

Vocabulary

decimeter (dm) A metric unit for measuring length or distance

fluid ounce (fl oz) A customary unit for measuring liquid volume

line plot A graph that shows the frequency of data along a number line

second A small unit of time

Dear Family,

During the next few weeks, our math class will be learning about customary and metric units of length, weight/mass, and liquid volume. We will also find elapsed time and learn to compute with mixed measures.

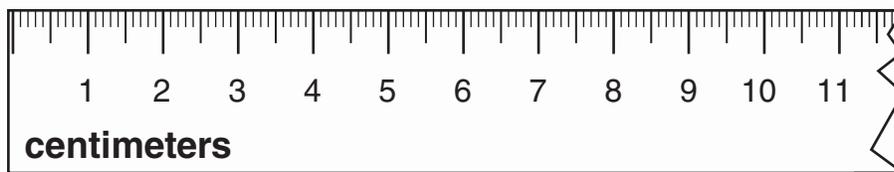
You can expect to see homework on how to use measurement benchmarks and how to compare units.

Here is a sample of how your child will be taught to compare sizes of metric units of length.



MODEL Compare the Relative Size of Centimeters and Millimeters

Look at a centimeter ruler.



Each labeled mark on the ruler is 1 centimeter.

The small marks between centimeters are millimeters.

1 centimeter = 10 millimeters

1 centimeter is 10 times as long as 1 millimeter.

1 millimeter is $\frac{1}{10}$ or 0.1 of a centimeter.

Tips

Estimating Measures

Use benchmarks to help you estimate measures. For example, the width of your finger is about 1 centimeter.

Activity

Have your child commit basic customary and metric units of measure to memory. Work together to make flash cards with measurement units, and have your child practice relating and comparing units. Use daily activities, such as meals and cooking, as opportunities for practice. For example, “If you start with 1 quart of juice and drink 3 cups, how many cups of juice are left?”

Carta para la casa

Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos las unidades usuales y métricas de longitud, peso/masa y volumen líquido. También aprenderemos a hallar el tiempo transcurrido y a calcular con medidas mixtas.

Llevaré a la casa tareas con actividades para aprender a usar puntos de referencia para medir y a comparar unidades.

Este es un ejemplo de la manera como aprenderemos a comparar los tamaños de las unidades métricas de longitud.

Vocabulario

decimetro (dm) Una unidad métrica que se usa para medir longitud o distancia

onza fluida (fl oz) Una unidad usual para medir el volumen líquido

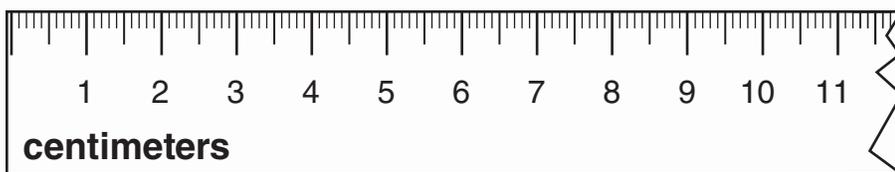
diagrama de puntos Una gráfica que muestra la frecuencia de los datos a lo largo de una recta numérica

segundo Una unidad pequeña de tiempo



MODELO Comparar el tamaño relativo de centímetros y milímetros

Observa la regla dividida en centímetros.



Pistas

Estimar medidas

Usa puntos de referencia para estimar medidas. Por ejemplo, tu dedo mide alrededor de 1 centímetro de ancho.

Cada marca señalada en la regla es de 1 centímetro. Las marcas pequeñas entre los centímetros son milímetros. 1 centímetro = 10 milímetros

1 centímetro mide 10 veces más que 1 milímetro.

1 milímetro mide $\frac{1}{10}$ o 0.1 de un centímetro.

Actividad

Pida a su hijo o hija que memorice las unidades básicas usuales y métricas de medida. Trabajen juntos para hacer tarjetas nemotécnicas con las unidades de medida, y pídale que relacione y compare unidades. Aproveche las actividades cotidianas, como las comidas o la cocina, para practicar. Por ejemplo, “Si comienzas con 1 cuarto de jugo y te bebes 3 tazas, ¿cuántas tazas de jugo quedan?”

Name _____

Measurement Benchmarks



COMMON CORE STANDARD—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Use benchmarks to choose the customary unit you would use to measure each.

