

Lesson Plan

Lesson Title and Purpose:

Bringing Home the Math-

Applying the STEAM principles of art, math, science, mechanics and engineering being the dream team of supportive, integrative subjects, this lesson uses art, drafting, and engineering topics to teach math. Participants will be guided through an age-adaptable drafting lesson. Students will design their dream home, within given parameters, creating a house plan complete with scale measurements. They will improve understanding of proportions, analyze personal and family needs, and evaluate priorities in order to make decisions in their design. This is a lesson that has been successfully taught at a variety of ages-- from 3rd grade through high school

Objectives:

- * Students will create a floor plan using 1/4 inch graph paper and will be introduced to terms and tools of architecture. (as they gain a better understanding to scale and design)
- * Students will start with a set square footage for which they will be required to meet (I find 1100 sqft. is a good start home (besides it fits on the graph paper)).

Grade Level: 3rd-12th

Materials:

1/4 inch graph paper, pencil/mechanical pencil, red pencil, ruler (if budget allows for an architect scale), triangle drawing tool (could be shared rather than for each student), eraser (could be shared). each student will need their own unless stated otherwise.

Teacher Materials: could include home plan books, actual floor plans, and/or ones from online.

Beyond Materials: foam board, utility knife you may need to be the cutter or that's when you could ask the parent volunteer to help (depending on age and maturity of the students), a cutting mat, hot glue and guns or white glue depending on age and or help.

Procedures:

***Intro:**

> Explain to the students that today we will look at examples of floor plans and home designs, starting with Frank Lloyd Wright (or any architect that you want to cover); that is when I start talking about how I want them to draw out the house/place they live in. (which is better for the younger student to get started but this could also be skipped if your short on time.) This is when I go over the requirements on their home that they design. I start with 1100 sq ft, must have rooms: kitchen, 1 bathroom, 2 bedrooms must be 10'x10' minimum not including closets, an eating area, living room. Teacher will show how the walls, windows, doors, closets, countertops, bathrooms, and dimensions are drawn. This will also be the time to show measurements, scale, how to use a ruler etc.

> You could come in with examples of plans if you have it handy. I have some old examples from students in the past.

***Through:**

> Once the students have drawn their place that they live (or the one that you set the sqft for them to design), I sometimes have the class do a show and tell (depending on age, maturity, and always time); this helps the ones that may be struggling to come up with ideas, but it also allows you (if needed/wanted) to redirect students' design ideas (so you don't have 36 rectangles, unless that is your objective)

> After they have drawn their plan and it was checked for meeting all the requirements have them draw in windows if they have not yet. Then have them color the walls red (this will help them see the layout better and will help them if you have them make a model home).

> Once they are finished with their floor plan have them draw the dimensions for the house.

*** Beyond:**

> Now that they have a plan they could either make a model home in or out of class.

*** Teacher Evaluation Key:**

As the students are working, provide them aid and support, but also check for understanding. As the students do their assignment, check for participation.

Student's grade will be based on level of project/lesson completed.