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.

![Centimeter Ruler](image)

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.

**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?”
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 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.

**MODELO** Comparar el tamaño relativo de centímetros y milímetros

Observa la regla dividida en centímetros.

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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?”

**Vocabulario**

- **decímetro (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.
Lesson 12.1
Measurement Benchmarks

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
   __________

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
   __________

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?

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COMMON CORE STANDARD MACC.4.MD.1.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
Lesson Check (MACC.4.MD.1.1)

1. Which is the best estimate for the weight of a stapler?
   A 4 ounces
   B 4 pounds
   C 4 inches
   D 4 feet

2. Which is the best estimate for the length of a car?
   A 4 kilometers
   B 4 tons
   C 4 kilograms
   D 4 meters

Spiral Review (MACC.4.NF.2.4c, MACC.4.NF.3.6, MACC.4.MD.3.5a, MACC.4.MD.3.5b, MACC.4.G.1.2)

3. Bart practices his trumpet $1\frac{1}{4}$ hours each day. How many hours will he practice in 6 days? (Lesson 8.4)
   A $8\frac{2}{4}$ hours
   B $7\frac{2}{4}$ hours
   C 7 hours
   D $6\frac{2}{4}$ hours

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? (Lesson 9.2)
   A 32
   B 3.2
   C 0.32
   D 0.032

5. Diedre drew a quadrilateral with 4 right angles and 4 sides of the same length. What kind of polygon did Diedre draw? (Lesson 10.4)
   A square
   B trapezoid
   C hexagon
   D pentagon

6. How many degrees are in an angle that turns through $\frac{1}{2}$ of a circle? (Lesson 11.2)
   A 60°
   B 90°
   C 120°
   D 180°
Customary Units of Length

Complete.

1. 3 feet = 36 inches
   Think: 1 foot = 12 inches,
   so 3 feet = 3 \times 12 \text{ 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 \(\bigcirc\) 10 feet

9. 5 feet \(\bigcirc\) 60 inches

10. 8 yards \(\bigcirc\) 20 feet

11. 3 feet \(\bigcirc\) 10 inches

12. 3 yards \(\bigcirc\) 21 feet

13. 6 feet \(\bigcirc\) 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 (MACC.4.MD.1.1)

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?
   - A 42 inches
   - B 84 inches
   - C 168 inches
   - D 504 inches

2. Jarod bought 8 yards of ribbon. He needs 200 inches to use to make curtains. How many inches of ribbon does he have?
   - A 8 inches
   - B 80 inches
   - C 96 inches
   - D 288 inches

Spiral Review (MACC.4.NF.3.6, MACC.4.MD.1.1, MACC.4.MD.1.2, MACC.4.MD.3.5a)

3. Which describes the turn shown below? (Lesson 11.1)
   - A $\frac{1}{4}$ turn counterclockwise
   - B $\frac{1}{4}$ turn clockwise
   - C $\frac{1}{2}$ turn clockwise
   - D $\frac{3}{4}$ turn counterclockwise

4. Which decimal represents the shaded part of the model below? (Lesson 9.1)
   - A 0.03
   - B 0.3
   - C 0.33
   - D 0.7

5. Three sisters shared $3.60 equally. How much did each sister get? (Lesson 9.5)
   - A $1.00$
   - B $1.20$
   - C $1.80$
   - D $10.80$

6. Which is the best estimate for the width of your index finger? (Lesson 12.1)
   - A 1 millimeter
   - B 1 gram
   - C 1 centimeter
   - D 1 liter
14. A company that makes steel girders can produce 6 tons of girders in one day. How many pounds is this?

