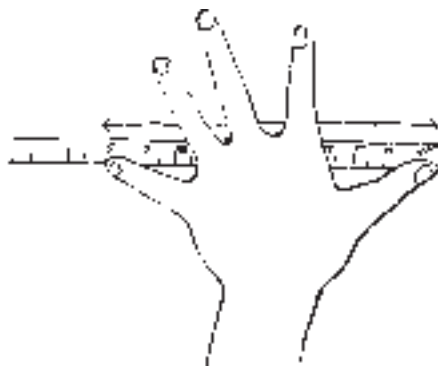


OVERVIEW

MEASUREMENT



GOALS

Measurement, the process of quantifying observations, is one of the cornerstones of science. Measurement compares nature—the unknown—to a standard unit—the known. Through such comparison, the organization of the world becomes more comprehensive. The FOSS **Measurement Module** consists of four investigations, each designed to emphasize a particular type of metric measurement—length, mass, temperature, and volume.

FOSS EXPECTS STUDENTS TO

- Understand the necessity for standard units of measurement.
- Develop an understanding and intuitive feel for the metric system.
- Measure length and distance in meters and centimeters with a meter tape.
- Measure mass in grams with a balance and mass pieces.
- Measure liquid volume and capacity of containers in liters and milliliters with 50-ml syringes and graduated cylinders.
- Measure temperature of liquids and air in degrees Celsius with a thermometer.
- Acquire the vocabulary associated with metric measurement.
- Exercise language and math skills in the context of metric measurement.
- Apply appropriate measuring skills in everyday situations.
- Develop and refine the manipulative skills required for making and using measuring tools.
- Use scientific thinking processes to conduct investigations and build explanations: observing, communicating, comparing, and organizing.

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Language Extensions

- Research measuring units in other countries and from history.
- Discuss metric prefixes.

Math Extensions

- Problem of the week.
- Review multiplication by tens.

Science and Art Extensions

- Create a measurement museum.
- Make desk covers.
- Draw a picture on a larger scale.
- Make a trundle wheel.

See the Science Stories folio.

- *A Royal Measurement Mess*
- *The Metric System*
- *Measure This!*

www.fossweb.com Check the FOSS website for interactive simulations, to communicate with a scientist, for teaching tips, and to talk with other classes using FOSS.

Home/School Connection: Students and families measure objects around the house (using hands, feet, etc., as measuring units) to reinforce the need for a standard.

Language Extensions

- Describe the procedure for weighing an object.
- Discuss nonstandard units.

Math Extensions

- Problem of the week.
- Weigh lunch items.
- Determine tare weight of packages.

Science Extensions

- Monitor evaporation rates.
- Test products for absorbancy.
- Make homemade balances.
- Investigate labels on food packages.

See the Science Stories folio.

- *The Metric System in the United States*
- *Mind-Boggling Measurements*
- *Measurements through Time*
- *Ancient Measurements Used Today*
- *The Metric System at Work*

Home/School Connection: Students keep a journal listing all the times someone in the family needed to measure something exactly or approximately. They describe in writing two of these situations.

Language Extensions

- Write letters to companies about product volume.

Math Extensions

- Problem of the week.
- Estimate capacity of other containers.

Science Extensions

- Seriate containers by a measurement other than capacity.
- Determine the volume of solid objects using a displacement apparatus.

See the Science Stories folio.

- *Water Everywhere*
- *Measurements in the Marketplace*
- *Angela Amato, School Reporter*

Home/School Connection: Students check labels of a variety of products at home. They determine what kind of products are labeled by volume and by mass.

Language Extensions

- Write stories about characters from extreme temperature climates.
- Compare temperatures around the world.

Math Extensions

- Problem of the week.
- Estimate temperatures of common things.

Science Extensions

- Hunt for high and low temperatures in class.
- Check body temperature.
- Practice taking temperatures.

See the Science Stories folio.

- *Fahrenheit and Celsius*
- *Thermometers*
- *Careers You Can Count On*
- *Vacation Aggravation*
- *Everything Is Made of Atoms*

Home/School Connection: Students monitor highs and lows in their own city for 5 days, then graph the highs and lows on a grid.