1. height of a computer

foot

2. weight of a table

3. length of a semi-truck

4. the amount of liquid a bathtub holds

Customary Units	
ounce	yard
pound	mile
inch	gallon
foot	cup

Use benchmarks to choose the metric unit you would use to measure each.

5. mass of a grasshopper

6. the amount of liquid a water bottle holds

7. length of a soccer field

8. length of a pencil

Metric Units	
milliliter	centimeter
liter	meter
gram	kilometer
kilogram	

Circle the better estimate.

9. mass of a chicken egg

50 grams 50 kilograms

10. length of a car

12 miles 12 feet

11. amount of liquid a drinking glass holds

8 ounces 8 quarts

Complete the sentence. Write *more* or *less*.

12. A camera has a length of _____ than one centimeter.

13. A bowling ball weighs _____ than one pound.

Problem Solving



14. What is the better estimate for the mass of a textbook, 1 gram or 1 kilogram?

15. What is the better estimate for the height of a desk, 1 meter or 1 kilometer?

Lesson Check (4.MD.1)

1. What unit would be best to use for measuring the weight of a stapler?
2. Which is the best estimate for the length of a car?

Spiral Review (4.NF.4c, 4.NF.6, 4.MD.5a, 4.MD.5b, 4.G.2)

3. Bart practices his trumpet $1\frac{1}{4}$ hours each day. How many hours will he practice in 6 days?
4. Millie collected 100 stamps from different countries. Thirty-two of the stamps are from countries in Africa. What is $\frac{32}{100}$ written as a decimal?

5. Diedre drew a quadrilateral with 4 right angles and opposite sides of the same length. What kind of polygon did Diedre draw?
6. How many degrees are in an angle that turns through $\frac{1}{2}$ of a circle?

Name _____

Customary Units of Length



Common Core Standard—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 3 feet = 36 inches Think: 1 foot = 12 inches,
so 3 feet = 3 × 12 inches, or 36 inches

2. 2 yards = _____ feet

3. 8 feet = _____ inches

4. 7 yards = _____ feet

5. 4 feet = _____ inches

6. 15 yards = _____ feet

7. 10 feet = _____ inches

Compare using <, >, or =.

8. 3 yards ○ 10 feet

9. 5 feet ○ 60 inches

10. 8 yards ○ 20 feet

11. 3 feet ○ 10 inches

12. 3 yards ○ 21 feet

13. 6 feet ○ 72 inches

Problem Solving



14. Carla has two lengths of ribbon. One ribbon is 2 feet long. The other ribbon is 30 inches long. Which length of ribbon is longer? **Explain.**

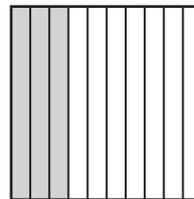
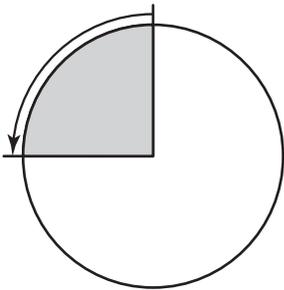
15. A football player gained 2 yards on one play. On the next play, he gained 5 feet. Was his gain greater on the first play or the second play? **Explain.**

Lesson Check (4.MD.1)

1. Marta has 14 feet of wire to use to make necklaces. She needs to know the length in inches so she can determine how many necklaces to make. How many inches of wire does Marta have?
2. Jarod bought 8 yards of ribbon. He needs 200 inches to use to make curtains. How many inches of ribbon does he have?

Spiral Review (4.NF.6, 4.MD.1, 4.MD.2, 4.MD.5a)

3. Describe the turn shown below. (Be sure to include both the size and direction of the turn in your answer.)
4. What decimal represents the shaded part of the model below?



5. Three sisters shared \$3.60 equally. How much did each sister get?
6. Which is the best estimate for the width of your index finger?

Name _____

Customary Units of Weight

Common Core Standard—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 5 pounds = 80 ounces

Think: 1 pound = 16 ounces, so
5 pounds = 5×16 ounces, or 80 ounces

2. 7 tons = _____ pounds

3. 2 pounds = _____ ounces

4. 3 tons = _____ pounds

5. 10 pounds = _____ ounces

6. 5 tons = _____ pounds

7. 7 pounds = _____ ounces

Compare using $<$, $>$, or $=$.

