Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**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.