Think: 1 ton = 2,000 pounds, so
6 tons = 6 × 2,000 pounds, or 12,000 pounds

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

Think: 1 pound = 16 ounces, so
6 pounds = 6 × 16 ounces, or 96 ounces
Lesson Check  (MACC.4.MD.1.1)
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?
   A 20 ounces
   B 32 ounces
   C 40 ounces
   D 64 ounces

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?
   A 700 pounds
   B 1,400 pounds
   C 7,000 pounds
   D 14,000 pounds

Spiral Review  (MACC.4.NF.2.4c, MACC.4.MD.1.1, MACC.4.MD.3.6, MACC.4.G.1.3)
3. What is the measure of \( \angle EHG \) ?  (Lesson 11.3)
   A 60°
   B 100°
   C 120°
   D 130°

4. How many lines of symmetry does the square below have?  (Lesson 10.6)
   A 0
   B 2
   C 4
   D 6

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?  (Lesson 8.4)
   A 14\( \frac{1}{2} \) cups
   B 12\( \frac{1}{2} \) cups
   C 11\( \frac{1}{2} \) cups
   D 10\( \frac{1}{2} \) cups

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?  (Lesson 12.2)
   A 60 inches
   B 66 inches
   C 72 inches
   D 216 inches
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** (MACC.4.MD.1.1)

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?
   - A 16 fluid ounces
   - B 32 fluid ounces
   - C 64 fluid ounces
   - D 128 fluid ounces

2. A cafeteria used 5 gallons of milk in preparing lunch. How many 1-quart containers of milk did the cafeteria use?
   - A 10
   - B 20
   - C 40
   - D 80

**Spiral Review** (MACC.4.NF.2.4a, MACC.4.NF.3.6, MACC.4.MD.1.1, MACC.4.G.1.1)

3. Roy uses \( \frac{1}{4} \) cup of batter for each muffin. Which list shows the amounts of batter he will use depending on the number of muffins he makes? (Lesson 8.1)
   - A \( \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8} \)
   - B \( \frac{1}{4}, \frac{3}{4}, \frac{5}{4} \)
   - C \( \frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \frac{5}{20} \)
   - D \( \frac{1}{4}, \frac{2}{8}, \frac{4}{16}, \frac{6}{24}, \frac{8}{32} \)

4. Beth has \( \frac{7}{100} \) of a dollar. Which shows the amount of money Beth has? (Lesson 9.4)
   - A $7.00
   - B $0.70
   - C $0.07
   - D $0.007

5. Name the figure that Enrico drew below. (Lesson 10.1)
   - A a ray
   - B a line
   - C a line segment
   - D an octagon

6. A hippopotamus weighs 4 tons. Feeding instructions are given for weights in pounds. How many pounds does the hippopotamus weigh? (Lesson 12.3)
   - A 4,000 pounds
   - B 6,000 pounds
   - C 8,000 pounds
   - D 12,000 pounds
Lesson 12.5

**Common Core Standard**
MACC.4.MD.2.4
Represent and interpret data.

**Line Plots**

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

<table>
<thead>
<tr>
<th>Time Spent on School Bus</th>
<th>Time (in hours)</th>
<th>Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/6</td>
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<td></td>
<td>4/6</td>
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</tr>
</tbody>
</table>

Use your line plot for 2 and 3.

2. How many students compared times? __________

3. 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)
   1 2 2 4 1 3 4 2 3 2
   8' 8' 8' 8' 8' 8' 8' 8' 8'

5. Distance Between Stops for a Rural Mail Carrier (in miles)
   3 4 5 1 5 4 4 3
   10' 10' 10' 10' 10' 10' 10' 10'
Lesson Check (MACC.4.MD.2.4)

Use the line plot for 1 and 2.

1. How many students were reading during study time?
   - A 5
   - B 6
   - C 7
   - D 8

2. What is the difference between the longest time and shortest time spent reading?
   - A $\frac{4}{8}$ hour
   - B $\frac{3}{8}$ hour
   - C $\frac{2}{8}$ hour
   - D $\frac{1}{8}$ hour

Spiral Review (MACC.4.NF.3.5, MACC.4.MD.1.1)

3. Bridget is allowed to play on-line games for $\frac{75}{100}$ of an hour each day. Which shows that fraction as a decimal? (Lesson 9.3)
   - A 75.0
   - B 7.50
   - C 0.75
   - D 0.075

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? (Lesson 9.6)
   - A $\frac{9}{100}$
   - B $\frac{42}{100}$
   - C $\frac{52}{100}$
   - D $\frac{69}{100}$

