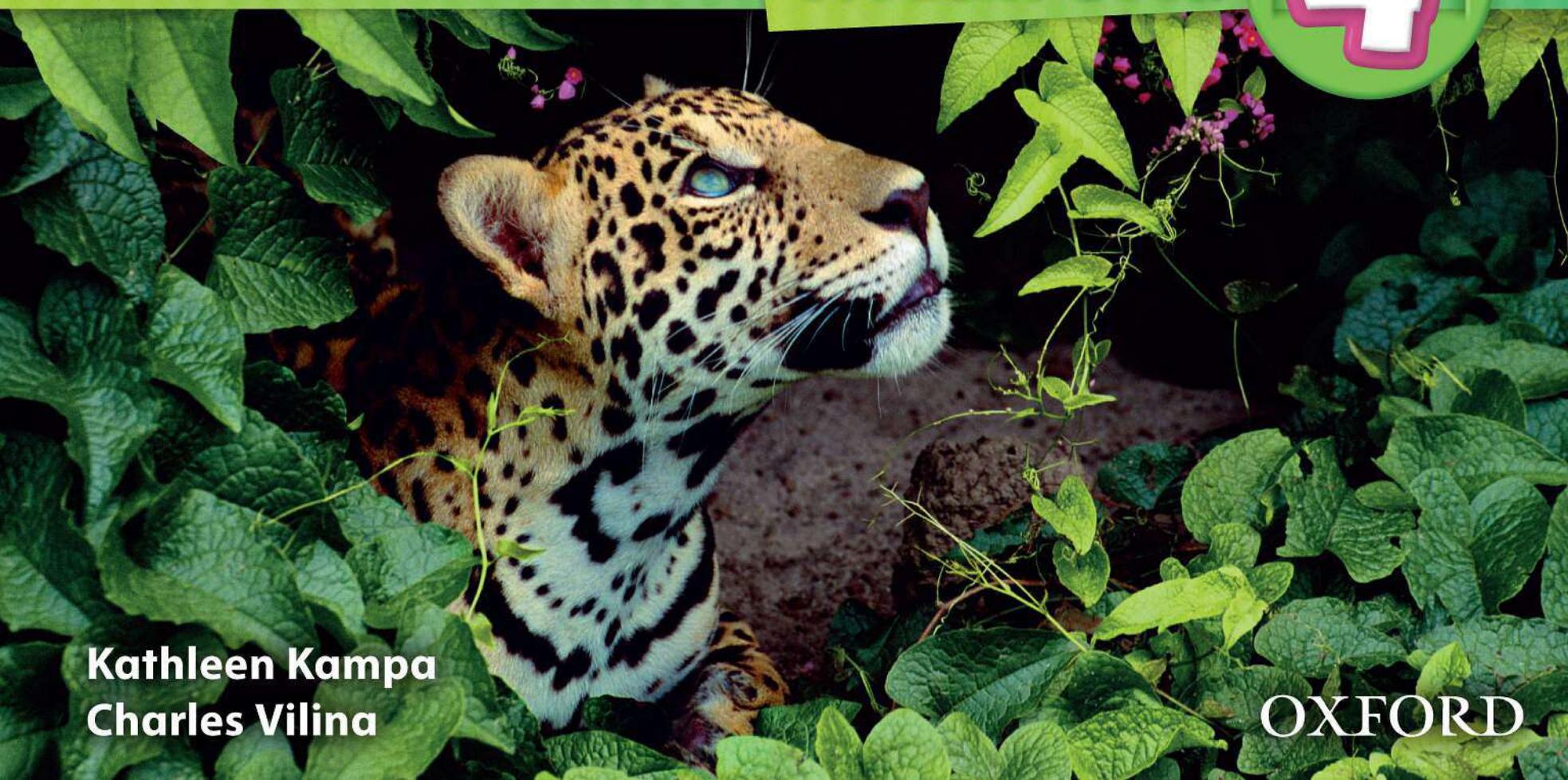


Oxford Discover

Student Book

4



Kathleen Kampa
Charles Vilina

OXFORD

Oxford Discover

Student Book

4

Kathleen Kampa

Charles Vilina



OXFORD
UNIVERSITY PRESS

Scope and Sequence

UNIT

READING

VOCABULARY

GRAMMAR

BIG QUESTION

1 Where are we in the universe?

Science: Astronomy

1
Page 6

Bella's Home

Science Fiction

Reading Strategy

Visualizing Changes

Reading Text Words moon, asteroid, comet, meteorite, solar system, stars, galaxy, universe, spacecraft, telescope, observatory

Words in Context vast, dwelled, speck, disk

Word Study Words with *ei*

Predictions with Will

Future statements

I will visit those places again, Bella thought.

