

# EARTH, SUN, AND MOON SYSTEM Science Reading

## Earth Moon and Sun System

**Eclipses**  
Have you ever wondered why the sky sometimes goes dark during the day, or why the Moon can turn a reddish color at night? These events are called eclipses, and they happen when the Earth, Moon, and Sun align in a special way. A solar eclipse occurs when the Moon moves directly between the Earth and the Sun. This alignment in a special way perfectly aligned with the Sun and Earth for an eclipse because the Moon's orbit is slightly tilted. Solar eclipses only happen when the Moon is in the New Moon phase, and they happen because the Moon orbits Earth and reflects sunlight. A total solar eclipse occurs when the Moon's shadow completely covers the Sun. A partial solar eclipse occurs when only some of the Sun is blocked. A solar eclipse can only happen when the Moon is in the New Moon phase.

**Phases of the Moon**  
Have you ever looked up at the night sky and noticed that the Moon seems to change shape? Sometimes it looks like a bright circle, while other times, it appears as a thin crescent. These changing shapes are called the phases of the Moon, and they happen because the Moon orbits Earth and reflects sunlight. The Moon does not make its own light; it reflects light from the Sun. As the Moon moves around Earth, we see different amounts of this light from Earth. This is what causes the Moon's phases. The cycle of the Moon's phases begins with the New Moon. During this phase, the side of the Moon facing Earth is completely dark. As the Moon moves, more of the side facing Earth is illuminated. The Moon continues to grow brighter, and we see different shapes. The phases are: New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Last Quarter, and Waning Crescent. The cycle then repeats.

**Seasons**  
Have you ever wondered why summer is hot, and winter is cold? Why do the days feel longer in some months and shorter in others? The answer lies in two key factors: the tilt of the Earth's axis and the way the Earth moves around the Sun. The Earth doesn't sit perfectly vertically; instead, it is tilted at an angle of 23.5 degrees. This tilt is the primary reason we experience different seasons. As Earth orbits the Sun, various parts of the planet receive varying amounts of sunlight at different times of the year (Diagram 1). When the Northern Hemisphere (the top half of the Earth) tilts toward the Sun, it receives more direct sunlight. This results in longer days and warmer temperatures, which we refer to as summer. Meanwhile, the Southern Hemisphere (the bottom half of the Earth) tilts away from the Sun, receiving less direct sunlight, leading to shorter days and colder temperatures, known as winter. Six months later, the situation reverses! The Southern Hemisphere tilts toward the Sun, experiencing summer, while the Northern Hemisphere tilts away, experiencing winter. During spring and autumn (fall), neither hemisphere is tilted directly toward or away from the Sun. This causes more balanced daylight hours and moderate temperatures, creating the transition between the hot summer and cold winter months. The seasons of the two hemispheres are opposite of each other.

