Metric Units of Length, Mass, Capacity

Exploratory Learning
Students should complete Activity Lab 9-1: Metric Measures, (this resource came with the 6th grade textbook).

Notes
Teach the Metric Rhyme:
“I say millimeter, you say pencil tip.” Students hold up pencil tip.
“I say centimeter, you say fingertip.” Students hold up fingertip.
“I say decimeter, you say brand new crayon.” Students hold up crayon.
“ I say meter, you say width of door.” Students hold hands apart about the width of a door.
“I say kilometer, you say ten minute walk.” Students make a walking motion with their arms.

Engaged Practice
Students work together in pairs to estimate and record the length and mass of several classroom objects. Partners then use metric rulers and a balance scale to find and record the actual measurements. Ask partners to share their estimates and measurements with the class.

OR

Students can complete the metric body measurements activity. They must first estimate their answers. (see attached)

Journal Writing
Explain the difference between mass and capacity. Give an example of each use one container.

Kagan Structures
Students can play “Find the Fiction” Cards should be made by the teacher with two problems per card. One solved correctly and the second with an error. Students will pick a card and explain to their group which choice on the card is incorrect. If the group agrees, play continues to the next person, if the group disagrees, they must discuss and prove which is fiction before play can continue. Teacher will need to make cards for game.

Thinking Maps
A flow map can be used by the teacher or by students to show the step-by-step order to solving problems dealing with metric units of measure.
Converting Units in the Metric System

Exploratory Learning
Students will copy the chart below in to their notebooks and use a calculator to compute the products.

<table>
<thead>
<tr>
<th>Kilo (k)</th>
<th>Hecta (h)</th>
<th>Decka (da)</th>
<th>Base (m, g, L)</th>
<th>Deci (d)</th>
<th>Centi (c)</th>
<th>Milli (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.005 km</td>
<td>0.05 hm</td>
<td>0.5 dam</td>
<td>5 m</td>
<td>50 dm</td>
<td>500 cm</td>
<td>5,000 mm</td>
</tr>
<tr>
<td>0.012 kl</td>
<td>0.12 hL</td>
<td>1.2 dal</td>
<td>12 l</td>
<td>120 dl</td>
<td>1,200 cl</td>
<td>12,000 mL</td>
</tr>
<tr>
<td>0.0003 kg</td>
<td>0.003 hg</td>
<td>0.03 dag</td>
<td>0.3 g</td>
<td>3 dg</td>
<td>30 cg</td>
<td>300 mg</td>
</tr>
</tbody>
</table>

Discussion Questions:
1) Do you notice a pattern in the above information? If so, what is it?

2) Based on the pattern you identified, fill in the missing areas of the below chart:

<table>
<thead>
<tr>
<th>Kilo (k)</th>
<th>Hecta (h)</th>
<th>Decka (da)</th>
<th>Base (m, g, L)</th>
<th>Deci (d)</th>
<th>Centi (c)</th>
<th>Milli (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 km</td>
<td></td>
<td></td>
<td>80,000 dm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 Dag</td>
<td></td>
<td>6,000 cg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.4 L</td>
<td>14 dl</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes
As a class, we will develop notes to summarize what the students learned in today’s activity. The below notes should be used as a guide.

The Metric Measurement System
You can use the following to help remember the order of the metric system:

K  H  D  B  D  C  M
King  Henry  Died  By  Drinking  Chocolate  Milk
kilo  hecta  decka  base  deci  centi  milli

The base stands for the single full unit. These are either: meters, liters, or grams.
Meters measure length, liters measure capacity, and grams measure weight.
Meters: km, hm, dam, m, dm, cm, mm
Liters: kl, hl, dal, l, dl, cl, mL
Grams: kg, hg, dag, g, dg, cg, mg

Engaged Practice
Allow students to work on groups to compete in the metric Olympics.
**Journal Writing**
When you convert metric measurements, how do you decide whether to multiply or divide?

**Kagan Structures**
Students can play “Showdown”. This is when one teammate reads a question aloud. Students work independently to solve the problem, then show their answers when the teammate calls, “Showdown!” Then they celebrate or coach. Play rotates so that each teammate has an opportunity to pick the card and yell showdown. You will need to generate cards, one problem per card.

**Thinking Maps**
A flow map can be used by the teacher or by students to show the step-by-step order to solving problems dealing with converting metric measurements.