

What Do You Remember?

1. List the three ways in which energy can be transferred. Briefly describe each way. You may want to use diagrams in your descriptions. **K/U**
2. Write a paragraph describing the transfer of energy from the Sun to Earth. Use the following terms in your paragraph: “electromagnetic radiation,” “space,” “light,” “infrared radiation,” “thermal energy,” “absorbed,” and “converted.” **K/U C**

What Do You Understand?

3. What is unique about the way energy reaches Earth from the Sun? **K/U**
4. We use a variety of different methods to cook food (Figure 1). For the methods below, list the form(s) of energy transfer involved in the cooking method. Be sure to explain your answer.
 - (a) grilling hamburgers on a barbecue
 - (b) baking cookies in an oven
 - (c) making pancakes in a frying pan **K/U A**



Figure 1

5. Copy Table 1 into your notebook. In each column, list at least three ways that energy transfer affects the natural environment. **K/U**

Table 1 Methods of Energy Transfer

Conduction	Convection	Radiation

6. How does reducing energy loss from homes demonstrate environmental stewardship? **A**
7. Explain why a down-filled jacket loses its insulating ability when it gets wet. **K/U A**
8. Using the Internet and other sources, research what a “thermal” in the atmosphere is. Describe one way in which organisms use thermals to their advantage. **A**

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9. Using the Internet and other sources, find out what a temperature inversion is. Why do temperature inversions occur? What type of energy transfer do they prevent? What are some of the effects of a temperature inversion? **A**

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10. Look back at Figure 1 in Section 8.8. This picture is called a “thermogram.” What type of energy transfer is important to thermography? Research other uses of thermograms on the Internet.

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11. Specialized clothing, such as space suits and wet suits, has special properties to keep people warm. Research one type of specialized clothing and explain how energy transfer is taken into account when designing and making the clothing. **A**

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Solve a Problem!

12. A well-insulated home is more comfortable and costs less to heat.
- What are some areas of your home where energy might be lost?
 - What can be done to reduce this loss?
 - What are the benefits of reducing energy loss? **K/U A**
13. Insulated clothing protects our bodies and increases our ability to enjoy outdoor activities in winter. What concepts from this chapter might clothing designers consider when they design cold-weather coats? **T/I A**
14. Spoons made of different materials sat partially submerged in a container of very hot water for 5 min. The temperatures of the parts sticking out of the water were measured (Table 2). What conclusions can you draw from these findings? **T/I**

Table 2 Spoon Temperatures

Spoon material	Temperature after 5 min (°C)
stainless steel	80
wood	25
plastic	50
silver	95

15. Name five things that you and your family can do to reduce heat transfer around your home. **T/I A**

Create and Evaluate!

16. (a) What might be some deterrents to having a green roof?
 (b) Suggest how these deterrents might be overcome.
 (c) Would you suggest to the government that all government building roofs be converted to green roofs? Why or why not? **T/I A**
17. (a) What are some of the disadvantages to having airtight buildings?
 (b) How can these problems be solved?
 (c) How effective are your solutions? **T/I A**
18. Some older homes and buildings use hot water heating systems (Figure 2). Research what a hot water heating system is (include a diagram). Do you think that hot water heating systems are efficient? Explain your answer. **K/U A**



Figure 2

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Reflect on Your Learning

19. Think back to the Key Question on the first page of this chapter.
- In a brief paragraph, answer the Key Question. You may use diagrams.
 - Write one or two more questions about the topic of this unit that you would like to explore.
20. Think back to an idea in this chapter that has changed the way you think about heat transfer. Write a brief paragraph describing how your understanding has changed and how this new understanding may affect activities in your everyday life.