

A Common Measuring System

Summary

Students need to know and understand the metric system in order to perform advanced scientific activities in the foods laboratories.

Main Core Tie

Food Science

[Strand 1 Standard 3](#)

Time Frame

2 class periods of 45 minutes each

Group Size

Large Groups

Life Skills

Employability

Background for Teachers

A History of the Metric System - The metric system originated in France where it was adopted by the National Assembly on April 7, 1795. Most nations in Europe and Central and South America adapted it for commercial use during the middle and last half of the 19th Century. Following World War II, the Soviet Union and China made the use of metric units mandatory. India and Japan followed in the 1950s. Britain began a ten-year conversion to the metric system in 1965. South Africa completed the metric conversion by 1975. In 1969, New Zealand began an eight-year conversion to metric units, and in 1970 Australia and Canada announced their commitment to metricate.

In the United States, the use of the metric system was made legal but not mandatory by an Act of Congress in 1966. Since that time, all U.S. customary units of measurement (used with foreign nations and in scientific fields) have been based upon metric standards. Legislation that would have made the use of the metric system mandatory failed in Congress by very small margins during the first 30 years of this century.

Intended Learning Outcomes

Students will distinguish, compute, and employ metrics as the basic system or unit of measurement in the scientific world.

Instructional Procedures

See attachments below:

The students will learn (or refresh their previous knowledge of) the metric system basics by participating in a PREASSESSMENT.

The teacher will discuss with the students the handouts:

UNDERSTANDING THE METRIC SYSTEM

HANDY CONVERSION CHART (USING EXACT MATHEMATICS)

HANDY CONVERSION CHART (USING APPROXIMATE MATHEMATICS)

and the transparency COMPARE - THERE ISN'T THAT MUCH DIFFERENCE

as needed while demonstrating how to use the metric measuring tools. Emphasize the specific

measuring tools that will be needed for the labs they will be doing.

The teacher will discuss with the students, 'Why do we need to know metrics?' She will summarize and note the advantages and disadvantages of the metric system for science. Note again that metrics is the unit of measurement in the physical and chemical sciences.

(Optional)--Give the students the conversion chart and a recipe, and have them convert the recipe to metrics. Have the students perform METRIC MEASURING EXPERIMENT.

The students will estimate amounts when converting English units to metric units and vice versa. (See CALCULATING METRIC CONVERSIONS.)

The students will participate in a METRIC FOOD LAB using the OATMEAL COOKIE recipe provided. The teacher may choose to divide the class into two groups. One group will prepare the cookie dough using the metric measurements. The other group will prepare the dough using customary (English) measurements. However, all students should do the conversion exercise. Compare and evaluate the results.

The students will participate in a demonstration/experiment showing MEASUREMENT AND DENSITY. They will describe and practice ways to measure using grams and milliliters. This exercise will also help the students understand and calculate density.

The students will be quizzed with a SUMMATIVE EVALUATION and then perform a lab assignment (METRIC CHOCOLATE SNOWBALLS-SUMMATIVE EVALUATION) as part of the final evaluation for the unit.

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