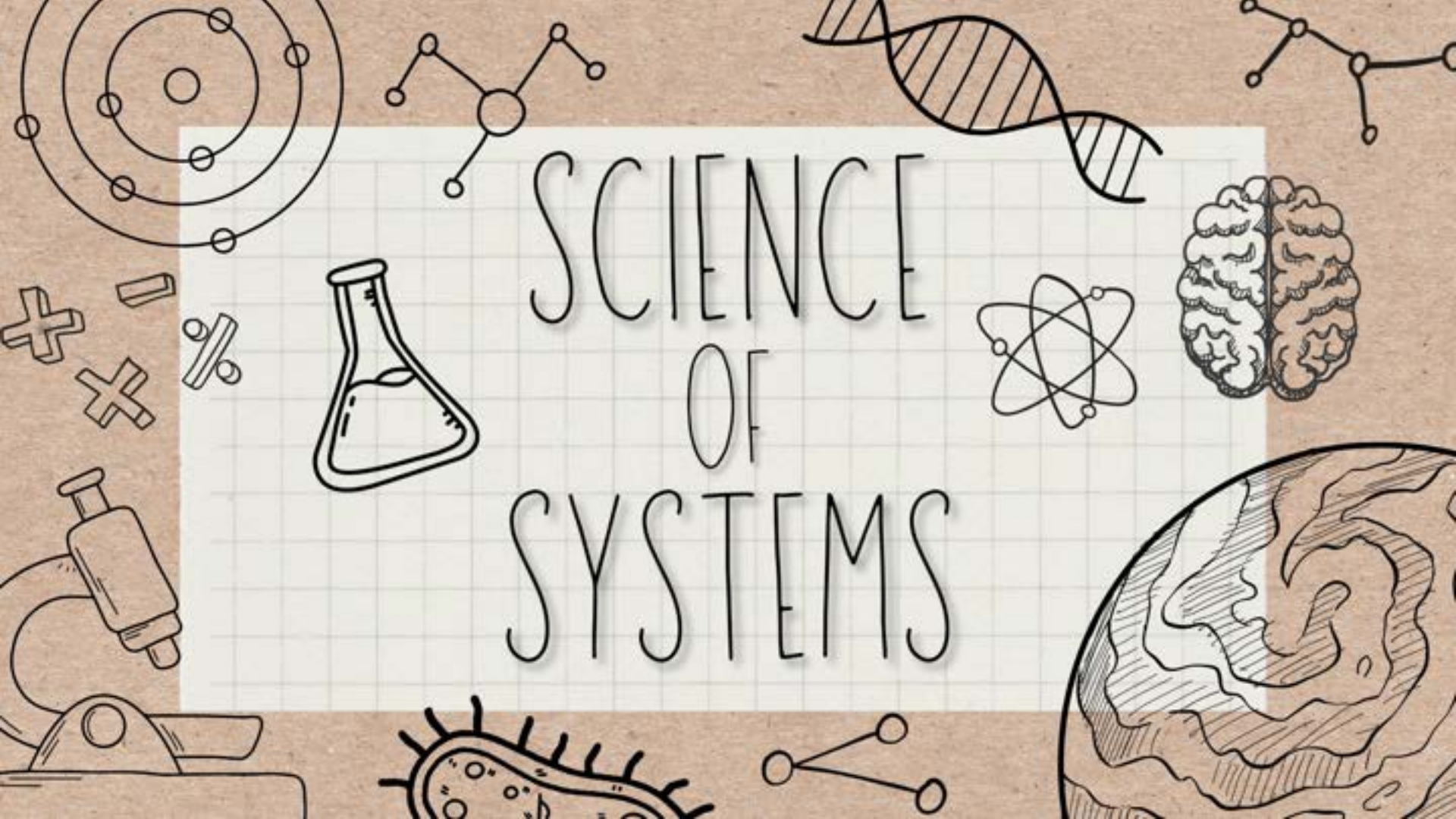
The background is a brown, textured surface covered with a dense pattern of small, light-brown scientific icons. These icons include DNA double helices, lightbulbs, microscopes, test tubes, charts, and various molecular structures. In the center of the image, there is a white rectangular area with a light blue grid pattern. The corners of this white area are folded over, giving it the appearance of a piece of paper or a sticky note.

**WEEK 1**

# SCIENCE OF SYSTEMS



# SKILL STATIONS

30:00

Create



Add task or students here

ENGINEER

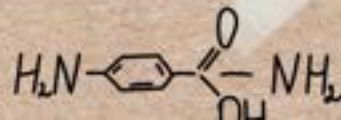
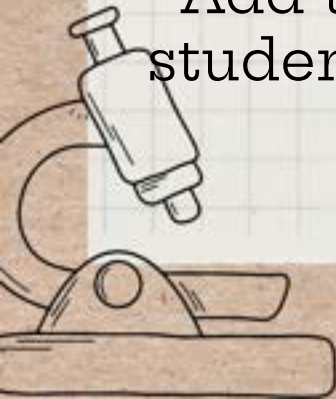


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SOLVE



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LET'S GET CURIOUS!



