Complete the following assignments for week 1.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Earth Science</td>
<td>1. Bay of Fundy Informational Text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Read and annotate the text and answer the questions and mini project</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Lunar Cycle Review Lesson</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete all 8 pages of the lesson</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Student Response Journal Entries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete the journal response entries after watching the videos or reading the quotes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Weather Map Inquiry Lab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complete the inquiry lab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Dinosaur Sue Informational Text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Read and annotate the text and answer the questions and mini project</td>
</tr>
</tbody>
</table>
Use the following directions to annotate each of the texts in this journal.

- Draw an arrow pointing at any words, phrases, or paragraphs that help the reader identify something new about the topic presented.

- Draw a triangle next to or around any words you do not know. Then, look up the definition of the word. Write it in the margin or in your notes for future reference.

- Draw a star next to any significant quotes. In the margin or in your notes, write WHY you believe the quote is significant to the passage.

- Draw a rectangle around the part of the passage that BEST represents the author’s main idea. In the margin or in your notes, explain why.

- Draw a circle around any use of figurative language. In the margin or in your notes, explain how the figurative language impacts the passage.

- Place a sticky note next to any part of the passage that you do not understand. Write a specific question on the sticky note for class discussion.

- Highlight ONE quote that stands out most to you. In the margin or in your notes, explain why this quote made such an impact on you.

- Underline any EXAMPLES the author provides about the topic.

- Cross out any information that is irrelevant to the topic, if any.
Nova Scotia is an eastern province of Canada. It is considered one of the Maritime provinces because of its position on the Atlantic Ocean. If you are the adventuring sort, the Bay of Fundy found on Nova Scotia is an encounter worth pursuing.

An international panel chose the Bay of Fundy as one of the natural wonders of the world. Here are the reasons why it made this exclusive list. First, they have the highest tides found anywhere on Earth. Secondly, their waters are home to some of the rarest whales, and thirdly, there are deposits of semi-precious minerals and dinosaur fossils throughout the area.

The fluctuation of the tides in this area is one of the unique phenomena on Earth. Recall that tides are the result of the gravitational pull of the Moon and Sun on Earth, plus the Earth’s rotation. The Moon, however, has the greatest influence on tides. As the water pulls in the direction of the Moon, it creates a bulge. This action transpires during a high tide. There are two high and two low tides a day over the Earth’s surface.

What makes the Bay of Fundy’s tide enormously high? Most tides change the water level about three feet (one meter), but the Bay’s differential is as high as 48 feet (16 meters). Because there is a substantial amount of water flowing into the Bay during a high tide and because of the Bay’s unique shape and size, the tides become higher than other areas. Other factors affecting the high tides are the enormous size, the unique funnel shape, and the immense depth of the Bay.

Besides exploring the sea floor, the Bay of Fundy is unique because of its whale species living in the area. Whales here are baleen whales and not toothed whales. They just open their mouths and let the water and nutrients filter through. There is plenty of food for the humpback, minke, and finback whales.

If you’re a budding paleontologist, there are multiple opportunities to visit dinosaur fossil sites as well as areas where semi-precious gems form. There seem to be numerous reasons to visit the Bay of Fundy. Whether you’re watching the tides, whale watching, or exploring fossils from the past, there is plenty to keep you busy and active on your visit to Nova Scotia.
COMPREHENSION QUESTIONS:
1. Where is the Bay of Fundy? Highlight your answer in the text.
______________________________________________________________________________
______________________________________________________________________________
2. Why is this bay considered one of the natural wonders of the world?
______________________________________________________________________________
______________________________________________________________________________
3. What makes the Bay of Fundy waves so high? Underline your answer in the text.
______________________________________________________________________________
______________________________________________________________________________
4. What type of whale is found in the Bay of Fundy? Circle your answer in the text.
______________________________________________________________________________
5. What are the main tourist attractions for the Bay of Fundy?
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
6. How does a baleen whale eat?
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Mini-PROJECT: TRAVEL AGENT

Imagine you work as a travel agent in Canada and a school reaches out for advice on where to go, what to do, and what to research while visiting the Bay of Fundy. Create a pamphlet of ideas for the school administration that focuses on the following items:
- Route to Bay of Fundy
- Plan of action to get there
- Places to visit
- Places to eat, shop, and explore
- Items to collect
- Items to research
Directions: Read the article below. When you’re done, answer the questions below on your answer page.

