Name_____ Period _____ Date _____

Sun Banking

STEM Sims

Lesson 1: Roof Direction

The amount of sunlight in a day will be the same no matter which direction your house faces, but does the cardinal direction (North, East, South, West) of the solar panels installed on the roof of your house affect the amount of sunlight that will hit them?

Doing the Science

1. Start the Sun Banking Simulation.
2. Make the following selections:
    - Season: Summer
    - Type of Panel: K1OTGM
    - Roof Direction: North
    - Annual kWh needs: 10,000
3. Select the "ADD PANELS" button.
4. The K1OTGM panel you have selected is available to drag and drop. Select and drag five (5) panels onto the roof.
5. Select the "BEGIN" button and wait for the simulation to complete.
6. Record in Table 1 below the amount of kWh produced on a daily average.

Table 1. Solar Panel Energy Conversion

	North	South	West	East
5 Panels				

7. Select the "RESTART" button.
8. Repeat steps 2-6 only changing roof directions to South, and then West, and then East until Table 1 is completed.

What Do You Understand?

1. Should the solar panels used in this investigation be classified as active or passive solar collectors? Support your response with a reason.

_____

_____

_____

2. Describe the energy transformation that occurs within a solar panel.

_____

_____

_____

3. Did the amount of kilowatt hours produced change when you changed the direction of the roof? Provide evidence to support your response.

_____

_____

_____

4. Which direction provided the solar panels with the most sunlight?

_____

5. Provide an explanation as to why one direction provided a greater amount of sunlight to the panels compared to the other directions.

_____

_____

_____

6. If the Sun rises due east on the date of the spring equinox, which direction does it set in? (Hint: The number of kWh should match in this direction.)

_____