

Probing Understanding

Pose these questions after instructional activities relating to each. Students write responses in their science journals.

Prior Knowledge

Start with students reflecting and brainstorming thoughts to the Essential Question, What causes people (scientists) to consider new alternatives to solve problems?

Session 3

1. How can you use light or dark materials to make your cooker work well? (*Use highly reflective panels to direct light into the oven, paint the oven box flat black to absorb heat, and so on.*)
2. How do different materials absorb or reflect the sun's heat (*glass, plastic, metal*)?

Session 4

3. Work in teams and complete one group essay. Describe the features of your solar cooker and explain how these features help the cooker work well. Or, compare your cooker design to another. Compare the basic features and explain why you chose the one you did. (*Answers should include the reflective and absorptive features of the cooker designs.*)

After Session 6

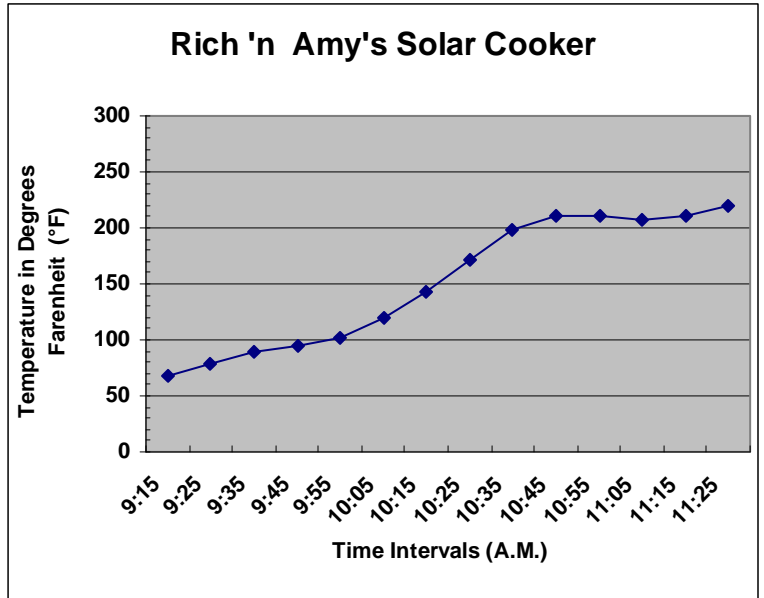
4. Explain how you can use solar energy to cook an egg with each method of heat transfer—conduction, radiation, and convection. (*Answer should demonstrate an understanding of these terms in relation to heat transfer.*)

After Session 9

5. What are some factors that limit the use of solar energy? (*For example, cloud covering, weather, terrain, storing the energy, Earth's position in relation to the sun, and so on.*)

After Session 10

6. Look at the solar cooker temperature graph. If you only had 10 minutes to cook an egg, when would you choose to cook it? (*Correct answers may vary, but the best results would occur when a steady heat is achieved, anytime after 10:45 a.m.*)



At the End of the Unit

7. Tell two ways solar energy can be used as an alternative to other energy sources. *(Solar energy can be used for cooking, heating, and running small appliances, such as watches and calculators. Solar energy can be absorbed by photovoltaic cells and converted into electricity.)*
8. Do you think solar energy can replace fossil fuels? Why or why not? *(Answers will vary.)*
9. Reflect back on the Essential Question—discuss.