Listen to two stories about the kiuguyat. Circle the elders whose stories you listened to:

1. Draw a picture of the story you liked best:

2. I liked ________________’s story best because ____________________________________________
____________________________________________________________________________________.

Choose a lesson from one of the stories and complete the sentences below:

3. ________________’s story encourages children to ________________________________
____________________________________________________________________________________.
This is important because ____________________________________________________________
____________________________________________________________________________________.

4. What is an Iñupiaq word for northern lights? ________________________________
Listen to two stories about the kiuŋiyaq. Circle the elders whose stories you listened to:

Fannie Akpik
Barrow

Annie Conger
Brevig Mission

Elmer Goodwin
Kotzebue

Edith Nageak
Barter Island

Grace Pullock
Shishmaref

1. Draw a picture of the story you liked best:

2. I liked ____________’s story best because ____________________________________________
   ________________________________________________________________________________.

Choose a lesson from one of the stories and complete the sentences below:

3. ________________’s story encourages children to __________________________________________
   ________________________________________________________________________________.
   This is important because __________________________________________________________
   ________________________________________________________________________________.

4. What is an Iñupiaq word for northern lights? ________________________________________
Complete the storytelling guide below for one of the stories you learned. Practice retelling the story to remind children to be safe and healthy. Remember to introduce yourself and explain who told you the story.

What is your name? ________________________________

Where are you from? ______________________________

Who told you this story? __________________________

What is the rule?
Example: Children should stay inside after 9 p.m.

________________________________________________________________________

________________________________________________________________________

What will happen?
Example: The northern lights will take off your head!

________________________________________________________________________

________________________________________________________________________

How can someone escape or get home safe?
Example: Throw a ball of dog dung at it and run.

________________________________________________________________________

________________________________________________________________________
VOCABULARY SWAP:
1. Distribute one card to each person.
2. Practice the word on your card, then find a classmate. Teach them the word on your card and learn the word on their card. Trade cards.
3. Find another classmate and repeat.

FIND THE CARD:
1. Divide into small groups. Each group will need a set of vocabulary cards. Spread the cards in front of you so that everyone in your group can see the pictures.
2. Listen as your teacher says a word aloud from one of the cards.
3. Work with your group to find and hold up the correct card.

VOCABULARY SLAP
1. Select one student to serve as the “caller” for this game. That student should make a list of the Iñupiaq vocabulary words on a separate sheet of paper. The words can be found on the back of the cards.
2. Place the cards in a circle, picture-side-up, in the middle of the playing area.
3. The caller should call out a word from their list. Everyone else should quickly place their hand on the picture that they believe represents that word.
4. Turn over the card or cards that students selected to see who chose correctly. Each student who placed his or her hand on the correct card earns a point.
5. Put the card(s) back in the circle and play again.
6. Play for a designated period of time. At the end of the time, the person with the most points wins.

TEAMWORK
1. Divide your group into two teams. Each team will need a pencil and paper.
2. Shuffle the vocabulary cards and place them picture-side up in the middle of the table.
3. Work with your team to write down the Iñupiaq and English words for the picture on the card.
4. After both teams have written answers, turn the card over to check. Teams get 1 point for the correct Iñupiaq word and 1 point for the correct English word.
5. Repeat until all cards are gone. The team with the most points wins.

ACT IT OUT
1. Shuffle the vocabulary cards and deal them out to each player. Keep your cards a secret!
2. Take turns acting out your cards using motions and sound effects, but no words.
3. Whoever guesses the Iñupiaq word first takes the card as a point.
4. The game is over after all cards have been acted out.
5. Optional: Add a timer to the mix! See if you can get your classmates to guess the word in 30 or 60 seconds.
Draw a line to connect each Iñupiaq word to the correct image:

- **Northern Lights**
  - **siqiñiq**
  - **siqilhatinniq**
  - **nipitchaŋa nunaqpaum**
  - **siaminniŋa siqiñŋum**