The Lunar Cycle

The Moon is always spinning on its axis, and it does this at the same rate that it orbits Earth in a counter-clockwise direction. Because of this, you’re always seeing the same side of the Moon! While it is orbiting Earth, the Moon reflects light from the Sun. That part of the Moon that is illuminated is what we see here on Earth. The visible parts go through a cycle called the lunar cycle. It takes about 27 days for the Moon to complete the lunar cycle (one revolution around Earth), with a new phase occurring about every four days. A new moon is the first phase of the Moon. It occurs when the Moon is between Earth and the Sun, and it appears unlit from Earth.

Slowly the lit part of the Moon, visible to Earth, begins to increase. We refer to this as waxing. A waxing crescent is the second phase of the Moon. We refer to the third phase of the Moon as the first quarter. From Earth, this phase appears to be half-lit on the right side. The fourth phase is known as waxing gibbous. During this phase the Moon appears to be more than half lit on the right side. A full moon is the fifth moon phase and occurs when the Earth is between the Sun and Moon. From Earth the Moon appears fully lit.

Now the lit part of the Moon, visible to Earth, begins to decrease. We refer to this as waning. A waning gibbous is the sixth phase of the Moon. From Earth, the Moon appears to be more than half lit on the left. The seventh moon phase is known as the third or last quarter. From Earth it appears to be half-lit on the left. A waning crescent is the last moon phase. This occurs when the lit part of the Moon as seen from Earth is decreasing on the left.

1. The main idea of the passage is:
   a) we always see the same side of the moon
   b) the new moon is the first phase of the lunar cycle
   c) the Moon is always spinning on its axis
   d) the Moon goes through a cycle of phases as it revolves around Earth

2. Which moon phase appears half-lit on the right side?
   a) new moon
   b) first quarter
   c) third quarter
   d) waxing gibbous
**Diagram:** Using the information from the reading, label and shade in each Moon phase on your answer sheet. Use the lines below your diagram to answer the questions that follow.

**Song Lyrics:** Create song lyrics, to the tune of “Twinkle, Twinkle, Little Star,” including all eight moon phases in order.

**Extension:** If you have less than 10 minutes left, try the following:
Use your knowledge of the lunar cycle to complete the segment of the lunar calendar on your answer sheet. Shade in the Moon and write the correct phase on the line underneath.

**Extension:** If you have more than 10 minutes left, try the following:
Use your knowledge of the lunar cycle to create a lunar calendar on your answer sheet. Shade in the Moon and write the correct phase on the line underneath.

**Assessment:** Use your knowledge of moon phases to answer the following questions on your answer sheet.

1. About how many days does it take for the Moon to go through a complete cycle of phases?

2. In your own words, describe the word *waxing*.

3. In your own words, describe the word *waning*.

4. Complete the model on your answer sheet to illustrate a full Moon (the flashlight is the Sun).

5. Use the picture (right) to identify what moon phase is found at the following locations:
   - At position 1:
   - Between position 2 & 3:
   - At position 4:
   - Between position 4 & 1:

**Show What You Know:** Draw a diagram, including the Sun, Moon, and Earth, illustrating a waning gibbous phase. Be sure to label your diagram.
**Lunar Cycle Student Pages**

