Weight

Essential Question: How can you compare and convert customary units of weight?

Hector’s school is having a model rocket competition. To qualify, each rocket must weigh 4 pounds or less. Hector’s unpainted rocket weighs 62 ounces. What is the weight of the most paint he can use for his model rocket to qualify for entry?

1 pound = ____ ounces

Use a bar model to write an equation.

**STEP 1** Convert 4 pounds to ounces.

**MODEL**

| 16 | 16 | 16 | 16 |

**RECORD**

<table>
<thead>
<tr>
<th>total lb</th>
<th>oz in</th>
<th>total oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STEP 2** Subtract the rocket’s weight from the total ounces a rocket can weigh to qualify.

_____ – 62 = _____

So, the weight of the paint can be at most _____ ounces for Hector’s model rocket to qualify for entry.

**Math Talk** How did you choose which operation to use to change from pounds to ounces? Explain.
Example

The rocket boosters for a U.S. space shuttle weigh 1,292,000 pounds each when the shuttle is launched. How many tons does each rocket booster weigh?

Use mental math to convert pounds to tons.

**STEP 1** Decide which operation to use. Since pounds are smaller than tons, I need to ______ the number of pounds by ______.

<table>
<thead>
<tr>
<th>Units of Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pound (lb) = 16 ounces (oz)</td>
</tr>
<tr>
<td>1 ton (T) = 2,000 lb</td>
</tr>
</tbody>
</table>

**STEP 2** Break 2,000 into two factors that are easy to divide by mentally.

2,000 = ______ × 2

**STEP 3** Divide 1,292,000 by the first factor. Then divide the quotient by the second factor.

1,292,000 ÷ _____ = ______

_____ ÷ 2 = ______

So, each rocket booster weighs _____ tons when launched.

Share and Show

1. Use the picture to complete each equation.
   a. 1 pound = _____ ounces
   b. 2 pounds = _____ ounces
   c. 3 pounds = _____ ounces
   d. 4 pounds = _____ ounces
   e. 5 pounds = _____ ounces

Convert.

2. 15 lb = _____ oz

3. 3 T = _____ lb

4. 320 oz = _____ lb

Math Talk

Explain how you can compare 11 pounds to 175 ounces mentally.
On Your Own.

Convert.

5. \(5 \text{T} = \underline{\quad} \text{lb}\) 
6. \(19 \text{T} = \underline{\quad} \text{lb}\) 
7. \(16,000 \text{ lb} = \underline{\quad} \text{T}\)

8. \(192 \text{ oz} = \underline{\quad} \text{lb}\) 
9. \(416 \text{ oz} = \underline{\quad} \text{lb}\) 
10. \(24 \text{ lb} = \underline{\quad} \text{oz}\)

Practice: Copy and Solve Convert.

11. \(23 \text{ lb} = \underline{\quad} \text{oz}\) 
12. \(6 \text{T} = \underline{\quad} \text{lb}\) 
13. \(144 \text{ oz} = \underline{\quad} \text{lb}\)

14. \(15 \text{T} = \underline{\quad} \text{lb}\) 
15. \(352 \text{ oz} = \underline{\quad} \text{lb}\) 
16. \(18 \text{ lb} = \underline{\quad} \text{oz}\)

Compare. Write <, >, or =.

17. \(130 \text{ oz} \underline{\quad} 8 \text{ lb}\) 
18. \(34 \text{ lb} \underline{\quad} 544 \text{ oz}\) 
19. \(14 \text{ lb} \underline{\quad} 229 \text{ oz}\)

20. \(16 \text{T} \underline{\quad} 32,000 \text{ lb}\) 
21. \(5 \text{ lb} \underline{\quad} 79 \text{ oz}\) 
22. \(85,000 \text{ lb} \underline{\quad} 40 \text{T}\)

Problem Solving

23. **Write Math** Explain how you can use mental math to compare 7 pounds to 120 ounces.

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

24. **PARCC Test Prep** Carlos used 32 ounces of walnuts in a muffin recipe. How many pounds of walnuts did Carlos use?