# HABITS OF A SCHOLAR



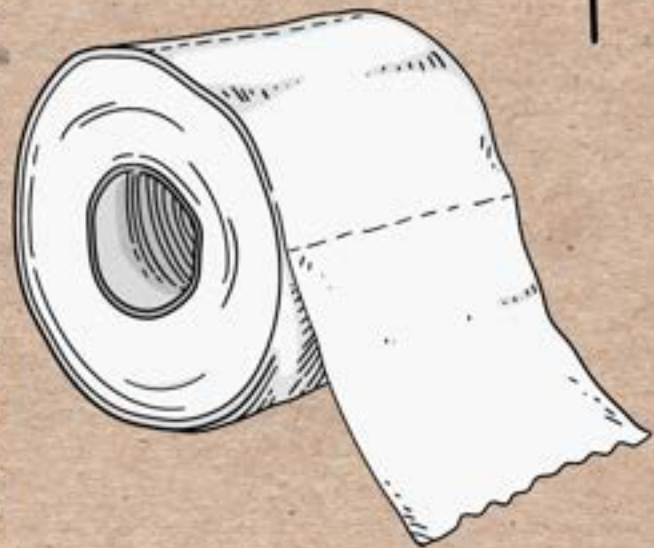


Earth Science

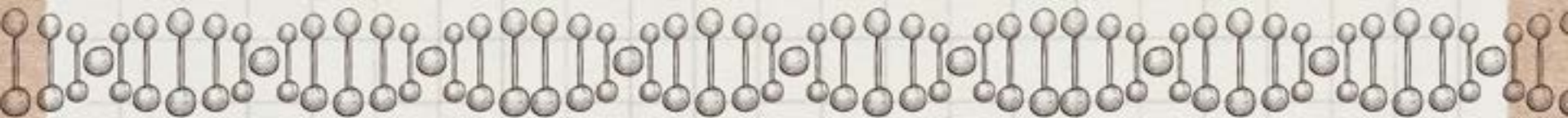
Think like a  
Disciplinarian

TOILET PAPER

TIMELINE



# FOUR WAYS TO UNDERSTAND THE EARTH'S AGE







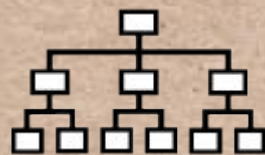
LET'S REFLECT...

Think back to the toilet paper timeline. What surprised you most about the history of the Earth?



EARTH  
SCIENCE

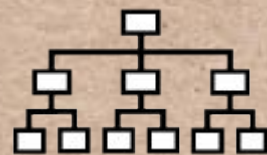
**THINK LIKE A ...**



GEOLOGIST



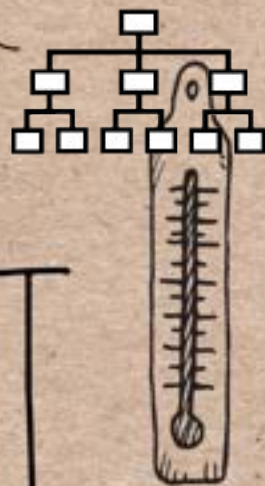
**THINK LIKE AN ...**



OCEANOGRAPHER



**THINK LIKE A ...**



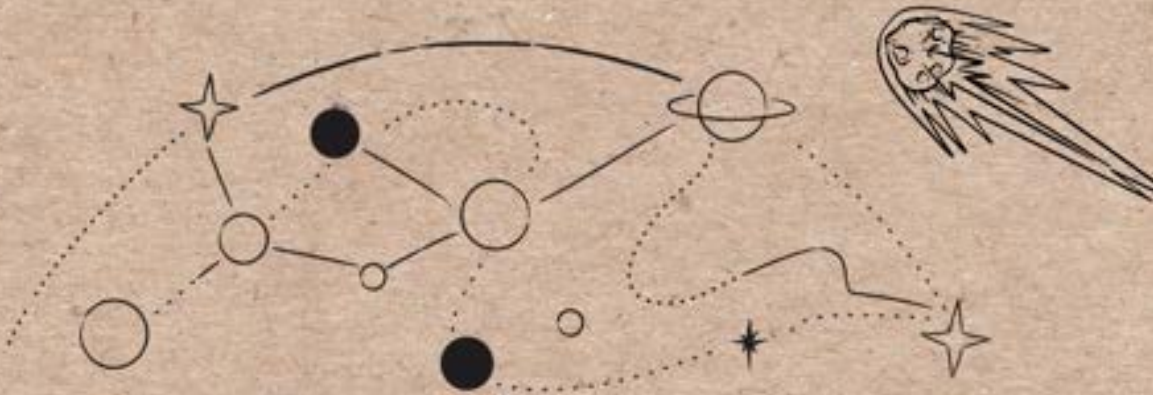
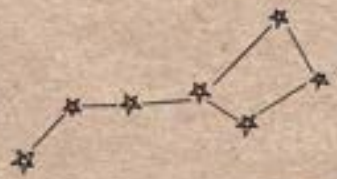
METEOROLOGIST



**THINK LIKE AN ...**



ASTRONOMER





# EARTH SCIENCE EVIDENCE

IT'S TIME TO GO OUTSIDE AND LOOK FOR EVIDENCE OF EARTH SCIENCE. THINK ABOUT THE DIFFERENT THINGS YOU SEE LIKE THE 4 DISCIPLINARIANS WE DISCUSSED.

COLLECT ONE ITEM (SMALLER THAN YOUR HAND) TO BRING INSIDE FOR OUR NEXT ACTIVITY.

# Create



As creators, we are using...

- Fluency
- Flexibility
- Originality
- Elaboration







# Fluency

MANY IDEAS

I CAN BRAINSTORM  
MANY DIFFERENT IDEAS.





# Flexibility

IDEAS HAVE VARIETY

I CAN LOOK FROM A  
NEW PERSPECTIVE  
AND SEE THINGS IN  
DIFFERENT WAYS.





# Originality

IDEAS ARE UNIQUE

I CAN THINK OF  
SOMETHING OTHERS  
HAVE NOT THOUGHT OF.





## Elaboration

IDEAS ARE DETAILED AND COMPLETE

I CAN CONTINUE TO  
ADD MORE AND BUILD  
ON MY FIRST IDEA.