**Answer Sheet**

Name: ___________________________  Date: ________

© Kesler Science, LLC

---

**Reading: Lunar Cycle**

1. □ A  □ B  □ C  □ D

2. □ A  □ B  □ C  □ D

---

**Diagram:**

1. About how long does it take the Moon to revolve around Earth?

   ___________________________________________________

2. About how long does it take the Moon to travel from the new moon to full moon phase?

   ___________________________________________________

3. What direction does the Moon revolve around Earth?

   ___________________________________________________

4. What phase comes after the third quarter?

   ___________________________________________________

5. What phase comes after the first quarter?

   ___________________________________________________
Lunar Cycle Student Pages
Answer Sheet

Name: ___________________________ Date: ______

Positive Behavior Checks

☑ Independent ☐ Partners ☐ Small Group

Song Lyrics:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Initials: ______
Extension: If you have less than 10 minutes...

Lunar Calendar: August 2016

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>August 18</td>
<td>August 22</td>
<td>August 25</td>
</tr>
<tr>
<td><img src="image" alt="Full Moon" /></td>
<td></td>
<td><img src="image" alt="Third Quarter" /></td>
</tr>
</tbody>
</table>

Extension: If you have more than 10 minutes...

Lunar Calendar: July 2017

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>July 4</td>
<td>July 8</td>
<td>July 12</td>
<td>July 15</td>
</tr>
<tr>
<td><img src="image" alt="First Quarter" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 18</td>
<td>July 22</td>
<td>July 26</td>
<td>July 30</td>
<td>August 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Initials: _______
Lunar Cycle Student Pages
Answer Sheet

Name: ______________________ Date: ______

Assessment:

1. ______________________________________
2. ______________________________________
   ______________________________________
   ______________________________________
3. ______________________________________
   ______________________________________
   ______________________________________
4. ______________________________________

5. Position 1: _____________________________
   Between Position 2 & 3: _________________
   Position 4: _____________________________
   Between Position 4 & 1: _________________

Show What You Know:

Positive Behavior Checks

Initials: _______

Independent ☐ Partners ☐ Small Group ☐

Earth

Initials: _______

Independent ☐ Partners ☐ Small Group ☐
Directions:
About how many days does it take for the Moon to go through a complete cycle of phases? _______________________________

In your own words, describe the word waxing.
______________________________________________________________________________________________

In your own words, describe the word waning.
______________________________________________________________________________________________

Complete the model below to illustrate a full moon. The flashlight is the Sun.

What moon phase is found at the following locations?

Position 1: ______________________________
Between Position 2 & 3: ______________
Position 4: ______________________________
Between Position 4 & 1: ______________
Directions: Draw a diagram, including the Sun, Moon, and Earth, illustrating their positions in a waning gibbous phase. Be sure to label your diagram.
Weather Maps Student Lab Sheet

**Essential Question:**
What global and regional factors influence local weather?

**Background:**
What should I wear today? Maybe looking at the weather forecast will have something to do with your decision.

Weather is defined as the condition of the atmosphere at any given time and place. Factors that determine the weather are: temperature, pressure, humidity, clouds, precipitation, and wind.

Hot and cold air masses are constantly moving from **high pressure areas** to **low pressure areas**. The boundary between two air masses is called a **front**. The colder air mass will always move underneath the warmer one and cause a weather change. Meteorologist use **weather maps** to give a visual picture of what is happening with the weather. **Symbols** are used to indicate pressure, fronts, and other information.

These bullet points describe the type of weather found during areas of high and low pressure and at fronts.

- **High Pressure**: Clear skies
- **Low Pressure**: Cloudy Skies
- **Cold Front**: Thunderstorms
- **Warm Front**: Gentle Rain
- **Stationary Front**: fog or several day of light rain
- **Occluded Front**: Strong winds and heavy precipitation

**Materials per Group:**
- Colored pencils
- 2 colors of highlighter
- Internet access

**Procedure:**
1. Visit the following link: [https://earth.nullschool.net/](https://earth.nullschool.net/) This is a live animation of the global wind patterns.
2. Drag the map to find the U.S. state of Florida: 27.88° N, 81.78° W.
3. Follow the wind currents that have the largest impact on Florida weather. Where does the wind originate?

