STEP 1 - Review Previous Lesson

Concepts	Review conversions with U.S. Customary units of measurement
Skills	The ability to find the number of cups in a quart or how many inches are in 1 ½ yards, etc.

STEP 2 - New Lesson Objective

Outcomes: The student will. . . . understand metric units of measurement and the relationships among units and convert from one unit to another within the same system. (If time allows, they will also understand how to convert between U.S. Customary units and metric units.)	**CASAS Level (A, B, C, or D)** **C**
	CCR Competencies: Convert like measurement units within a given measurement system. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. (5.MD.1)

Resources Needed	Multimedia, rulers, yard stick, tape measure, 2 liter bottle, paperclips, coins,	**Estimated Time** 2 - 2.5 hours

STEP 3 - Warm-Up

Build Background knowledge and interest	Brainstorm: Where do you encounter the metric system in your daily life? (2 liter bottles, run/walk a 5k, nutrition labels, medicine, etc.)

STEP 4 - Introduction

Note: This is a highly interactive step in which you model, demonstrate, and do a think aloud to show students necessary mental processes they will apply. Do not rush this step.
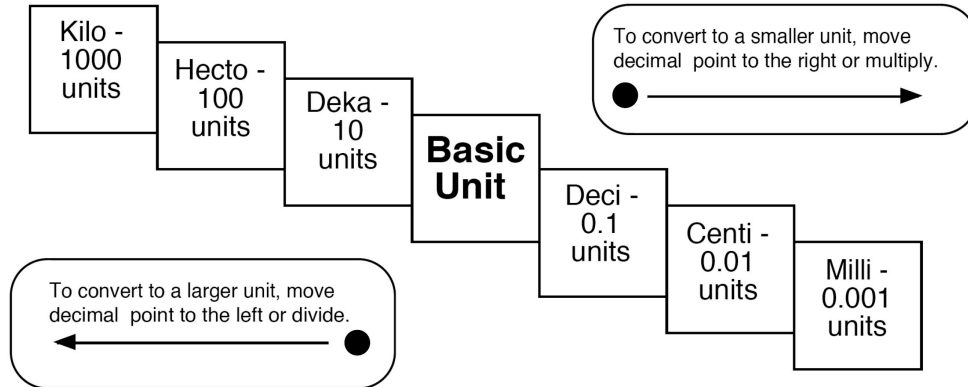
New Information	The teacher introduces the different units of measurement and how to convert between units with both single-step and multi-step conversions.
	Begin with visual aids to demonstrate benchmark comparisons between the U.S. Customary system and the metric system.
	Liquid volume: Liters -- use a 2 liter bottle. .. show how it's just a little more than 2 quarts
	Length: Meters -- using a yard stick demonstrate how a meter is slightly more than a yard (36 inches vs 39.31 inches in a meter). Show a picture of a large track and show how a km is slightly more than ½ a mile. Give students a ruler and have them use their fingers to find something (like a pinky joint or fingernail) that is about 1cm long. Then do the same for 1 inch.
	Weight: Grams -- use a dime to demonstrate that it weighs about 1 gram. Find a 2 lb object and explain that a kg is slightly more than 2 pounds.
	Use [Metric System PowerPoint](#) (slides 16-28) to do a quick quiz on best unit of measurement to use.
New Skills	Students learn to use base ten arithmetic rules, unit rates and proportions to make conversions.

STEP 5 - Presentation

Whole Group Activities	Review multiplying and dividing with base ten numbers (by 10, 100 1000, etc.)

Metric Conversion Chart

Kilo - 1000 units

Hecto - 100 units

Deka - 10 units

Basic Unit

Deci - 0.1 units

Centi - 0.01 units

Milli - 0.001 units

To convert to a smaller unit, move decimal point to the right or multiply. →

← To convert to a larger unit, move decimal point to the left or divide.

Project the metric system on the board (or write it) and have students copy it in their notebooks as the instructor explains how to use the system to convert like units.

Have students fill out the chart on their handout from:
http://www.sciencespot.net/Media/metriccnvsn2.pdf

They will also do the problems on the above handout.

(*Then do Activity 1 in "small group work" section*)

Next introduce conversions and ask which unit is larger for each:

Length	Volume	Mass
2.54 cm=1 inch	1 liter=1.06 quarts	1 kilogram=2.2 pounds
1 meter=3.28 feet	3.79 liters=1 gallon	
1 meter=1.094 yards		
1.609 kilometer=1 mile		

(*Then do Activity 2 in "small group work" section*)

STEP 6 – Small group/Interactive Work

Pair, triad or small group activities	**1st Activity:** In pairs do problems 1-7 on page 145 of Pre-GED Math (Steck-Vaughn) -- Need [food labels](#) for #7
	If you need extra problems, go to page 169 of the more advanced GED Math (Steck-Vaughn)
	2nd Activity: Give students the conversion for inches to centimeters: 1 inch = 2.54 Centimeters. Ask: Which one is larger? How do you know?
	For the exercise, students convert their height from feet/inches to centimeters. The teacher can use his/her own height to model how to do this. Do the same for arm length.
	Optional. . . this is a time consuming activity: Students then will do excercise #2 to relate arm length to total height in centimeters from this online [workbook unit](#).

STEP 7 – Checking for Student Understanding

Formative assessment	Students go on a [simulated vacation to Europe](#).
	Before leaving, students write down whether they agree or disagree with this statement:
	The U.S. Customary Units of measurement are better than the metric system.
	Then have them jot down one or two reasons why. Then open it up for discussion after you have gone around to make sure everyone has something on paper.