A 8 pounds
B 4 pounds
C 2 pounds
D 1 pound
A leaky faucet in Jarod’s house drips 2 cups of water each day. After 2 weeks of dripping, the faucet is fixed. If it dripped the same amount each day, how many quarts of water dripped from Jarod’s leaky faucet in 2 weeks?

**STEP 1**
Record the information you are given.

- The faucet drips ____ cups of water each day.
- The faucet drips for ____ weeks.

**STEP 2**
Find the total amount of water dripped in 2 weeks.

Since you are given the amount of water dripped each day, you must convert 2 weeks into days and multiply.

Think: There are 7 days in 1 week.

- cups each day    days in 2 weeks    total cups
  \[ \downarrow \quad \downarrow \quad \downarrow \]
  \[ 2 \times \_ \_ \_ = \_ \_ \_ \]
- The faucet drips ____ cups in 2 weeks.

**STEP 3**
Convert from cups to quarts.

Think: There are 2 cups in 1 pint.

- There are 2 pints in 1 quart.
  \[ \_ \_ \_ \text{ cups} = \_ \_ \_ \text{ pints} \]
  \[ \_ \_ \_ \text{ pints} = \_ \_ \_ \text{ quarts} \]

So, Jarod’s leaky faucet drips ____ quarts of water in 2 weeks.

- **What if** the faucet dripped for 4 weeks before it was fixed?
  How many quarts of water would have leaked?
Example

A carton of large, Grade A eggs weighs about 1.5 pounds. If a carton holds a dozen eggs, how many ounces does each egg weigh?

STEP 1
In ounces, find the weight of a carton of eggs.

Think: 1 pound = _____ ounces

Weight of a carton (in ounces):

\[
\begin{align*}
total \text{ lb} & \quad oz \text{ in 1 lb} & \quad total \text{ oz} \\
\downarrow & \quad \downarrow & \quad \downarrow \\
1.5 & \quad \times & \quad = \\
\end{align*}
\]

The carton of eggs weighs about _____ ounces.

STEP 2
In ounces, find the weight of each egg in a carton.

Think: 1 carton (dozen eggs) = _____ eggs

Weight of each egg (in ounces):

\[
\begin{align*}
total \text{ oz} & \quad eggs \text{ in 1 carton} & \quad oz \text{ of 1 egg} \\
\downarrow & \quad \downarrow & \quad \downarrow \\
24 & \quad \div & \quad = \\
\end{align*}
\]

So, each egg weighs about _____ ounces.

Share and Show

Solve.

1. After each soccer practice, Scott runs 4 sprints of 20 yards each. If he continues his routine, how many practices will it take for Scott to have sprinted a total of 2 miles combined?

Scott sprints _____ yards each practice.

Since there are _____ yards in 2 miles, he will need to continue his routine for _____ practices.

2. A worker at a mill is loading 5-lb bags of flour into boxes to deliver to a local warehouse. Each box holds 12 bags of flour. If the warehouse orders 3 Tons of flour, how many boxes are needed to fulfill the order?

3. Cory brings five 1-gallon jugs of juice to serve during parent night at his school. If the paper cups he is using for drinks can hold 8 fluid ounces, how many drinks can Cory serve for parent night?
On Your Own

Solve.

4. A science teacher needs to collect lake water for a lab she is teaching. The lab requires each student to use 4 fluid ounces of lake water. If 68 students are participating, how many pints of lake water will the teacher need to collect?

5. A string of decorative lights is 28 feet long. The first light on the string is 16 inches from the plug. If the lights on the string are spaced 4 inches apart, how many lights are there on the string?

6. When Jamie’s car moves forward such that each tire makes one full rotation, the car has traveled 72 inches. How many full rotations will the tires need to make for Jamie’s car to travel 10 yards?

7. A male African elephant weighs 7 Tons. If a male African lion at the local zoo weighs $\frac{1}{40}$ of the weight of the male African elephant, how many pounds does the lion weigh?

8. An office supply company is shipping a case of wooden pencils to a store. There are 64 boxes of pencils in the case. If each box of pencils weighs 2.5 ounces, what is the weight, in pounds, of the case of wooden pencils?

