

Disciplinary Core Ideas

ESS1.A: The Universe and Its Stars

- Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.

ESS1.B: Earth and the Solar System

- The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.
- The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.

Plan for the day:

0) **OVERDUE: Orbital Ellipses Quick-Lab (WHITE LATE MORNING BIN)**

Assigned as HOMEWORK multiple times. Show ALL you OWE.

1a) **RE-CHECK Lesson 2: Gravity and the Solar System, pages 60-72, questions 1-21, AND**

1b) **RE-CHECK Lesson Review, questions 1-9; Describe, Explain, Analyze and Explain questions require multiple sentence answers.**

2) **Is Gravity important in the Universe CER assignment.**

★ **Due by end of science class.** ★

3) **Continue reading Unit 1, Lessons 1 & 2 answering the Lesson Review questions 1 - 10 (pages 13 & 25).**

Sep 25-6:22 AM

Instructions for the Gravity-CER

1) **There are three (3) handouts:**

a) **CER Graphic and Rubric with Grammar handout**
(yours to keep)

b) **Gravity reading handout**
(yours to keep)

c) **Graphic Organizer & Response handout**
(**MUST BE TURNED IN to the BLUE MORNING BIN**)

2) **You will also use your Space Science workbook (pg 60-72): Gravity in the Solar System.**

Oct 21-12:23 PM

This task is an assessment. There will be **NO TALKING** while any student is still working on this task.

Completed responses (ONLY the handout with the **PROMPT**) are placed in the **BLUE MORIN BIN** with **GRAPHIC ORGANIZER** up and your **name** closest to the wall.

Work on **Unit 1, Lessons 1 & 2** once the **CER** has been turned in.

Oct 21-12:23 PM

PLACE in your science binder **AFTER** you have **COMPLETED** and **TURNED IN** the **CER** task.

This handout is your guide to success!!!

SCIENTIFIC EXPLANATIONS

CLAIM
Statement about the results of an investigation

- A one-sentence answer to the question you investigated.
- It answers, what can you conclude?
- It should not start with "yes" or "no."
- It should describe the relationship between dependent and independent variables.

EVIDENCE
Scientific data used to support the claim

Evidence must be:

- Sufficient — Use enough evidence to support the claim.
- Appropriate — Use data that support your claim. Leave out information that doesn't support the claim.
- Qualitative — (Using the senses), or Quantitative (numerical), or a combination of both.

REASONING
Ties together the claim and the evidence

- Shows how or why the data count as evidence to support the claim.
- Provides the justification for why the evidence is important to the claim.
- Includes one or more scientific principles that are important to the claim and evidence.

*Remember: Read what you've written to be sure it makes sense as a whole explanation.

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CER - Scoring Rubric

Claim/Evidence/Reasoning Writing Rubric

	0	1	2	3
Claim – statement or conclusion that answers the original question/problem.	Does not make a claim.	Makes an inaccurate claim.	Makes an accurate but incomplete claim.	Makes an accurate and complete claim.
Evidence – scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.	Does not provide evidence.	Only provides inappropriate evidence (Evidence that does not support the claim.).	Provides appropriate, but insufficient evidence to support claim. May include some inappropriate evidence.	Provides appropriate and sufficient evidence to support claim.
Reasoning – justification that links the claim and evidence and includes appropriate and sufficient scientific principles to defend the claim and evidence.	Does not provide reasoning	Only provides reasoning that does not link evidence to claim.	Repeats evidence and links it to some scientific principles, but not completely.	Provides accurate and complete reasoning that links evidence to claim. Includes appropriate and sufficient scientific principles.
Grammar/ Spelling	Grammar and spelling makes the writing too difficult to understand.	Multiple grammar and spelling mistakes make the response difficult to understand. Lacks a clear introduction and/or conclusion.	Some grammar and spelling mistakes.	Minimal grammar and spelling mistakes. Writing is highly organized.
	12-100% 7-75%	11-95% 6-70%	10-90% 5-65%	9-85% 4-60% 8-80% Less than 4 = 50%

Oct 21-12:23 PM

Per the instructions, ANNOTATE as necessary.

