

To our teachers:

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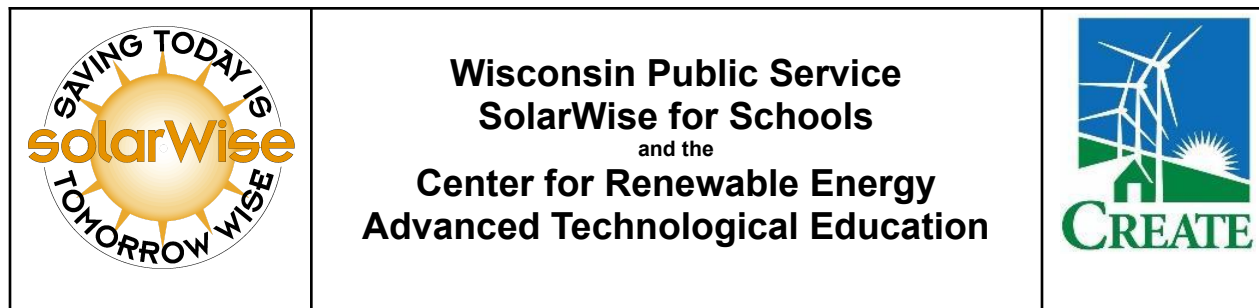
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STARRING THE SUN

Student Lesson

It's surprising how little most people know about our star, the sun. Some aspect of the sun or sunlight can be found in almost any important topic you would ever care to consider. Without enough sunlight it is likely that the earth would be a planet without life. Sunlight, which takes eight minutes to get here from the surface of the sun, determines the earth's surface temperature and weather patterns. It supplies virtually all of the energy that drives our global systems and cycles. The energy released when we burn fossil fuels—coal, oil, and natural gas—is literally "buried" sunshine. Modern-day sunshine that has been converted by plants into carbohydrates through photosynthesis is the starting point for all of the food we eat. Modern day sunshine also provides us with nearly every form of renewable energy.

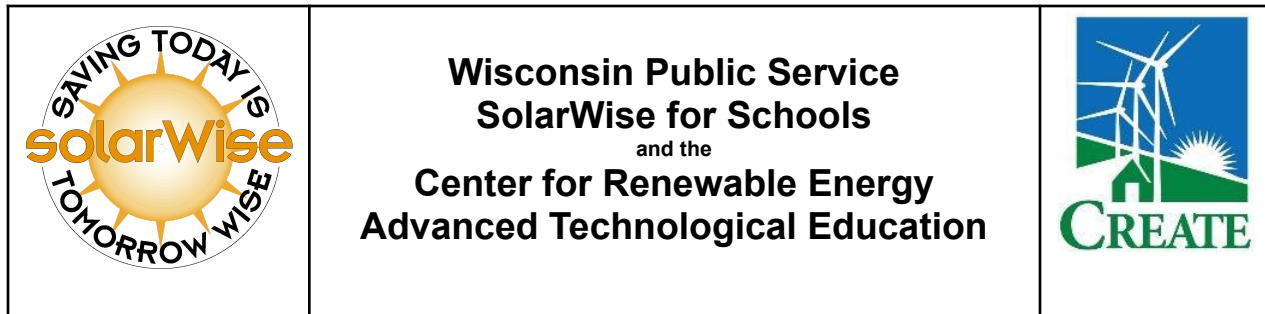
The sun warms us, sometimes too much. During the winter it may seem to warm us too little. Sun worship in many cultures still continues today, and for good reason when you consider the importance of the sun. In our own culture many people still worship the sun, usually while lying on a beach towel.

Our sun really is a "star" (pun intended), as you are about to learn. Complete the following **Response Guide** while viewing and reading the PowerPoint, **Starring The Sun**. See if you know the answer to 16. before beginning the program!



Name: * _____

Date: * ____ / ____ / ____ Class Hour: * ____



STARRING THE SUN

Student Response Guide

Most of the following questions require only a very short answer—a word or two. A few of the questions require a longer answer—you'll need to write a well-developed sentence or two. Other questions require an answer that is somewhere between these two extremes. Select the length that's appropriate for the question—the length that expresses a quality answer.

FULLY CORRECT ANSWERS MAY NOT RECEIVE FULL CREDIT! HERE'S WHY:

You are welcome to use words from the reading to form your answers. However, if you lift more than one or two words directly from the reading, you must put them "in quotes" in your answer. When you don't put them in quotes, you are claiming authorship of those words. If you don't place words that were written by another person inside quotation marks you will lose credit on your answer.

1. The uneven appearance of the surface of the sun is caused by?

*** Answer**

2. How can we study what a star is made of?

*** Answer**

3. Light travels and behaves as?

*** Answer**

4. All light travels at the speed of light, which is?

*** Answer**

5. The entire range of different kinds of light including the ones the human eye can't see is called the?

*** Answer**

6. Scientists describe the differences between types of light like visible and x-ray in terms of the length of the light's waves or?

*** Answer**

7. Write each of the seven different kinds of electromagnetic radiation in order below. Begin with the radiation with the longest wavelength (weakest radiation) at the top (7a). Continue in order to the radiation with the shortest wavelength (strongest radiation) at the bottom(7g).

7a. *** Answer**

7b. *** Answer**

7c. *** Answer**

7d. *** Answer**

7e. *** Answer**

7f. *** Answer**

7g. *** Answer**

8. About how many Earths could fit across the diameter of the sun?

*** Answer**

9. The sun is how many miles from the earth?

*** Answer**

10. Every second, the sun produces enough energy to handle the energy needs of the United States for how many years?

*** Answer**

11. How long does it take light from the sun to reach Earth?

*** Answer**

12. The sun consists mostly of these two elements (provide the elements names and their percent makeup of the sun)?

*** Answer**

13. The sun is how many years old?

*** Answer**

14. The sun will last how many more years?

*** Answer**

15. If you drove a car at 100 miles / hour to the sun, how many years would it take you to get there (algebra and calculator needed)?

*** Answer**

16. The sun is the source of how much of our energy?

*** Answer**

17. The reaction shown in the slide, which takes place in the sun's core, is called a ____ reaction?

*** Answer**

18. $2 \text{ Neutrons} + 2 \text{ Protons} \rightarrow \rightarrow$

$\rightarrow \rightarrow$ *** Answer** + *** Answer**

19. The temperature of the sun's corona reaches about how many degrees Celsius?

*** Answer**

20. Sunspots are caused by?

*** Answer**

21. The frequency of sunspots varies with the rise and fall of a solar cycle, which is how many years in length?

*** Answer**

22. What is a solar flare?

*** Answer**

23. Solar prominences are caused by?

*** Answer**

24. What is a CME (Coronal Mass Ejection)?

*** Answer**

25. What causes CME's?

*** Answer**

26. What does a CME do to the earth's magnetic field?

*** Answer**

27. List five things that can happen when a CME impacts the earth:

*** Answer**

28. What is the solar wind?

*** Answer**

29. What causes the northern (or southern) lights (Aurora Borealis)?

*** Answer**

30. Research today suggests that large scale changes in weather may be driven by what?

*** Answer**