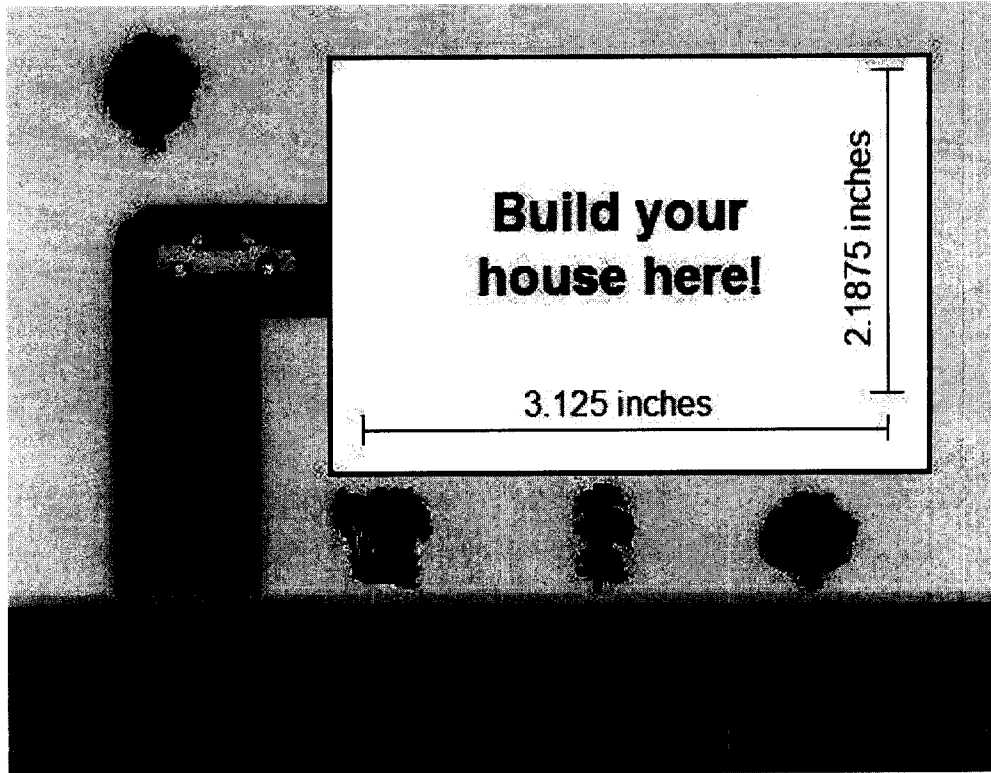


**Digital Fabrication Basics**  
*Building a House*

- Using FabLab ModelMaker, design a house (*cuboid + wedge*) that will fit in the space provided. Add color and/or texture to your house (The dropdown menu in the *Texture Palette* includes roof and wall textures).



- Using FabLab ModelMaker, find the total area (surface area) and volume of each shape.

a. CUBOID

i. Total Area = \_\_\_\_\_ in.<sup>2</sup>

ii. Volume = \_\_\_\_\_ in.<sup>3</sup>

b. WEDGE

i. Total Area = \_\_\_\_\_ in.<sup>2</sup>

ii. Volume = \_\_\_\_\_ in.<sup>3</sup>

These answers will be contingent upon the HEIGHT chosen by the students. (Only the length and width of the house's foundation are provided.)

- Now, group the shapes together. Using FabLab ModelMaker, find the total area (surface area) and volume of your house.

a. HOUSE (*cuboid + wedge*)

i. Total Area = \_\_\_\_\_ in.<sup>2</sup>

ii. Volume = \_\_\_\_\_ in.<sup>3</sup>

SAME AS ABOVE

4. Using simple addition, determine whether the surface area and the volume of the house equal the sum of the surface area and volume of its respective parts. (In other words, do the volume of the cuboid and the volume of the wedge equal the volume of the house? Do the total area of the cuboid and the total area of the wedge equal the total area of the house?). If not, offer an explanation.

$$\text{SA of cuboid} + \text{SA of wedge} \neq \text{SA of house}$$
$$V \text{ of cuboid} + V \text{ of wedge} = V \text{ of house}$$

Explanation of SA discrepancy: When the wedge is placed on top of the cuboid, the top of the cuboid and the base of the wedge no longer constitute "exposed" areas. Therefore, the SA of the house will be less than the SA of its respective parts.

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5. Now, you are ready to print and fabricate your house! How did you do? Are the dimensions of the house appropriate for the given plot of land?

**\*\*Throughout the next two weeks, we encourage you to visit [www.digitalfabrication.org](http://www.digitalfabrication.org) when you have questions about FabLab ModelMaker and the digital fabricator. In the *Help* tab, you will find videos and written tutorials that will guide you through the process of designing, printing, and fabricating your three-dimensional object.\*\***