**Reading Passages**  
✓  
**Notes**  
✓  
**Worksheets**  
✓  
**Task Cards**  
✓

Readings with Questions

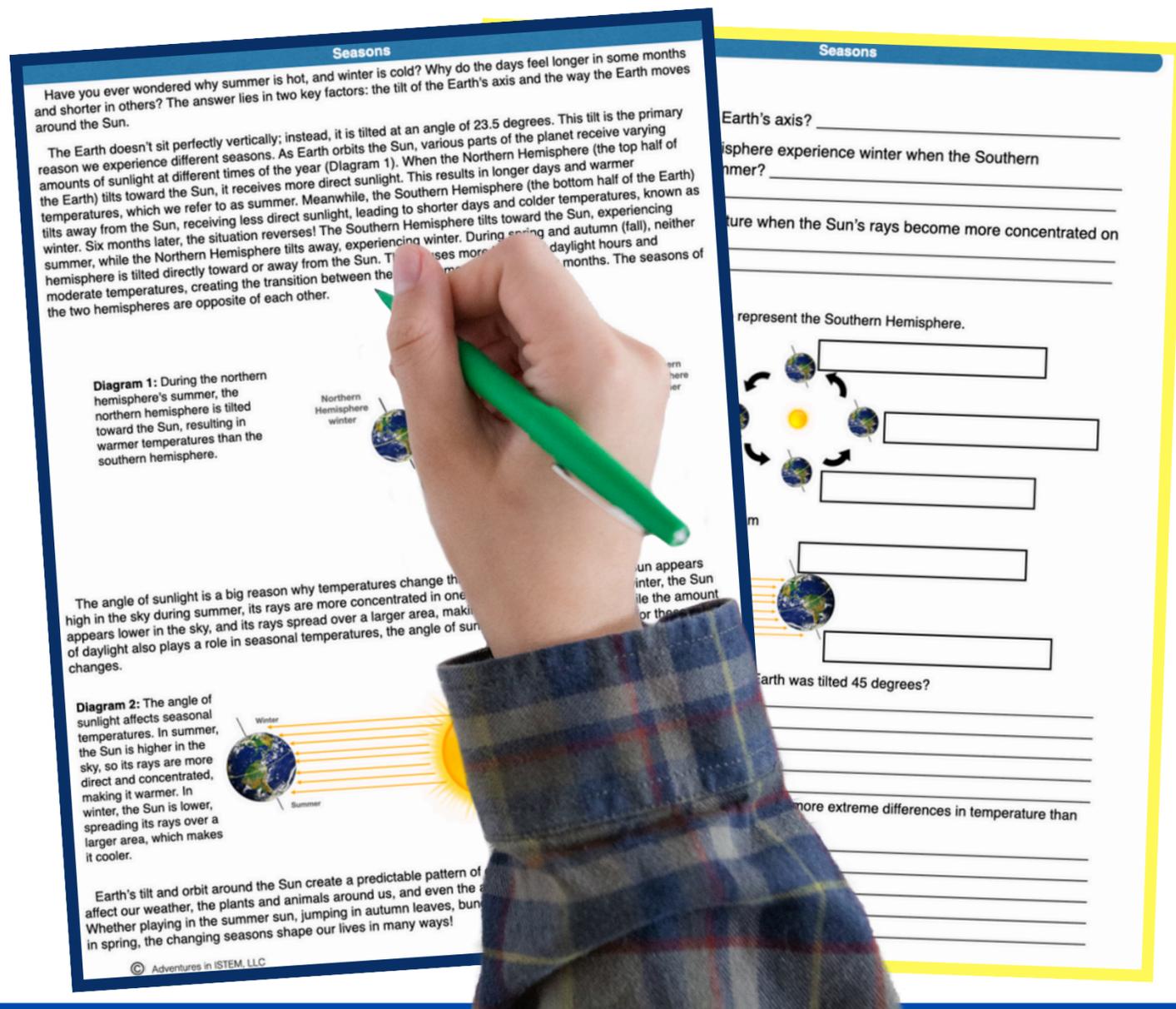
# Scroll Through

## To take a peek inside!

Help students learn about the relationship between the Earth, Moon, and Sun with seasons, phases of the moon, and eclipses, and then test their comprehension with these easy to read science reading passages.

# EARTH, SUN, AND MOON SYSTEM

## Science Reading



## Topics Included

**Seasons**

**Phases of the Moon**

**Eclipses**

# Each topic *includes*

- ✓ **One page science reading passage to teach the topic.**
- ✓ **Notes with questions to guide their reading**
- ✓ **Comprehension worksheets to review the information using multiple levels of questioning**
- ✓ **Task cards to extend their learning and for extra review**
- ✓ **Answer keys to easily check the student knowledge**
- ✓ **Digital version for more flexibility on how to use the lesson**
- ✓ **Lesson Design to help you differentiate the lesson in your classroom**

The image displays a collection of educational resources for teaching about eclipses. At the top left, a worksheet titled "Eclipses" contains five questions under the heading "Define / Describe":

1. What is a solar eclipse?
2. What is a lunar eclipse?
3. Which moon phase has a chance of creating a solar eclipse?
4. Which moon phase has a chance of creating a lunar eclipse?
5. Label the two types of solar eclipses

Below the questions is a diagram showing the Sun, Earth, and Moon in alignment, with labels for "Umbra" and "Penumbra". To the right, a notes page titled "What Happens During an Eclipse?" has a "Notes" section with horizontal lines for writing.