9. HOT A gallon of unleaded gasoline weighs about 6 pounds. About how many ounces does 1 quart of unleaded gasoline weigh? HINT: 1 quart $= \frac{1}{4}$ of a gallon
Using a map, Alex estimates the distance between his house and his grandparent’s house to be about 15,000 meters. About how many kilometers away from his grandparent’s house does Alex live?

The metric system is based on place value. Each unit is related to the next largest or next smallest unit by a power of 10.

One Way  Convert 15,000 meters to kilometers.

<table>
<thead>
<tr>
<th>kilo-(k)</th>
<th>hecto-(h)</th>
<th>deka-(da)</th>
<th>meter (m)</th>
<th>liter (L)</th>
<th>gram (g)</th>
<th>deci-(d)</th>
<th>centi-(c)</th>
<th>milli-(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STEP 1** Find the relationship between the units.
Meters are ____ powers of 10 smaller than kilometers.
There are ____ meters in 1 kilometer.

**STEP 2** Determine the operation to be used.
I am converting from a ____ unit to a ____ unit, so I will ____.

**STEP 3** Convert.

\[
\begin{array}{c}
\text{number of meters in 1 kilometer} \\
\downarrow \\
15,000 \\
\downarrow \\
\end{array} \quad \begin{array}{c}
\text{number of kilometers} \\
\downarrow \\
\end{array} = \begin{array}{c}
\end{array}
\]

So, Alex’s house is ____ kilometers from his grandparent’s House.
Another Way Use a diagram.

Jamie made a bracelet 1.8 decimeters long. How many millimeters long is Jamie's bracelet?

Convert 1.8 decimeters to millimeters.

<table>
<thead>
<tr>
<th>kilo-</th>
<th>hecto-</th>
<th>deka-</th>
<th>meter</th>
<th>liter</th>
<th>gram</th>
<th>deci-</th>
<th>centi-</th>
<th>milli-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STEP 1** Show 1.8 decimeters.

Since the unit is decimeters, place the decimal point so that decimeters are the whole number unit.

**STEP 2** Convert.

Cross out the decimal and rewrite it so that millimeters will be the whole number unit. Write zeros to the left of the decimal point as needed to complete the whole number.

**STEP 3** Record the value with the new units.

1.8 dm = ________ mm

So, Jamie's bracelet is ________ millimeters long.

Try This! Complete the equation to show the conversion.

**A** Convert 247 milligrams to centigrams, decigrams, and grams.

Are the units being converted to a larger unit or a smaller unit? ________

Should you multiply or divide by powers of 10 to convert? ________

247 mg ○ 10 = _____ cg
247 mg ○ 100 = _____ dg
247 mg ○ 1,000 = _____ g

**B** Convert 3.9 hectoliters to dekaliters, liters, and deciliters.

Are the units being converted to a larger unit or a smaller unit? ________

Should you multiply or divide by powers of 10 to convert? ________

3.9 hL ○ 10 = _____ daL
3.9 hL ○ 100 = _____ L
3.9 hL ○ 1,000 = _____ dL
Share and Show

Complete the equation to show the conversion.

1. $8.47 \text{ L} \times 10 = \underline{____} \text{ dL}$
   $8.47 \text{ L} \times 100 = \underline{____} \text{ mL}$
   $8.47 \text{ L} \times 1,000 = \underline{____} \text{ mL}$

2. $9,824 \text{ dg} \times 10 = \underline{____} \text{ g}$
   $9,824 \text{ dg} \times 100 = \underline{____} \text{ dag}$
   $9,824 \text{ dg} \times 1,000 = \underline{____} \text{ hg}$

Convert.

3. $4,250 \text{ cm} = \underline{____} \text{ m}$
4. $6,000 \text{ mL} = \underline{____} \text{ L}$
5. $4 \text{ dg} = \underline{____} \text{ cg}$

On Your Own

Convert.

