Sun/Earth Conversions

Overview:

During this activity, students convert measurements obtained in the activity "A Sun/Earth Comparison" from miles to kilometers and from inches to centimeters.

Objectives:

The student will:

- convert metric units to English units;
- calculate scale factor; and
- determine the appropriate distance (in inches), between a clay model Earth (.39 inches in diameter) and a paper sun (39 inches in diameter).

Materials:

- Calculators
- STUDENT WORKSHEET: "Sun/Earth Conversions"

Activity Procedure:

1. Ask students to imagine they are Scientist Mentors for a sixth-grade class that has been studying the solar system. The teacher has asked students to convert measurements in the *Aurora Alive* lesson "A Sun/Earth Comparison" to inches and miles instead of centimeters and kilometers. However, the class has not studied the metric system and they need help.
2. Distribute calculators and the STUDENT WORKSHEET: "Sun/Earth Conversions." Explain the worksheet contains the "Sun/Earth Comparison" measurements that need to be converted.
3. Demonstrate how to convert these measurements to inches and/or miles using the information in the conversion chart.
4. Ask students to complete the worksheet and discuss results.

Answers to Student Worksheet:

1. *1 cm x .39 inches/cm = .39 inches*
2. *100 cm x .39 inches/cm = 39 inches*
3. *1,393,000 km x .62 miles/km = 863,660 miles*
4. *150,000,000 km x .62 miles/km = 93,000,000 miles*
5. *863,660 miles ÷ 39 inches = 22,145 miles/inch*
6. *93,000,000 miles ÷ 22,145 miles/inch = 4,200 inches (rounded)*

Name: _____ **Student Worksheet**

Sun/Earth Conversions

Directions: The questions on this worksheet include measurements needed to perform the "Sun/Earth Comparison" activity. Use the Conversion Table for assistance in converting each of these measurements from metric to English.

Conversion Table		
1 centimeter	=	.39 inches
1 kilometer	=	.62 miles

1. Students are asked to make a clay ball 1 centimeter in diameter. What is the diameter of the clay ball in inches?

   _____ cm x _____ inch/cm = _____inches
   (diameter of clay ball in centimeters; number of inches in a centimeter; diameter of clay ball in inches)

2. Students are asked to make a paper sun model 100 centimeters in diameter. What is the diameter of the paper sun model in inches?

   _____ cm x _____ inch/cm = _____inches
   (diameter of model sun in centimeters; number of inches in a centimeter; diameter of model sun in inches)

3. The diameter of the sun is 1,393,000 kilometers. What is the diameter of the sun in miles?

   _____ km x _____ miles/km = _____miles
   (diameter of sun in kilometers; number of miles in a kilometer; diameter of sun in miles)

4. The average distance between the sun and Earth is 150,000,000 kilometers. What is the average distance between the sun and Earth in miles?

   _____ km x _____ miles/km = _____miles
   (distance between sun and Earth in km; number of miles in a kilometers; distance between sun and Earth in miles)

5. Calculate the paper model sun scale in miles/inch using the answers to questions 2 and 3.

   _____ miles ÷ _____ inches = _____miles/inch
   (diameter of sun in miles; diameter of paper model sun in inches; paper model sun scale in miles/inch)

6. How far apart (in inches) should the students place their clay Earth and paper model sun? The answers to questions 4 and 5 should help.

   _____ miles ÷ _____ miles/inch = _____inches
   (distance between sun and Earth in miles; paper model sun scale in miles/inch; distance between clay Earth and paper sun in inches)

