

# Solar Houses

STUDENT  
PAGE

**OBJECTIVE:** Investigate and demonstrate the movement of heat through matter.

**PROBLEM:** Does the direction a window on a house faces affect the temperature inside the house?

**HYPOTHESIS:** Record your ideas in your journal.

**MATERIALS:**

- House template copied on white card stock (one per group)
- Tape to “build” the house
- Clear plastic wrap/Saran wrap for the window
- Thermometer
- Stopwatch
- Cardboard/support to hold house and keep off the ground
- Graph paper
- Compass to find the direction (optional)

**PROCEDURES:**

1. Cut out the house and “build” the house using tape. Place a piece of plastic wrap on the inside of the window before you close the house. Place the house on top of the piece of cardboard as support and insulation from the ground.
2. Create a data table in your journal to record the results of your experiment. Place the house in the sun for 15 minutes and record the temperature every minute.
3. When the class goes outside to conduct the experiment, the houses will need to be placed at different directions (North, South, East, West, and any direction in between). Be sure to observe the location of the sun and the time of day as you conduct the investigation. Also note the weather conditions – sunny, partly cloudy, cloudy, or other notes.
4. As soon as you are outside and have your house set up, take the initial temperature inside the house. Start the stopwatch and record the temperature inside the house every minute for 15 minutes.
5. Graph your results and place in your journal.



Time of day: \_\_\_\_\_

Direction house pointed:  
\_\_\_\_\_

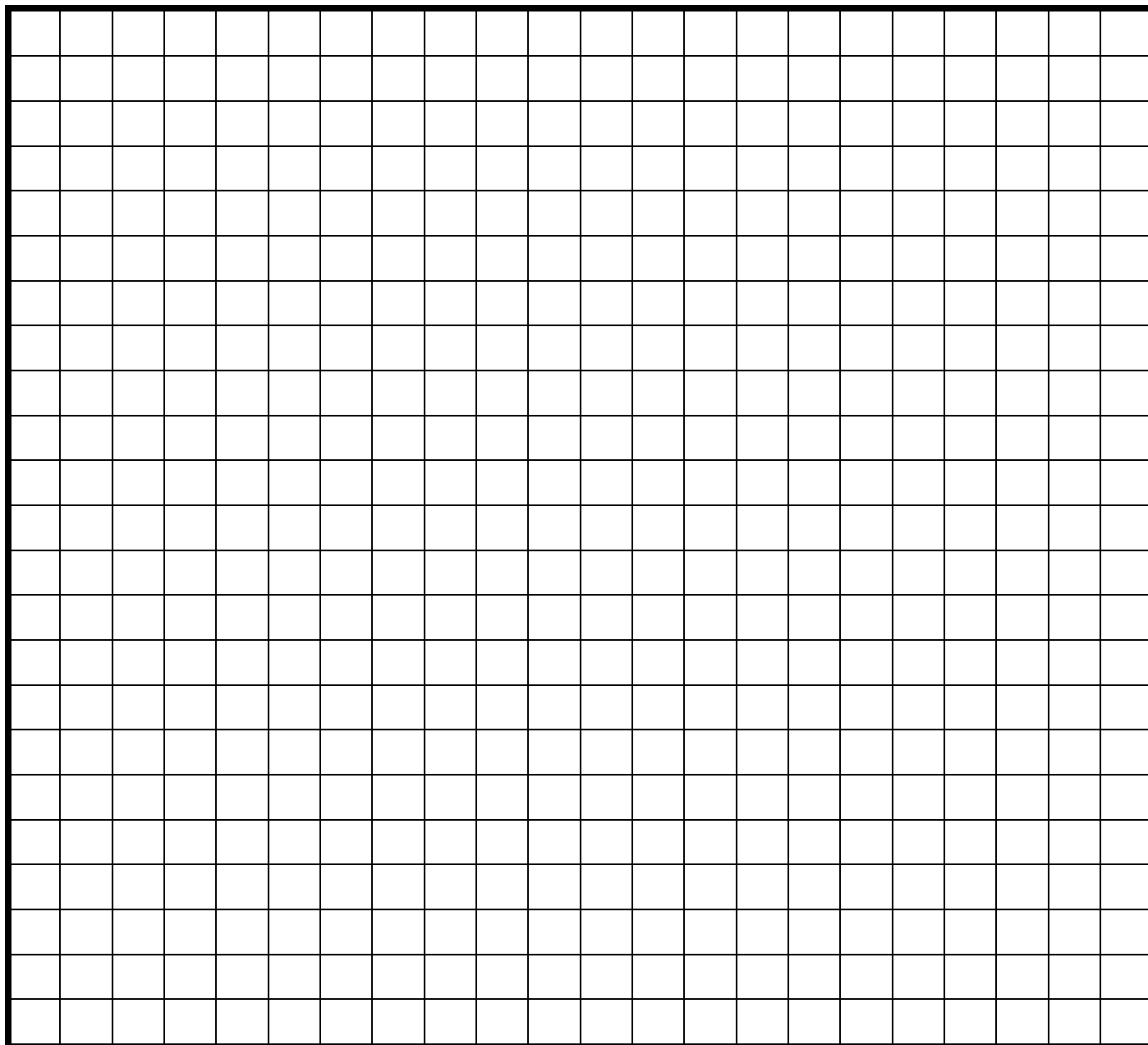
Weather conditions:  
\_\_\_\_\_  
\_\_\_\_\_

Time (minutes)	Temperature (°C)
0 (initial)	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

## ANALYSIS/CONCLUSIONS:

1. What observations did you make about the temperature inside the house?
2. Calculate the temperature change that took place in your house.
3. Why did your temperatures increase or decrease?
4. Looking at your graph, are there any trends in the data? If so, describe the trend.
5. If you stayed outside for 30 minutes collecting data, predict what the data might look like.
6. Compare your results to those of other class periods throughout the day. How did your temperature change compare to your classmates in other groups?
7. How did your results compare to the temperature changes of other class periods throughout the day?
8. If you were designing a house, where would you place the largest windows in the house to maximize the light but minimize the temperature increase?





# ENERGY TRANSFORMATIONS

# Hot Wired!

## SOLAR HOUSE TEMPLATE DIRECTIONS:

1. Cut along the solid lines.
2. Fold along the dotted lines (you may use a ruler to fold straight).
3. Tape the plastic/Saran over the window hole.
4. Tape the tabs to the edges to create a house.

