

Good Morning!



Today is a bit of a floopy-day, so please start by enjoying this!

Please check your **jobs**, grab a **clipboard** and orange, blue, and green **colored pencils**, and **start reading** the Mars articles (both sides).

I'll give you directions for the pencils in just a minute!

3-2-1

Highlight the following on EACH article:

- 3 interesting facts --- orange
- 2 things you're curious about -- blue
- 1 thing that you wish you could have been responsible for -- green



Before we get started... what's our goal today?

Self-Check: How am I Growing as a Researcher?

Novice	Apprentice	Proficient	Distinguished
A novice researcher needs help to gather and organize one-page or less of notes from one or more sources. He or she uses topics & sub-topics that were made by the teacher or others. This researcher may struggle to take notes. His or her products may be incomplete and provide little information.	An apprentice researcher works with less help from others. She or he can gather and organize one to two pages of notes from multiple sources. They use topics & sub-topics well and take notes using mostly her/his own words. Their products are complete, they retail information, and they follow the requirements.	A proficient researcher can work alone to gather and organize multiple pages of notes from multiple higher challenge sources. He or she can create and use topics & sub-topics to organize their work and accurately take notes using their own words. Proficient products are complete, information-rich, & thoughtful.	A distinguished researcher can do all of the things a proficient researcher can do, but he or she adds something extra, like: - unique work in note taking and production - a clear and different point of view than others - high motivation and energy - being focused on a goal

Self-Check: How am I Growing as a Problem Solver?

Novice	Apprentice	Proficient	Distinguished
When there is unknown or missing information, a novice problem solver can create a hypothesis about it, but it is usually a hypothesis which was shared in class. A hypothesis from a novice usually has little or no information about a in it.	When there is unknown or missing information, an apprentice problem solver can create a hypothesis which may be expected or common. An apprentice level hypothesis contains some information about a scientific exploration.	A proficient problem solver can create a focused hypothesis when faced with missing information. A proficient level hypothesis is information-rich and is explained in detail by the problem solver.	A distinguished problem solver can do all of the things a proficient problem solver can do, but she or he add something extra, like: - their hypothesis is based on multiple pieces or sources of information. - their hypothesis is connected to other related topics



- Discovery #1: Blue Whale Barrel Roll
- Discovery #2: Arctic Microbes
- Discovery #3: Let's go!!!!



Information Review

Work in small groups to create a Venn Diagram to compare and contrast the Blue Whale Barrel Roll discovery and the Arctic Microbes discovery.

You have 10 minutes.

Use as many index cards as you need.
Use Sharpie markers using the colors listed below.
You may use your notebooks.

Each group has one specific area on which to focus:

Basic Facts: Kaley, Caleb, Sydney, Kevin, Sarah W, Ryon

A "basic fact" is anything other than an event that happened or a cause/effect.
(Blue Whales feed in summer.)

Specific Events: Noah, Lexin, Cami, Trey, Isaiah, Olivia, Isabel

A "specific event" is one specific thing that happened during a discovery.
(The ice stopped the ship.)

Causes/Effects: Owen, Nicole, Levi, Jessy, Lesley

A "cause/effect" is a paired-event that shows both a cause and a result.
(Following the GPS signal resulted in recovering the whale tags.)

Respectful Disagreement

Sounds Like

peaceful voices
lots of discussion
"I understand what you mean, but I disagree because..."
"I have a different opinion because..."

Looks Like

sitting/standing and talking calmly
two or three people in discussion together

Feels Like

being interested in what someone else thinks
someone else cares what I think and say
taking turns
talking WITH someone, not AT someone

The Story of Scientific Discoveries


Blue Whale Barrel Roll Discovery

whales feeding
krill
rolling/acrobatics
tags
computer models

underwater

Oldest Micro-organism Discovery

robot
very deep
interview/radio
yellow fluffy stuff
micro-organisms
disappointments/problems
did not find what they wanted to find

	What was the data like?	What problems did they have?	What question were they trying to answer?	What unexpected things did they bump into?
Blue Whale Barrel Roll				
Micro-Organisms in the Arctic Ocean				
				


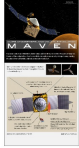


Gather New Information



TSW take one-page of notes about the MAVEN exploration from multiple sources of information.

You have 55 minutes.





Together:


- Watch LeVar Burton video together.  <http://www.space.com/23599-levar-burton-on-maven-star-tek-star-explains-new-mars-mission-video.html>
- Read an infographic together. 