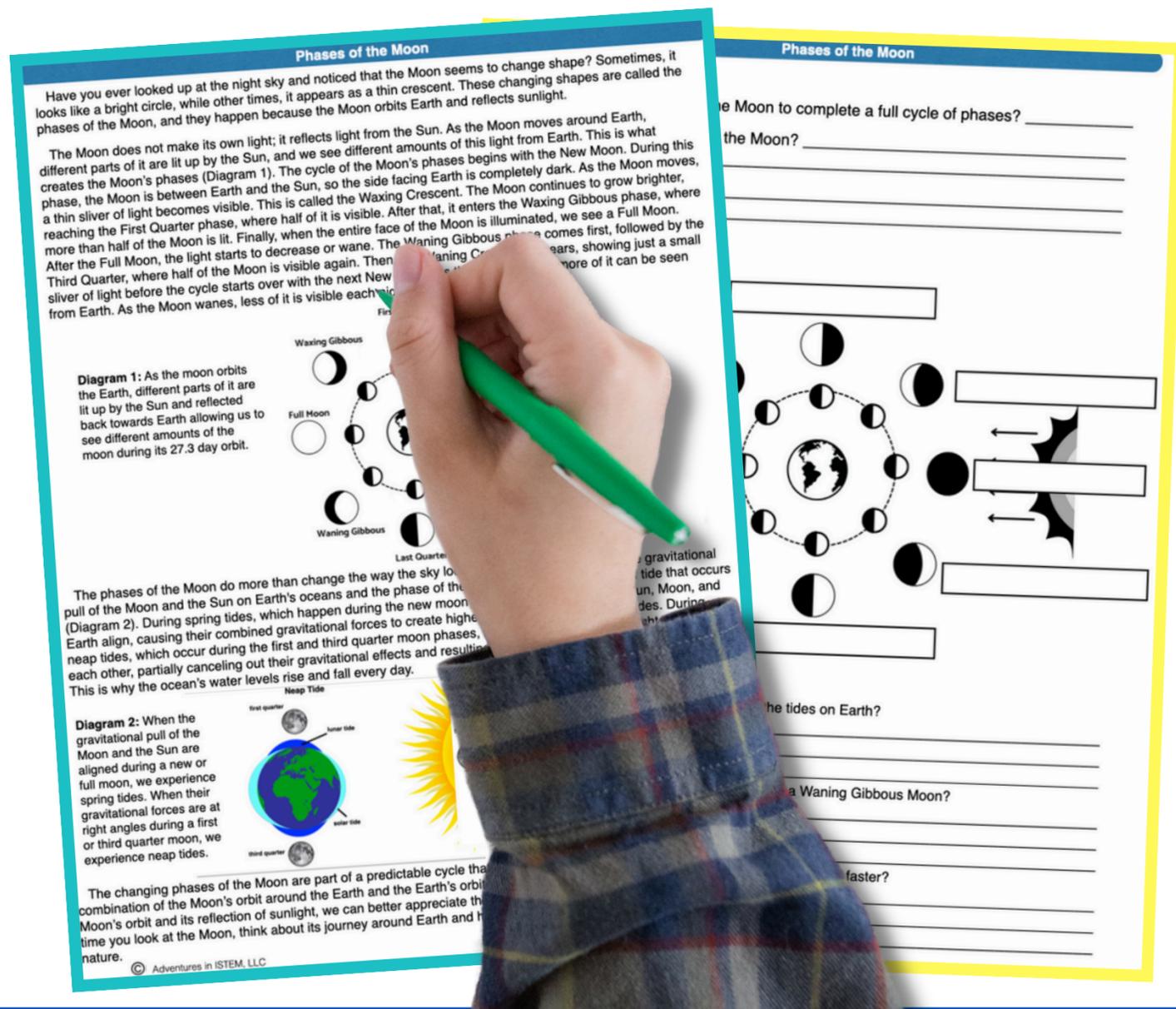
In the center, a reading passage titled "Eclipses" explains the science of eclipses. It states: "Have you ever wondered why the sky sometimes goes dark during the day, or why the Moon can turn a reddish color at night? These events are called eclipses, and they happen when the Earth, Moon, and Sun align in a special way. A solar eclipse occurs when the Moon moves directly between the Earth and the Sun. This alignment blocks some or all of the Sun's light from reaching Earth, causing the sky to darken during the day. Solar eclipses only happen during a New Moon, but not every New Moon results in an eclipse because the Moon's orbit is slightly tilted, so it must be perfectly aligned with the Sun and Earth for an eclipse to occur. During a solar eclipse, the Moon casts two types of shadows on Earth: the umbra, which is the darkest part of the shadow where the Sun is completely blocked, and the penumbra, which is the lighter, outer part of the shadow where only part of the Sun is blocked (Diagram 1). These shadows create different types of solar eclipses. In a total solar eclipse, the Moon's umbra causes the Sun to be completely blocked, turning day into night for a few minutes. A partial solar eclipse happens when the penumbra covers only part of the Sun, so the sky becomes dim but not fully dark. In an annular solar eclipse, the Moon is slightly farther from Earth and appears smaller in the sky, so it covers the center of the Sun but not the edges, leaving a bright ring of light visible around the Moon." Below the text is "Diagram 1: A total solar eclipse will occur when the Moon's shadow completely blocks the Sun. However, a partial solar eclipse occurs when only some of the Sun is blocked." and another diagram showing a partial eclipse.