5. Jeremy gives his horse 12 gallons of water each day. How many 1-quart pails of water is that? (Lesson 12.4)
   - A 24
   - B 48
   - C 72
   - D 96

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? (Lesson 12.2)
   - A 45 inches
   - B 50 inches
   - C 60 inches
   - D 72 inches
Lesson 12.6

Metric Units of Length

Complete.
1. 4 meters = \(\boxed{400}\) centimeters
   Think: 1 meter = 100 centimeters, so 4 meters = \(4 \times 100\) centimeters, or 400 centimeters

2. 8 centimeters = \(\boxed{8}\) millimeters
3. 5 meters = \(\boxed{5}\) decimeters

4. 9 meters = \(\boxed{9}\) millimeters
5. 7 meters = \(\boxed{7}\) centimeters

Compare using <, >, or =.
6. 8 meters \(\bigcirc\) 80 centimeters
7. 3 decimeters \(\bigcirc\) 30 centimeters

8. 4 meters \(\bigcirc\) 450 centimeters
9. 90 centimeters \(\bigcirc\) 9 millimeters

Describe the length in meters. Write your answer as a fraction and as a decimal.
10. 43 centimeters = \(\boxed{4}\) or \(\boxed{\frac{43}{100}}\) meter
11. 6 decimeters = \(\boxed{6}\) or \(\boxed{\frac{6}{10}}\) meter
12. 8 centimeters = \(\boxed{8}\) or \(\boxed{\frac{8}{100}}\) meter
13. 3 decimeters = \(\boxed{3}\) or \(\boxed{\frac{3}{10}}\) 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 (MACC.4.MD.1.1)

1. A pencil is 15 centimeters long. How many millimeters long is that pencil?
   - **A** 1.5 millimeters
   - **B** 15 millimeters
   - **C** 150 millimeters
   - **D** 1,500 millimeters

2. John’s father is 2 meters tall. How many centimeters tall is John’s father?
   - **A** 2,000 centimeters
   - **B** 200 centimeters
   - **C** 20 centimeters
   - **D** 2 centimeters

Spiral Review (MACC.4.NF.2.4b, MACC.4.NF.3.7, MACC.4.MD.2.4)

3. Bruce reads for \(\frac{3}{4}\) hour each night. How long will he read in 4 nights? (Lesson 8.3)
   - **A** \(\frac{3}{16}\) hour
   - **B** \(\frac{7}{4}\) hours
   - **C** \(\frac{9}{4}\) hours
   - **D** \(\frac{12}{4}\) hours

4. Mark jogged 0.6 mile. Caroline jogged 0.49 mile. Which inequality correctly compares the distances they jogged? (Lesson 9.7)
   - **A** \(0.6 = 0.49\)
   - **B** \(0.6 > 0.49\)
   - **C** \(0.6 < 0.49\)
   - **D** \(0.6 + 0.49 = 1.09\)

Use the line plot for 5 and 6. (Lesson 12.5)

5. How many lawns were mowed?
   - **A** 8
   - **B** 9
   - **C** 10
   - **D** 11

6. What is the difference between the greatest amount and least amount of gasoline used to mow lawns? (Lesson 12.5)
   - **A** \(\frac{6}{8}\) gallon
   - **B** \(\frac{5}{8}\) gallon
   - **C** \(\frac{4}{8}\) gallon
   - **D** \(\frac{3}{8}\) gallon

Gasoline Used to Mow Lawns in May (in Gallons)
**Metric Units of Mass and Liquid Volume**

**Complete.**
1. $5$ liters = \underline{5,000} milliliters  
   Think: $1$ liter $= 1,000$ milliliters,  
   so $5$ liters $= 5 \times 1,000$ milliliters, or $5,000$ milliliters