8. 8 pounds 80 ounces

9. 1 ton 100 pounds

10. 3 pounds 50 ounces

11. 5 tons 1,000 pounds

12. 16 pounds 256 ounces

13. 8 tons 16,000 pounds

Problem Solving

14. A company that makes steel girders can produce 6 tons of girders in one day. How many pounds is this?

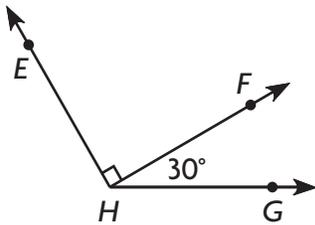
15. Larry's baby sister weighed 6 pounds at birth. How many ounces did the baby weigh?

Lesson Check (4.MD.1)

1. Ann bought 2 pounds of cheese to make lasagna. The recipe gives the amount of cheese needed in ounces. How many ounces of cheese did she buy?
2. A school bus weighs 7 tons. The weight limit for a bridge is given in pounds. What is this weight of the bus in pounds?

Spiral Review (4.NF.4c, 4.MD.1, 4.MD.7, 4.G.3)

3. What is the measure of $\angle EHG$?



4. How many lines of symmetry does the square below have?



5. To make dough, Reba needs $2\frac{1}{2}$ cups of flour. How much flour does she need to make 5 batches of dough?
6. Judi's father is 6 feet tall. The minimum height to ride a rollercoaster is given in inches. How many inches tall is Judi's father?

Name _____

Customary Units of Liquid Volume

Common Core Standard—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 6 gallons = 24 quarts

Think: 1 gallon = 4 quarts,
so 6 gallons = 6×4 quarts, or 24 quarts

2. 12 quarts = _____ pints

3. 6 cups = _____ fluid ounces

4. 9 pints = _____ cups

5. 10 quarts = _____ cups

6. 5 gallons = _____ pints

7. 3 gallons = _____ cups

Compare using $<$, $>$, or $=$.

8. 6 pints 60 fluid ounces

9. 3 gallons 30 quarts

10. 5 quarts 20 cups

11. 6 cups 12 pints

12. 8 quarts 16 pints

13. 6 gallons 96 pints

Problem Solving

14. A chef makes $1\frac{1}{2}$ gallons of soup in a large pot. How many 1-cup servings can the chef get from this large pot of soup?

15. Kendra's water bottle contains 2 quarts of water. She wants to add drink mix to it, but the directions for the drink mix give the amount of water in fluid ounces. How many fluid ounces are in her bottle?

Lesson Check (4.MD.1)

1. Joshua drinks 8 cups of water a day. The recommended daily amount is given in fluid ounces. How many fluid ounces of water does he drink each day?
2. A cafeteria used 5 gallons of milk in preparing lunch. How many 1-quart containers of milk did the cafeteria use?

Spiral Review (4.NF.4a, 4.NF.6, 4.MD.1, 4.G.1)

3. Roy uses $\frac{1}{4}$ cup of batter for each muffin. Make a list to show the amounts of batter he will use depending on the number of muffins he makes.
4. Beth has $\frac{7}{100}$ of a dollar. What is the amount of money Beth has?

5. Name the figure that Enrico drew below.
6. A hippopotamus weighs 4 tons. Feeding instructions are given for weights in pounds. How many pounds does the hippopotamus weigh?



Name _____

Line Plots

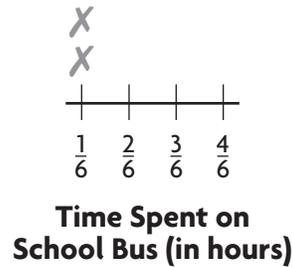


COMMON CORE STANDARD—4.MD.4
Represent and interpret data.

- Some students compared the time they spend riding the school bus. Complete the tally table and line plot to show the data.

Time Spent on School Bus	
Time (in hours)	Tally
$\frac{1}{6}$	
$\frac{2}{6}$	
$\frac{3}{6}$	
$\frac{4}{6}$	

Time Spent on School Bus (in hours)	
$\frac{1}{6}$	$\frac{3}{6}$ $\frac{4}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{1}{6}$ $\frac{3}{6}$ $\frac{3}{6}$



Use your line plot for 2 and 3.

