Metric Mania

Metric Conversions
Ladder Method

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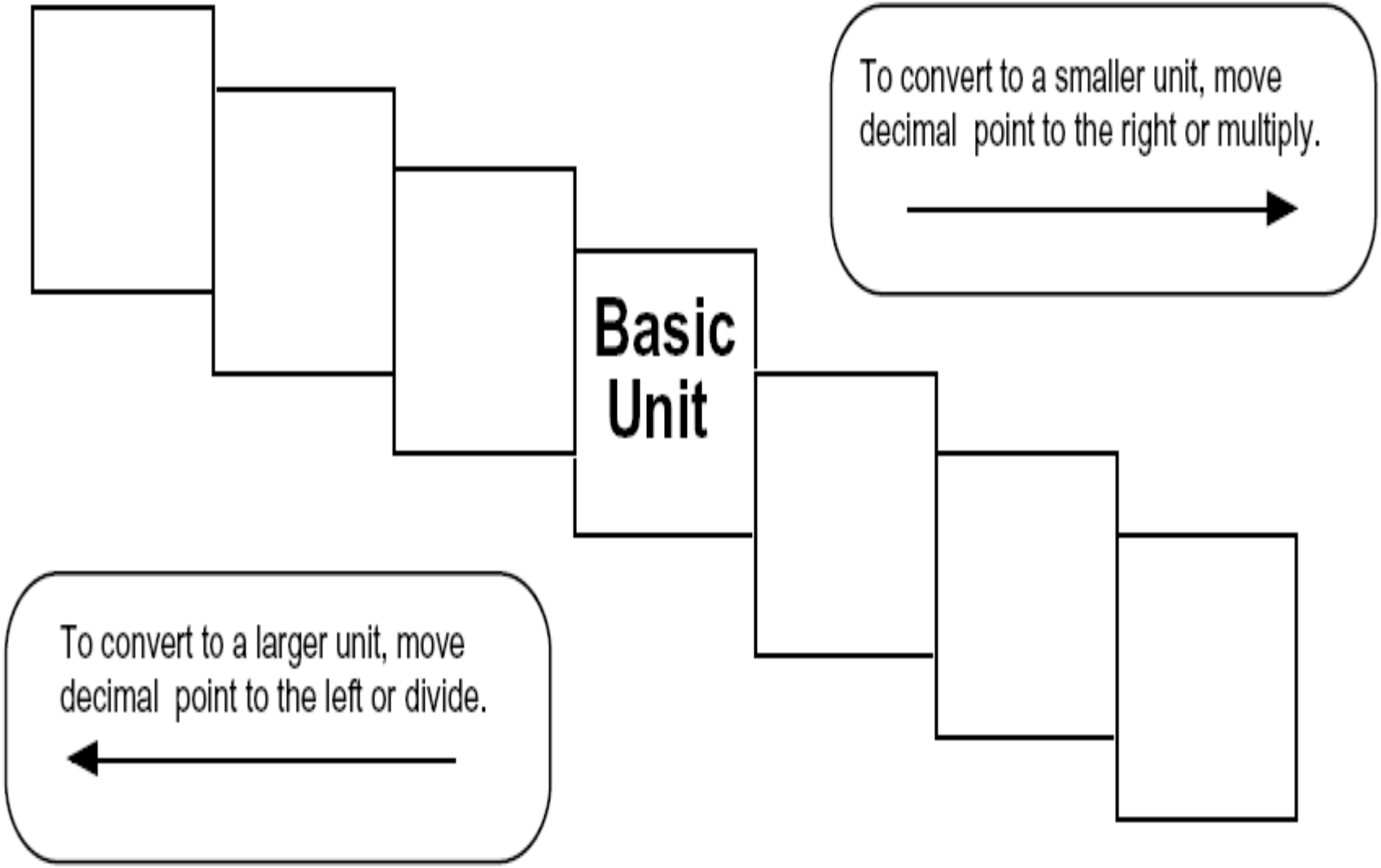
Metric System

- The metric system is based on a base unit that corresponds to a certain kind of measurement
  - Length = meter
  - Volume = liter
  - Weight (Mass) = gram
- Prefixes plus base units make up the metric system
  - Example:
    - Centi + meter = Centimeter
    - Kilo + liter = Kiloliter


To convert to a smaller unit, move decimal point to the right or multiply.
Basic Unit
To convert to a larger unit, move decimal point to the left or divide.