4. Click on the “earth” in the lower left corner, then change the Overlay to Temp (for temperature). Click on “earth” again to close the menu.

5. Describe each land mass and the temperatures that the wind that reaches Florida would pass as it travels:

6. Follow the wind currents as part of them turn and re-cross the Atlantic.

7. Notice the temperatures of the waters around Great Britain, 53.50° N, 4.87° W. Are they warmer or cooler than water temperatures the same distance from the equator (the same latitude) on the Canadian side of the Atlantic?

8. What is affecting the water temperature around Great Britain?

9. How might the water temperature affect the local weather of Great Britain?
9. Read each weather forecast in the table below.
10. With one color of highlighter, highlight the pressure factors contributing to the resulting weather.
11. Add high and low pressure symbols to the map on the next page to match the weather description.
12. With a different color highlighter, highlight information about warm and cold fronts.
13. Use the front symbols from the page after the map to identify where air masses are moving between areas of high and low pressure.

<table>
<thead>
<tr>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. A high pressure system is developing over the Pacific and is headed to the Northern West coast. Residents will experience sunny, clear skies for the next few days.</strong></td>
</tr>
<tr>
<td><strong>2. Warm and humid air spilling northward from the Gulf of Mexico will combine with a warm front to trigger widely scattered afternoon showers and thunderstorms across the Southeast today.</strong></td>
</tr>
<tr>
<td><strong>3. Wyoming has been experiencing several days of cloudy skies due to a low pressure system and is about to get thunderstorms as a cold air mass from Canada is moving in. Canada is looking at clear skies from a high pressure system.</strong></td>
</tr>
<tr>
<td><strong>4. A slow moving warm air mass traveling from New Mexico will meet a cold air mass over Kansas giving the area several days of fog and light rain.</strong></td>
</tr>
<tr>
<td><strong>5. High pressure above northeast Canada will send a cold front over the entire East Coast resulting in rain and cooler conditions along the region and afternoon snow in western New England.</strong></td>
</tr>
<tr>
<td><strong>6. Low pressure will keep the Plains and the Midwest mostly cloudy and warmer as winds become southerly due to a northern moving warm air mass.</strong></td>
</tr>
<tr>
<td><strong>7. The cloudy skies over Texas will be joined by light rain as a warm air mass from the East coast is headed that way. A high pressure system over Louisiana and Arkansas will give them clear skies.</strong></td>
</tr>
</tbody>
</table>
Check for Understanding

1. On your map, are high pressure systems following behind or moving ahead of fronts?

2. Describe the weather experienced when one air mass meets another.
14. Look at these three images that show a pattern of weather that developed over three days.

15. What is probably causing the area of thunderstorms and flash flooding in the middle of the country on Day 2?

16. What is the most likely reason there is no precipitation in the Texas area on Day 2 and Day 3?
Weather Maps Student Lab Sheet

**Conclusion:** What global and regional factors influence local weather?

**Claim:**

**Evidence:**

**Reasoning:**

**Reflections:**
1. Look at the maps on the previous page. Choose an area of the map, and write a story about the weather that happened over those three days as though you were someone living in that area. Write it here, or attach a separate piece of paper.
Student Response Journal Entries
What are the benefits of a topographic map? Who would use one? Do you think you might use one in your life?

https://www.youtube.com/watch?v=CoVcRxza8nI
Click on the image to see the video.

This video shows the powerful effects of erosion. Based on what you know about erosion, what would you do if you lived in this complex?

https://www.youtube.com/watch?v=t80GUIJDW_o
Would you prefer to live near the poles or near the equator? Explain.

https://www.youtube.com/watch?v=KUU7IyfR34o
"The only people who should have their head examined are those who never ask questions."

Neil deGrasse Tyson
Astrophysicist, author, science communicator, and Director of Hayden Planetarium in NYC

Explain what this quote means in your own words.