6. $9.34 \text{ kL} = \underline{____} \text{ daL}$
7. $45 \text{ hg} = \underline{____} \text{ dag}$
8. $40 \text{ mm} = \underline{____} \text{ cm}$

9. $7 \text{ g} = \underline{____} \text{ mg}$
10. $5 \text{ km} = \underline{____} \text{ m}$
11. $1,521 \text{ mL} = \underline{____} \text{ dL}$

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

12. $32 \text{ hg} \bigcirc 3.2 \text{ kg}$
13. $6 \text{ km} \bigcirc 660 \text{ m}$
14. $525 \text{ mL} \bigcirc 525 \text{ cL}$
UNLOCK the Problem

Aaron is making fruit punch for a family reunion. He needs to make 120 cups of punch. If he wants to store the fruit punch in gallon containers, how many gallon containers will Aaron need?

Use the graphic organizer below to help you solve the problem.

Conversion Table

<table>
<thead>
<tr>
<th></th>
<th>gal</th>
<th>qt</th>
<th>pt</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gal</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>1 qt</td>
<td>$\frac{1}{4}$</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>1 pt</td>
<td>$\frac{1}{8}$</td>
<td>$\frac{1}{2}$</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1 c</td>
<td>$\frac{1}{16}$</td>
<td>$\frac{1}{4}$</td>
<td>$\frac{1}{2}$</td>
<td>1</td>
</tr>
</tbody>
</table>

**Read the Problem**

**What do I need to find?**

I need to find ______________

______________

______________

______________

______________

**What information do I need to use?**

I need to use ______________

______________

______________

______________

______________

**How will I use the information?**

I will make a table to show the relationship between the number of ____ and the number of ____.

**Solve the Problem**

There are _______ cups in 1 gallon. So, each cup is _______ of a gallon.

Complete the table below.

<table>
<thead>
<tr>
<th>c</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>gal</td>
<td>$\frac{1}{16}$</td>
<td>$\frac{1}{8}$</td>
<td>$\frac{3}{16}$</td>
<td>$\frac{1}{4}$</td>
<td></td>
</tr>
</tbody>
</table>

Multiply by ____.

So, Aaron needs ______ gallon containers to store the punch.

- Will all of the gallon containers Aaron uses be filled to capacity? Explain. ___________________
**Try Another Problem**

Sharon is working on a project for art class. She needs to cut strips of wood that are each 1 decimeter long to complete the project. If Sharon has 7 strips of wood that are each 1 meter long, how many 1-decimeter strips can she cut?

**Conversion Table**

<table>
<thead>
<tr>
<th></th>
<th>m</th>
<th>dm</th>
<th>cm</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 m</td>
<td>1</td>
<td>10</td>
<td>100</td>
<td>1,000</td>
</tr>
<tr>
<td>1 dm</td>
<td>1/10</td>
<td>1</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>1 cm</td>
<td>1/100</td>
<td>1/10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>1 mm</td>
<td>1/1,000</td>
<td>1/100</td>
<td>1/10</td>
<td>1</td>
</tr>
</tbody>
</table>

**Read the Problem**

<table>
<thead>
<tr>
<th>What do I need to find?</th>
<th>What information do I need to use?</th>
<th>How will I use the information?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Solve the Problem**

So, Sharon can cut _____ 1-decimeter lengths to complete her project.

- What relationship did the table you made show? ____________________________
Share and Show

1. Edgardo has a drink cooler that holds 10 gallons of water. He is filling the cooler with a 1-quart container. How many times will he have to fill the quart container to fill the cooler?
   
   **First,** make a table to show the relationship between gallons and quarts. You can use a conversion table to find how many quarts are in a gallon.

<table>
<thead>
<tr>
<th>gal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>qt</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   **Then,** look for a rule to help you complete your table.
   
   number of gallons × _____ = number of quarts

   **Finally,** use the table to solve the problem.
   
   Edgardo will need to fill the quart container _____ times.

2. **H.O.T. What if** Edgardo only uses 32 quarts of water to fill the cooler. How can you use your table to find how many gallons that is?
   
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

3. If Edgardo uses a 1-cup container to fill the cooler, how will that affect the number of times he has to fill a container to fill the cooler? **Explain.**

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
4. Jeremy made a belt that was 6.4 decimeters long. How many centimeters long is the belt Jeremy made?