Metric System

- But what if you need to measure a longer distance, like from your house to school?
  - Let's say you live approximately 10 miles from school
    - 10 miles = 16093 meters
  - 16093 is a big number, but what if you could add a prefix onto the base unit to make it easier to manage:
    - 16093 meters = 16.093 kilometers (or 16.1 if rounded to 1 decimal place)

Metric System

- These prefixes are based on powers of 10. What does this mean?
  - From each prefix every “step” is either:
    - 10 times larger
      or
    - 10 times smaller
  - For example
    - Centimeters are 10 times larger than millimeters
    - 1 centimeter = 10 millimeters

Metric System

- An easy way to move within the metric system is by moving the decimal point one place for each “step” desired

Example: change meters to centimeters

1 meter = 10 decimeters = 100 centimeters

or

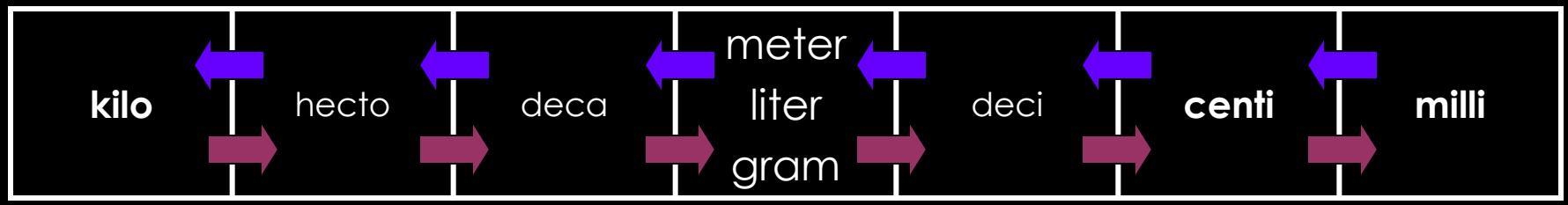
1.00 meter = 10.0 decimeters = 100. centimeters

