

## Grades 3-6

created by: Marci Klein, M.D. cofounder 3DuxDesign  
Scott Wojnarowicz, Curriculum Coordinator Capitol Harbor Prep

**Common Core State Standards or Next Generation State Standards:**

ETS 1.2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem

MP 1 Make sense of problems and persevere in solving them

3 MD 6: Understand concepts of area and relate area to multiplication and addition. Measure areas by counting unit squares.

3 MD 8: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

4 MD 3: Solve problems involving measurement and measurements from a larger unit to a smaller unit. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

5 MD 1: Convert like measurement units within a given measurement system. Convert among different-sized standard measurement units within a given system and use these conversions in solving multi-step real world problems.

**Objective(s) of Lesson:**

I know how to design a tiny house because I can determine building costs.

**Informal Assessment(s):**

Cooperative quads work will be informally assessed by class during class discussion of "Do Now". Scholar calculations will be informally assessed during the design process to monitor work towards meeting criteria.

**Formal Assessment(s):**

Scholar will complete "The Cost of Tiny Living" worksheet.

**Do Now" Opening:**

Individual scholars will work to complete "Do Now: Cost of Tiny House" worksheet.

**Activity:**

Cooperative quads will share, compare and revise work on "Do Now". Scholars will work to complete "Anchor Chart" description of how they determined total costs.

**Closure:**

Illuminator will lead discussion of how floor, exterior/interior walls and roofs will be used to calculate total building costs.

**Activity:**

Cooperative pairs will work to design all exterior walls for their Tiny House using "Tiny House Wall Plan" grid. Windows should be also added to design.

**Closure:**

Cooperative pairs will work to determine total costs for their tiny houses, not including windows.

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**Homework:**

Scholars will watch "Tiny House Costs" video. Alternative costs to building a tiny house will be added to already calculated building costs.

**Lesson Notes:**

Scholars may need help to calculate area of irregular shaped houses. Have scholars partition plans to make rectangles and squares.

"Tiny House Costs" video: <https://www.youtube.com/watch?v=Z4wyZuwfQ10>

\*\*Class tiny houses will be built on private property. It will not need a trailer!

After this lesson, teacher may want to use Sketchup for scholars to create 3D "blueprints" of their tiny houses.

ular shaped houses. Have scholars partition plans to make rectangles and squares.

name \_\_\_\_\_ date \_\_\_\_\_

## Standard:

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## Objective:

I know how to design a tiny house because I can determine building costs.

## Do Now: Cost of Tiny Living

## Scenario:

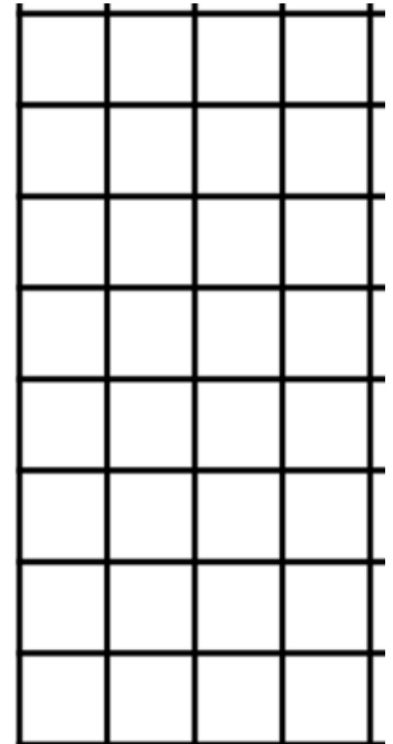
The picture is a representation of the floor plan for your neighbor's tiny house which is in the shape of a rectangular prism with a height of 96 inches.

(scale: each box represents a 2' x 2' square)

1. The cost to build is \$10 per square foot for each the walls, floor and ceiling determine the total cost to create the shell of the tiny house.