Below the reading passage is "Diagram 2: A total lunar eclipse will occur when the Earth's shadow completely blocks the Sun. However, a partial lunar eclipse occurs when only some of the Sun is blocked." and a diagram of a lunar eclipse.

At the bottom, a digital tablet displays a digital version of the worksheet, showing the questions and diagrams in a user-friendly interface with "Add text" boxes for answers.

# EARTH, SUN, AND MOON SYSTEM

## Science Reading



# What Are *students* Doing?

- ✓ **Marking the text**
- ✓ **Filling in the guided note-taking template**
- ✓ **Reviewing and applying their knowledge**
- ✓ **Reinforcing their understanding**

# EARTH, SUN, AND MOON SYSTEM

## Science Reading

**Seasons**

**Define / Describe:**

1. What is the tilt angle of the Earth's axis?
2. Why does the Northern Hemisphere experience winter when the Southern Hemisphere experiences summer?
3. What happens to the temperature when the Sun's rays become more direct?

**Label:**

4. Label the seasons on the diagram to represent the Northern Hemisphere.

**Elaborate / Extend:**

5. Label summer and winter on the diagram.
6. What would happen to the seasons if the Earth's axis were not tilted?
7. Why do the countries near the equator have extreme climates?

Have you ever wondered why summer is hot, and winter is cold? Why do the days feel longer in some months and shorter in others? The answer lies in two key factors: the tilt of the Earth's axis and the way the Earth moves around the Sun.

The Earth doesn't sit perfectly vertically; instead, it is tilted at an angle of 23.5 degrees. This tilt is the primary reason we experience different seasons. As Earth orbits the Sun, various parts of the planet receive varying amounts of sunlight at different times of the year (Diagram 1). When the Northern Hemisphere (the top half of the Earth) tilts toward the Sun, it receives more direct sunlight. This results in longer days and warmer temperatures, which we refer to as summer. Meanwhile, the Southern Hemisphere (the bottom half of the Earth) tilts away from the Sun, receiving less direct sunlight, leading to shorter days and colder temperatures, known as winter. As the Earth continues its orbit, the situation reverses! The Southern Hemisphere tilts toward the Sun, experiencing summer. The Northern Hemisphere tilts away, experiencing winter. During spring and autumn (fall), neither hemisphere is tilted directly toward or away from the Sun. This causes more balanced daylight hours and temperatures, creating the transition between the hot summer and cold winter months. The seasons of the Northern Hemisphere are opposite of each other.