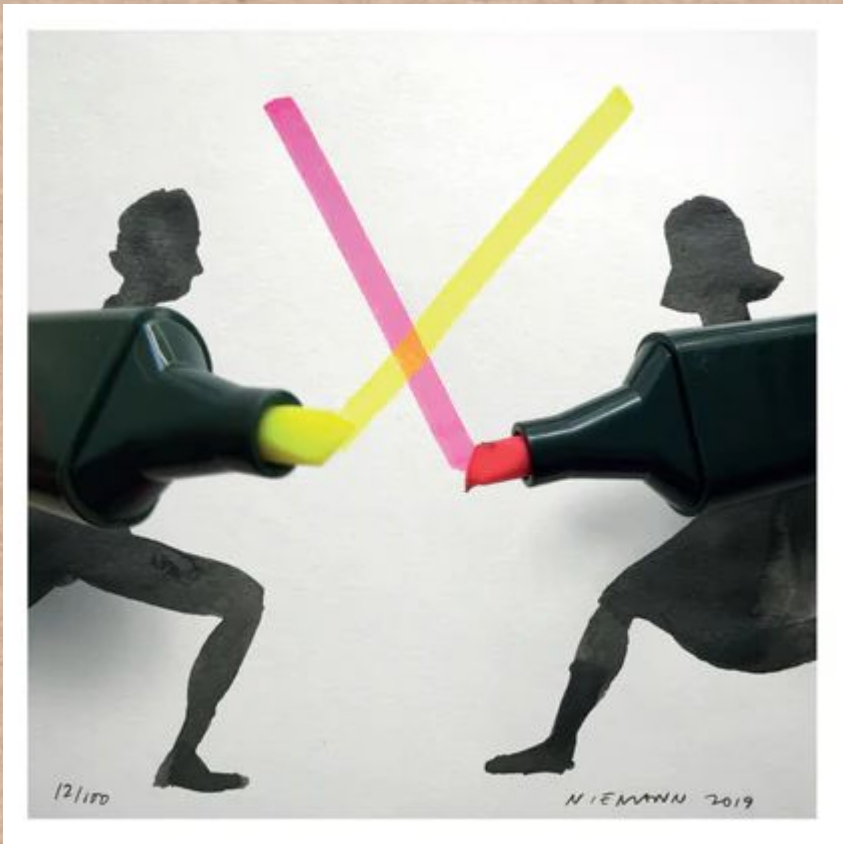






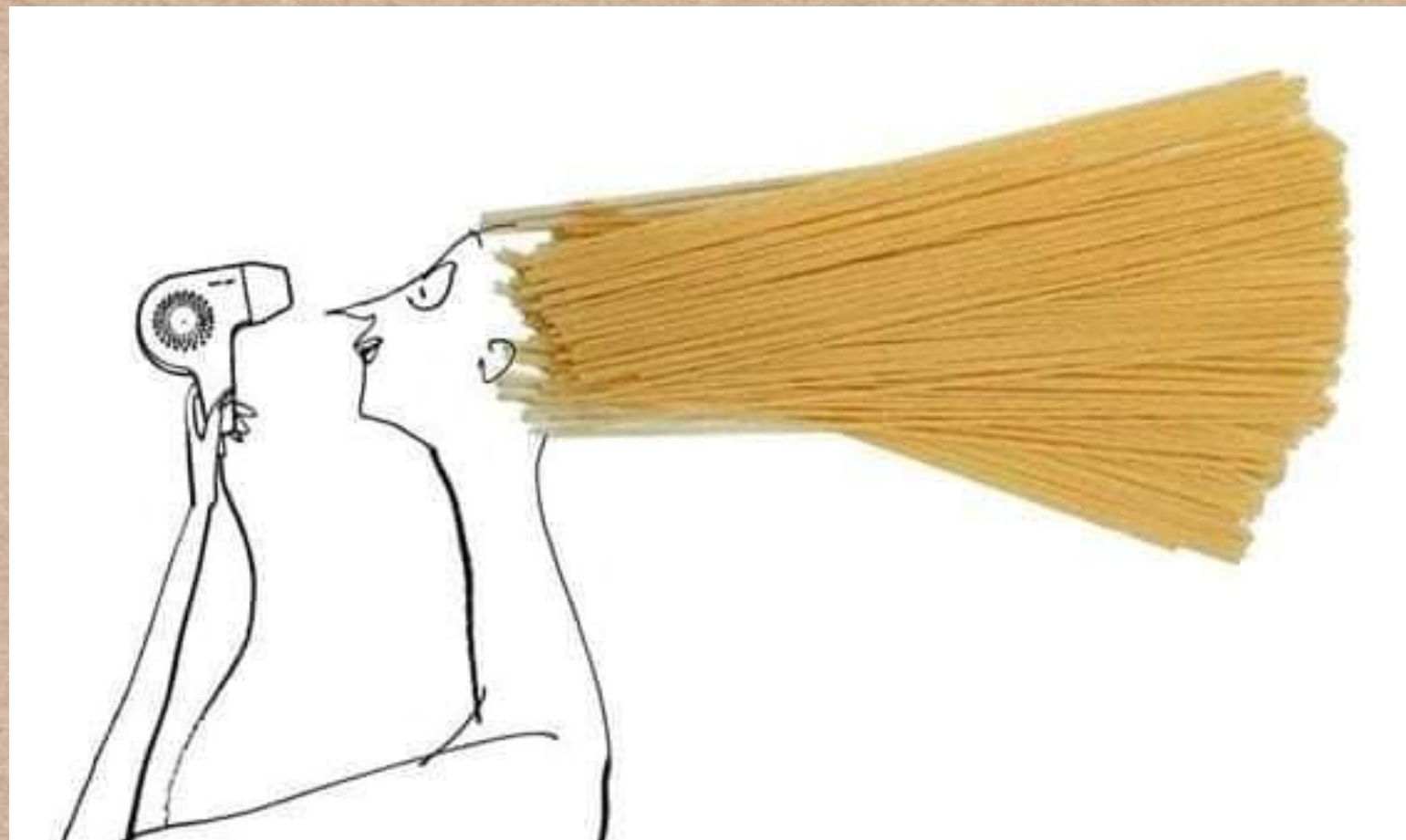
11/10

1212 KAWCEN













zohar









Remember-

Your score is not based on your artistic ability, but rather your ability to apply the components of creative thinking (Fluency, Flexibility, Originality, and Elaboration) into your work.