- How many students compared times? _____
- What is the difference between the longest time and shortest time students spent riding the bus? _____

Problem Solving



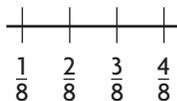
For 4–5, make a tally table on a separate sheet of paper. Make a line plot in the space below the problem.

4.

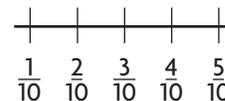
Milk Drunk at Lunch (in quarts)	
$\frac{1}{8}$	$\frac{2}{8}$ $\frac{2}{8}$ $\frac{4}{8}$ $\frac{1}{8}$ $\frac{3}{8}$ $\frac{4}{8}$ $\frac{2}{8}$ $\frac{3}{8}$ $\frac{2}{8}$

5.

Distance Between Stops for a Rural Mail Carrier (in miles)	
$\frac{3}{10}$	$\frac{4}{10}$ $\frac{5}{10}$ $\frac{1}{10}$ $\frac{5}{10}$ $\frac{4}{10}$ $\frac{4}{10}$ $\frac{3}{10}$



Milk Drunk at Lunch
(in quarts)



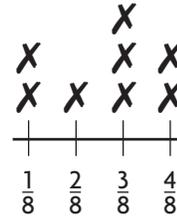
Distance Between Stops for
a Rural Mail Carrier (in miles)

Lesson Check (4.MD.4)

Use the line plot for 1 and 2.

1. How many students were reading during study time?

2. What is the difference between the longest time and shortest time spent reading?



Time Spent Reading During Study Time (in hours)

Spiral Review (4.NF.5, 4.MD.1)

3. Bridget is allowed to play on-line games for $\frac{75}{100}$ of an hour each day. Write this fraction as a decimal.

5. Jeremy gives his horse 12 gallons of water each day. How many 1-quart pails of water is that?

4. Bobby's collection of sports cards has $\frac{3}{10}$ baseball cards and $\frac{39}{100}$ football cards. The rest are soccer cards. What fraction of Bobby's sports cards are baseball or football cards?

6. An iguana at a pet store is 5 feet long. Measurements for iguana cages are given in inches. How many inches long is the iguana?

Name _____

Metric Units of Length

COMMON CORE STANDARD—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 4 meters = 400 centimeters

Think: 1 meter = 100 centimeters,
so 4 meters = 4×100 centimeters,
or 400 centimeters

2. 8 centimeters = _____ millimeters

3. 5 meters = _____ decimeters

4. 9 meters = _____ millimeters

5. 7 meters = _____ centimeters

Compare using $<$, $>$, or $=$.

6. 8 meters 80 centimeters

7. 3 decimeters 30 centimeters

8. 4 meters 450 centimeters

9. 90 centimeters 9 millimeters

Describe the length in meters. Write your answer as a fraction and as a decimal.

10. 43 centimeters = _____ or

_____ meter

11. 6 decimeters = _____ or

_____ meter

12. 8 centimeters = _____ or

_____ meter

13. 3 decimeters = _____ or

_____ meter

Problem Solving

14. A flagpole is 4 meters tall. How many centimeters tall is the flagpole?

15. A new building is 25 meters tall. How many decimeters tall is the building?

Lesson Check (4.MD.1)

1. A pencil is 15 centimeters long. How many millimeters long is that pencil?
2. John's father is 2 meters tall. How many centimeters tall is John's father?

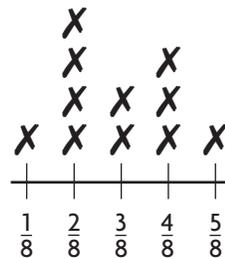
Spiral Review (4.NF.4b, 4.NF.7, 4.MD.4)

3. Bruce reads for $\frac{3}{4}$ hour each night. How long will he read in 4 nights?
4. Mark jogged 0.6 mile. Caroline jogged 0.49 mile. Write an inequality to compare the distances they jogged.

Use the line plot for 5 and 6.

