

A wooden tiny house with a metal roof and a skylight, situated in a forest. The house has a wooden exterior and a metal roof with a skylight. A ladder is leaning against the roof. The house is surrounded by trees and rocks.

Thermal Energy

Model Home - Criteria & Constraints

Homework

None.

Mindful Minute

Storyline

You are a team of architects and need to design a home to maximize thermal efficiency.

Task

Build a model tiny home that minimizes heat loss.

Specifics

- The model cannot exceed 30 cm (12”) in height.
- The base cannot be more than 12 in. x 12 in., but it must be at least 9 in. x 9 in.
- There must be at least one door and 3 windows. There must be a window and/or door opening on three sides of the model. Doors are approximately 3 ft x 7 ft.
- You may have a **maximum of 14** basswood sticks (each is 12” long).
- The dimensions need to be proportional. (Scale: 1 in. = 2 ft.)
- The house must be built within the allowed budget (\$15,000).

Team Contracts

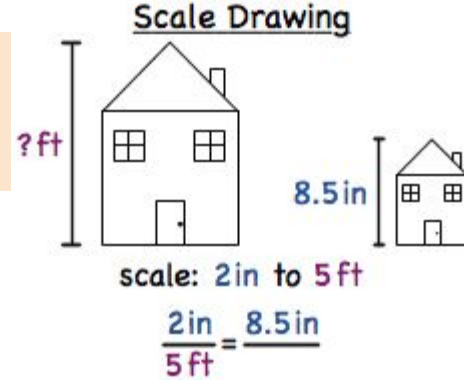
Create [Team Contract](#). Have Recorder and Reporter make a COPY and share with group.

Roles:

1. Foreman - makes final decisions if there is a dispute in building
2. Principal Architect - makes final decisions on building designs
3. Project Manager - makes final budget decisions and resources to use
4. Master Carpenter - oversees the building of the house framework (wood)

Sketch & Budget

NOTE: This drawing is a different scale, but it shows you how to determine parts.



Materials: Scratch paper, [budget](#), paper & rulers

1. Decide on the location where it will be. Houses in different climates have different roof structures. **2-3 minutes.**
2. Read over the specifics. Decide how many doors and windows and the type of roof you want. Remember there are specific minimum number that you need. All of these features cost money and you need to stay in budget. You have to find a balance here. **5 minutes.**
3. Do a rough sketch of each side with dimensions (measurements). **5 minutes.**
4. When you have agreed on the dimensions. Each person will draw ONE SIDE as a scale drawing. **SCALE: 1 in = 2ft** **10-12 minutes.** Finished? Help a **tablemate.**

Resources

Please review the [Model Tiny Home Resource Sheet](#) before starting.