Name_____Date_____Class _____

Pizza Box Solar Oven: Student Worksheet

New Question If I make the following modifications to my pizza-box solar oven, can I get my oven to be hotter than I did before? Also, will my oven be hot enough to cook food?

Modifications Write down at least 3 ways that you will modify your solar oven to prevent heat loss by *conduction or convection*, or how you will increase the *solar radiation* that enters the solar oven.

1. _____

_____

_____

_____

2. _____

_____

_____

_____

3. _____

_____

_____

_____

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Hypothesis _____

_____

_____

_____

_____

Procedure

Materials

- pizza box solar oven
- thermometer
- timer
- small cup of water *(small enough for the pizza box to close with the cup inside)*

Procedure Repeat the same procedure as in Lesson 1, except that this time, food will be cooked The cup of water will be used to measure and compare temperature readings. The temperature of the food will not be measured because we will be using a science thermometer.

1. Set up your pizza-box solar oven in the sun. Turn the box so that the opening is facing the sun. Then tilt the window until you can see the sun's light reflect into your box. Tie the window open at this distance.
2. Place the small tray with food in the oven.
3. Cover your window opening with an acrylic sheet. Although this is plastic, you must still be careful not to break it or cut yourself.
4. Push the thermometer through a small hole on the edge of the box until the tip reaches the place where the sun shines through the window, but try not to let it touch the ground. Record the initial temperature inside the box right away.
5. Every 5 minutes, record the temperature inside the solar oven. Leave the thermometer in place while you are waiting. You can pull the thermometer out slightly to look at the temperature if necessary, but not for long.
6. When you have finished all of the recordings, open the box.
7. You will now need to carry the materials back to the classroom. Close your box after removing the tray with food and thermometer. Your teacher will instruct you on what to do with the materials.

Experiment and Data Collection

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Temperature Outside: _____ (Remember to always use degrees Celsius.)

Initial Water Temperature: _____

Final Water Temperature: _____

Time (minutes)	Temperature (˚C)
0 minutes	
5 minutes	
10 minutes	
15 minutes	
20 minutes	
25 minutes	

Final Oven Temperature: _____

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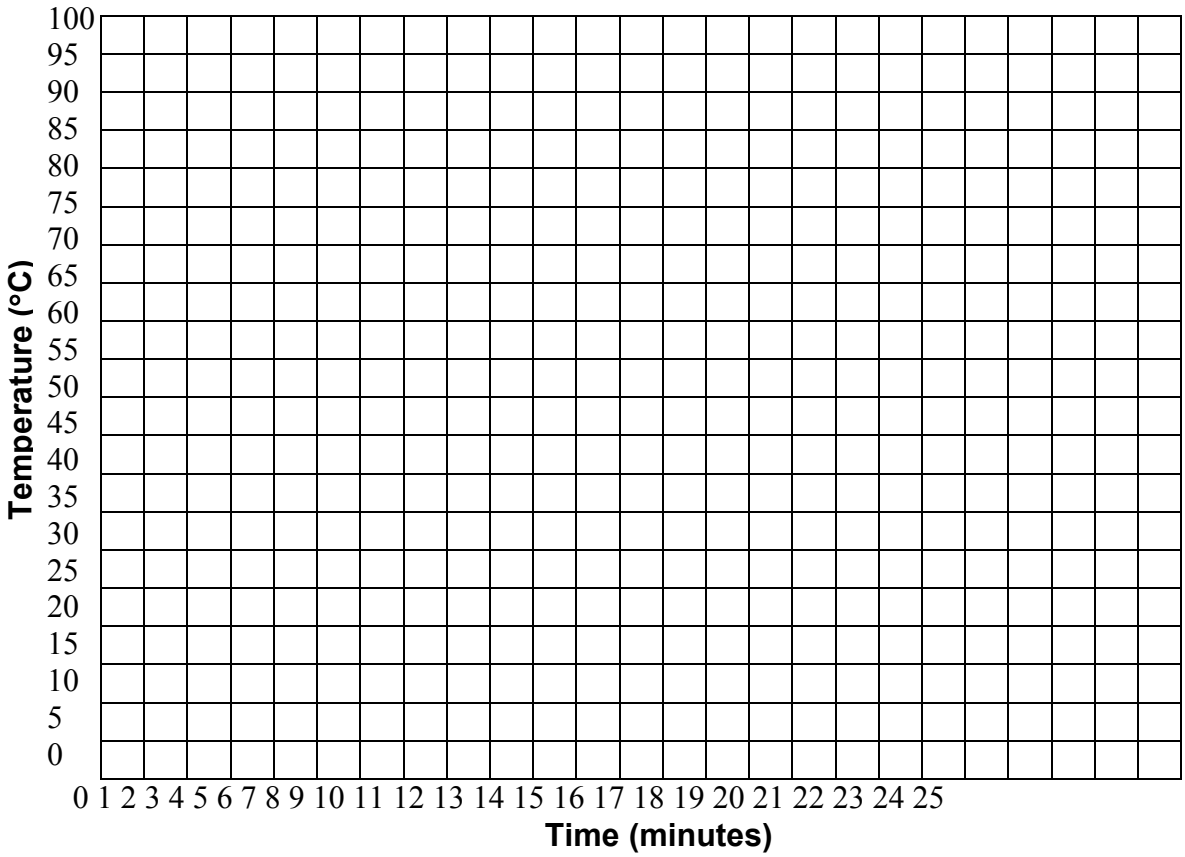
Analysis

1. What is the final oven temperature in degrees Fahrenheit? _____

Use this equation: ˚F = (9/5 × ˚C) + 32

2. Make a line graph that shows how the temperature changed over time.



Conclusion

3. Specify whether or not your solar oven was hot enough to cook your food and use your data to support your conclusion.

_____

_____

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4. State whether or not your modifications helped to make your oven hotter.

5. Do you think you were able to get more solar radiation into your oven? Explain.

Do you think you allowed for less heat loss by conduction or convection? Explain.

6. Do you think that the weather may have affected your results? How do you think the weather changed them?

7. If you were to do another experimental test to see if you could improve your oven again, what might you try to test?

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