5. How many lawns were mowed?

6. What is the difference between the greatest amount and least amount of gasoline used to mow lawns?



Gasoline Used to Mow Lawns in May (in Gallons)

Name _____

Metric Units of Mass and Liquid Volume



COMMON CORE STANDARDS—4.MD.1
4.MD.2 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 5 liters = 5,000 milliliters

Think: 1 liter = 1,000 milliliters,
so 5 liters = $5 \times 1,000$ milliliters, or 5,000 milliliters

2. 3 kilograms = _____ grams

3. 8 liters = _____ milliliters

4. 7 kilograms = _____ grams

5. 9 liters = _____ milliliters

6. 2 liters = _____ milliliters

7. 6 kilograms = _____ grams

Compare using $<$, $>$, or $=$.

8. 8 kilograms 850 grams

9. 3 liters 3,500 milliliters

10. 1 kilogram 1,000 grams

11. 5 liters 520 milliliters

Problem Solving

12. Kenny buys four 1-liter bottles of water. How many milliliters of water does Kenny buy?

13. Mrs. Jones bought three 2-kilogram packages of flour. How many grams of flour did she buy?

14. Colleen bought 8 kilograms of apples and 2.5 kilograms of pears. How many more grams of apples than pears did she buy?

15. Dave uses 500 milliliters of juice for a punch recipe. He mixes it with 2 liters of ginger ale. How many milliliters of punch does he make?

Lesson Check (4.MD.1, 4.MD.2)

1. During his hike, Milt drank 1 liter of water and 1 liter of sports drink. How many milliliters of liquid did he drink?
2. Larinda cooked a 4-kilogram roast. The roast left over after the meal weighed 3 kilograms. How many grams of roast were eaten during that meal?

Spiral Review (4.MD.1, 4.MD.6, 4.G.1)

3. Use a protractor to find the angle measure.
4. Draw a pair of parallel lines.



5. Carly bought 3 pounds of birdseed. How many ounces of birdseed did she buy?
6. A door is 8 decimeters wide. How wide is the door in centimeters?

Name _____

Units of Time



COMMON CORE STANDARD—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 6 minutes = 360 seconds

Think: 1 minute = 60 seconds,
so 6 minutes = 6×60 seconds, or 360 seconds

2. 5 weeks = _____ days

3. 3 years = _____ weeks

4. 9 hours = _____ minutes

5. 9 minutes = _____ seconds

6. 5 years = _____ months

7. 7 days = _____ hours

Compare using $<$, $>$, or $=$.

8. 2 years 14 months

9. 3 hours 300 minutes

10. 2 days 48 hours

11. 6 years 300 weeks

12. 4 hours 400 minutes

13. 5 minutes 300 seconds

Problem Solving



14. Jody practiced a piano piece for 500 seconds. Bill practiced a piano piece for 8 minutes. Who practiced longer? **Explain.**

15. Yvette's younger brother just turned 3 years old. Fred's brother is now 30 months old. Whose brother is older? **Explain.**

Lesson Check (4.MD.1)

1. Glen rode his bike for 2 hours. For how many minutes did Glen ride his bike?
2. Tina says that vacation starts in exactly 4 weeks. In how many days does vacation start?

Spiral Review (4.NF.3b, 4.NF.5, 4.MD.1, 4.MD.2)

3. Kayla bought $\frac{9}{4}$ pounds of apples. What is that weight as a mixed number?
4. Judy, Jeff, and Jim each earned \$5.40 raking leaves. How much did they earn together?

5. Melinda rode her bike $\frac{54}{100}$ mile to the library. Then she rode $\frac{4}{10}$ mile to the store. How far did Melinda ride her bike in all? Write your answer as a decimal.
6. One day, the students drank 60 quarts of milk at lunch. How many pints of milk did the students drink?

Lesson Check (4.MD.2)

1. Bobbie went snowboarding with friends at 10:10 A.M. They snowboarded for 1 hour and 43 minutes, and then stopped to eat lunch. What time did they stop for lunch?
2. The Cain family drove for 1 hour and 15 minutes and arrived at their camping spot at 3:44 P.M. What time did the Cain family start driving?

Spiral Review (4.NF.4b, 4.NF.5, 4.MD.1, 4.MD.2)

3. A praying mantis can grow up to 15 centimeters long. How long is this in millimeters?
4. Thom's minestrone soup recipe makes 3 liters of soup. How many milliliters of soup is this?

5. Stewart walks $\frac{2}{3}$ mile each day. List three multiples of $\frac{2}{3}$.
6. Angelica colored in 0.60 of the squares on her grid. Write 0.60 as tenths in fraction form.