2. $3$ kilograms = \underline{\hspace{2cm}} grams

3. $8$ liters = \underline{\hspace{2cm}} milliliters

4. $7$ kilograms = \underline{\hspace{2cm}} grams

5. $9$ liters = \underline{\hspace{2cm}} milliliters

6. $2$ liters = \underline{\hspace{2cm}} milliliters

**Compare using $<$, $>$, or $=$.**
8. $8$ kilograms \(\bigcirc\) $850$ grams

9. $3$ liters \(\bigcirc\) $3,500$ milliliters

10. $1$ kilogram \(\bigcirc\) $1,000$ grams

11. $5$ liters \(\bigcirc\) $520$ milliliters

**Problem Solving**

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

    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 (MACC.4.MD.1.1, MACC.4.MD.1.2)

1. During his hike, Milt drank 1 liter of water and 1 liter of sports drink. How many milliliters of liquid did he drink in all?
   A 20 milliliters
   B 200 milliliters
   C 2,000 milliliters
   D 20,000 milliliters

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?
   A 7,000 grams
   B 1,000 grams
   C 700 grams
   D 100 grams

Spiral Review (MACC.4.MD.1.1, MACC.4.MD.3.6, MACC.4.G.1.1)

3. Use a protractor to find the angle measure. (Lesson 11.3)
   A 15°
   B 35°
   C 135°
   D 145°

4. Which of the following shows parallel lines? (Lesson 10.3)
   A
   B
   C
   D

5. Carly bought 3 pounds of birdseed. How many ounces of birdseed did she buy? (Lesson 12.3)
   A 30 ounces
   B 36 ounces
   C 42 ounces
   D 48 ounces

6. A door is 8 decimeters wide. How wide is the door in centimeters? (Lesson 12.6)
   A 8 centimeters
   B 80 centimeters
   C 800 centimeters
   D 8,000 centimeters
Units of Time

Complete.

1. 6 minutes = ________ seconds

Think: 1 minute = 60 seconds,
so 6 minutes = 6 \times 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


________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

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 (MACC.4.MD.1.1)

1. Glen rode his bike for 2 hours. For how many minutes did Glen ride his bike?
   - **A** 60 minutes
   - **B** 100 minutes
   - **C** 120 minutes
   - **D** 150 minutes

2. Tina says that vacation starts in exactly 4 weeks. In how many days does vacation start?
   - **A** 28 days
   - **B** 35 days
   - **C** 42 days
   - **D** 48 days

Spiral Review (MACC.4.NF.2.3b, MACC.4.NF.3.5, MACC.4.MD.1.1, MACC.4.MD.1.2)

3. Kayla bought $\frac{9}{4}$ pounds of apples. What is that weight as a mixed number? (Lesson 7.6)
   - **A** $1 \frac{1}{4}$ pounds
   - **B** $1 \frac{4}{9}$ pounds
   - **C** $2 \frac{1}{4}$ pounds
   - **D** $2 \frac{3}{4}$ pounds

4. Judy, Jeff, and Jim each earned $5.40 raking leaves. How much did they earn in all? (Lesson 9.5)
   - **A** $1.60
   - **B** $10.80
   - **C** $15.20
   - **D** $16.20

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? (Lesson 9.6)
   - **A** 0.14 mile
   - **B** 0.58 mile
   - **C** 0.94 mile
   - **D** 1.04 miles

6. One day, the students drank 60 quarts of milk at lunch. How many pints of milk did the students drink? (Lesson 12.4)
   - **A** 30 pints
   - **B** 120 pints
   - **C** 240 pints
   - **D** 480 pints
Read each problem and solve.

1. Molly started her piano lesson at 3:45 P.M. The lesson lasted 20 minutes. What time did the piano lesson end?

   **Think:** What do I need to find?
   - How can I draw a diagram to help?

   4:05 P.M.

2. Brendan spent 24 minutes playing a computer game. He stopped playing at 3:55 P.M. and went outside to ride his bike. What time did he start playing the computer game?

3. Aimee’s karate class lasts 1 hour and 15 minutes and is over at 5:00 P.M. What time does Aimee’s karate class start?

4. Mr. Giarmo left for work at 7:15 A.M. Twenty-five minutes later, he arrived at his work. What time did Mr. Giarmo arrive at his work?