Independently:


- Read articles to get more information. 
- There are low-challenge, medium-challenge, high-challenge, and ultra-high challenge articles.*
- **Floor Group:** Meet me on the floor if you're a new student. If your feedback score from last time tells you that you need support or if you feel like you need support, please join us on the floor. 

Self-Check: How am I Growing as a Researcher?


 Novice	 Apprentice	 Proficient	 Distinguished
A novice researcher requires assistance to gather and organize less than one page of information from multiple sources. He/She uses some teacher-created topics & sub-topics. This researcher attempts to use his/her own words.	An apprentice researcher works with increasing independence. They can gather and organize one to two pages of information from multiple sources. They use medium level challenge resources. They use topics & sub-topics accurately and take notes using mostly his/her own words.	A proficient researcher can independently gather and organize multiple pages of information from multiple high-challenge sources. They create and use topics & sub-topics to organize their work and accurately take notes using their own words.	A distinguished researcher can independently gather and organize multiple pages of information from multiple highest-challenge sources. They create and creatively use topics & sub-topics to organize their work. They accurately take notes using their own words, and thoughtful note taking structures.



I remember what it felt like to be here.

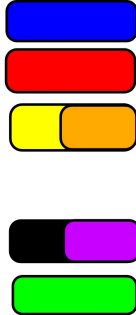
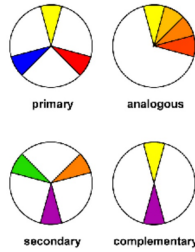


I feel "at home" here. This is where I can do good work comfortably.



Im taking aim at the next step
I feel like Im creeping up on the level

Partnering Practice!

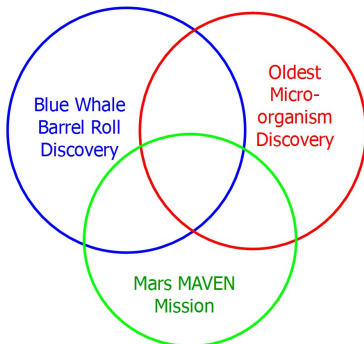


Specials Time!
10:40 - 11:10

Lunch Time!
11:15 - 11:40

Please get a clipboard, pencil, and an index card ready for after lunch!

Time to add another circle to our Venn Diagram!



Use the index card at your table to identify a **fact**, **event**, or **cause/effect** about the MAVEN Mission. Place it somewhere in the MAVEN circle.

Top Line: Fact, Event, or Cause/Effect

Bottom Line: Where will it go?
"Maven only"
"Maven + Blue Whale"
"Maven + Arctic"

On Back: name and date

Once you place yours in the circle, read other people's cards too.

Read someone's card and go discuss it with them. Do you agree? Disagree? Why?

Processing New Information

Now that you've learned about some pretty interesting and new things, it's time to put your newly learned information to work!

Task One: Use facts about the MAVEN to write INFORMATION-RICH sentences and to draw an INFORMATION-RICH drawing.

Task Two: Use what you now know about scientific discoveries to HYPOTHESIZE about the MAVEN Mission.

Task Three: Now that you know what the MAVEN is for and how it will do its job, you have enough information to WRITE A CRITIQUE about the mission.

Do you have a goal in Research or Problem Solving?

Task One: Use Your MAVEN Facts

Use the paper strip provided to write three sentences and draw one image showing what you know about the Mars MAVEN.

We have 15 minutes.

1	2	3	4
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- Box One: **WHAT** Write a descriptive sentence that includes **what, when, and where** info.
 Box Two: **HOW** Write an explanation sharing **HOW** the MAVEN exploration will happen.
 Box Three: **WHY** Write an answer to the question, "Why is the United States sending the MAVEN to Mars?" Be sure to use information in your answer.
 Box Four: **DRAW** Draw an **image** to represent something you learned about the MAVEN.



Task Two: Form a Hypothesis

Use the paper strip provided to write one list and three sentences showing what you believe will be true about the Mars MAVEN Mission.

You have 2 minutes to discuss (no pencils) each one and then 3 minutes to write it!

1	2	3	4
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- Box 1: **Data** What might the data from MAVEN be like?
 Box 2: **Problems** What problems might the MAVEN have?
 Box 3: **Questions** What is the driving question of MAVEN?
 Box 4: **Unexpected Findings** - What might MAVEN discover that was unexpected?



Task Three: Write A Critique

Once you've gathered good information and processed it thoroughly, you're then ready to create a thoughtful judgment about the topic.

Use the 1/4 page provided to write a 1-2 sentence critique of the Mars MAVEN mission. Your critique should be thorough and information-rich.

You have 8 minutes.

Hold onto your critique. You'll be debating your opinion with a partner in just a moment.