- **Earth**
  - **kiiŋuyat**

- **Sun**
  - **Nunaqpak**

- **Earth’s Magnetic Field**
  - **particles**

- **Solar Wind**
Activity 2: Iñupiaq Northern Lights Vocabulary

Draw a line to connect each Iñupiaq word to the correct image:

- **northern lights**
- **solar wind**
- **mazaq**
- **massam anuḫiŋa**
- **Nunaqpak**
- **kiuŋiyaq**
- **ağivlat**
- **sun**
- **particles**
- **Earth**
Read about and watch the Welcome the Sun dance. Practice the dance moves.

Sketch a motion from the dance:

What is the meaning of this motion, or what does it symbolize?

When I dance, I feel ____________________________________________________________.

The Welcome the Sun dance celebrates ____________________________________________

Why do areas in the far north receive less sunlight during winter and more during summer?

What is the Iñupiaq word for sun? _____________________________________________
Magnetic Fields

Materials:
- Magnetic field viewer
- Magnets

Procedure:
1. Place the magnetic field viewer on a flat surface.
2. Place a magnet on top of the viewer. Do not move the magnet.
3. Watch the iron in the viewer align with the magnetic field.

**Sketch** your observations in the boxes below.

<table>
<thead>
<tr>
<th>Shape of magnet</th>
<th>Shape of magnet</th>
<th>Shape of magnet</th>
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<tbody>
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</table>

Which magnet’s field most closely resembles Earth’s magnetic field?

<p>| |</p>
<table>
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</table>
Visit an elder in your community. Explain you are learning about the northern lights in school. Ask in Iñupiaq: Quliaqtuaqtugutiyumiñaqpiña kiuguyatigun? (Can you tell me about the northern lights?) Take notes about what you learn.

Elder’s name: ____________________________ From: ____________________________

Question to ask an elder:
Quliaqtuaqtugutiyumiñaqpiña kiuguyatigun? (Can you tell me about the northern lights?)

Notes:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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Share something interesting that you learned about the northern lights from your elder. It might be a story about a time they remember seeing the northern lights, or a song or dance they shared. It might be an observation of the northern lights when they are visible from your community, or the colors that most frequently appear. What was interesting to you?

I was interested to learn that __________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________

Visit an elder in your community. Explain you are learning about the northern lights in school. Ask in Iñupiaq: Šumik kulaiqluipina kiŋiuqzraqmik? (Can you tell me about the northern lights?) Take notes about what you learn.

Elder’s name: ___________________________ From: ___________________________

Question to ask an elder:
Sumik kulaiqluipina kiŋiuqzraqmik? (Can you tell me about the northern lights?)

Notes:
________________________________________________________________________
________________________________________________________________________
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Share something interesting that you learned about the northern lights from your elder. It might be a story about a time they remember seeing the northern lights, or a song or dance they shared. It might be an observation of the northern lights when they are visible from your community, or the colors that most frequently appear. What was interesting to you?

I was interested to learn that
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Create a drawing that explains how the northern lights are formed. Label it in Inupiaq and English.

- Nunaqpak / Earth
- siqiñiq / sun
- siqihatinniq / solar wind
- siaminniña siqiŋgum / particles
- nipitchaŋa nunaqpauum / magnetic field
- kiuguyat / northern lights

Name: __________________________
Create a drawing that explains how the northern lights are formed. Label it in Iñupiaq and English.

- Nunaqpak / Earth
- mazaq / sun
- massam anuqiña / solar wind
- ağivlat / particles
- magnetic field
- kiujiyaq / northern lights
1. How are the northern lights similar to a neon sign?

2. Using colored pencils, fill in the northern lights below with the correct color for glowing gas particles in each region.
Northern Lights in a Tube (1 of 3)

Name: ____________________________

Materials:
- Tubes filled with different gases (neon, nitrogen, carbon dioxide)
- Power supply to transfer electrical energy to the gas tubes
- Colored pencils
- Spectrum slides (optional)

Hypothesis:
Use what you have learned about the northern lights and energy transfer to make a hypothesis. What do you think will happen when different gas tubes are plugged into the power supply and charged with energy?