5. Ms. Brown’s flight left at 9:20 A.M. Her plane landed 1 hour and 23 minutes later. What time did her plane land?
Lesson Check (MACC.4.MD.1.2)

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?
   A  8:27 A.M.
   B  10:53 A.M.
   C  11:53 A.M.
   D  12:53 A.M.

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?
   A  4:59 P.M.
   B  2:44 P.M.
   C  2:39 P.M.
   D  2:29 P.M.

Spiral Review (MACC.4.NF.2.4b, MACC.4.NF.3.5, MACC.4.MD.1.1, MACC.4.MD.1.2)

3. A praying mantis can grow up to 15 centimeters long. How long is this in millimeters? (Lesson 12.6)
   A  15 millimeters
   B  150 millimeters
   C  1,500 millimeters
   D  15,000 millimeters

4. Thom’s minestrone soup recipe makes 3 liters of soup. How many milliliters of soup is this? (Lesson 12.7)
   A  30 milliliters
   B  300 milliliters
   C  3,000 milliliters
   D  30,000 milliliters

5. Stewart walks \( \frac{2}{3} \) mile each day. Which is a multiple of \( \frac{2}{3} \)? (Lesson 8.2)
   \[
   \frac{4}{3} \quad \frac{4}{6} \quad \frac{8}{10} \quad \frac{2}{12}
   \]

6. Angelica colored in 0.60 of the squares on her grid. Which of the following expresses 0.60 as tenths in fraction form? (Lesson 9.3)
   \[
   \frac{60}{100} \quad \frac{60}{10} \quad \frac{6}{100} \quad \frac{6}{10}
   \]
Mixed Measures

Complete.

1. 8 pounds 4 ounces = ______ 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. 9 gal 1 qt + 6 gal 1 qt = ______ gal ______ qt

9. 12 lb 5 oz − 7 lb 10 oz = ______ lb ______ oz

10. 8 hr 3 min + 4 hr 12 min = ______ hr ______ min

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 (MACC.4.MD.1.2)

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?
   - A 16 ounces
   - B 10 ounces
   - C 7 ounces
   - D 6 ounces

2. Theodore says there are 2 weeks 5 days left in the year. How many days are left in the year?
   - A 14 days
   - B 15 days
   - C 19 days
   - D 25 days


3. On one grid, 0.5 of the squares are shaded. On another grid, 0.05 of the squares are shaded. Which statement is true? (Lesson 9.7)
   - A 0.05 > 0.5
   - B 0.05 = 0.5
   - C 0.05 < 0.5
   - D 0.05 + 0.5 = 1.0

4. Classify the triangle shown below. (Lesson 10.2)
   - A right
   - B acute
   - C equilateral
   - D obtuse

5. Sahil’s brother is 3 years old. How many weeks old is his brother? (Lesson 12.8)
   - A 30 weeks
   - B 36 weeks
   - C 90 weeks
   - D 156 weeks

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? (Lesson 12.9)
   - A 9:30 A.M.
   - B 9:50 A.M.
   - C 10:30 A.M.
   - D 12:10 A.M.
Patterns in Measurement Units

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

1. \[
\begin{array}{|c|c|}
\hline
\text{Gallons} & \text{Quarts} \\
\hline
1 & 4 \\
2 & 8 \\
3 & 12 \\
4 & 16 \\
5 & 20 \\
\hline
\end{array}
\]

2. \[
\begin{array}{|c|c|}
\hline
\text{} & \text{} \\
\hline
1 & 12 \\
2 & 24 \\
3 & 36 \\
4 & 48 \\
5 & 60 \\
\hline
\end{array}
\]

3. \[
\begin{array}{|c|c|}
\hline
\text{} & \text{} \\
\hline
1 & 2 \\
2 & 4 \\
3 & 6 \\
4 & 8 \\
5 & 10 \\
\hline
\end{array}
\]

4. \[
\begin{array}{|c|c|}
\hline
\text{} & \text{} \\
\hline
1 & 7 \\
2 & 14 \\
3 & 21 \\
4 & 28 \\
5 & 35 \\
\hline
\end{array}
\]

