WAMC Lab Template

Math Concept(s): :

- 1): Analyze Proportional Relationships and use them to solve real-world and mathematical problems.
- 2): Understand ratio concepts and use ratio reasoning to solve problems.

Source / Text: CORD and misc.

Developed by: Israel Jerry Ornelas E-Mail: jornelas@mlsd.org Date: Summer In-service 2013 Tefang Lee tlee@fpschools.org

Kathy Edder

kedder@fpschools.org

Attach the following documents:

Lab Instructions

Student Handout(s)

Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

<u>Lab Plan</u>

Lab Title: Similarity- "Wonder Walls"

Prerequisite skills:

- Ability to use tape measure and record measurements
- Ability to measure distances in feet and inches
- Ability to convert feet into inches and vice versa

Lab objective:

- SWBAT construct (draw) a two-dimensional model using proportional relationships and unit conversions correctly.
- SWBAT explain how the scale factor affects the size of the drawing.

Standards:

CCSS-M:

Dom	Domain:		
1):	7RP:	Ratios and Proportional Relationships	
2):	6RP:	Ratios and Proportional Relationships	
Big I	dea (Clu	uster):	
1):	7RP: /	Analyze Proportional Relationships and use them to solve real-world and	
math	nematica	al problems.	
2):	6RP:	Understand ratio concepts and use ratio reasoning to solve problems.	
Com	nmon Co	re State Standards:	
1):	7RP:1	: Compute unit rates associated with ratios of fractions, including ratios of	
leng	ths, area	as, and other quantities measured in like or different units.	
2):	6RP:3	d: Use ratio reasoning to convert measurement units: manipulate and	
trans	sform un	its appropriately when multiplying or dividing quantities.	
aan		appropriatory whom maniplying of arriang quantities.	

Standards for Mathematical Practice:

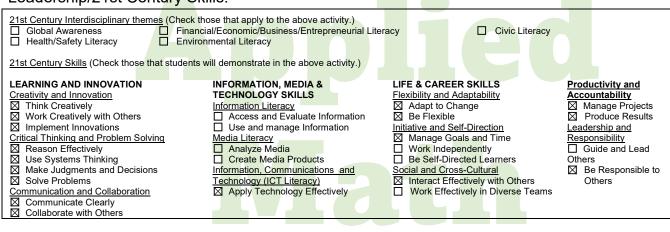
- CCSS-MP 1-8 (all)
- •

State Standards addressed (2008 Washington State Mathematics Standards):

- PE7.2.B: Solve single- and multi-step problems involving proportional relationships and verify the solutions.
- PE7.2.D: Make scale drawings and solve problems related to scale.
- PE7.2.I: Solve single- and multi-step problems involving conversions with or between measurement systems and verify the solutions.

Writing:

Leadership/21st Century Skills:



Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Tape measures,
- paper (including graph paper),
- pencils,
- rulers,
- walls

Set-Up Required:

- assemble materials above
- have instructions prepared for distribution (or overhead display)
- have warmup exercise prepared for distribution (or overhead display)

Lab Organization Strategies:

Grouping/Leadership/Presentation Opportunities:

• students will be in groups of two for this lab: one will do measurement, and one will record data

Cooperative Learning:

Cooperative learning roles will be combined to accommodate student pairs:

- recorder/timekeeper will act as the data recoder
- leader/

Expectations:

- Students will create a scale drawing of the wall(s)- included in the drawing will be all wall features
- Each drawing will have a scale factor listed

Timeline:

3 days

Post Lab Follow-Up/conclusions:

Discuss real world application of learning from lab

- Using a scale drawing to create a larger model
- Converting distances on a map
- Adjusting a recipe to either double or half the end result
- •