2
Page 16

Traveling Together Around the Sun

Science Article (Nonfiction)

Reading Strategy

Compare and Contrast in Science

Reading Text Words astronomer, space probe, core, gravity, orbit, matter, distance, diameter, surface, craters, unique

Words in Context bodies, explore, inner, outer

Word Study Words with the suffixes -ance and -ant

Future Real Conditional

Future statements and questions

If technology continues to grow, we will travel to these places ourselves.

BIG QUESTION

2 How do we know what happened long ago?

Social Studies: History

3
Page 26

Hidden Army: Clay Soldiers of Ancient China

Magazine Article (Nonfiction)

Reading Strategy

Author's Purpose

Reading Text Words army, soldiers, uniform, emperor, armor, treasure, archaeologist, tomb, jade, clay, peasant

Words in Context battle, generals, varnish, coffin

Word Study Words with the suffix -ist

Verbs Followed by Infinitives

Simple present and simple past statements and questions

The Chinese government plans to keep it closed for now.

4
Page 36

Stumbling upon the Past

Realistic Fiction

Reading Strategy

Predictions

Reading Text Words dinosaur, skull, ravine, examine, discover, excavate, layers, paleontologist, ash, sedimentary rock, pastime

Words in Context favorite, dream, tripped, determine

Word Study Words with *ie*

Verbs Followed by Gerunds

Simple present and simple past statements and questions

Javier enjoyed playing with his friends.

BIG QUESTION

3 Where does our food come from?

Social Studies: Geography

5
Page 46

The Breakfast Quest

Humorous Fiction

Reading Strategy

Conclusions

Reading Text Words sugar cane, wheat, cinnamon, butter, vanilla, ingredients, bark, plantation, steamship, spoil, leopard

Words in Context gather, introduce, peel, coax

Word Study Phrasal verbs with *drop*

Present Continuous for Future Plans

Present continuous statements and questions

I'm making a special breakfast today.

6
Page 56

From the World to Your Table

Informational Text (Nonfiction)

Reading Strategy

Summarize

Reading Text Words convenient, export, local, process, package, farmer's market, agriculture, corporate farm, decrease, century, chemical

Words in Context grocery stores, food labels, organic food, whole food

Word Study Four-syllable words

Polite Offers

Simple present questions and answers

Would you like to know where your food comes from?

BIG QUESTION

4 Why do we make art?

Art

7
Page 66

Art Through New Eyes

Magazine Article (Nonfiction)

Reading Strategy

Text Features

Reading Text Words sketch, pastels, canvas, paintbrushes, shapes, string, three-dimensional, prodigy, street painter, carpenter, sculptor

Words in Context complex, washable, combines, fascination

Word Study Words with the prefix *dis-*

Indefinite Pronouns

Simple present and simple past statements and questions

I want to paint something in this room.

8
Page 76

Sketches in a Gallery

Realistic Fiction

Reading Strategy

Value Judgments

Reading Text Words exhibition, frame, landscape, texture, shading, perspective, contrast, space, stained, brilliant, pale

Words in Context ignore, worries, famous, speechless

Word Study Synonyms

Offers with Shall and Will

Future statements and questions

"Shall I show you some more sketches?" he asks.

Jay**Meg****Harry****Anna****LISTENING****SPEAKING****WRITING****WRAP UP****Looking at the Stars**

A conversation about stars in a galaxy

Listening Strategy

Listening for reasons

The Speed of Light

A science report about how fast light travels

Listening Strategy

Listening for main idea and numbers

Talking About Differences*The first picture has a quarter moon.***Asking About Quantity***How much water is on Jupiter?***Writing Complete Sentences***The Earth revolves around the sun.***Writing Practice** Write about an object in the universe (Workbook)**Choice Questions***Is Ganymede a planet or a moon?***Writing Practice** Write about exploring the universe (WB)**• Writing**

Write a compare and contrast report (WB)

• Project

Create a model

• ReviewUnits 1 and 2 (WB)
Big Question 1 Review**An Ancient Town**

Children discuss a very old town

Listening Strategy

Listening for similarities and differences

A Nigerian Myth

A myth about the sun and the moon

Listening Strategy

Listening for gist and sequence

Giving Reasons*I'd like to go back to an ancient Maya city.**I want to see how Maya people made pyramids.***Verb Tenses***The first emperor died when he was 49 years old.***Writing Practice** Write about something that happened long ago (WB)**Count and Noncount Nouns***A lot of volcanic ash was above the bone.***Writing Practice** Write about something old that people might look for in the ground (WB)**• Writing**