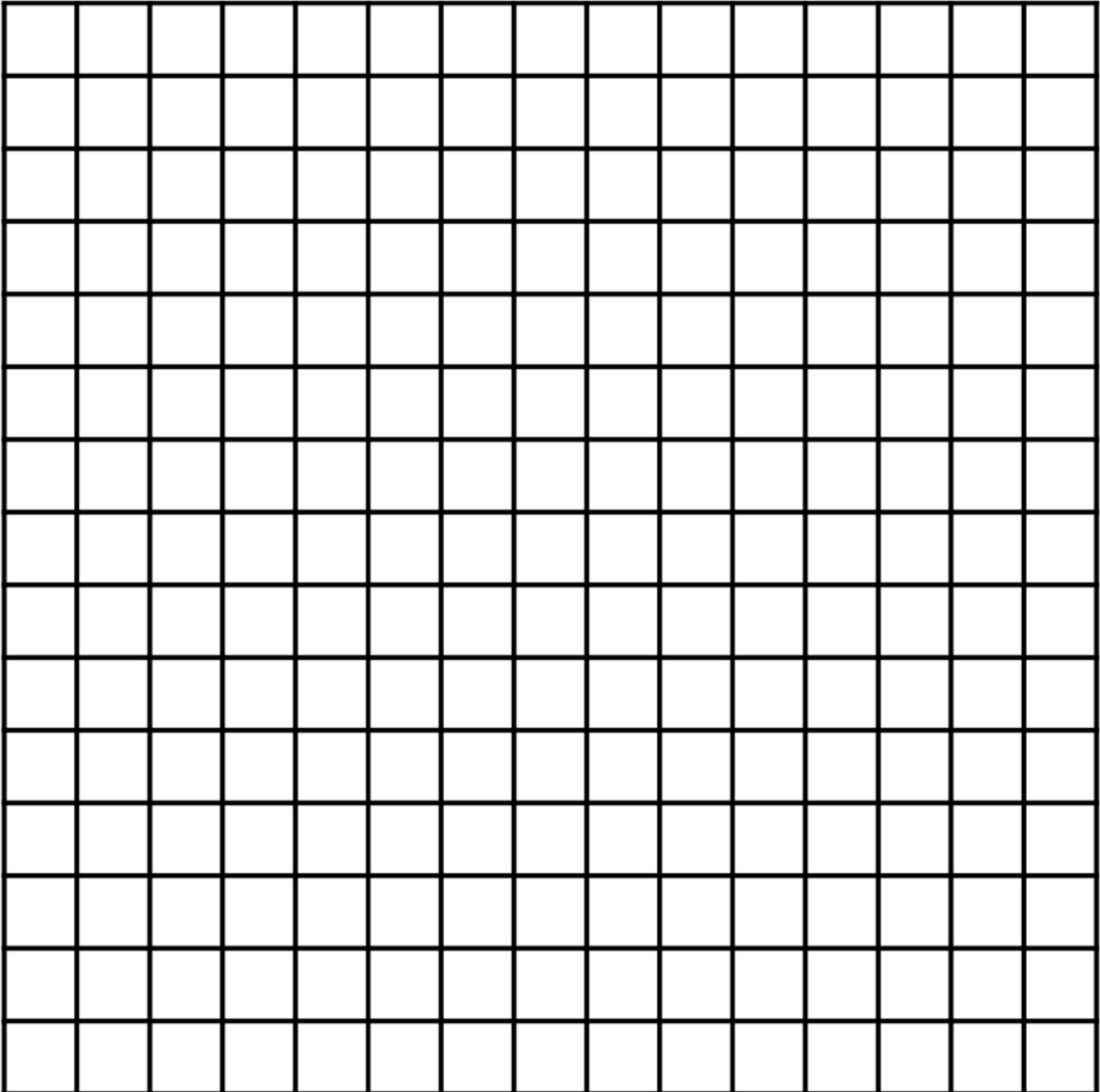
2. The cost to insulate, build and paint the interior side walls is \$5 a square foot. How much money does this add to your neighbor's cost?

3. What is the total cost to build this tiny house?



### Tiny House Wall Plan

(scale: each box represents 1' x 1')



name \_\_\_\_\_ date \_\_\_\_\_

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**Objective:**

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### The Cost of Tiny Living Worksheet

Using the costs from the "Do Now" activity determine the costs of your tiny house:

1. Sketch the floor plan of your tiny house below. Label all dimensions.

Determine the cost of building your tiny floor. Show all work.

2. Sketch the ceiling plan of your tiny house below. Label all dimensions.

Determine the cost of building your tiny ceiling. Show all work.

name \_\_\_\_\_ date \_\_\_\_\_

3. Determine the cost of building your exterior walls. Show all work.

4. Determine the cost of your interior walls. Show all work.

5. What is the total cost of building your tiny house? Show all work.

HW: List the extra costs for building your tiny house as indicated from the video.

Item	Costs

Determine the total cost to building your tiny house. Show work.

Tiny house total cost: \$ \_\_\_\_\_