Name _____

Mixed Measures**COMMON CORE STANDARD—4.MD.2**
*Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.***Complete.**

1. 8 pounds 4 ounces = 132 ounces

Think: 8 pounds = 8×16 ounces, or 128 ounces.

128 ounces + 4 ounces = 132 ounces

2. 5 weeks 3 days = _____ days

3. 4 minutes 45 seconds = _____ seconds

4. 4 hours 30 minutes = _____ minutes

5. 3 tons 600 pounds = _____ pounds

6. 6 pints 1 cup = _____ cups

7. 7 pounds 12 ounces = _____ ounces

Add or subtract.

8.
$$\begin{array}{r} 9 \text{ gal } 1 \text{ qt} \\ + 6 \text{ gal } 1 \text{ qt} \\ \hline \end{array}$$

9.
$$\begin{array}{r} 12 \text{ lb } 5 \text{ oz} \\ - 7 \text{ lb } 10 \text{ oz} \\ \hline \end{array}$$

10.
$$\begin{array}{r} 8 \text{ hr } 3 \text{ min} \\ + 4 \text{ hr } 12 \text{ min} \\ \hline \end{array}$$

Problem Solving

11. Michael's basketball team practiced for 2 hours 40 minutes yesterday and 3 hours 15 minutes today. How much longer did the team practice today than yesterday?

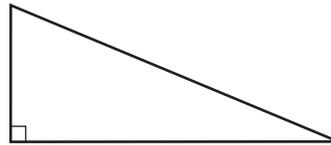
12. Rhonda had a piece of ribbon that was 5 feet 3 inches long. She removed a 5-inch piece to use in her art project. What is the length of the piece of ribbon now?

Lesson Check (4.MD.2)

1. Marsha bought 1 pound 11 ounces of roast beef and 2 pounds 5 ounces of corned beef. How much more corned beef did she buy than roast beef?
2. Theodore says there are 2 weeks 5 days left in the year. How many days are left in the year?

Spiral Review (4.NF.7, 4.MD.1, 4.MD.2, 4.G.2)

3. On one grid, 0.5 of the squares are shaded. On another grid, 0.05 of the squares are shaded. Compare the shaded parts of the grids using $<$, $=$, or $>$.
4. Classify the triangle shown below.



5. Sahil's brother is 3 years old. How many weeks old is his brother?
6. Sierra's swimming lessons last 1 hour 20 minutes. She finished her lesson at 10:50 A.M. At what time did her lesson start?

Name _____

Patterns in Measurement Units



COMMON CORE STANDARD—4.MD.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Each table shows a pattern for two customary units of time or volume. Label the columns of the table.

1.

<u> </u>	<u> </u>
1	4
2	8
3	12
4	16
5	20

2.

<u> </u>	<u> </u>
1	12
2	24
3	36
4	48
5	60

3.

<u> </u>	<u> </u>
1	2
2	4
3	6
4	8
5	10

4.

<u> </u>	<u> </u>
1	7
2	14
3	21
4	28
5	35

Problem Solving 

Use the table for 5 and 6.

5. Marguerite made the table to compare two metric measures of length. Name a pair of units Marguerite could be comparing.

6. Name another pair of metric units of length that have the same relationship.

?	?
1	10
2	20
3	30
4	40
5	50

Lesson Check (4.MD.1)

1. Joanne made a table to relate two units of measure. The number pairs in her table are 1 and 16, 2 and 32, 3 and 48, 4 and 64. What are the best labels for Joanne's table?
2. Cade made a table to relate two units of time. The number pairs in his table are 1 and 24, 2 and 48, 3 and 72, 4 and 96. What are the best labels for Cade's table?

Spiral Review (4.NF.6, 4.MD.1, 4.MD.2, 4.MD.5a)

3. Anita has 2 quarters, 1 nickel, and 4 pennies. Write Anita's total amount as a fraction of a dollar.
4. The minute hand of a clock moves from 12 to 6. What describes the turn the minute hand makes?
5. Roderick has a dog that has a mass of 9 kilograms. What is the mass of the dog in grams?
6. Kari mixed 3 gallons 2 quarts of lemon-lime drink with 2 gallons 3 quarts of pink lemonade to make punch. How much more lemon-lime drink did Kari use than pink lemonade?