# Area and Cost/Sq.Ft. for a House Lesson Plan: 6th Grade

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**Overview:**

Students will learn about the process of evaluating the cost of a home, and how changing things (size and rooms) will change the end cost.

**Purpose (Objective):**

For students to understand that when size changes on particular variables it can affect the outcome in a greater result, using mathematical operations.

**Materials:**

* PowerPoint Presentation
* Worksheet printed or large scale graph paper

**Discussion:**

Use the PowerPoint presentation to have a discussion about the cost of building a house. Discuss slides 1-4. Make sure students understand slide number 5. Practice how the sq. footage was obtained if students seem unsure or are confused. Then explain slide number 6. Again, make sure to explain and show examples of how the numbers were obtained (ex: 364 sq. ft. x $75 per sq. ft. = $27,300 for the living room). Then explain how we would do that for each room coming up with the total shown. This is how we come up with the average cost per sq. ft. Now explain the activity (slide 6-7).

**Activity (Explore) (35-45 min):**

Explain the activity using slide 6 and 7. Break students into groups of 2-4 students. Each group is to design a home on the worksheet that is passed out using the following rules:

* + At least 1,800 sq. ft., but no more than 2,500 sq. ft. (each large square is 100 sq. ft. on the graph)
	+ Must have at least 2 bathrooms and 3 bedrooms (the smallest a bathroom can be is 7 feet wide and 10 feet long and the smallest a bedroom can be is 10 ft. x 10 ft.)
	+ Must also have a kitchen and living area, a study, den, media or bonus room is optional and is the same price per sq. ft. as the living area.
	+ A garage is also required, but not part of the sq. ft. requirement. The size of the garage is 400 sq. ft. or more.
	+ Once you have designed the house you need to find out the cost of building the house according to the information provided on the worksheet.

**Closure/Conclusion Discussion:**

Bring the class back together. On the Board draw a graph on the board with the Y axis for cost and X axis for sq. ft. Have each group send one student to the board to plot their house on the graph. After every group has plotted their information, ask students what they notice about graph.

Use slides 9-10 to discuss why there are differences. Use this opportunity to explain the relationship between size and cost, but also size of components (houses with a higher square footage cost have more bathroom and kitchen area).

Let the students discuss what they would want in a house and use the opportunity to talk about unique or exciting projects you have had.

**Assessment:**

Students will be assessed on their participation in the discussions and their completion of a design and accompanying calculations on the graph paper.

**Curriculum:**

Common Core

* [CCSS.MATH.CONTENT.6.EE.B.6](http://www.corestandards.org/Math/Content/6/EE/B/6/) - Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
* Math standard 6.SP.4 - Display numerical data in plots on a number line, including dot plots, histograms, and box plots. Choose the most appropriate graph/plot for the data collected.

**Script for Lesson Plan**

**Needed for Lesson**

PowerPoint

11x17 Print Out or large scale graph paper

Lesson Plan

**Slide 1**

Introduce yourself, tell them why you are here, what company you work for, what got you interested in the field, and any other information you think would be good.

**Slide 2**

This slide has 2 animations and you will click next after you talk about the first point.

In this slide talk about why we have plans, and a little how 2 dimensional drawings turn into three dimensional. After you click next and get the little animation to change on the right side of the slide, begin to talk about how we build from the ground up, and from the outside in.

Click Next

**Slide 3**

On this slide discuss the roles in construction, and specifically your role. Feel free to give a little background on your particular job and what you do on a day to day basis.

**Slide 4**

This slide has animations, and each animation is an equation. Just explain each equation and a little of how it pertains to your daily job.

Click Next

**Slide 5**

This slide contains an example problem, which will be very similar to their activity. So the layout starts with just outlines. After you click next the picture will be broken up into on the floor plan, to make it easier to calculate the square footage. Give the kids a minute to do some calculations, and then as you click next one by one the answers of each section will show up. After you get to the last number the next slide will use these same numbers and apply costs to different rooms.

Click Next

**Slide 6**

This slide gives a key showing some made up cost for each space. These costs are not supposed to be extremely accurate, but more as just an example. Have each kid make some quick calculations and after a few min walk through each calculations. After you have gone through all the rooms and the calculations click next and a total cost will show up, and then next again, and a cost per square foot will come up.

Click Next

**Slide 7**

Now hand out the 11x17 worksheets and then read through the rules for the activity. Now be available for questions for about 15-20 min and walk around to help the kids. Also while the kids are working on a their house plans, draw a graph on the board with a relationship to cost and square footage. The max square footage being 2,400 and max price of $300,000. After the activity is done have students plot their information on the graph. Ask students what they notice about the graph or what they have learned from the activity today.

Click Next

**Slide 8**

This slide is animated and as you click next more answers will appear. Explain what made the house more expensive in our example and then what made it more expensive in real life. (You will click next a total of 8 times)

**Slide 9**

Explain why none of their houses ended the same, that there were 11.8 million houses built, and why it is such a great opportunity for future jobs in each of the areas you talked about before. Wrap up with thanking the teacher and possibly handing out some company items or candy.