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.

\[
\begin{array}{|c|c|}
\hline
\text{Units} & \text{Units} \\
\hline
? & ? \\
1 & 10 \\
2 & 20 \\
3 & 30 \\
4 & 40 \\
5 & 50 \\
\hline
\end{array}
\]

6. Name another pair of metric units of length that have the same relationship.
Lesson Check  (MACC.4.MD.1.1)
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. Which are the best labels for Joanne’s table?
   A  Cups, Fluid Ounces
   B  Gallons, Quarts
   C  Pounds, Ounces
   D  Yards, Inches

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. Which are the best labels for Cade’s table?
   A  Days, Hours
   B  Days, Weeks
   C  Years, Months
   D  Years, Weeks

Spiral Review  (MACC.4.NF.3.6, MACC.4.MD.1.1, MACC.4.MD.1.2, MACC.4.MD.3.5a)
3. Anita has 2 quarters, 1 nickel, and 4 pennies. Write Anita’s total amount as a fraction of a dollar. (Lesson 9.4)
   A  \(\frac{39}{100}\)
   B  \(\frac{54}{100}\)
   C  \(\frac{59}{100}\)
   D  \(\frac{84}{100}\)

4. The minute hand of a clock moves from 12 to 6. Which describes the turn the minute hand makes? (Lesson 11.1)
   A  \(\frac{1}{4}\) turn
   B  \(\frac{1}{2}\) turn
   C  \(\frac{3}{4}\) turn
   D  1 full turn

5. Roderick has a dog that has a mass of 9 kilograms. What is the mass of the dog in grams? (Lesson 12.7)
   A  9 grams
   B  900 grams
   C  9,000 grams
   D  90,000 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? (Lesson 12.10)
   A  3 quarts
   B  4 quarts
   C  1 gallon 1 quart
   D  1 gallon 2 quarts
Chapter 12 Extra Practice

Lesson 12.1

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

1. length of a car
   - customary unit: ____________________
   - metric unit: _______________________

2. liquid volume of a sink
   - customary unit: ____________________
   - metric unit: _______________________

3. weight or mass of a parakeet
   - customary unit: ____________________
   - metric unit: _______________________

4. length of your thumb
   - customary unit: ____________________
   - metric unit: _______________________

Lessons 12.2 – 12.4

Complete.

1. 6 yards = ______ feet
2. 2 feet = ______ inches
3. 3 pounds = ______ ounces
4. 2 tons = ______ pounds
5. 5 gallons = ______ quarts
6. 4 quarts = ______ cups

Lesson 12.5

Use the line plot for 1–2.

1. What is the difference in height between the tallest plant and the shortest plant?
   ______________

2. How many plants are in Box A? ________
Lessons 12.6 – 12.8

Complete.

1. 9 centimeters = ________ millimeters
2. 7 meters = ________ decimeters
3. 5 decimeters = ________ centimeters
4. 4 liters = ________ milliliters
5. 3 kilograms = ________ grams
6. 3 weeks = ________ days
7. 6 hours = ________ minutes
8. 2 days = ________ hours

Lesson 12.10

Add or subtract.

1. 3 ft 8 in. + 1 ft 2 in. = ________ ft ________ in.
2. 9 lb 6 oz − 4 lb 2 oz = ________ lb ________ oz
3. 5 gal 2 qt − 1 gal 3 qt = ________ gal ________ qt
4. 7 hr 10 min − 3 hr 40 min = ________ hr ________ min

Lessons 12.9 and 12.11

1. Rick needs to be at school at 8:15 A.M. It takes him 20 minutes to walk to school. At what time does he need to leave to get to school on time?

2. Sunny’s gymnastics class lasts 1 hour 20 minutes. The class starts at 3:50 P.M. At what time does the gymnastics class end?

3. David made a table to relate two customary units. Label the columns of the table.

<table>
<thead>
<tr>
<th>1</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>64</td>
</tr>
<tr>
<td>5</td>
<td>80</td>
</tr>
</tbody>
</table>