Shaping My Knowledge

Warm-up

First, to start the discussion on celestial bodies, play a game of Balderdash with the different elements of the galaxy. Then, have groups create three definitions for one of the images in Exercise 1 (two false and one accurate definition). Have groups take turns reading their definitions so the other groups can guess the correct meaning. The group that correctly guesses the most wins. Alternatively, if appropriate, have students create definitions individually and play the game in a small group.

Teaching Tip

For Exercise 4
First, have groups choose an element to research. Then, review skimming and scanning reading techniques so they can identify the information they need for the task. Finally, have them paraphrase and summarize the information in their own words. Encourage them to write notes, but not every word, so they present and don't read their information. Have students use Canva or Jamboard to create visual notes to help them paraphrase and summarize the information.

Differentiation Strategy

For Exercise 3
Go to the Differentiation Strategies Bank and adapt this exercise using Strategy 6.

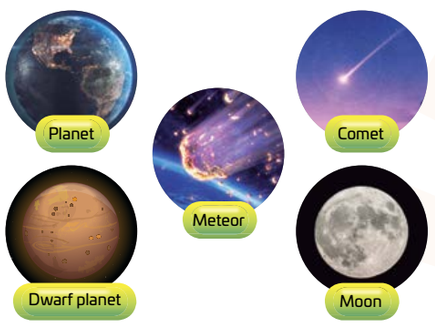
Flexi Exercises
(To adjust to students' needs, you can either use or not the activities below)

Exercise 1

Science

What are those things we see in the night sky?

01 **Look at the images below. What do they have in common?**



02 **Read "Space Oddity" and underline the best text summary.**

1. Astronomers follow strict rules when classifying celestial bodies.
2. The same rules classify all celestial bodies.
3. The classification rules never change.

03 **Read the text again and complete the sentence prompts with information from the text.**

Possible answers

1. Pluto was considered a planet until 2006.
2. Pluto is classified as a dwarf planet.
3. The IAU now knows more about the area around Pluto.
4. Classifying celestial bodies is essential to advance our knowledge of our Solar System.

Space Oddity

If Pluto's not a planet, what is it? Today, we're going to answer that question, but first we need to highlight that the classification and organization of these various bodies are based on highly refined rules.

Planets, dwarf planets, meteors, moons, asteroids, and **comets** are some of the main types of celestial bodies in our Solar System.

As in other branches of science, classification is essential to our field of study. Not only does it help with research, but it also helps transmit ideas —in places like planetariums and other academic sites—and advances our understanding of space.

So, what makes Pluto NOT a planet? In 2006, using new information discovered by scientific satellites, the International Astronomical Union (IAU), the governing body of all astronomy, rigorously applied three criteria to reclassify Pluto.

To be a planet, a celestial body must:
1. orbit the Sun.
2. be spherical.
3. have a gravitational pull that can move all other bodies from its orbital path, meaning it's the biggest in the area.

While Pluto meets the first two criteria, it fails on the third; therefore, Pluto is a dwarf planet. After learning more about Pluto's neighborhood, we discovered it was not alone! Little did the IAU know how publicly debated and controversial this reclassification would be; in fact, debates on social media continue to this day. Celestial bodies must be categorized based on highly specialized criteria, and these criteria are constantly evolving as we learn more.

Let's close by reiterating that categorizing and classifying celestial bodies is essential to advancing our knowledge of our Solar System. And as in other scientific realms, the more we advance our knowledge, the better we understand the world around us.

04 **Choose one of the other celestial bodies from the text and find out how they are classified. Present your findings to the class.**

Shaping My Knowledge

Language Structures and Functions Tip

For Exercise 5
First, have students work with a classmate to find the inversions before unscrambling the sentences: *rarely, little, so …, no sooner.* Then, have them explain the type of inversion each is – both use and form. Next, have them unscramble the sentences. If time allows, ask pairs to get together in four groups to review their ideas and explain any required changes. Afterward, have groups create sentences with similar meanings with alternative inversions. Finally, if time allows and you deem necessary, review the grammar point in more detail.

Teaching Tip

For Exercise 8
First, have individual students in the groups take on roles such as government official, Nobel Prize-winning astronomer, or university professor. Then, give groups time to research recent discoveries and predicted technological changes. Then, have them conduct their discussions in character, using their research to present an argument.

Differentiation Strategy

For Exercise 7
Go to the Differentiation Strategies Bank and adapt this exercise using Strategy 7.

Wrap-up

Close the session with a whole-class debate on the fate of Pluto. First, use a debate statement: *Pluto's status as a planet should be reinstated*. Then, divide the class into for and against groups. Give them time to generate their arguments. Next, have the debate, providing each group time to present their arguments and give rebuttals to their opponents. End by choosing or eliciting from the groups the winning argument.

Flexi Exercises
(To adjust to students' needs, you can either use or not the activities below)

Exercise 6

05 Unscramble the words to form sentences.

1. debate / as Pluto's / rarely has a / status / as much / public / change in / planetary / scientific decision / sparked

   Rarely has a scientific decision sparked as much public debate as Pluto's change in planetary status.

2. could be removed / little did the / list so suddenly / a beloved planet / from the official / public expect that

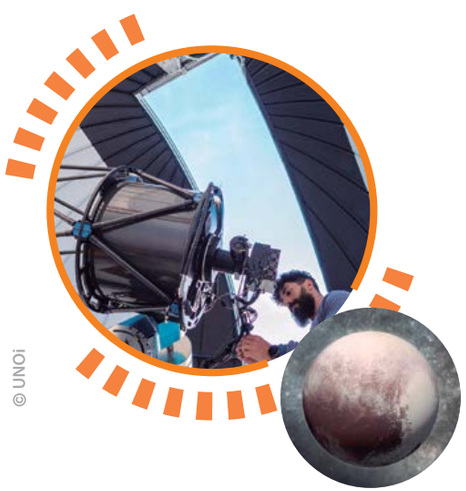
   Little did the public expect that a beloved planet could be removed from the official list so suddenly.

3. understand the structure / the reclassification of / System / so significant was / reshaped how we / of our Solar / Pluto that it

   So significant was the reclassification of Pluto that it reshaped how we understand the structure of our Solar System.

4. as a dwarf planet / than Pluto was reclassified / the IAU introduced / no sooner had / of other celestial / a planet / the new definition of

   No sooner had the IAU introduced the new definition of a planet than Pluto was reclassified as a dwarf planet.



06 Use inversions to complete the sentences.
Answers will vary.

1. Rarely / scientific classification / cause / controversy /

2. No sooner / IAU / announce / reclassification

3. Little / astronomers / realize

4. So significant / new data

07 Use the sentences in Exercises 5 and 6 to create an opinion paragraph about Pluto.
Answers will vary.

08 Imagine you are a group of astronomers. Discuss the impact of the constantly advancing understanding of space through satellites, telescopes, and human and machine-run space voyages. Then, present your conclusions to your class.