

Name: _____

Date: _____

Period: _____

Quarter 2 - Solar Cooker Project (Rubric on 2nd page)

Total Points: 200

Project Due: _____

Assignment: Research and design a solar cooker that will cook the food of your group's choice successfully.

Use simple materials found around your home. You may purchase additional materials that you need, but you are not to buy a solar cooker kit that has the materials ready for you. The only source of energy used to heat the food will be the heat lamp.

Your solar cooker cannot exceed a size of 30cm x 30cm x 20cm (a pizza box or a shoe box works great). Your solar cooker also must be able to have a way for you to insert and take out the food container.

□ **EACH PERSON MUST TURN IN HIS/HER OWN WEBQUEST AND SOLAR COOKER DESIGN PAPER**

You must test it using a 100-Watt light bulb to see how well it works. Test your cooker and try to improve the cooking rate. Remember, you will only have **1 hour and 15 minutes** to heat your food. Consider the size of your cooker, color, insulation, size of the window, and choice of materials. Use the information from your "Researching Solar Cookers" web quest and any additional credible sources for your project.

Scoring Guidelines

25 Points: Researching Solar Cookers WEB QUEST. You must answer all the questions correctly

75 points: Solar Cooker COMMERCIAL. You must follow guidelines to writing a detailed scrip and comic sketch.

15 pts: Draw a picture of your solar cooker (or use a digital camera) and label the major materials used

20 pts: Describe the materials used to build your solar cooker. Explain why you choose those particular materials **and** the specific design of your cooker?

20 pts: Discuss other designs that you considered before constructing your solar cooker. Why did you decide not to use those designs?

10 pts: If you had to build another solar cooker, what would you change in your design to make your new solar cooker more efficient?

10 pts: Submitted on or before the due date

The construction of a working solar cooker:

5 pts: originality and creativity of design (Is the design of your cooker original and one-of-a-kind or does it look like everyone else's cooker?)

5 pts: craftsmanship (Is it constructed neatly, accurately, and soundly?)

5 pts: function (Does it raise the temperature of food in the allotted time?)

10 pts: following project guidelines (size, materials that can not be used, etc.)

Name: _____ Group: _____ Block: _____

Solar Cooker Project Rubric

The Solar Cooker Project must meet or exceed the requirements under each category to earn maximum points for that category.

CATAGORY	Max. Points	Points Earned	Comments
WEB QUEST: <input type="checkbox"/> All questions are answered correctly and completely.	25		
Solar Cooker Commercial <input type="checkbox"/> Followed guidelines to writing scrip and creating comic sketch (see 2 nd rubric)	75		
TYPED PAPER	Max. Points	Points Earned	Comments
PICTURE OF SOLAR COOKER: <input type="checkbox"/> Diagram of the solar cooker is neat and has labels for all parts and materials used in the construction.	15		
OWN DESIGN: <input type="checkbox"/> Thorough explanation is provided for why each material was used in the design.	20		
OTHER DESIGNS CONSIDERED: <input type="checkbox"/> Clear explanation about other designs of solar cooler that were considered is provided. <input type="checkbox"/> Explanation of why those designs were disregarded.	20		
FLAWS IN YOUR DESIGN: <input type="checkbox"/> Flaws in student's own design are clearly explained. <input type="checkbox"/> Suggestions for fixing the flaws in the design are clearly stated. (If he solar cooker was build again).	10		
SUBMISSION: <input type="checkbox"/> Work is submitted on or before due date	10		
SOLAR COOKER MODEL	Max. Points	Points Earned	Comments
DESIGN: <input type="checkbox"/> Design of the solar cooker is creative and original.	5		
QUALITY OF MODEL: <input type="checkbox"/> Solar cooker is constructed neatly and soundly. (The parts of the cooker do not fall apart)	5		
GUIDELINES: <input type="checkbox"/> Solar oven is fits guidelines	5		
TESTING: <input type="checkbox"/> The temperature of food rises in the allotted time frame.	10		

Total Points Earned: _____ out of 200 points

Name: _____ Group: _____ Block: _____

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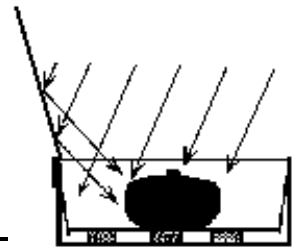
Researching SOLAR COOKERS Web Quest

Total Points: 25

We will be learning about solar cookers, so to start you need to research them. Go to

<http://solarcooking.org/plans/>.

Find **Panel Cookers** – take a look at the pictures.



1. List 3 basic materials that can be used to build a solar cooker.

2. What is the power source for a solar cooker? _____

Scroll up to the top right of the page and **click** on **The Solar Cooking Archive**.

On the next page, on the left side under **Solar Cooking: Basics**, **click** on **Frequently Asked Questions**.

On the next page, **click** on **English: Frequently-Asked Questions (FAQ)**.

Read the information on this page to answer the questions.

1. What are the three types of solar cookers?

2. What is the advantage of the box cooker? What is it best at cooking?

3. What is the advantage to the panel cooker?

4. Where are solar cookers being made for less than \$5 each? _____

5. What is the advantage to the parabolic cooker?

6. What are the three advantages to the parabolic cooker?

Name: _____ Group: _____ Block: _____

7. Who invented the first solar cooker and in what year? _____

8. Where are solar ovens being used the most? _____

Under **How hot do solar ovens get?**, answer these questions:

9. Solar ovens will cook just fine as long as the temperature gets to what? _____

10. Why do people prefer to cook at lower temperatures?

Under **How long does it take to cook a meal?**, answer these questions:

11. How long does food in a single reflector box cooker take to cook?

12. Why is it not necessary to carefully watch food or stir it while it cooks?

Scroll down to **What kind of pots work best?**, answer this question.

13. What is the best type of pot to use for cooking?

Scroll down to **Can you sterilize water in a solar oven?**, answer these questions.

14. To make water safe to drink, what has to be done to it? _____

At what temperature does this occur? _____

Scroll down to, **If solar ovens are so good, why isn't everyone using one?**, answer these questions.

15. What are the three factors that need to be in place to make it possible for poor people to solar cook on an on-going basis?

16. If you build a box cooker out of cardboard, will it catch fire? _____

Name: _____ Group: _____ Block: _____

Scroll down to **How much of the year can you cook?**, answer these questions.

17. How often could you use your solar cooker if you lived in Canada? _____

18. How often could you use your solar cooker if you lived in a tropical region? _____

19. What happens if the sun goes in front of the clouds while I'm cooking? Will the food still cook?

20. At what temperature in °F does food cook? _____

