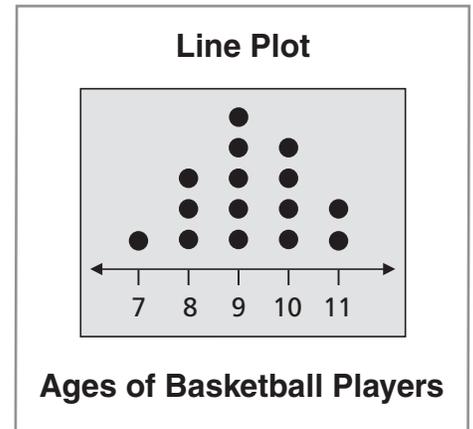
A **tally chart** can be used to record and organize data.

A **frequency table** shows how many times events occur.

A **line plot** shows the frequency of data on a number line.

| Tally Chart | |
|-------------|-------|
| Age | Tally |
| 7 | I |
| 8 | III |
| 9 | IIII |
| 10 | IIII |
| 11 | II |

| Frequency Table | |
|-----------------|-------|
| Age | Tally |
| 7 | 1 |
| 8 | 3 |
| 9 | 5 |
| 10 | 4 |
| 11 | 2 |



► Make Sense of Data Displays

Use the data displays above to answer Exercises 1–4.

1. How many basketball players are 10 years old?

2. Which age appears the most often?

3. Are there more players younger than 9 or more players that are older than 9?

4. Write another question that can be answered by using the data displays.



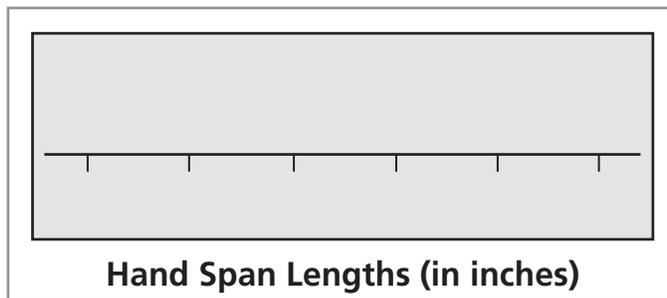
► Create Line Plots with Fractions

1. Measure the length of the hand spans of 10 classmates to the nearest $\frac{1}{2}$ inch. Have your classmates spread their fingers apart as far as possible, and measure from the tip of the thumb to the tip of the little finger. Record the data in the tally chart below and then make a frequency table.

| Tally Chart | |
|-------------|-------|
| Length | Tally |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| Frequency Table | |
|-----------------|-------|
| Length | Tally |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

2. Use the data to make a line plot.

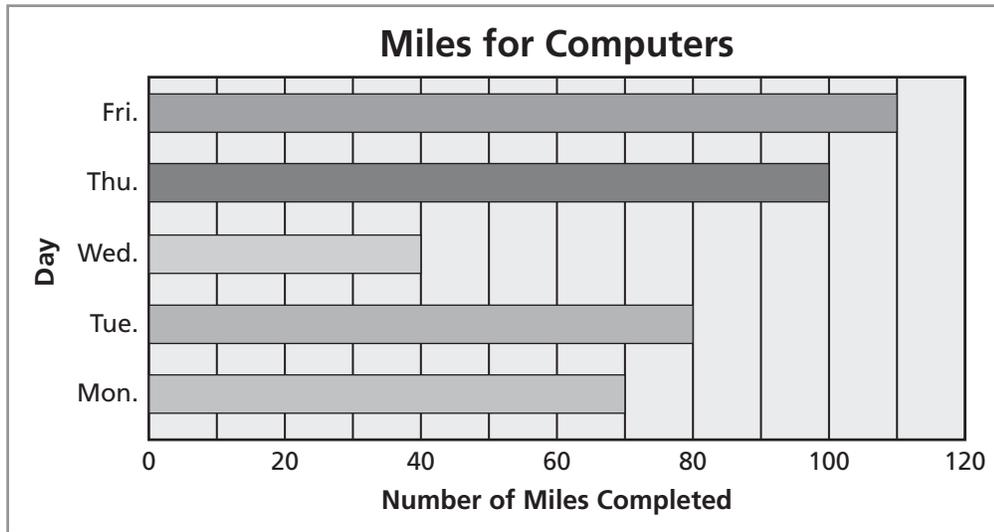


3. Which length occurred the most often?

4. Write a question that can be answered by using the data in the line plot.

► Solve Problems Using a Bar Graph

Five teams of students are riding their bikes after school to raise money for the computer lab. Every completed mile will earn the computer lab \$2. The bar graph below shows the number of miles completed in one week.



Use the bar graph to solve the problems.

- How much money was earned for the computer lab on Tuesday?

