



# WHEN THE SUN GOES DARK

Andrew Fraknoi  
Dennis Schatz

  
**NSTA Kids**  
National Science Teachers Association

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Illustrated by Eric Freeberg

  
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**This book is dedicated to our children,  
Alex, Colin, and Evan.**





Grandma was telling us about the big event during their trip. First, the Sun looked like it had a little bite taken out of it. They had to use special glasses to be able to look at the Sun without hurting their eyes. Then that dark bite out of the Sun got bigger and bigger. When the Sun was almost covered, it looked like a diamond ring for a second. After that, not only the Sun but also the sky turned dark. The birds even stopped singing. The stars came out in the middle of the day. All of the people watching with my grandparents oohed and aahed because there was a halo of light around the Sun that was very beautiful.

“The darkness only lasted four or five minutes,” Grandma said.

Then everything that had happened before went backward. They quickly needed their glasses

again because more and more of the bright Sun became visible. They could see the bite taken out of the Sun again, but now it got smaller and smaller until the whole Sun was back.

Grandma called the event a solar *e-clips*. I’ve heard of e-mail and e-books, but I didn’t know what an *e-clips* was. But I didn’t want to look ignorant in front of my pesky little brother, so I didn’t say anything.

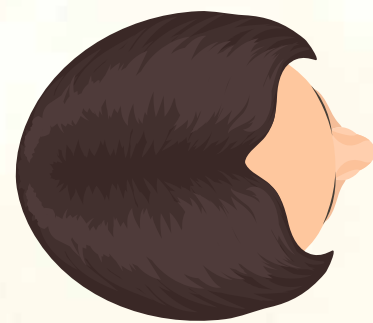
After dinner, I sat next to Grandma on the couch in the living room and asked her to tell me more about solar *e-clips* and what they were. She chuckled at the way I said *e-clips*, emphasizing the *e*.

She told me, “Most people say *eclipse* with the emphasis on the *clipse* part of the word.”

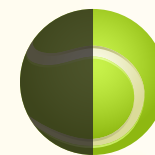
So now I knew how to pronounce it, but I still didn’t know what caused an eclipse or why people traveled thousands of miles to see one.



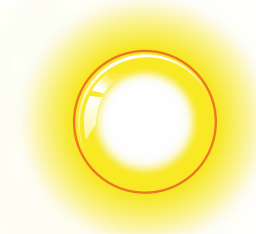




Earth



Moon



Sun

Grandma smiled and said, “It isn’t hard to explain an eclipse like the one we saw. It happens when the Moon passes in front of the Sun, blocking the light from it.”

Grandma could tell from the expression on my face that this wasn’t clear enough for me. Then, she got that look she has when a good idea comes into her head.

“Let’s make this room more like outer space,” she said, “and then I can show you what happens with the Moon and the Sun.”

She turned off the lights in our living room except for one lamp on the table. At this point, Sammy, who’s always getting into my business, came in to see what was happening. Grandma told him he was welcome to join us in outer space. That hooked him; Sammy is really into space video games!

Grandma took the shade off the lamp, saying, “Let’s pretend the bulb is the Sun, and Diana and Sammy, each of your heads is the Earth.”

When Sammy, who has really short hair, said,

“Diana’s head has too much hair; my head’s a better Earth,” Grandma just put a finger to her lips and said, “Sammy, it’s quiet in space.” I have to remember that line!

She gave each of us a tennis ball from her luggage and said it would be the Moon. She asked us what the Moon went around, and we both knew that it went around the Earth, although I said it first. Grandma told us to hold the tennis ball Moon with an outstretched arm and make it go around Earth (meaning our heads).

She then told us to look at the tennis ball Moon as we moved it around. When we held it in the direction of the lamp, she told us to stop. She asked us what the side of the ball facing each of our heads looked like. We both said it was dark.

“This dark Moon is called the *new Moon*,” she told us.

I didn’t think that was such a great name. Dark Moon would be better—but let’s face it, we kids don’t get to vote on things like that!



"First, the Sun looked like it had a little bite taken out of it. They had to use special glasses to be able to look at the Sun without hurting their eyes. Then that dark bite out of the Sun got bigger and bigger. When the Sun was almost covered, it looked like a diamond ring for a second. After that, not only the Sun but also the sky turned dark. The birds even stopped singing."

—from *When the Sun Goes Dark*

# WHEN THE SUN GOES DARK

This illustrated book introduces young astronomers to the extraordinary science behind eclipses. It tells how two curious children and their grandparents re-create eclipses in their living room using a lamp, a tennis ball, two Hula-Hoops, and Ping-Pong balls. Later, in the backyard and around the house, the family learns about safe ways to view a solar eclipse and ponders phenomena from sunspots to phases of the Moon. *When the Sun Goes Dark* gives children and adults vivid examples of hands-on techniques to learn about the marvels of the universe.

Andrew Fraknoi and Dennis Schatz, authors of NSTA's *Solar Science: Exploring Sunspots, Seasons, Eclipses, and More*, are award-winning experts in both astronomy and science education. Andrew is an astronomy professor at Foothill College near San Francisco. Dennis is a senior adviser at the Pacific Science Center in Seattle.

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