5. Dan owns 9 DVDs. His brother Mark has 3 more DVDs than Dan has. Their sister, Marsha, has more DVDs than either of her brothers. Together, the three have 35 DVDs. How many DVDs does Marsha have?

6. **H.O.T.** Kevin is making a picture frame. He has a piece of trim that is 4 feet long. How many 14-inch-long pieces can Kevin cut from the trim? How much of a foot will he have left over?

7. **Write Math** Explain how you could find the number of cups in five gallons of water.

8. Carla uses $2\frac{3}{4}$ cups of flour and $1\frac{3}{8}$ cups of sugar in her cookie recipe. How many cups does she use in all?

9. Tony needs 16-inch-long pieces of gold chain to make each of 3 necklaces. He has a piece of chain that is $4\frac{1}{2}$ feet long. How much chain will he have left after making the necklaces?
   - A 6 inches
   - B 12 inches
   - C 18 inches
   - D 24 inches
Elapsed Time

Essential Question: How can you solve elapsed time problems by converting units of time?

UNLOCK the Problem

A computer company claims its laptop has a battery that lasts 4 hours. The laptop actually ran for 200 minutes before the battery ran out. Did the battery last 4 hours?

1 hour = _____ minutes

Think: The minute hand moves from one number to the next in 5 minutes.

Convert 200 minutes to hours and minutes.

STEP 1  Convert minutes into hours and minutes.

<table>
<thead>
<tr>
<th>200 min = _____ hr _____ min</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

STEP 2  Compare. Write <, >, or =.

| _____ hr _____ min ___ 4 hr |

Since _____ hours _____ minutes is _____ 4 hours, the battery last as long as the computer company claims.

Try This! Convert to mixed measures.

Jill spent much of her summer away from home. She spent 10 days with her grandparents, 9 days with her cousins, and 22 days at camp. How many weeks and days was she away from home?

STEP 1  Find the total number of days away.

10 days + 9 days + 22 days = _____ days

STEP 2  Convert the days into weeks and days.

_____ ÷ 7 is _____ r _____

So, Jill was away from home _____ weeks and _____ days.

Units of Time

<table>
<thead>
<tr>
<th>Units of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 seconds (s)</td>
</tr>
<tr>
<td>60 minutes</td>
</tr>
<tr>
<td>24 hours</td>
</tr>
<tr>
<td>7 days</td>
</tr>
<tr>
<td>52 weeks</td>
</tr>
<tr>
<td>12 months (mo)</td>
</tr>
<tr>
<td>365 days</td>
</tr>
</tbody>
</table>

1 minute (min) = 1 hour (hr) = 1 day (d) = 1 week (wk) = 1 year (yr)
One Way  Use a number line to find elapsed time.

Monica spent $2\frac{1}{2}$ hours working on her computer. If she started working at 10:30 A.M., what time did Monica stop working?

10:30  \[ \begin{array}{c}
\text{1 hour} \\
\text{30 minutes}
\end{array} \]  \[ \begin{array}{c}
\text{30 minutes}
\end{array} \]

Think: $\frac{1}{2}$ hour $= 30$ minutes

Another Way  Use a clock to find elapsed time.

Start  \hspace{1cm} End

So, Monica stopped working at \[ \underline{\text{11:15 A.M.}} \].

Try This! Find a start time.

Robert’s soccer team needs to be off the soccer field by 12:15 P.M. Each game is at most $1\frac{3}{4}$ hours long. What time should the game begin to be sure that the team finishes on time?

$\frac{1}{4}$ hour $= 15$ minutes, so $\frac{3}{4}$ hour $= \underline{45}$ minutes

**STEP 1** Subtract the minutes first.

45 minutes earlier is \[ \underline{11:30 A.M.} \].

So, the game should begin at \[ \underline{11:30 A.M.} \].

**STEP 2** Then subtract the hour.

1 hour and 45 minutes earlier is \[ \underline{10:45 A.M.} \].

**Math Talk**  Explain how you could convert 3 hours 45 minutes to minutes.
Share and Show

Convert.

1. $1.540 \text{ min} = \_\_\_ \text{ hr}$

2. $2.8 \text{ d} = \_\_\_ \text{ hr}$

3. $3.110 \text{ hr} = \_\_\_ \text{ d} \_\_\_ \text{ hr}$

Find the end time.

