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# Size is Relative

## NCTM Standards (5-8):

Number and Operations, Measurement, Data Analysis and Probability, Problem Solving, Communication, and Representation

## Objectives:

Students will:

- measure their heights and convert them to feet, centimeters, and meters.
- use the Internet to find the heights of the Washington Monument, the highest point in their state, and the depth of the Mariana Trench.
- compare their heights to the Washington Monument, the highest point in their state, and the depth of the Mariana Trench by forming ratios.
- calculate the decimal, fraction, and percent equivalents for each ratio.
- make a scale drawing that will include themselves, the Washington Monument, the highest point in their state, and the Mariana Trench.

## Materials:

computer(s) with Internet access, calculators, tape measures, rulers or meter sticks, and poster paper.

## Suggested Web Site:

<http://www.teachercreated.com/books/3843>

Click page 23, site 1

## Alternate Web Site(s):

Conversions:

[http://anduin.eldar.org/~ben/convert/mc\\_fi.html](http://anduin.eldar.org/~ben/convert/mc_fi.html)

Washington Monument:

<http://www.cr.nps.gov/NR/travel/wash/dc72.htm>

Highest Point:

[http://www.hikinglasvegas.com/highest\\_pt.htm](http://www.hikinglasvegas.com/highest_pt.htm)

Mariana Trench:

<http://www.who.edu/info/deepest-ocean.html>

## Teaching the Lesson:

- Have students record their heights in feet by using decimals. You may need to demonstrate how to convert fractions to decimals.
- The height of the Washington Monument and the highest point in the students' state are suggested comparisons. If there are more familiar sites or sites for which data is more readily available, then use those sites.
- Some students will recognize the pattern that is developing in the tables; if they do not, ask questions to lead students in that direction.
- Students will need to experiment with scale for their drawings. Remind them that they will be including other objects that might be much taller or deeper.
- Some students may choose to use the depth of the Mariana Trench as a negative number.

# Size is Relative (cont.)

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

Have you ever stood at the bottom of a very tall building and wondered just how tall it is? Think for a moment about the tallest building or the highest mountain you have ever seen. Sometimes it is hard to relate to their massive heights. To better comprehend such massive heights, start with your own height.

## How Tall are You?

Work in a pair to measure your height and another student's height. Record this measurement in the appropriate column below. Next, determine your height in the other units of measurement in the table. For help in making the conversions, go to <http://www.teachercreated.com/books/3843> and click page 23, site 1. Use the search engine to find a Web site to help you with the conversions. (Hint: Try typing the keywords, "length conversions" in the search box.)

**Table One: Your Height**

My height in inches	My height in feet (in decimals)	My height in centimeters	My height in meters (in decimals)

## How Tall is the Washington Monument?

Let's see how your height compares to the height of the Washington Monument. Use the same search engine to find the height of the Washington Monument. (Hint: Try typing the keywords, "Washington Monument" in the search box.) List the height in inches, feet, centimeters, and meters. (Hint: Use the same conversion Web site you used with the table above.)

**Table Two: Height of the Washington Monument**

Height of Washington Monument in inches	Height of Washington Monument in feet (in decimals)	Height of Washington Monument in centimeters	Height of Washington Monument in meters (in decimals)