kilo	hecto	deca	meter liter gram	→ deci →	**centi**	**milli**

Metric System

- If you move to the left in the diagram, move the decimal to the left

- If you move to the right in the diagram, move the decimal to the right

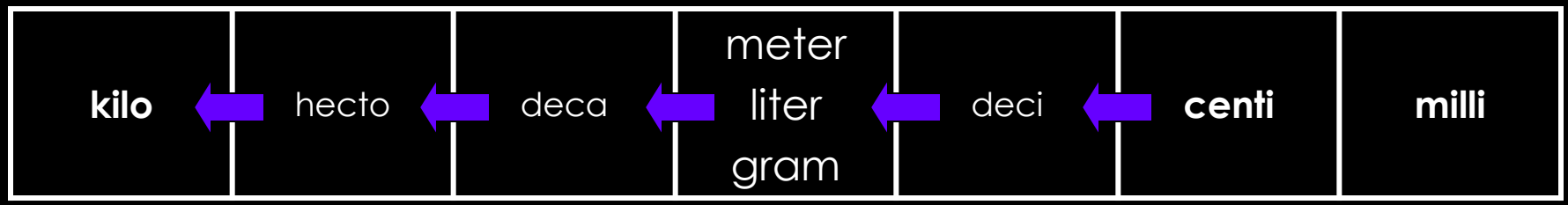


Metric System

- Now let's start from centimeters and convert to kilometers

400000 centimeters = 4 kilometers

400000 centimeters = 4.00000 kilometers

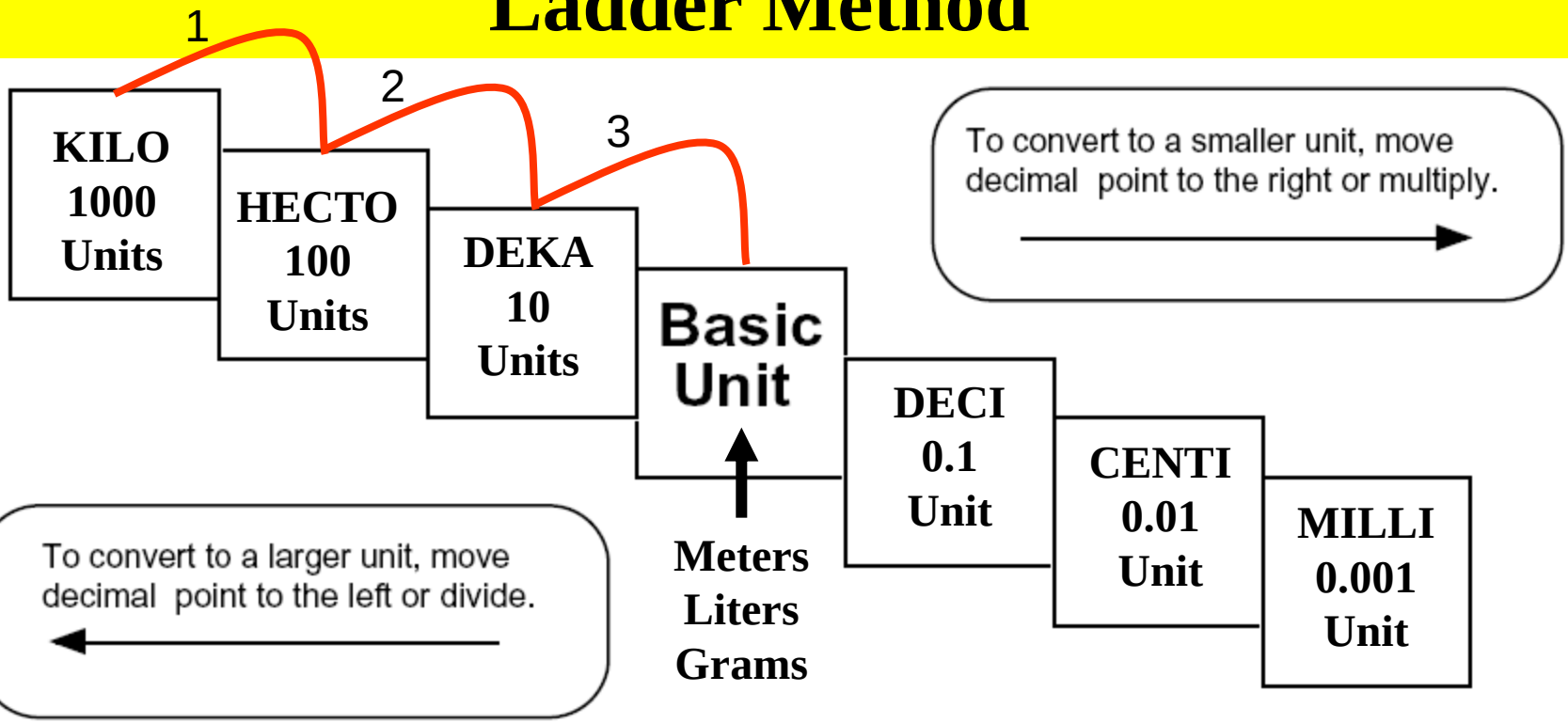


Metric System

- Summary
  - Base units in the metric system are meter, liter, gram
  - Metric system is based on powers of 10
  - For conversions within the metric system, each “step” is 1 decimal place to the right or left
  - Using the diagram below, converting to the right, moves the decimal to the right and vice versa

kilo	hecto	deca	meter liter gram	deci	**centi**	**milli**

Ladder Method



How do you use the "ladder" method?

1st – Determine your starting point.

2nd – Count the "jumps" to your ending point.

3rd – Move the decimal the same number of jumps in the same direction.

4 km = _____ m

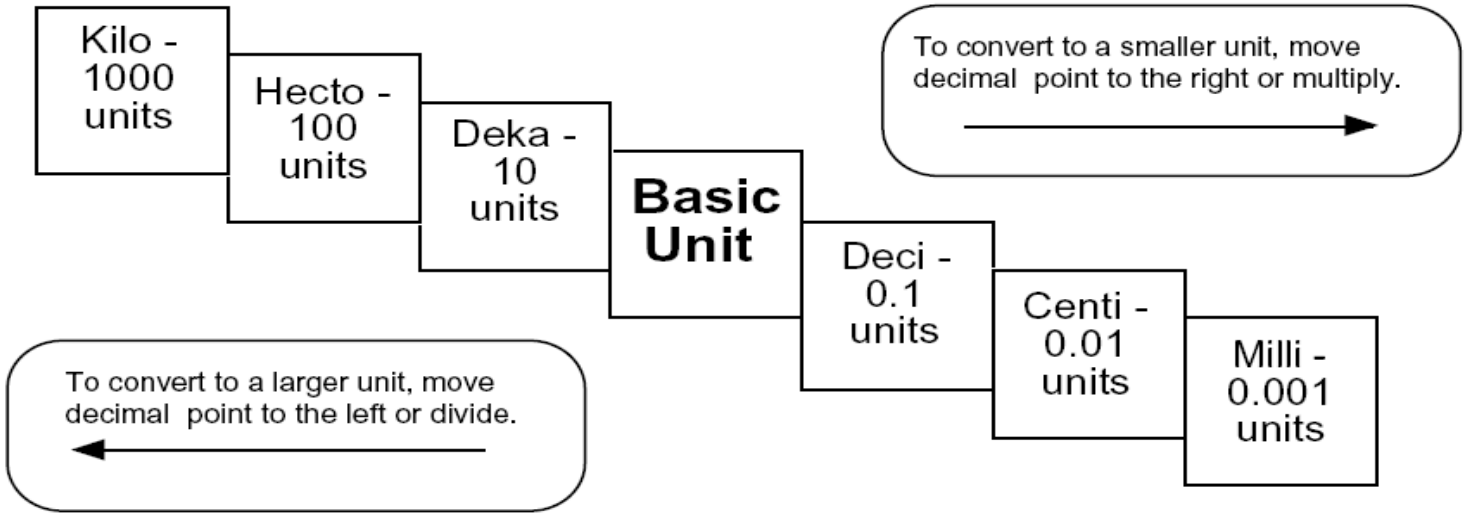
Starting Point Ending Point

How many jumps does it take?

4. _. _. _. = 4000 m

1 2 3

Conversion Practice



Try these conversions using the ladder method.

1000 mg = _____ g

1 L = _____ mL

160 cm = _____ mm

14 km = _____ m

109 g = _____ kg

250 m = _____ km

Compare using <, >, or =.

56 cm ◯ 6 m

7 g ◯ 698 mg