WAMC Lab Template

Math Concept(s): Reading a Floor Plan
Source / Text: Cengage Financial Algebra
Developed by: Cynthia Tan
E-Mail: cynthiatan@seattleschools.org Date: Summer 2023

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):

Lab Plan

Lab Title: Designing Your Tiny House Floor Plan

Prerequisite skills: Calculating Area; Proportion and scale

Lab objective: Students would be able to design a Floor Plan for a Tiny House that is 23 x 12 feet

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*

Mathematics K–12 Learning Standards:

- HSG-GMD.B.4 Visualize relationships between 2D and 3D objects
-

Standards for Mathematical Practice:

- Model with Mathematics
- Attend to precision

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- Speaking and Listening
- Comprehension and collaboration

Engineering

- HS-ETS 2 Design a solution to a real world problem by breaking it down into smaller, more manageable problems that can be solved through engineering

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

☐ Global Awareness
X Financial/Economic/Business/Entrepreneurial Literacy
☐ Civic Literacy
☐ Health/Safety Literacy
☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION	INFORMATION, MEDIA & TECHNOLOGY SKILLS	LIFE & CAREER SKILLS	Productivity and Accountability
Creativity and Innovation	Information Literacy	Flexibility and Adaptability	X Manage Projects
X Think Creatively	☐ Access and Evaluate Information	X Adapt to Change	X Produce Results
X Work Creatively with Others	☐ Use and manage Information	X Be Flexible	Leadership and Responsibility
X Implement Innovations	Media Literacy	Initiative and Self-Direction	☐ Guide and Lead Others
Critical Thinking and Problem Solving	☐ Analyze Media	X Manage Goals and Time	
X Reason Effectively	☐ Create Media Products	☐ Work Independently	
☐ Use Systems Thinking		☐ Be Self-Directed Learners	

X Make Judgments and Decisions X Solve Problems Communication and Collaboration X Communicate Clearly X Collaborate with Others	Information, Communications and Technology (ICT Literacy) ☐ Apply Technology Effectively	Social and Cross-Cultural X Interact Effectively with Others X Work Effectively in Diverse Teams	☐ Be Responsible to Others

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

Materials

Each pair to have:

- Tape measure
- Pencil and rulers
- WS Tiny House Floorplan

Set-Up Required:

- Mark our 4 areas that are 23 x 12 feet with masking tape

Lab

1. Divide students into pairs (or groups of 4). Give each pair a Floor Plan Layout and a tape measure. The tape measure will help them visualize the dimensions of the essential items.
2. Have them walk through the areas that have been marked out with masking tape. They have to decide how they want to design the floor plan of their tiny house.
3. They will have to use the tape measure to help them visualize the dimensions of the things they have to include in the tiny house to ensure that there is enough room to fit all.
4. Once they agree on the floor plan, they will have to draw out their floor plan to scale on the Floor Plan Layout.
5. They will have to calculate the area of the essential items in their Tiny House.

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

Cooperative Learning:

- Students will work in pairs (or groups of 4).

Expectations:

- Students will be able to design a floor plan for a tiny house

Timeline:

- This would be a 2hr lab. 1 hour would be for students to agree on the floor plan of the house. The next hour would be for students to draw out their plans to scale on the floor plan and calculate area of essential items.

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Tiny house or living in a camper van are very popular these days. Students have to learn to be creative to balance space, aesthetics and function.

Career Applications

- Construction trade, interior designer

Optional or Extension Activities

- Have students build the furniture with popsicle sticks.

- Have students calculate how much it will cost to tile or carpet the house
- Have students calculate how much it will cost to build the house given
- Make it more challenging by changing it to a 9 x 11 feet camper van

Part 1- Tiny House Floor Plan Layout

Name: _____

Floor Plan Layout

Use this page to design the floor plan of your home.

Items that HAVE to be included in your Tiny House:

Living Room: - Couch - table
Bedroom: - bed - side table - some kind of storage (e.g closet / cupboard)
Kitchen: - sink - fridge - stove
Bathroom: - shower - toilet - sink

Part 2 – Area of Essential Items

	Area / sq feet
Couch	
Table	
Bed	
Side table	
Storage	
Kitchen Sink	
Fridge	
Stove	
Shower	
Toilet	
Bathroom Sink	

Rubrics:

	1	2	3
Essential Items	The floor plan is missing more than half of the essential items	The floor plan is missing a few essential items	The floor plan has all essential items

Scale	Only a few of items in the floor plan are not drawn to scale are not reasonable in size	Most of the items in the floor plan are drawn and scale and are reasonable	The items in the floor plan are drawn to scale and is reasonable in size
Layout	The layout is not reasonable and does not provide reasonable room for a person to walk	Some of the layout is reasonable and provides room for a person to walk	The layout is reasonable and provides room for a person to walk