The angle of sunlight is a big reason why temperatures change throughout the year. When the Sun appears high in the sky during summer, its rays are more concentrated in one area, making it warmer. In winter, the Sun appears lower in the sky, and its rays spread over a larger area, making it cooler (Diagram 2). While the amount of daylight also plays a role in seasonal temperatures, the angle of sunlight is the primary reason for these changes.

**Diagram 1:** The angle of sunlight affects seasonal temperatures. In summer, the Sun is higher in the sky, so its rays are more direct and concentrated, making it warmer. In winter, the Sun is lower, spreading its rays over a larger area, which makes it cooler.

**Diagram 2:** The angle of sunlight affects seasonal temperatures. In summer, the Sun is higher in the sky, so its rays are more direct and concentrated, making it warmer. In winter, the Sun is lower, spreading its rays over a larger area, which makes it cooler.

Earth's tilt and orbit around the Sun create a predictable pattern of changing seasons. These natural cycles affect our weather, the plants and animals around us, and even the activities we enjoy throughout the year. Whether playing in the summer sun, jumping in autumn leaves, bundling up in winter, or watching flowers bloom in spring, the changing seasons shape our lives in many ways!

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## Different ways to use the science readings

- ✓ Substitute plan on days you will be out
- ✓ Introduction of the material at the beginning of the unit
- ✓ During the explain phase of the 5E model
- ✓ As part of a science station
- ✓ For reteach to reinforcing their understanding
- ✓ During the review at the end of the unit

# Why? SCIENCE READING PASSAGES?

- ✓ Increase science literacy in the classroom
- ✓ Simple passages to help students comprehend the information
- ✓ Note-taking template to help students interact with the reading
- ✓ Worksheets to review and apply their knowledge
- ✓ Reinforcement task cards to continue their understanding



“My students and I absolutely loved this resource!!! The way this was planned out with the reading, diagrams, and questions was perfect. I mainly used this with my students but they used it one day with a substitute and they wrote to tell me how great it was! (I think they thought I created it so I have to tell them otherwise!)” -

Nicole

# EARTH, SUN, AND MOON SYSTEM

## Science Reading

**Eclipses**

**Define / Describe:**

1. What is a solar eclipse? A solar eclipse happens when the Moon moves directly between the Earth and the Sun, blocking some or all of the Sun's light and casting a shadow on Earth.
2. What is a lunar eclipse? A lunar eclipse occurs when the Earth moves directly between the Sun and the Moon, casting a shadow on the Moon and making it appear darker or even red.
3. Which moon phase has a chance of creating a solar eclipse? new moon
4. Which moon phase has a chance of creating a lunar eclipse? full moon

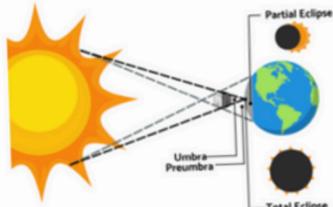
**Answer**

**Eclipses**

Have you ever wondered why the sky sometimes goes dark during the day, or why the Moon can turn a reddish color at night? These events are called eclipses, and they happen when the Earth, Moon, and Sun align in a special way.

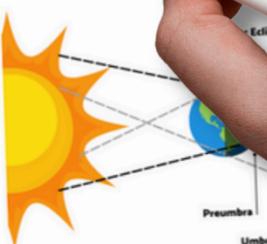
A solar eclipse occurs when the Moon moves directly between the Earth and the Sun. This alignment blocks some or all of the Sun's light from reaching Earth, causing the sky to darken during the day. Solar eclipses only happen during a New Moon, but not every New Moon results in an eclipse because the Moon's orbit is slightly tilted, so it must be perfectly aligned with the Sun and Earth for an eclipse to occur. During a solar eclipse, the Moon casts two types of shadows on Earth: the umbra, which is the darkest part of the shadow where the Sun is completely blocked, and the penumbra, which is the lighter, outer part of the shadow where only part of the Sun is blocked (Diagram 1). These shadows create different types of solar eclipses. In a total solar eclipse, the Moon's umbra causes the Sun to be completely blocked, turning day into night for a few minutes. A partial solar eclipse happens when the penumbra covers only part of the Sun, so the sky becomes dim but not fully dark. In an annular solar eclipse, the Moon is slightly farther from Earth and appears smaller in the sky, so it covers the center of the Sun but not the edges, leaving a bright ring of light visible around the Moon.