## Transformation Rubric

Areas for Growth	Creativity Skill	Strengths
	<b>Fluency:</b> Many Ideas I can brainstorm many ideas.	
	<b>Flexibility:</b> Ideas have variety I can look from a new perspective and see things in different ways.	
	<b>Flexibility:</b> Resistance to Closure I can add ideas not shown in their entirety, leaving part to the imagination.	
	<b>Originality:</b> Ideas are unique I can think of an idea no one else has thought of.	
	<b>Originality:</b> Title is unique I can create a descriptive title to add to my drawing (not just label the item).	
	<b>Elaboration:</b> Ideas are detailed and complete I can continue to build on my first idea. I can add many details in the picture including a setting.	
	<b>Elaboration:</b> Ideas show complexity I can use details in my picture to show interaction, movement, and storytelling.	
Novice/Apprentice - 2	Practitioner - 3	Expert - 4



# OBJECT TRANSFORMATION

BE INSPIRED BY ARTIST CHRISTOPH NIEMANN  
AND TRANSFORM YOUR OBJECT INTO  
SOMETHING NEW!



REMEMBER TO APPLY FFOE INTO YOUR WORK.

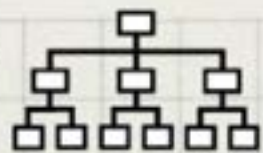




LET'S REFLECT...

Consider the components of creativity (FFOE).  
Do you think creativity is a system? Why or why not?

# IS IT A SYSTEM?




DOES THE INTERACTION OF THE PARTS PRODUCE AN EFFECT THAT IS DIFFERENT FROM THAT OF ANY PART ON ITS OWN?

ARE THERE PARTS?

DOES IT MATTER HOW THE PARTS ARE ARRANGED?

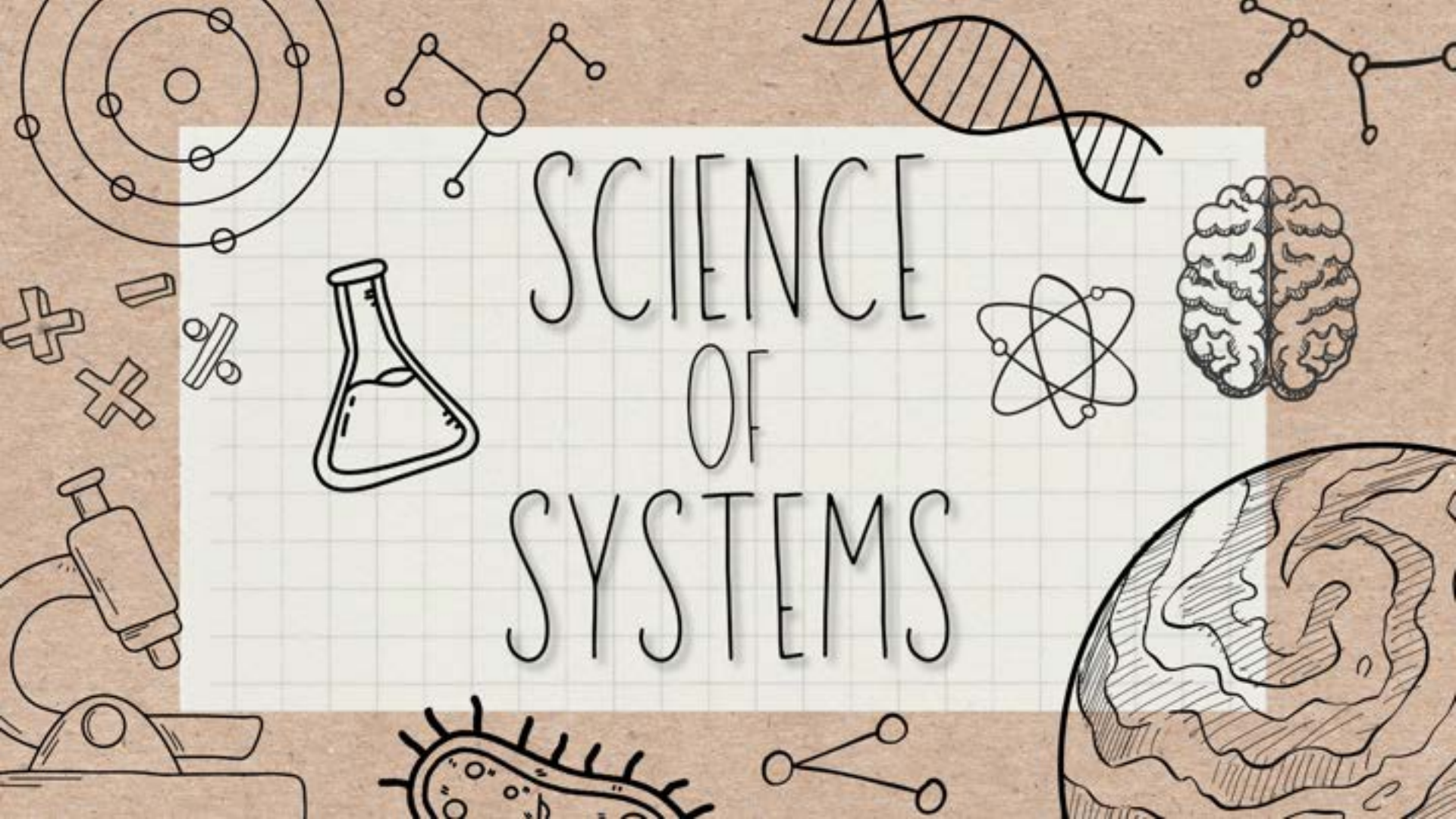
DO THE PARTS AFFECT EACH OTHER?

DOES THE BEHAVIOR OF THE SYSTEM CHANGE IF A PART IS TAKEN AWAY?

The background is a brown, textured surface covered with a dense pattern of small, light-brown icons representing various scientific fields such as biology (DNA, cells, microscope), chemistry (flasks, beakers, test tubes), physics (atom, lightbulb), and general science (magnifying glass, book, gear). In the center, there is a white rectangular area with a light blue grid pattern, resembling a piece of graph paper. The text 'WEEK 2' is written in a bold, black, sans-serif font across the middle of this grid.