4. Start time: 9:17 A.M.
   Elapsed time: 5 hr 18 min
   End time: 

On Your Own

Convert.

5. $5.3 \text{ yr} = \_\_\_ \text{ d}$

6. $6.208 \text{ wk} = \_\_\_ \text{ yr}$

7. $7.350 \text{ min} = \_\_\_ \text{ hr} \_\_\_ \text{ min}$

Find the start, elapsed, or end time.

8. Start time: 11:38 A.M.
   Elapsed time: 3 hr 10 min
   End time: 

9. Start time: 
   Elapsed time: 2 hr 37 min
   End time: 1:15 P.M.

10. Start time: 
    Elapsed time: $2\frac{1}{4} \text{ hr}$
    End time: 5:30 P.M.

11. Start time: 7:41 P.M.
    Elapsed time: 
    End time: 8:50 P.M.
Problem Solving

For 12-14, use the graph.

12. Which Internet services downloaded the podcast in less than 4 minutes?

13. **H.O.T.** Which service took the longest to download the podcast? How much longer did it take than Red Fox in minutes and seconds?

14. **H.O.T.** Which service was faster, Red Fox or Internet-C? How much faster in minutes and seconds?

15. **Write Math** Explain how you could find the number of seconds in a full 24-hour day. Then solve.

16. **PARCC Test Prep** Samit and his friends went to a movie at 7:30 P.M. The movie ended at 9:55 P.M. How long was the movie?
   - A 2 hours 25 minutes
   - B 2 hours 5 minutes
   - C 1 hour 25 minutes
   - D 1 hour 5 minutes
Chapter Review/Test

Vocabulary
Choose the best term from the box.

1. A metric unit of mass that is equal to $\frac{1}{1,000}$ of a gram is called a _________. \(\text{(p. 423)}\)

2. A metric unit for measuring length that is equal to 10 meters is called a _________. \(\text{(p. 423)}\)

Concepts and Skills
Convert. \(\text{(MACC.5.MD.1.1)}\)

3. 96 oz = ____ lb
4. 5 kg = ____ g

5. 500 min = ____ hr ____ min
6. 65 yd 2 feet = ____ ft

Compare. Write $<$, $>$, or $=$. \(\text{(MACC.5.MD.1.1)}\)

7. 7 wk □ 52 d
8. 4 L □ 3,000 mL
9. 72 in. □ 2 yd

Solve. \(\text{(MACC.5.MD.1.1)}\)

10. A girl walks 5,000 meters in one hour. If the girl walks at the same speed for 4 hours, how many kilometers will she have walked?
Fill in the bubble completely to show your answer.

11. Howard cuts 54 centimeters off a 1-meter board. How much of the board does Howard have left? (MACC.5.MD.1.1)

   A) 53 centimeters  
   B) 53 meters  
   C) 46 meters  
   D) 46 centimeters

12. Joe’s dog has a mass of 28,000 grams. What is the mass of Joe’s dog in kilograms? (MACC.5.MD.1.1)

   A) 2,800 kilograms  
   B) 280 kilograms  
   C) 28 kilograms  
   D) 2.8 kilograms

13. Cathy drank 600 milliliters of water at school and another 400 milliliters at home. How many liters of water did Cathy drink? (MACC.5.MD.1.1)

   A) 1,000 liters  
   B) 100 liters  
   C) 10 liters  
   D) 1 liter

14. Mr. Banks left work at 5:15 P.M. It took him $1 \frac{1}{4}$ hours to drive home. At what time did Mr. Banks arrive home? (MACC.5.MD.1.1)

   A) 6:15 P.M.  
   B) 6:30 P.M.  
   C) 6:45 P.M.  
   D) 7:30 P.M.
Fill in the bubble completely to show your answer.