Write a descriptive report (WB)

• Project

Create a time capsule

• ReviewUnits 3 and 4 (WB)
Big Question 2 Review**Where My Food Comes From**

A girl explains the types of food she eats

Listening Strategy

Listening for examples and numbers

Types of Farms

Reporters discuss types of farms

Listening Strategy

Listening for reasons

Giving a Reason for a Preference*I like oranges, but I prefer bananas because they are easier to peel.***Interesting Adjectives***My chickens lay wonderful eggs.***Writing Practice** Write about a delicious meal (WB)**• Writing**

Write a research report (WB)

• Project

Create a story

• ReviewUnits 5 and 6 (WB)
Big Question 3 Review**Art Around the World**

Children discuss art they like to make

Listening Strategy

Listening for reasons

Talking About a Picture*What are the children doing?
They're painting.***Compound Predicate***Picasso painted many masterpieces and created many sculptures.***Writing Practice** Write about a work of art (WB)**• Writing**

Write an opinion essay (WB)

• Project

Act in a play

• ReviewUnits 7 and 8 (WB)
Big Question 4 Review**An Important Painting**

A tour guide discusses a famous painting

Listening Strategy

Listening for differences and details

Expressing a Desire or Wish*I wish I could paint like Claude Monet.***The Articles A/An and The***Theo went to see an exhibition.
Theo went to see the exhibition of Zayan Khan's landscapes.***Writing Practice** Write about an artist (WB)

UNIT

READING

VOCABULARY

GRAMMAR

BIG QUESTION

5 What is a city? Social Studies: Society

9

Page 86

Jakarta: A Big-City Snapshot

Travel Article (Nonfiction)

Reading Strategy

Paraphrasing

Reading Text Words canal, port, architecture, rickshaw, street vendor, antiques, souvenirs, batik, exotic fruits, tuna, shrimp**Words in Context** countless, congested, haggle, banned**Word Study** Words with soft c and hard c**Negative Indefinite Pronouns**

Simple present and simple past statements and questions

Do you have nothing to do?

10

Page 96

Mayor for a Day

Humorous Fiction

Reading Strategy

Understanding Characters

Reading Text Words citizens, volunteers, mayor, assistant, city council, city hall, president, garbage collectors, equipment, news conference, playground**Words in Context** contest, ribbon, speech, members**Word Study** Phrasal verbs with take**Tag Questions**

Simple present, simple past, and future questions

You'll work hard, won't you?

11

Page 106

Understanding Viruses with Max Axiom, Super Scientist

Graphic Science Fiction

Reading Strategy

Main Idea and Theme

Reading Text Words cells, microscope, virus, bacteria, disease, influenza, common cold, mucus, immune, paralyze, infect**Words in Context** suit, scrape, fluid, swallowed**Word Study** Antonyms**Order of Adjectives**

Simple present and simple past statements and questions

Max Axiom studies these fascinating, tiny visitors.

12

Page 116

The Human Body: Systems at Work

Informational Text (Nonfiction)

Reading Strategy

Sequence of Actions

Reading Text Words system, blood, heart, arteries, veins, capillary, lungs, trachea, diaphragm, carbon dioxide, pulse**Words in Context** major, pumps, tubes, squeezes**Word Study** Verbs that end in -ate**Used To**

Simple past statements

In ancient times, people used to think differently about the human body.

BIG QUESTION

7 What is the mass media? Social Studies: Technology

13

Page 126

From Newspapers to Smartphones: The Rise of the Mass Media

Interview (Nonfiction)

Reading Strategy

Main Idea and Supporting Details

Reading Text Words mass media, newspaper, magazine, printing press, publisher, advertising, broadcast, the Web, smartphone, blog, social network**Words in Context** journalist, newsreels, radio station, latest**Word Study** Words with silent k**Must, Mustn't, Have To, Don't Have To**

Simple present and simple past statements

You must pay for the Internet to use it at home.

14

Page 136

From the Blog of Elsa B. Garcia, Kid Reporter

Realistic Fiction

Reading Strategy

Conflict and Resolution

Reading Text Words reporter, editor, interview, headline, hero, website, mistake, decide, discuss, investigate, search**Words in Context** mansion, terrible, donated, fair**Word Study** Synonyms**Present Perfect**

Present perfect statements

I have decided to keep a blog.