Career Applications

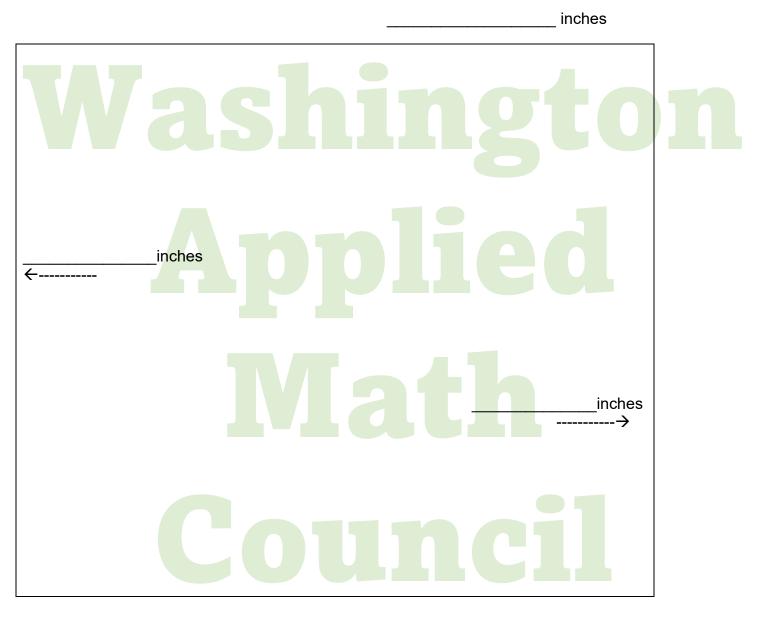
- Interior Designer
- Engineer
- Construction
- Architect
- Home owner

Optional or Extension Activities

- Extension 1- Have the students create a scale drawing of the front of their home. A picture must accompany the drawing.
- Extension 2- Have the students create a scale drawing of their bedroom floor. All the furnishings need to be included in the drawing.
- Extension 3- Have the students create a scale drawing of their dream home. The scale drawing must include the actual dimensions.

https://wa-appliedmath.org/

Using your ruler, measure the figure below. Write its dimensions on the lines next to each side.



_____inches

Using those measurements, draw a scale model on a piece of graph paper such that one inch of this square equals ½ inch on the graph paper. (This is considered a 2:1 scale factor.)

https://wa-appliedmath.org/

You should be in a group of two! One person will be acting as the measurement person and one person will be recording those measurements. Please trade roles at least once so that each of you has the opportunity to do both jobs.

You should have the following materials:

- Tape measures,
- paper (including graph paper),
- pencils,
- rulers

Your assignment is to examine the wall that is assigned to you and accurately measure every feature on the wall, including:

- the dimensions of the wall itself,
- The windows,
- Light switches,
- White boards
- And anything else that might be on the wall.

Then you must use those measurements to draw a scale drawing on a piece of graph paper. Decide what your scale factor must be in order to correctly transfer all the features of the wall to your graph paper. You might wish to draw a rough sketch first, and then recreate the drawing onto another sheet of paper. Use the suggestions and ideas from our class discussion to help you get started! Ask questions! Have fun!

You will be presenting your final drawing at the end of the project. The rubric for your drawing is attached.

https://wa-appliedmath.org/

Instructions for Wonder Walls Lab

Students will be placed in groups of two. Each group will be responsible for accurately creating a scale drawing of the wall(s) in the classroom. Each drawing must include all additional wall features (clock, whiteboard(s), door, window(s), etc.) correctly placed. Each drawing will contain the scale factor the students are using.

All work for conversions must be shown.



Objectives:

CCSS-M

1): 7RP: Analyze Proportional Relationships and use them to solve real-world and mathematical problems.

2): 6RP: Understand ratio concepts and use ratio reasoning to solve problems.

StudentStudent demonstrates good understanding of using measurement techniques to create a two- dimensional model from a life-sized example of a classroom wall.Student demonstrates basic understanding of using measurement techniques to create a two-dimensional model a classroom wall.Student can: understanding of understanding of understandi