**WEEK 2**

# SCIENCE OF SYSTEMS



# SKILL STATIONS

30:00

Create



Add task or students here

ENGINEER

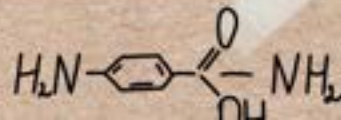
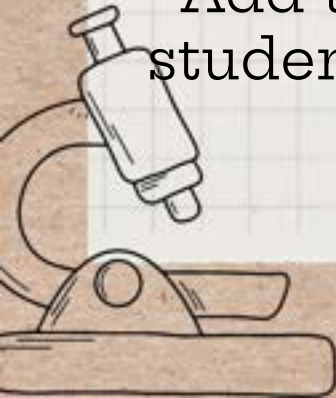


Add task or students here

SOLVE



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LET'S GET CURIOUS!



# HABITS OF A SCHOLAR





Earth Science

Think like a  
Disciplinarian





EARTH  
SCIENCE

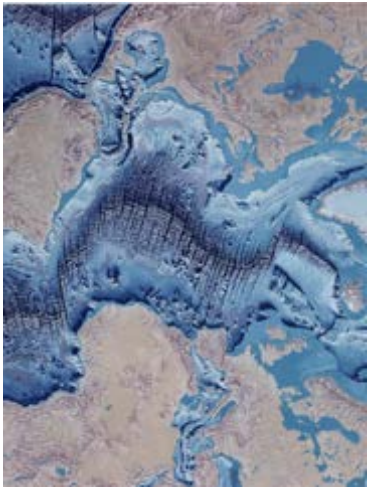


## Hydrographer:

An oceanographer who surveys and charts bodies of water, such as seas, lakes, and rivers.

**THINK LIKE AN ...**

OCEANOGRAPHER



## Underwater Mapping



**How is hydrography related to other branches of science, social studies, math, and language arts?**



## Marine Biologist:

A scientist who studies biological oceanography and the associated fields of chemical, physical, and geological to understand marine organisms

**THINK LIKE AN ...**

OCEANOGRAPHER



## Live Stream Activities

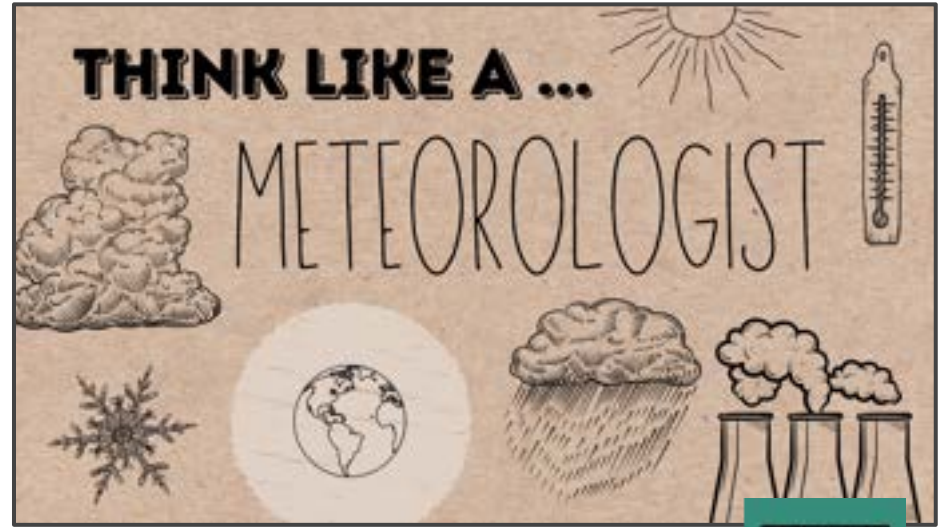


**What controversies exist regarding marine biology?**



## Fulminologist:

A meteorologist who studies the causes of lightning and thunder and their after-effects.



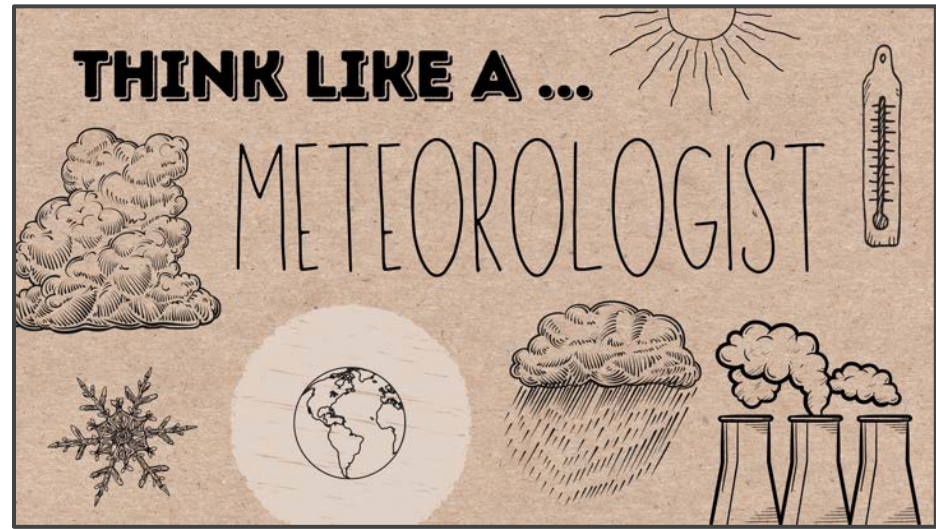
## Make Your Own Lightning

Certain parts of the world have much more frequent lightning strikes than others. Check out this [yearly lightning strike map](#). The areas shaded in red and orange have frequent flashes, while blue and purple areas experience lightning less frequently. What do the red and orange areas have in common? When you are done with the yearly map, head over to the [daily strike map](#) to investigate where lightning is striking today. How does it compare with the yearly map? Remember: When the Northern Hemisphere is experiencing winter, the Southern Hemisphere is experiencing summer. Do you notice more strikes in the Northern or Southern Hemisphere? What does that tell you about lightning and thunderstorms?

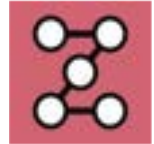


## Atmospheric Scientist:

A meteorologist who studies tornadoes and has the technology to forecast and track tornado outbreaks.