- How many fewer miles were completed on Monday than on Friday?

- How many miles in all did the students ride?

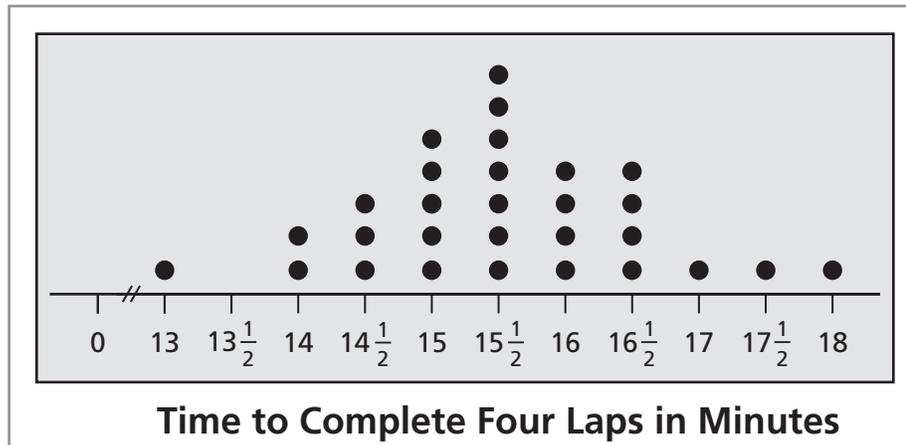
- How many more miles did students ride on Monday and Tuesday combined than on Friday?

- There are four riders on each of the five teams. If each student completed the same number of miles, how many miles did each student ride on Wednesday?

- Did students ride more miles on Monday and Wednesday combined or on Thursday?

► Solve Problems Using a Line Plot

The physical fitness coach asked her students to walk around a track four times. Four laps equal one mile. She recorded their times on the line plot below.



Use the plot to solve the problems.

- | | |
|--|---|
| <p>7. What is the difference between the greatest and the least amount of time students took to walk four laps?</p> <p>_____</p> | <p>8. Did more students complete the laps in 16 minutes or more or in $15\frac{1}{2}$ minutes or fewer?</p> <p>_____</p> |
| <p>9. How many students completed four laps in 16 minutes?</p> <p>_____</p> | <p>10. The coach recorded the times of how many students?</p> <p>_____</p> |
| <p>11. How many students completed four laps in fewer than 15 minutes?</p> <p>_____</p> | <p>12. Most students completed the laps between which two times?</p> <p>_____</p> |

► Math and Sports

Many students take part in a track and field day at school each year. One event is the standing broad jump. In the standing broad jump, the jumper stands directly behind a starting line and then jumps. The length of the jump is measured from the starting line to the mark of the first part of the jumper to touch the ground.



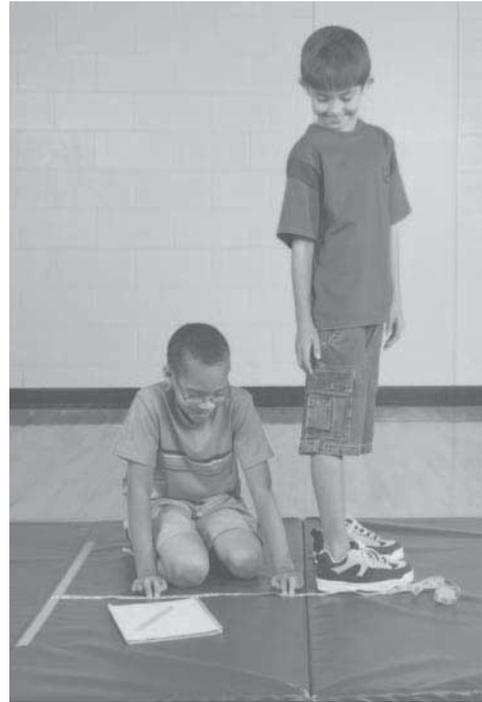
Complete.

1. Your teacher will tell you when to do a standing broad jump. Another student should measure the length of your jump to the nearest $\frac{1}{2}$ foot and record it on a slip of paper.
2. Record the lengths of the students' jumps in the box below.

► How Far Can a Third Grader Jump?

To analyze how far a third grader can jump, the data needs to be organized and displayed.