Gravity

When you walk around, you are "stuck" to the ground. You can jump, but the ground always gets you in the end. Why is this?

Isaac Newton was the first to realize that the force that makes planets go around the sun is the same force that makes things fall to Earth. It is called gravity (GRAV-i-tee). A story about Newton says that he figured out gravity when he saw an apple fall from a tree. He realized that the apple and the moon are similar. Gravity attracts them both to Earth.

Gravity is what holds us on the ground and keeps us from floating into space. It also keeps Earth going around the sun and the moon going around Earth. Without gravity, things would just bob in space. Everyday life would be difficult.


Big Gravity

Newton watched the planets in the sky. He figured out that the planets were pulled toward the sun. The closer the planets were to the sun, the stronger the pull on them.

He also watched the moon. He knew that the moon was moving around and around Earth. But why did its path curve around? Why did it not shoot away from Earth in a straight line? That was Newton's first law of motion: objects move in straight lines unless some other force makes them change direction.

Newton figured out what must be changing the moon's direction: Earth's gravity. Earth's gravity gives it a constant tug, which pulls it around in a circle. Think of a ball on a string. If you swing the ball around your head, then the tension in the string acts like gravity. It keeps the ball moving in a circle. If you were to let go of the string, then the ball would fly off at an angle. This is what would happen to the moon if Earth's gravity stopped working.


The reason Earth's gravity doesn't make the moon fall down and land on Earth is that the moon has energy from its motion. If something came along that stopped the moon from moving, then it would start falling toward Earth. Just as in the ball example above, letting the ball slow down too much makes it collapse toward you!



Little Gravity

Everything in the universe exerts a pull of gravity on everything else. The strength of that pull is determined by the object's mass and how far away it is. A big object has a big pull of gravity. A faraway object has a smaller pull of gravity. The biggest, closest thing to you right now is Earth. Because it's big and it's close, you feel its pull the strongest.

You can't feel it, but you have gravity, too. You have mass, so you have gravity. Compared to Earth, though, your gravity is very small. If you were floating out in space, though, you could have your own moon that orbited around you—maybe your little sister!



Comprehension Question

Describe the forces that keep the moon in its orbit.

Oct 21-12:23 PM

Put your First & Last NAME on the handout.

Name: _____ Class: _____ Date: _____

12A, 36A, 78A, 12B, 36B, or 78B

PROMPT: Is Gravity important in the universe?
TAKE NOTES as you watch the brief BrainPop [Gravity](#) video to help you answer the prompt above.
READ the passage Gravity. Annotate as you read to help you answer the prompt.
USE your Space Science workbook to provide additional information.
COMPLETE the graphic organizer below with the information you recorded. This will help you write.

Claim ... What do you now know? Was your prediction correct? Answer the topic question.	<u>Use the question as a guide</u>
Evidence ... How can you support your claim? What data do you have? What did you observe?	<u>Bullet the information from your notes, annotations and text that supports your claim. You may have MORE but not less than 3 pieces of evidence.</u>
Reasoning ... Why does your data support your claim? What scientific knowledge do you have?	<u>Tie scientific knowledge to your selected evidence.</u>

Name: _____ Class: _____ Date: _____
Directions: Use your completed graphic organizer to answer the **PROMPT** below using the Claim-Evidence-Reasoning model. Grammar and spelling are part of your score.
PROMPT: Is Gravity important in the universe.

★ Due by end of science class. ★

USE the RUBRIC (separate handout) and the graphic organizer (front page you already completed) to guide your response to the PROMPT.

GRAMMAR and SPELLING is part of your grade.

You are expected to make a "beefy" paragraph. That means, sentences will be well-developed.

Oct 21-12:23 PM

Keeping the prompt in mind, take notes while viewing the brief BrainPop video,

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Gravity. I will show NO MORE than twice!

Oct 21-1:31 PM

This is where you FULLY ANSWER the prompt.

Directions: Use your completed graphic organizer to answer the PROMPT below using the Claim-Evidence-Reasoning model. Grammar and spelling are part of your score.

PROMPT: Is Gravity important in the universe.

★ Due by end of science class TODAY. ★

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Oct 21-1:31 PM

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