## TedEd: Tornadoes

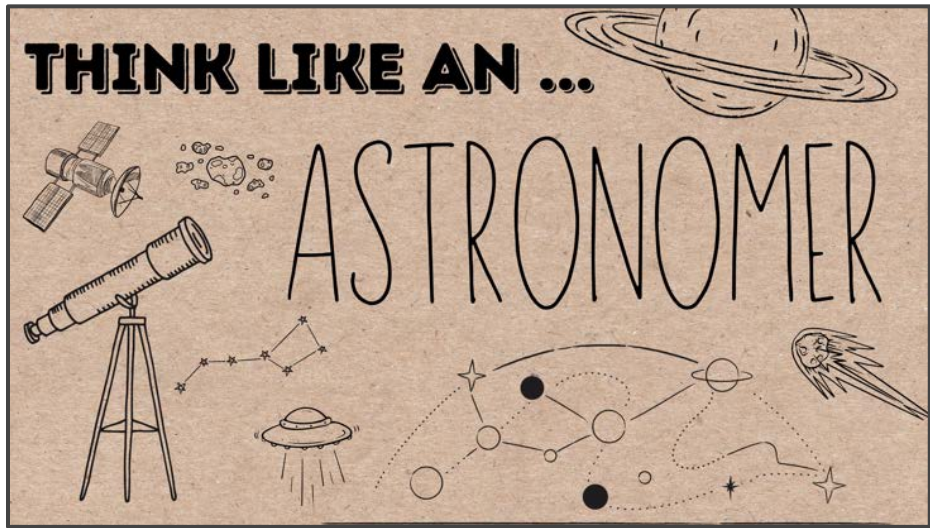


**There is a specific pattern for tornado formation.  
Why is this pattern so valuable?**



## Stellar Astronomer:

An astronomer who studies the life cycle and structure of stars, both individuals and populations.



## Constellations

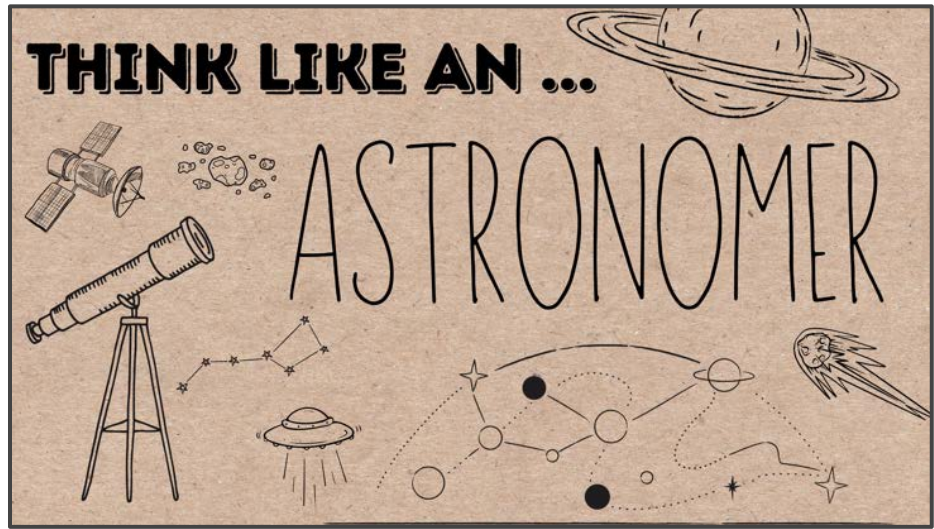


How does the perspective about constellations of ancient people differ from our perspective today?



## Galactic Astronomer:

An astronomer who studies our Milky Way galaxy and all its contents.



## Galaxy Watercolors

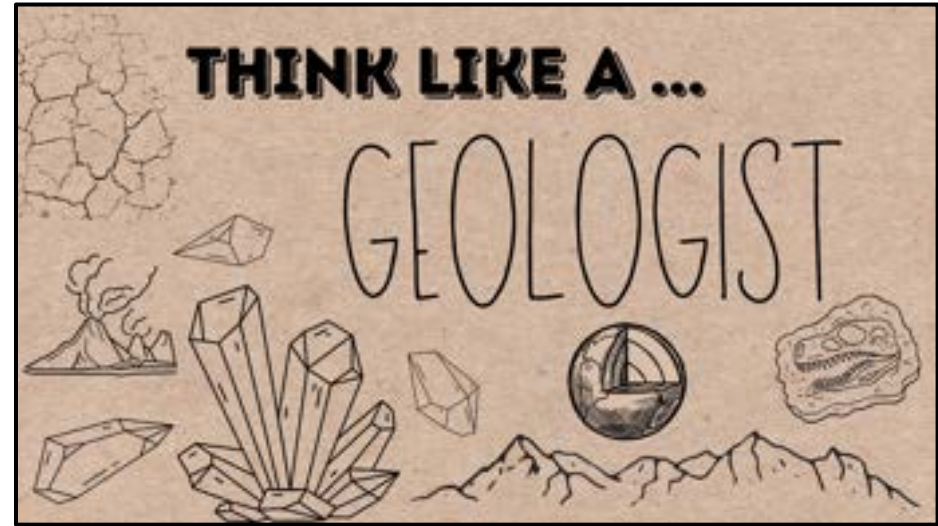


How has our understanding of galaxies changed over time?



