

# NTTI Media Rich Lesson Plan

**Name:** Will Todd, Jr.

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**Title:** One Size Fits All, Part I

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**Topic:** Ratios and Proportions

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**Time Allotment:** 55 – 60 minutes

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**Overview:**

Man has always been fascinated with the body and its parts relative to height, weight, and proportional parts, which include to waist size, foot (shoe) size, and arm span. This lesson looks at the body as it relative to proportion comparing height to shoe (foot) size. It has been hypothesized that shoe (foot) size is a good indicator of a person height.

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**Subject Matter:** Mathematics

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**Grade Level:** Grades 7-12, Pre-Algebra & Algebra I

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**Learning Objectives: The students will be able to:**

**Georgia Quality Core Curriculum (QCCs):**

- 8 **Topic:** Measurement, Estimation, Problem Solving  
**Standard:** Estimates, measures, and solves problems using both customary and metric systems. **Pre-Algebra**
- 30 **Topic:** Rational Expressions: Algebraic Fractions

**Standard:** Solves problems involving ratios, proportions, and percents. **Algebra I**

**41 Topic:** Constant Rate


**Standard:** Solves practical problems using ratio and proportion, including constant rate. **Algebra I**

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**Standards:**

**National Council of Teachers of Mathematics (NCTM):**

**Algebra Standards for 6- 8 & 9-12.**


-  understand and use ratios and proportions to represent quantitative relationships;

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**Media Components:**

**Internet websites:**







<http://www.mhschool.com/student/math/mhmath/6/activities.html>

-  McGraw-Hill's website that illustrates on-line books they provide for teachers and students who utilize their textbook series.

- Select** Student Icon
- Select** Content Area (Mathematics)  
Book selection includes grades Kindergarten thru sixth grade.
- Select** 6<sup>th</sup> grade book
- Select** On-line Activities
- Select** Chapter Selection – Chapter 14 Probability & Statistics  
Make sure that Shock Wave is installed to accommodate audio and visual interaction, directing the student through the activity.

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## Materials:

-  Metric Stick
-  Chart Paper
-  Tape
-  Graph paper
-  Pencil & Paper
-  Chart

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## Preparation for Teachers:

This lesson must assume that students already have a basic understanding of ratios and proportion, and graphing coordinate points. Arrange the room to accommodate cooperative groups, include a manager, recorder, timer and material manager. Make sure that you write clear directions and complete a demonstration round before each group begins to play the game. You will need three (3) stations to measure the height, shoe (foot) size and arm span of each group members.

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## Introductory Activity: Setting the Stage/Engage (Maximum of 20 minutes)

### Engage

Ask the students how tall would a man be if he wore a size 10 shoe? Size 12?

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## Learning Activity: Focus for Media Interaction

### Step 1:

Discuss in details the definition of ratios and proportions; graphing point on a coordinate plane.

**Step 2:**

Allow students to form groups and then assign groups to rotate through each station. The recorder will record the height, shoe length, and arm span of each group member. Once the information is recorded, each group will graph each member's data onto a chart and graph, each group and onto a class sheet.

**Step 3:**

Next, ask students what will happen if you have a smaller shoe size? Will this be the same for males and females? Does age matter? Questions you might also ask:

1. "What is a ratio?" a proportion?
2. "How is it represented?"
3. "Does shoe size affect height?"
4. "What is the likelihood of having a tall person with small feet?"
5. "What is the likelihood or having a short person with big feet?"

**Step 4:**

Show students how to graph their finding and determine whether the initial hypothesis is true. Illustrate on the chalkboard, overhead projector or internet game. Give each group of students a few minutes to complete station rotation. Members need to complete the worksheet recording the outcomes and whether they won or loss.

	Name	Height (cm)	Arm Span (cm)	Shoe Size (cm)
Student 1				

Student 2				
Student 3				
Student 4				

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**Cross-Curricular Extensions:**

**Language Arts:**

Research to find who was the tallest person on record. Write a formula based on your finding to predict height based on shoe size. Measure the member of your family and make predictions on their height.

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**Community and Real Life Connections:**

**Moral & Values:** Locate different scenarios where ratio and proportion was utilized through media, for example the newspaper or new station. How does the presentation of data reflect the proportional sample of the population?