**Diagram 1:** A total solar eclipse will occur when the Moon's shadow completely blocks the Sun. However, a partial solar eclipse occurs when only some of the Sun is blocked.



A lunar eclipse happens when the Earth passes directly between the Sun and the Moon, casting a shadow on the Moon. Lunar eclipses only occur during a Full Moon, when the Moon is on the opposite side of the Earth from the Sun. During a lunar eclipse, the Earth casts two types of shadows: the umbra, which is the darker, central part of the shadow where direct sunlight is blocked, and the penumbra, the lighter outer part of the shadow where only some of the Sun's light is blocked (Diagram 2). These shadows help identify the different types of lunar eclipses. A total lunar eclipse occurs when the Moon moves into the Earth's umbra, often making the Moon appear red or orange due to Rayleigh scattering (Diagram 2). A partial lunar eclipse occurs when only part of the Moon enters the umbra. A penumbral lunar eclipse takes place when the Moon passes through only the penumbra, which is often hard to notice.

**Diagram 2:** A total lunar eclipse will occur when the Earth's shadow completely blocks the Sun. However, a partial lunar eclipse occurs when only some of the Sun is blocked.



Eclipses are remarkable events that show the precise movements of the Earth, Moon, and Sun. Whether it's the Moon blocking the Sun's light during a solar eclipse or the Earth casting a shadow on the Moon during a lunar eclipse, these moments connect us to the vastness of our solar system. Watching an eclipse is a reminder of the beauty and wonder of the universe we live in.

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Check out what teachers just like you have said about the science reading products:



“I love using reading passages in my science classes because I am able to reinforce all the learning strategies they have learned in the past and give the students more understanding of the information provided.” – Suzzane



“I was really glad to find a bundle that included so many of our objectives since we do not have a curriculum” – Amanda



“This article kept my 8th graders engaged while reviewing this topic” Brower Power Science

# HOW TO USE THE RESOURCE IN

# 3 simple steps

1

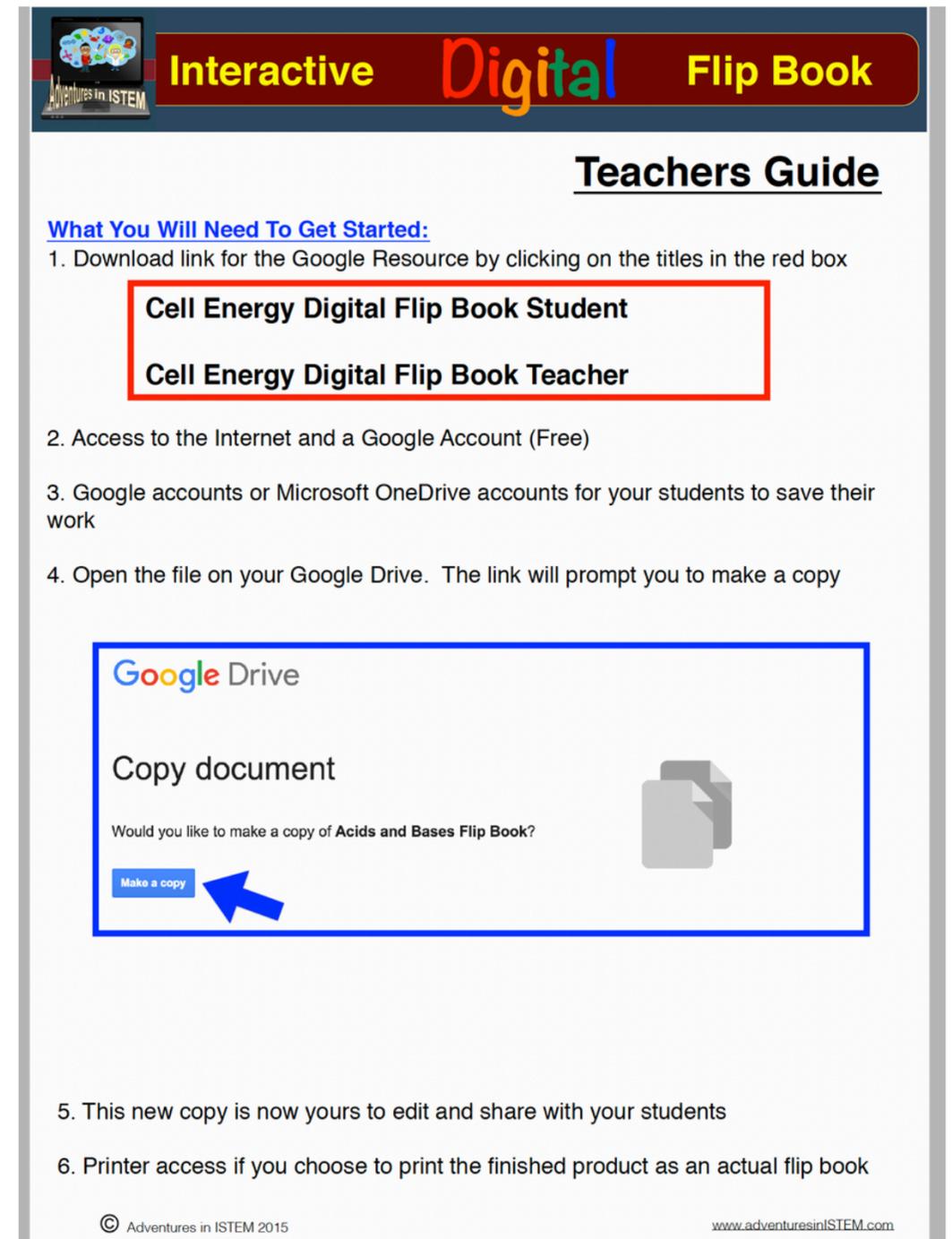
Print the PDF version, make copies, and hand out to students