## **Sedimentologist:**

A geologist who examines certain rock types, but usually soil from a variety of areas



## **Eggshell Geodes**



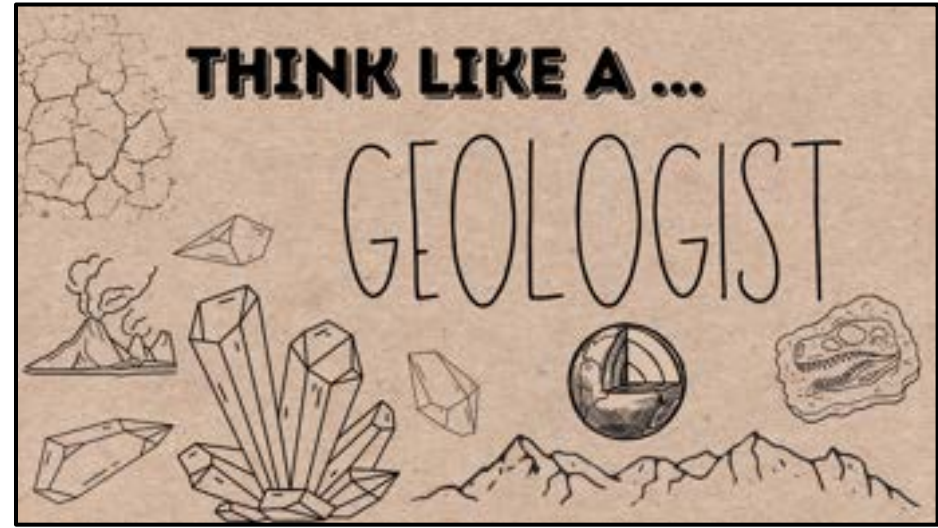
**How might a geologist describe the details of geodes using language of the discipline?**





## Paleontologist:

A geologist who studies or is an expert in the branch of science concerned with fossil animals and plants



## Fossils

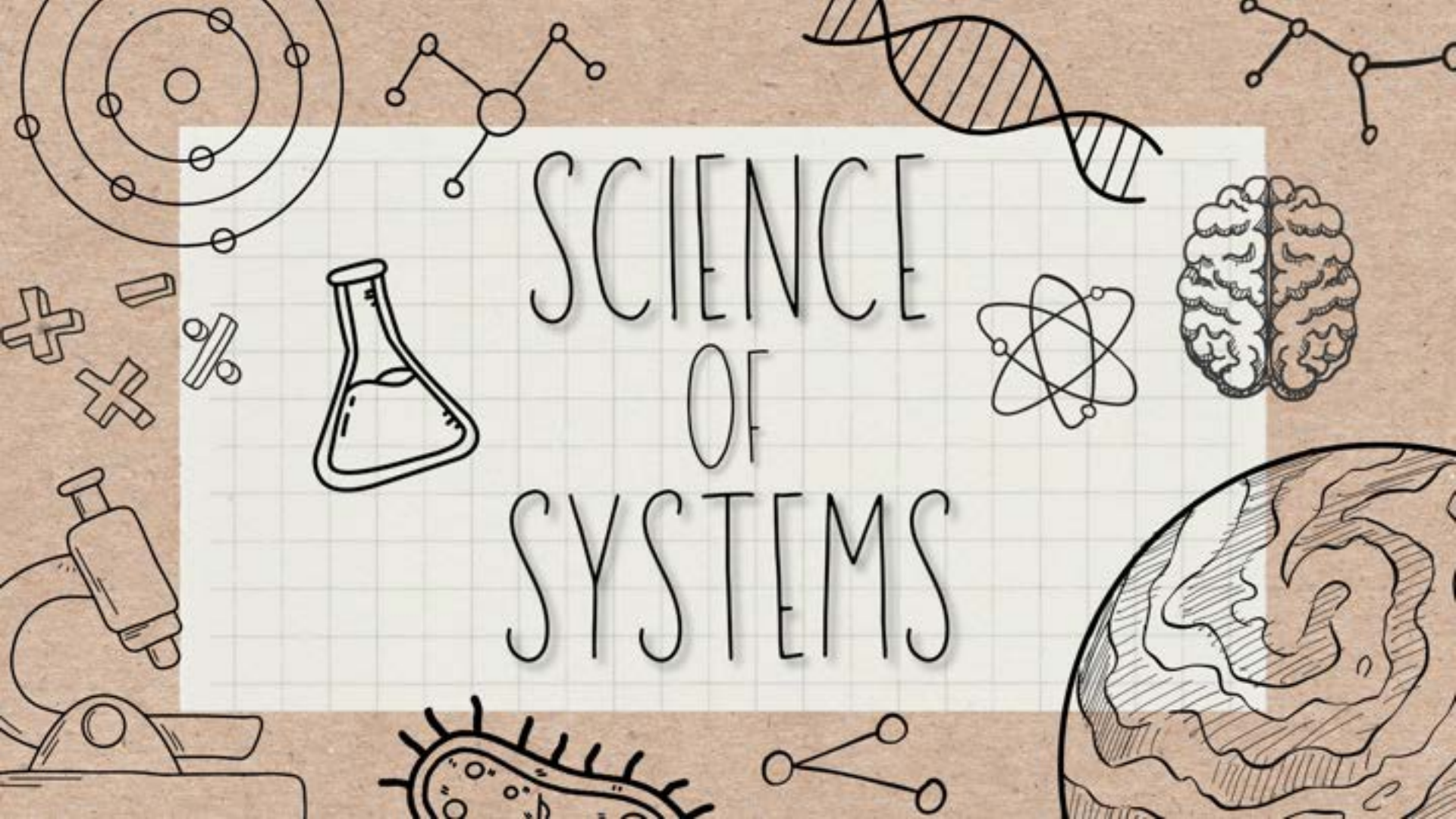


**What unanswered questions regarding fossils are necessary for us to gain better understanding of Earth Science?**

The background is a textured, brownish surface covered with a dense pattern of small, light-colored icons. These icons represent various scientific and educational concepts, including DNA double helices, lightbulbs, microscopes, test tubes, charts, and molecular structures. In the center, there is a white rectangular area with a light blue grid pattern, resembling a piece of graph paper. The text 'WEEK 3' is written in a bold, black, sans-serif font across the middle of this grid.

# WEEK 3

# SCIENCE OF SYSTEMS



# SKILL STATIONS

30:00

Create



Add task or students here

ENGINEER

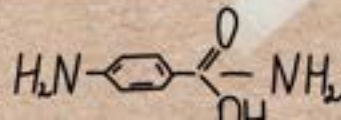
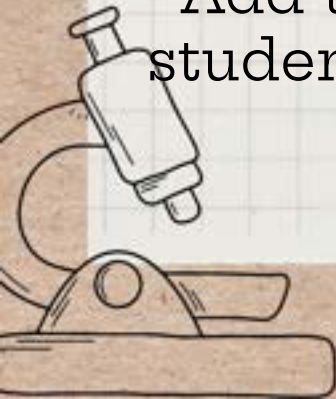


Add task or students here

SOLVE



Add task or students here



MICRO  
WORLDS



**FIERCEST PREDATORS**

LET'S GET CURIOUS!



