



Eclipse Explained:

When the Sun, Moon, and Earth Align

What is an eclipse, and why should we be so excited?
Dr. B shines some light on this natural phenomenon.



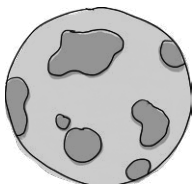
Watch the show!



<https://www.youtube.com/watch?v=c6PFkwZJUA>

Quick Questions

1. Have you ever heard of a lunar eclipse? How about a solar eclipse?
2. Have you ever experienced an eclipse? If yes, what was your experience like?
3. If you have never experienced an eclipse, do you want to see one someday? Why or why not?
4. Imagine you have never heard of an eclipse, and you experience either a lunar or solar eclipse. What might you think?
5. Scientific research sometimes relies on regular people collecting and submitting data through "citizen science" projects. Have you ever participated in citizen science, either for an eclipse or for other topics?



Deep Dives

1. Many people travel long distances to experience eclipses; this is particularly true for total solar eclipses. What do you think motivates people to do this? Would you spend money and travel long distances to experience a total solar eclipse? Why or why not?
2. Scientists are trying to better understand animal reactions to eclipses, but it is difficult to study. Total solar eclipses usually only last a few minutes, and only in specific locations. Imagine you're a scientist trying to set up a research study to better understand how and why animals react the way they do to total solar eclipses. What animals would you like to study, and why? How would you set up your study, and what challenges do you foresee?
3. Many cultures throughout history have reacted to eclipses in various ways, and some of these traditions continue today. Some cultures excitedly engage with the eclipse by going outside and experiencing the changes; but some other cultures intentionally do not go outside during an eclipse. Still others have acknowledged and regarded eclipses in different ways. How does your own culture engage with an eclipse? Why might different cultures have different traditions surrounding eclipses?
4. Some cultures have traditionally told stories about the Moon and the Sun that interpret what is happening during an eclipse. These stories help people understand and connect with the science that they are observing. What story might you tell to explain what is happening? How might you explain the reactions of various organisms (plants and animals) on Earth during an eclipse? How do other individuals or characters on Earth or in space (like rainbows or clouds) fit into your narrative?
5. Scientists study solar eclipses to learn all sorts of things about the Sun, from solar winds to the Sun's corona. Imagine you are a scientist who studies the Sun or Moon. What sorts of questions would you want to study? Do you think you could study any of these questions during a solar or lunar eclipse? Why or why not? What is it about the unique conditions of an eclipse that might make that brief period the ideal time to research your question?

Engaging in Science Discussions



Recommended Grade Level: Middle and High School

Objective: To engage in open-ended discussions about critical science topics. While leading these discussions, it is important to ensure that everyone is heard, and everyone is treating one another with respect. There is no “right answer” during these discussions, and it’s okay to respectfully disagree.

Additional Notes: We recommend having these discussions multiple times with the same group of participants. This provides the opportunity to explore different topics and improve one’s abilities to have successful conversations about STEM topics. Quick Questions are optional and are recommended to be used as warm-up questions.

Materials: TV or projector Paper and writing utensils

TIMELINE (30 – 40 MINUTES)

5 min	10 min	5 min	10 min	10 min <i>(optional)</i>
Intro + prompts	Watch segment	Think/write time	Share with partner	Small groups

Intro (5 min) Before starting, select one Deep Dive question. Tell the group you will be asking them a question that has no right or wrong answer. After they watch the clip, they will have time to think about and write their response. They will share their response with a partner or small group. Now share the question you selected.

If participants are new to these sorts of discussions, you may want to review the following concepts:

- When you are sharing your responses, provide reasoning and evidence. Reasoning is your own thinking behind your answer. Evidence is facts that support your answer, such as historical facts or scientific facts. You may also have experiences from your own life that support your answer.
- When listening to your classmates, ask questions. The purpose of questions is to better understand their thought process, not to challenge them. Some ways to frame questions are: “I didn’t understand X.” “Could you explain Y again?” “What do you mean by Z?”
- If someone asks you questions, provide clarification. Explain your reasoning and evidence. Remember that there are no right or wrong answers.

Watch the segment (10 minutes)

Think/write time (5 minutes): Participants write down their answers

Share with a partner (10 minutes): Pair up participants. Each person has 5 minutes to share their response and answer questions from their partner. Then switch so each partner gets a turn.

(Optional) Small groups (10 minutes): Put participants in groups of 4 for share-outs and conversations.

(Optional) Homework prompts: Expand your response into a report, picture, poem, essay, short story, song, or performance. Or, write your own discussion question for the group.