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Experiment:
1. Test your hypothesis by asking your teacher to plug each gas tube into the power supply and charge it with energy.

2. Carefully observe what happens in the tube. Record your observations on the following pages of this worksheet.
**Observations:**

Sketch what you see when the gas in the tube is charged with energy.
If you have a spectrum slide, make a second sketch of what you see through the slide.

---

**NEON**

What happened when the gas in the tube was charged with energy?

---

**NITROGEN**

What happened when the gas in the tube was charged with energy?
Conclusion:
What did you find out? What evidence supports this conclusion? Was your hypothesis proved or disproved?

What happened when the gas in the tube was charged with energy?

How does what you learned relate to the northern lights?
**Activity 9: Kiuŋuyat Karaoke**

Listen to the northern lights songs sung by Elder Fannie Akpik of Barrow and Elder Laura Smith of Selawik.

Write down at least one Inupiaq word or phrase used in the song. What is the English translation of each word or phrase?

<table>
<thead>
<tr>
<th>Inupiaq word:</th>
<th>English translation:</th>
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How are the songs similar? How are they different?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
**Listen** to the northern lights songs sung by Elder Fannie Akpik of Barrow and Elder Laura Smith of Selawik.

**Write** down at least one Iñupiaq word or phrase used in the song. What is the English translation of each word or phrase?

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How are the songs similar? How are they different?

________________________________________________________________________

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________________________________________________________________________
When are the Kiugiyat visible in your area? Interview two adults in your community about when they most often see the northern lights. You can speak to parents, elders, other adult family members, or community members. Record their responses below.

1. During which months are the northern lights visible in your community?
   - Person 1 name: ____________________________ (Circle all that apply)
     Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec
   - Person 2 name: ____________________________ (Circle all that apply)
     Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

2. What colors have you observed in the northern lights?
   - Person 1: ________________________________
   - Person 2: ________________________________

3. Where is a good place nearby to view the northern lights?
   - Person 1: ________________________________
   - Person 2: ________________________________
When are the kiuģiyaq visible in your area? Interview two adults in your community about when they most often see the northern lights. You can speak to parents, elders, other adult family members, or community members. Record their responses below.

1. During which months are the northern lights visible in your community?

   Person 1 name: ____________________________________________ (Circle all that apply)

   Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

   Person 2 name: ____________________________________________ (Circle all that apply)

   Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

2. What colors have you observed in the northern lights?

   Person 1: __________________________________________________

   Person 2: __________________________________________________

3. Where is a good place nearby to view the northern lights?

   Person 1: __________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   Person 2: __________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________
When are the Kiuŋuyat visible in your area? Use the data that you and your classmates collected to complete the questions below.

1. Create a bar graph to show the data your class collected about when the northern lights are visible in your area.

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<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
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Fill in name of your community.

People reporting the aurora is visible in ______________________________

Data Analysis
2. What colors of northern lights did people in your community see?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Using your class data, list three good places to view the northern lights from your community:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. How does Earth’s rotation affect when the northern lights are visible?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. How does Earth’s orbit and the tilt of its axis affect when the northern lights are visible?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
When are the Kiungiyaq visible in your area? Use the data that you and your classmates collected to complete the questions below.

1. Create a bar graph to show the data your class collected about when the northern lights are visible in your area.

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2. What colors of northern lights did people in your community see?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Using your class data, list three good places to view the northern lights from your community:

________________________________________________________________________
________________________________________________________________________
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4. How does Earth’s rotation affect when the northern lights are visible?

________________________________________________________________________
________________________________________________________________________
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5. How does Earth’s orbit and the tilt of its axis affect when the northern lights are visible?

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I learned that

I learned that

I learned that

I learned that

I learned that

I learned that