How does this quote apply to your life or the world today?
“We look at science as something very elite, which only a few people can learn. That’s just not true.”

Dr. Mae Jemison
American physician, NASA astronaut, and the first African-American woman to travel in space.

Explain what this quote means in your own words.

How does this quote apply to your life or the world today?
Draw an arrow pointing at any words, phrases, or paragraphs that help the reader identify something new about the topic presented.

Draw a triangle next to or around any words you do not know. Then, look up the definition of the word. Write it in the margin or in your notes for future reference.

Draw a star next to any significant quotes. In the margin or in your notes, write WHY you believe the quote is significant to the passage.

Draw a rectangle around the part of the passage that BEST represents the author's main idea. In the margin or in your notes, explain why.

Draw a circle around any use of figurative language. In the margin or in your notes, explain how the figurative language impacts the passage.

Place a sticky note next to any part of the passage that you do not understand. Write a specific question on the sticky note for class discussion.

Highlight ONE quote that stands out most to you. In the margin or in your notes, explain why this quote made such an impact on you.

Underline any EXAMPLES the author provides about the topic.

Cross out any information that is irrelevant to the topic, if any.

© The SuperHERO Teacher, 2018
The Black Hills Institute (BHI), located in Hill City, South Dakota, is a geological research facility famous for their fossil finds. In the summer of 1990, Sue Hendrickson, a paleontologist from the BHI decided to keep exploring nearby cliffs while her peers took the truck to town to fix a flat tire. She discovered the first bones of what turned out to be the largest and most complete T-Rex dinosaur ever found, 90% complete.

Scientists believed the remains were quickly covered by water and mud soon after death allowing for the fossilization process to occur. After the bones were plastered and moved to the BHI, they began the cleaning process. Meanwhile, Sue Hendrickson’s reward was having the fossil named after her; Dinosaur Sue.

Because of the value of the T-Rex, a dispute arose over who owned her. The BHI paid the landowner, Maurice Williams, $5,000 to excavate and remove the bones. Williams claimed that the money paid did not entitle the BHI to own the fossil but only to remove it. Williams was a member of the Sioux tribe, who also claimed the bones belonged to them.

In 1992, the FBI raided the BHI and took the bones to the South Dakota School of Mines and Technology where they stored it until the legal dispute settled. As you can imagine, the people of Hill City were devastated by this news.

The three-year legal battle decreed that Maurice Williams retained ownership, and the remains were returned to him in 1995. Williams then decided to sell Sue and contracted with Sotheby’s to auction her off. People were worried that the fossil might end up in the hands of a private collector and not put on view for the world.

The Field Museum in Chicago was very interested in purchasing Sue, but they did not have the money to invest. After searching for investors who could help them, including Walt Disney Parks, McDonald’s, and many individual donors, they were able to take part in the auction. The auction began its bidding at $500,000, and in less than 10 minutes, Sue was purchased by The Field Museum for $7.6 million dollars. Williams received that amount.

If you want to see Dinosaur Sue today, she is proudly displayed in the main lobby of The Field Museum in Chicago.
COMPREHENSION QUESTIONS:
1. What is the Black Hills Institute (BHI)?
______________________________________________________________________________
______________________________________________________________________________

2. What did Sue Hendrickson Discover? Highlight your answer in the text.
______________________________________________________________________________
______________________________________________________________________________

3. How was Sue Hendrickson rewarded for her discovery?
______________________________________________________________________________

4. What was the legal dispute about over Dinosaur Sue? Underline your answer in the text.
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

5. How long did the legal battle last?
______________________________________________________________________________

6. Who owns Dinosaur Sue now and how did they acquire her?
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Mini-PROJECT: CAREER ESSAY
Research the Black Hills Institute (BHI). Then, write a three-paragraph career research essay that answers the following questions:
- What are some of the fossils that they have found?
- If you were applying for a job at the BHI what would you apply for?
- What education and qualifications would you need to have for that job?