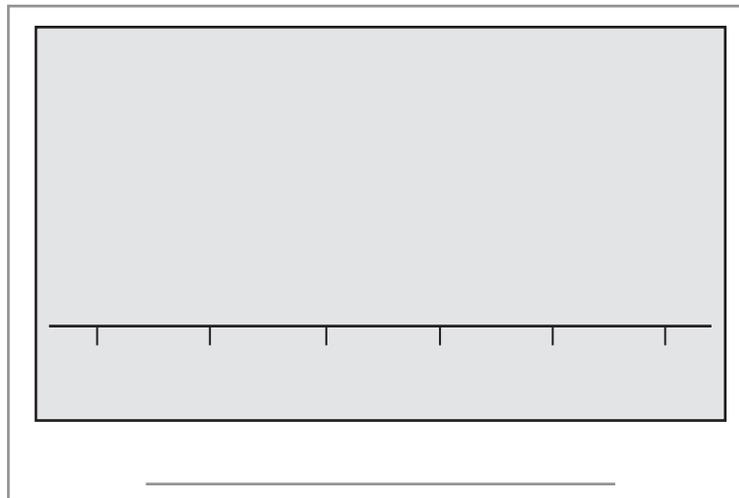
- Use the lengths of the students' jumps to complete the tally chart and the frequency table.



| Tally Chart | |
|-------------|-------|
| Length | Tally |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| Frequency Table | |
|-----------------|-------|
| Length | Tally |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

- Make a line plot.



1. Matt's beach bucket contains 250 grams of sand. He adds 130 grams of sand to the bucket. How many grams of sand are in the bucket now?

_____ grams

2. For numbers 2a–2d, choose Yes or No to tell whether the words say the time on the clock.



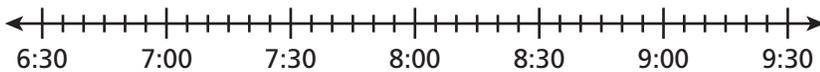
- 2a. twenty-six minutes before eleven Yes No
- 2b. thirty-four minutes after twelve Yes No
- 2c. thirty-four minutes after eleven Yes No
- 2d. twenty-six minutes before twelve Yes No

3. Emma is eating a bowl of soup for dinner. She estimates the bowl holds 2 quarts of soup. Do you think Emma's estimate is reasonable? Why or why not?



Review/Test

4. Kyle starts his homework at 6:30 P.M. He spends 35 minutes doing math homework and 40 minutes doing science homework. At what time does Kyle finish his homework? How much time does he spend on homework? Use the number line to help you.



Kyle finishes his homework at _____ P.M.

He spends _____ on homework.

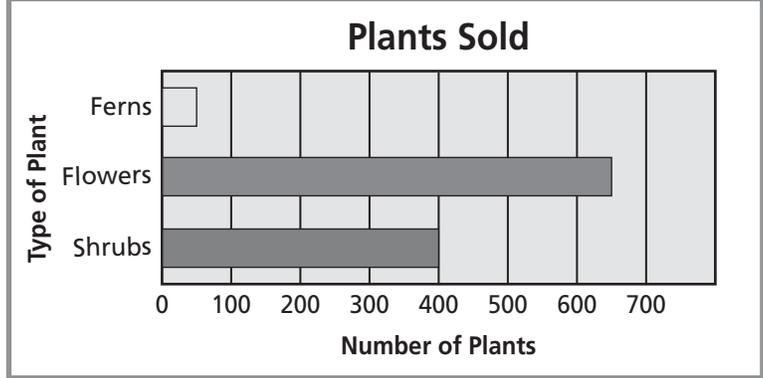
- 1 hour 5 minutes
- 1 hour 15 minutes
- 1 hour 25 minutes

5. Write the name of the object in the box that shows the unit you would use to measure the mass of the object.

| | | |
|---------------|------------|--------|
| loaf of bread | watermelon | person |
| house key | lion | comb |

| gram | kilogram |
|------|----------|
| | |

6. The bar graph shows the number of plants sold at a nursery.



How many more flowers does the nursery sell than ferns and shrubs combined?

_____ more flowers

Write and answer another question using data from the graph.

7. Estimate the length of the marker in inches. Then measure it to the nearest $\frac{1}{4}$ inch.



Estimate: _____ in. Actual: _____ in.



8. Estimate the liquid volume of each object. Draw a line from the estimate to the object.

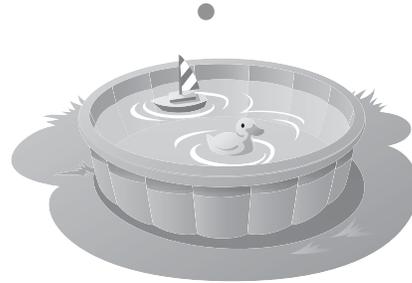
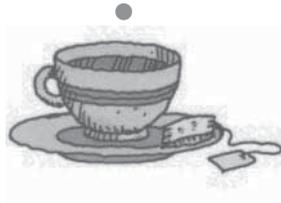
100 liters