Self-Check: How am I Growing as a Problem Solver?!

<p>Novice</p> <p>When faced with a lack of information, a novice problem solver can generate a hypothesis, but it is usually a hypothesis which was discussed in class.</p> <p>A novice level hypothesis contains little or no information about a scientific exploration.</p>	<p>Apprentice</p> <p>An apprentice problem solver can generate a hypothesis, but it may be a hypothesis which may be expected or common.</p> <p>An apprentice level hypothesis contains little information about a scientific exploration.</p>	<p>Proficient</p> <p>A proficient problem solver can generate a focused hypothesis when faced with missing information.</p> <p>A proficient level hypothesis is information-rich.</p>	<p>Distinguished</p> <p>A distinguished problem solver can generate a unique hypothesis when faced with missing information.</p> <p>A distinguished level hypothesis is clearly based on multiple pieces or sources of information.</p>
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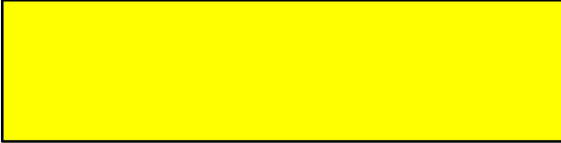
I feel "at home" here. This is where I can do good work comfortably.

I'm taking aim at the next step! I feel like I'm creeping up on the level.

Wrapping it Up!

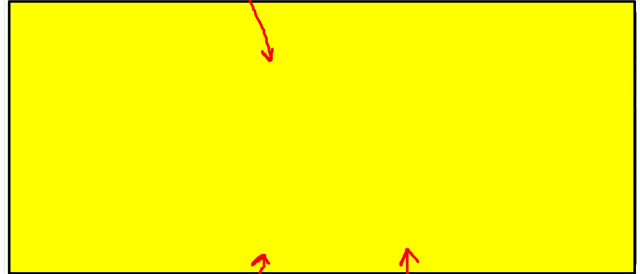
It's time to put it all together!

You'll be making this:



1. Write MAVEN across the top and your name and the date on the bottom. Look at the photo for directions.
2. Use the tape Miss Kelly gives you to tape your paper strips onto the craft sticks!
3. Fold up your critique (3 folds) and put it in the cup on your MAVEN model! Get a lid from the stool up front!

Write M.A.V.E.N across the top.



Write your name here.

Write the date here.

Self-Reflection Time



We've been using recent (and future) scientific discoveries to build our **research skills**, practice a little **problem solving**, and to **decide** whether or not we think the process of scientific discovery has a structure.

We heard the stories of **two recent discoveries** (Blue Whale Barrel Roll and Micro-Organisms in the Arctic) and we **studied the process** of those discoveries. We analyzed their **data, problems, questions**, and more.

We researched the **Mars MAVEN** and turned our **micro-research** into a **micro-product** with **fact sentences, drawings, and hypotheses** about what the MAVEN's discovery story might be like.

In your reflection today, look back at the past two classes. **What was it like for you? What did you learn? What was your thinking like? What might you have done better? What plans do you have based on what you learned?**

Bonus: What do you think? Does scientific discovery have a structure? Use details from the past two classes to explain your thinking and reasoning.

Reflection Time: Fourth Grade

Reflection Task	Who				The Product	
Blog It Go to the computer with the pink chair and log in as you.	*	1			Save to Student Resources	
Shoot It Pick up the iTouch and go to the Photo Booth. Use the camera to record your video.		2			Video saved on camera.	
Type It Go to the two computers that are facing the windows and start a new Word document.	3	4			Saved to Student Resources AND print and place in journal.	
Talk It Meet Miss Kelly on the floor or at her table. Start jotting down a blooped list of things you might say.	5	6	7	8	Thoughts or notes in your journal.	
Write It Get your journal and write find a comfortable place where you can concentrate.	9	10	11	12	13	Your journal entry.
	14	15	16	17	18	

When writing reflectively, be sure to include...

The Basics: *facts* *feelings*
 details *descriptions*

The Challenges: *judgments*
 lessons learned
 plans for the future
 other perspectives
 drawing conclusions
 cause/effect relationships

What's your goal?

1	2	3	4
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MY CRITIQUE OF THE MAVEN MISSION

Write a 1-2 sentence critique of the Mars MAVEN mission. Your critique should be thorough and information-rich.

I think the MAVEN mission is...

Name: _____ Date: _____

Thing you might include:

Should the US be sending a satellite to Mars?

What is your judgment of the work that has gone into this mission?

What kind of job do you think the NASA workers are doing?