BIG QUESTION

8 What can we learn from nature's power? Earth Science

15

Page 146

Forces of Nature

Science Article (Nonfiction)

Reading Strategy

Cause and Effect in a Series of Events

Reading Text Words flood, earthquake, tsunami, hurricane, tornado, blizzard, thunderstorm, rescue worker, victim, power lines, collapse**Words in Context** forces, funnel, horizontally, vertically**Word Study** Compound nouns with noun-verb combinations**Present Perfect with Ever and Never**

Present perfect questions and answers

Have you ever seen a real tornado?

16

Page 156

Staying Calm Before the Storm

Historical Fiction

Reading Strategy

Making Inferences

Reading Text Words emergency, storm shelter, first-aid kit, cash, storm shutters, sleeping bag, flashlight, batteries, supplies, bottled water, canned food**Words in Context** inland, destroyed, trunk, landfall**Word Study** Phrasal verbs with turn**Present Perfect with Already, Just, and Yet**

Present perfect statements and questions

I've already packed everything.

17

Page 166

The Natural Communities of Earth

Informational Text (Nonfiction)

Reading Strategy

Classify and Categorize

Reading Text Words biome, desert, grassland, tropical rainforest, temperate forest, taiga, tundra, freshwater, equator, sloth, cactus**Words in Context** Arctic, hatches, glides, scenes**Word Study** Words with -tch**Present Perfect with For and Since**

Present perfect statements

I have studied biomes since February.

18

Page 176

Camila's Journey

Realistic Fiction

Reading Strategy

Asking Open-ended Questions

Reading Text Words parrot fish, seahorse, manta ray, sea turtle, marine park, snorkel, speedboat, border, petition, law, astonish**Words in Context** manage, invited, signed, difference**Word Study** Words with the suffixes -ent and -ence**Present Perfect and Simple Past**

Present perfect and simple past statements and questions

*Camila has created a petition.**When she got home, Camila created a petition.*

LISTENING

SPEAKING

WRITING

WRAP UP

Cities and Water
The reasons why many cities form near bodies of water

Listening Strategy
Listening for reasons

Benefits of Cities
Children share what they like about the cities they live in

Listening Strategy
Listening for facts and opinions

Giving Reasons
*My city grew because it is next to a river.
The river was important because people used the water in many ways.*

Asking Questions with Have To
Do people in your city have to recycle bottles and cans?

Capitalize the Names of Bodies of Water
River Seine, Lake Texcoco, Pacific Ocean

Writing Practice Write about a city near water (WB)

Coordinating Conjunctions: And, But, Or
*I play chess with my mother **but** not with my father.*

Writing Practice Write about parts of a city (WB)

- **Writing**
Write a persuasive essay (WB)

Project
Create a travel brochure

Review
Units 9 and 10 (WB)
Big Question 5 Review 

Public Service Announcement
An announcement on how to stay healthy

Listening Strategy
Listening for advice

The Body's Bones
Facts about the bones in the human body

Listening Strategy
Listening for who's speaking and details

Asking and Answering Personal Questions
*What do you do when you catch a cold?
I drink a lot of water and sleep as much as I can.*

Explanations with That or Where
*What is the stomach?
It's a part of your body that breaks down food.*

Give Advice with Commands
Eat healthy food every day.

Writing Practice Write about good health habits (WB)

Subject/Verb Agreement with Indefinite Pronouns
*When **everyone** works together, you can do great things!*

Writing Practice Write about exercise (WB)

- **Writing**
Write an interview (WB)

Project
Conduct an interview

Review
Units 11 and 12 (WB)
Big Question 6 Review 

Creating a Blog
An explanation of how to create a blog

Listening Strategy
Listening for gist and details

Giving Examples
My dad gets news from the newspaper.

Pronouns
*When early humans discovered how to make fire, **they** told **their** friends.*

Writing Practice Write about how news travels (WB)

- **Writing**
Write a news story (WB)

Project
Create a school news program

Review
Units 13 and 14 (WB)
Big Question 7 Review 

School News
A school news program for students

Listening Strategy
Listening for facts and opinions

Giving Opinions
I don't think that all blogs are interesting because some are boring.

Regular and Irregular Verbs in the Present Perfect
*George has **learned** a lot from this science blog.
I've **seen** the inside of a television studio.*

Writing Practice Write about a mass media job (WB)

- **Writing**
Write a news story (WB)

Project
Create a school news program

Review
Units 13 and 14 (WB)
Big Question 7 Review 

Earthquake Preparation
An explanation of how to prepare for an earthquake

Listening Strategy
Listening for problems and solutions; main idea and details

Weather Warnings
Reporters give extreme weather warnings

Listening Strategy
Listening for recommendations

Possibilities
There might be a lot of rain.

Contractions in Present Perfect Sentences
We've bought extra water in case of a storm.