2

Use the digital version by clicking the titles in the RED BOX to make your own copy (found at the end of the PDF)

3

Share the resource with your students using your favorite LMS (Google Classroom, Powerschool (schoolology), Canva...)

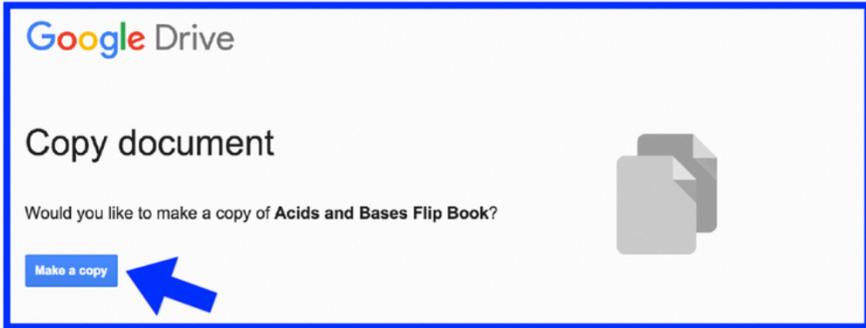


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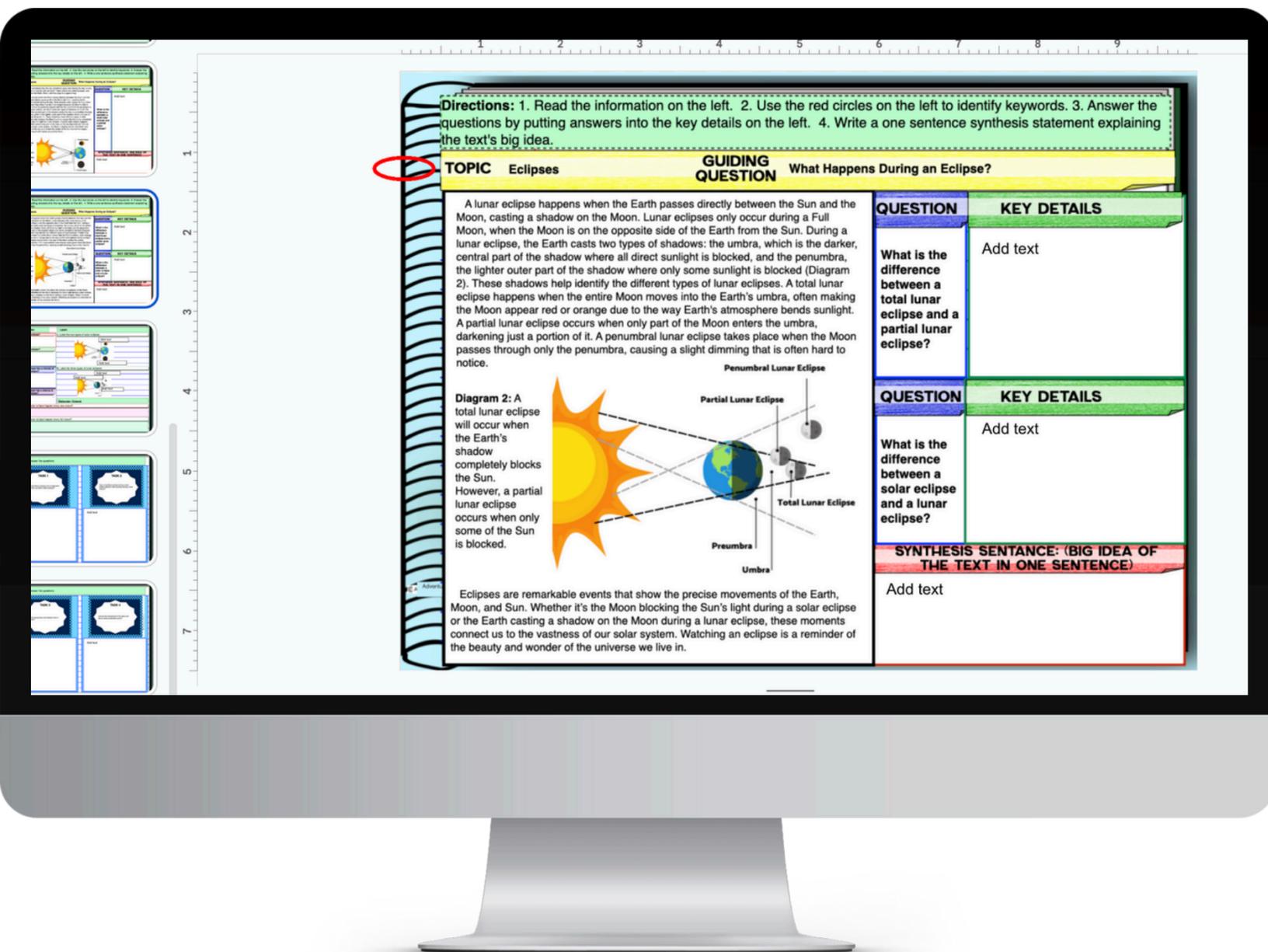
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## Earth Science Standards

### Earth and Space

NGSS MS-ESS1

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### Earth's Systems

NGSS MS-ESS2

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### Human Impact on the Environment

NGSS MS-ESS3

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## Life Science Standards

## Integrated Model by Grade Level

### NGSS Grade 6 Integrated

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### NGSS Grade 7 Integrated

**Full Year**

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### NGSS Grade 8 Integrated

**Full Year**

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Molecules to Organisms

NGSS MS-LS1

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Ecosystems

NGSS MS-LS2

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Heredity

NGSS MS-LS3

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Evolution

NGSS MS-LS4

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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## Physical Science Standards

## Alternative Model by Topic

### Earth Science

**Full Year**

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Life Science

**Full Year**

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Physical Science

**Full Year**

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Chemistry

NGSS MS-PS1

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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**Chemistry also includes thermal energy**

### Waves

NGSS MS-PS4

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Force and Motion

NGSS MS-PS2

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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### Physics

NGSS MS-PS2, MS-PS3, MS-PS4

- ✓ Reading Passages
- ✓ Notes
- ✓ Worksheets
- ✓ Task Cards

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**Physics includes mechanical energy**



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