15. A turtle walks 12 feet in one hour. How many inches does the turtle walk in one hour? \( \text{(MACC.5.MD.1.1)} \)

(A) 12 inches  
(B) 24 inches  
(C) 124 inches  
(D) 144 inches

16. Jason and Doug competed in the long jump at a track meet. Jason’s long jump was 98 inches. Doug’s long jump was 3 yards. How much longer was Doug’s jump than Jason’s jump? \( \text{(MACC.5.MD.1.1)} \)

(A) 1 inch  
(B) 10 inches  
(C) 12 inches  
(D) 20 inches

17. Sarita used 54 ounces of apples to make an apple pie. How many pounds and ounces of apples did Sarita use? \( \text{(MACC.5.MD.1.1)} \)

(A) 2 pounds 6 ounces  
(B) 3 pounds 6 ounces  
(C) 4 pounds 6 ounces  
(D) 8 pounds 6 ounces

18. Morgan measures the capacity of a juice glass to be 12 fluid ounces. If she uses the glass to drink 4 glasses of water throughout the day, how many pints of water does Morgan drink? \( \text{(MACC.5.MD.1.1)} \)

(A) 3 pints  
(B) 6 pints  
(C) 24 pints  
(D) 48 pints
**Constructed Response**

19. Louisa needs 3 liters of lemonade and punch for a picnic. She has 1,800 milliliters of lemonade. How much punch does she need? **Explain** how you found your answer. *(MACC.5.MD.1.1)*

20. Maddie bought 10 quarts of ice cream. How many gallons and quarts of ice cream did Maddie buy? **Explain** how you found your answer. *(MACC.5.MD.1.1)*

**Performance Task** *(MACC.5.MD.1.1)*

21. The Drama Club is showing a video of their recent play. The first showing began at 2:30 P.M. The second showing was scheduled to start at 5:25 P.M. with a $\frac{1}{2}$-hour break between the showings.

**A** How long is the video in hours and minutes? ________

**B** **Explain** how you can use a number line to find the answer.

**C** The second showing started 20 minutes late. Will the second showing be over by 7:45 P.M.? **Explain** why your answer is reasonable.
Mid-Chapter Checkpoint

Vocabulary
Choose the best term from the box.

1. The ________ of an object is how heavy the object is. (p. 413)

2. The ________ of a container is the amount the container can hold. (p. 409)

Concepts and Skills
Convert. (MACC.5.MD.1.1)

3. 5 mi = _____ yd
4. 48 qt = _____ gal
5. 9 T = _____ lb

6. 336 oz = _____ lb
7. 14 ft = _____ yd _____ ft
8. 11 pt = _____ fl oz

Compare. Write <, >, or =. (MACC.5.MD.1.1)

9. 96 fl oz  13 c
10. 25 lb  384 oz
11. 8 yd  288 in.

Solve. (MACC.5.MD.1.1)

12. A standard coffee mug has a capacity of 16 fluid ounces. If Annie needs to fill 26 mugs with coffee, how many total quarts of coffee does she need?

_____________________________
Fill in the bubble completely to show your answer.

13. The length of a classroom is 34 feet. What is this measurement in yards and feet? (MACC.5.MD.1.1)
   - A 17 yards 0 feet
   - B 11 yards 1 foot
   - C 8 yards 2 feet
   - D 5 yards 4 feet

14. Charlie’s puppy, Max, weighs 8 pounds. How many ounces does Max weigh? (MACC.5.MD.1.1)
   - A 24 ounces
   - B 88 ounces
   - C 124 ounces
   - D 128 ounces

15. Milton purchases a 5-gallon aquarium for his bedroom. To fill the aquarium with water, he uses a container with a capacity of 1 quart. How many times will Milton fill and empty the container before the aquarium is full? (MACC.5.MD.1.1)
   - A 10
   - B 15
   - C 20
   - D 25

16. Sarah uses a recipe to make 2 gallons of her favorite mixed-berry juice. The containers she plans to use to store the juice have a capacity of 1 pint. How many containers will Sarah need? (MACC.5.MD.1.1)
   - A 4
   - B 8
   - C 10
   - D 16

17. The average length of a female white-beaked dolphin is about 111 inches. What is this length in feet and inches? (MACC.5.MD.1.1)
   - A 9 feet 2 inches
   - B 9 feet 3 inches
   - C 10 feet 0 inches
   - D 10 feet 3 inches