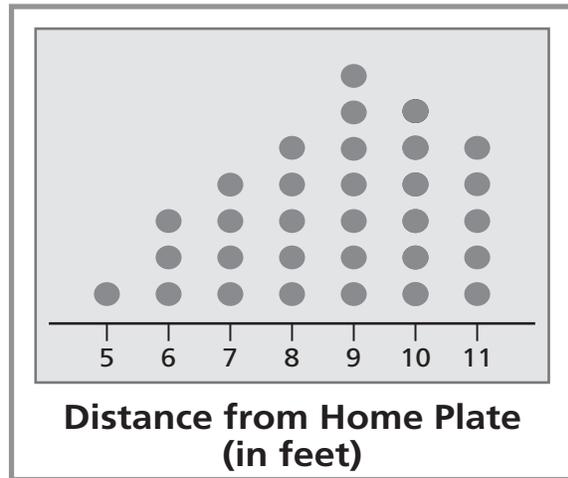
3 liters



400 milliliters



9. Tom measures the distances some softballs were thrown from home plate. The results are shown in the line plot. For numbers 9a–9d, select True or False for each statement.



9a. 8 softballs are thrown 5 feet.

True

False

9b. 13 softballs are thrown less than 9 feet.

True

False

9c. 11 softballs are thrown farther than 9 feet.

True

False

9d. 4 feet is the difference between the least and greatest distances thrown.

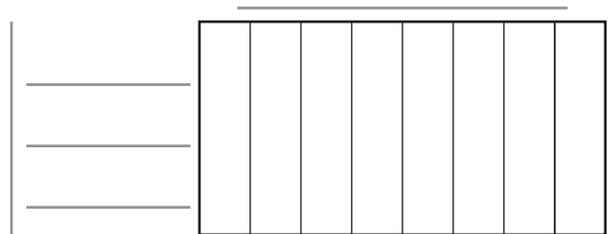
True

False

10. Use the data in the table to complete the pictograph and bar graph.

| T-Shirt Sales | | | |
|------------------|-------|--------|-------|
| Size | Small | Medium | Large |
| Number of Shirts | 40 | 70 | 50 |

| T-Shirt Sales | |
|---------------|-------|
| Small | _____ |
| Medium | _____ |
| Large | _____ |
| Key: _____ | |



Which graph would you choose to show the data? Why?

11. Write the start time or end time to complete the chart.

| | | |
|-----------|-----------|------------|
| 8:48 A.M. | 3:25 A.M. | 12:50 P.M. |
| 8:53 A.M. | 3:35 P.M. | 1:10 P.M. |

| Start Time | Elapsed Time | End Time |
|------------|--------------------|-----------|
| 8:15 A.M. | 38 minutes | |
| | 55 minutes | 4:20 A.M. |
| 10:45 A.M. | 2 hours 25 minutes | |



12. Billy needs 200 milliliters of lemonade to fill a small jar. How many milliliters of lemonade does he need to fill 6 jars of the same size? Choose the measure to complete the sentence.

600

Billy needs _____ milliliters of lemonade.

800

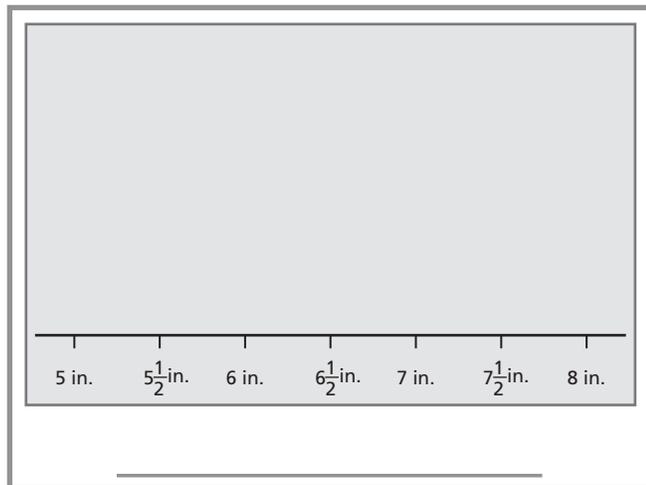
1200

13. The frequency table shows the lengths of some books in a classroom.

Part A

Use the frequency table to complete the line plot.

| Frequency Table | |
|--------------------|-----------------|
| Length (in inches) | Number of Books |
| 5 | 2 |
| $5\frac{1}{2}$ | 3 |
| 6 | 6 |
| $6\frac{1}{2}$ | 5 |
| 7 | 8 |
| $7\frac{1}{2}$ | 5 |
| 8 | 7 |

**Part B**

Most book lengths are between which two measures?

_____ inches and _____ inches

What if you measure three more book lengths at $7\frac{1}{2}$ inches and add the data to the line plot? How would your answer change?