# HABITS OF A SCHOLAR





Earth Science

Think like a  
Disciplinarian



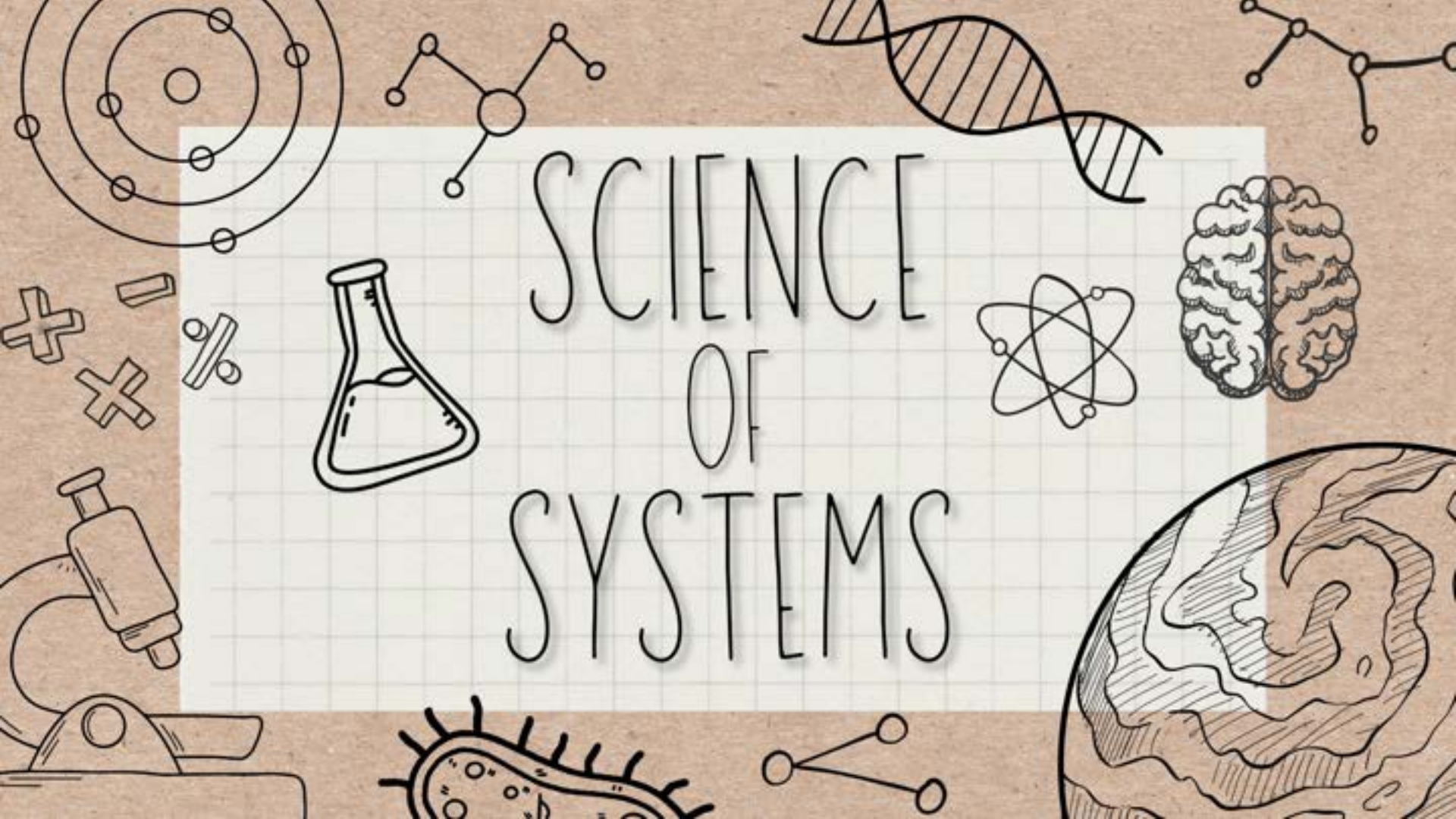
# Continue Disciplinarian Stations



The background is a brown, textured surface covered with a dense pattern of small, light-brown scientific icons. These icons include DNA double helices, lightbulbs, microscopes, test tubes, and various charts and graphs. In the center of the image, there is a white rectangular area with a light blue grid pattern, resembling a piece of graph paper. The text 'WEEK 4' is written in a bold, black, sans-serif font across the middle of this grid.

**WEEK 4**

# SCIENCE OF SYSTEMS



# SKILL STATIONS

30:00

Create



Add task or students here

ENGINEER

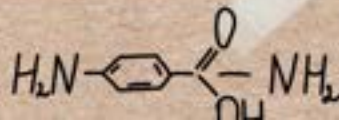
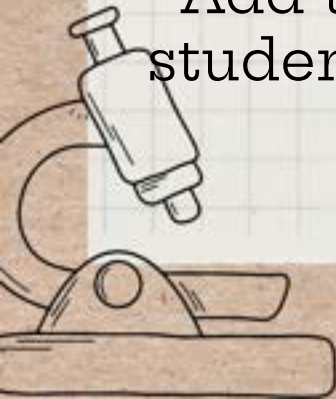


Add task or students here

SOLVE



Add task or students here





LET'S GET CURIOUS!



# HABITS OF A SCHOLAR





Earth Science

Think like a  
Disciplinarian



# Continue Disciplinarian Stations

# Ask A Disciplinarian



Work in a group to construct an email to one of the disciplinarians we've discussed. Ask any Unanswered Questions about their field. Work to apply additional depth/complexity icons into your questions.

Ex: What trends have you noticed in your field with new advancement in technology?



What other disciplines impact your field, and in what ways?

