



Sunny Shelter

STEM Sims

Lesson 2: Earth Sheltering

Earth sheltering is a method of homebuilding in which the architect designs for the house to be built into the naturally occurring landscape, such as into a hill. What benefits might one get from constructing an earth-sheltered home?

Doing the Science

1. Start the Sunny Shelter Simulation by clicking on the “Sim” tab.
2. Make the following selections:
 - House Size: Small
 - Sheltering: Not Earth Sheltered
 - Window Direction: North Facing
 - Window Size: Small
 - Window Tint: Absent
 - Thermal Mass: Low
 - Material R-value: 10
 - Season: Summer
3. Click on the Design House Now button.
4. The Energy Usage Thermometer is to the right of the image. Record the value in Table 1 below.
5. Click the Design Menu button to return to the main screen.
6. Repeat steps 2-5 only changing Sheltering to Earth Sheltered and complete your table.
7. Repeat steps 2-6 only changing Season to Winter.

Table 1.

Sheltering	Not Earth-Sheltered	Earth-Sheltered
Summer Energy Reading		
Winter Energy Reading		

Do You Understand?

1. Does earth-sheltering make a house more or less energy efficient? (Note: The relationship between the energy usage reading and energy efficiency is inversely related.)

2. Infer the most likely reason that earth-sheltering affects energy usage.

3. Was there a relationship between sheltering, season, and energy use? If so, discuss the relationship.