Writing Practice Write about a force of nature (WB)

- **Writing**
Write a how-to speech (WB)

Project
Create an emergency poster

Review
Units 15 and 16 (WB)
Big Question 8 Review 

Food Chains
Children explain desert food chains

Listening Strategy
Listening for sequence

Describing a Sequence
In the spring, the trees are full of small leaves.

Complex Sentences with Until
*The cheetah ran **until** it caught the gazelle.*

Writing Practice Write about someone who visits a biome (WB)

- **Writing**
Write a fictional story (WB)

Life in a Different Biome
Children discuss biomes where they would like to live

Listening Strategy
Listening for reasons

Asking About Needs
What do I need for my trip?

Complex Sentences with Since and Because
Since coral reefs are dying, we have to help them.

Writing Practice Write about protecting biomes (WB)

- **Project**
Act in a play
- **Review**
Units 17 and 18 (WB)
Big Question 9 Review 

In units
1 and **2**
you will:

WATCH
a video about
the universe.

LEARN
about our place
in the universe.

READ
about a space journey
and our solar system.



WRITE

a compare and contrast report.

CREATE

a model of the solar system.

**BIG QUESTION 1**

Where are we in the universe?

A Watch the video.

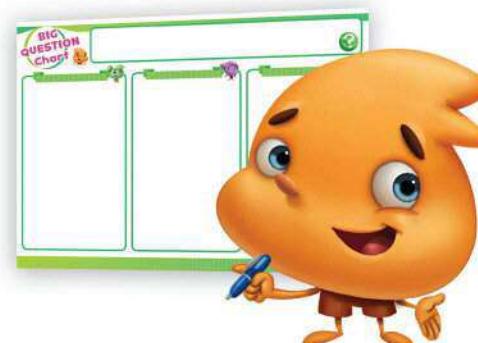
B Look at the picture and talk about it.

- 1 What is the girl looking at? What does it do?
- 2 What do you think the girl is thinking about?

C Think and answer the questions.

- 1 What can you see in the night sky where you live?
- 2 Where would you go if you were an astronaut? Why?

D Fill out the **Big Question Chart**.



What do you know about the universe?
What do you want to know?

Words

- A** Listen and read the words. Listen again and say the words.  1-02



moon



asteroid



comet



meteorite



solar system



stars



galaxy



universe



spacecraft



telescope



observatory

- B** Write the following words in the correct order. Talk about your answers.

solar system meteorite galaxy moon universe

Largest → Smallest

universe

- C** Two of the three words are correct. Cross out the wrong answer.

1 People built this.

observatory

star

spacecraft

2 This is bright in the night sky.

star

comet

meteorite

3 People use this to look at places far away.

moon

observatory

telescope

4 This travels through space.

asteroid

telescope

comet



Before You Read



Think Talk about the word *home* with your partner.
What do you think of when you hear this word?

D Learn Visualizing Changes

Remember, you can make pictures in your mind by **visualizing** what you read. Think about how these pictures change as you read. This will help you to understand and remember a story or a poem.

Read. How do the pictures change in your mind? Write.

Jon's spacecraft flew quickly through space. Through the window, the moon was small and bright. On the next day, it looked like a huge white ball with a bumpy surface and large, dark spots. On the third day, Jon's spacecraft circled the moon. The gray surface was just below him. Rocks of many different sizes covered the surface.

1 First: I see the moon far away in the distance. It looks small and bright.

2 Next: _____

3 Finally: _____

Bella's Home

In this *science fiction* story, a science teacher in Nome, Alaska, writes a poem to help his daughter understand how vast and beautiful the universe is. As you read, try to visualize the changes that she sees on her journey through the universe.



E Words in Context Scan the story on pages 10–11 and circle these words. As you read, guess what the words mean.

vast dwelled speck disk

F Answer the questions before you read.

- 1 Where are you right now? What is this place like?
- 2 What would this place look like if you went a kilometer into the sky?
- 3 What would it look like at 10 and 100 kilometers into the sky?

Bella's Home

Charles Kunayak was a high school science teacher who lived with his family in a quiet neighborhood in Nome, Alaska. In his free time, he studied the secrets of the universe. Charles had a powerful telescope, and he often visited observatories, so he learned more and more about the universe. What an amazing universe!

Yet how could Charles help his daughter Bella understand that our sun was just one of billions* of stars? How could she realize that the small meteorite on display in his classroom traveled to Earth from beyond Mars? How could he explain that we live in a universe so vast, it would take a spacecraft 100,000 years to cross our Milky Way galaxy while traveling at the speed of light!

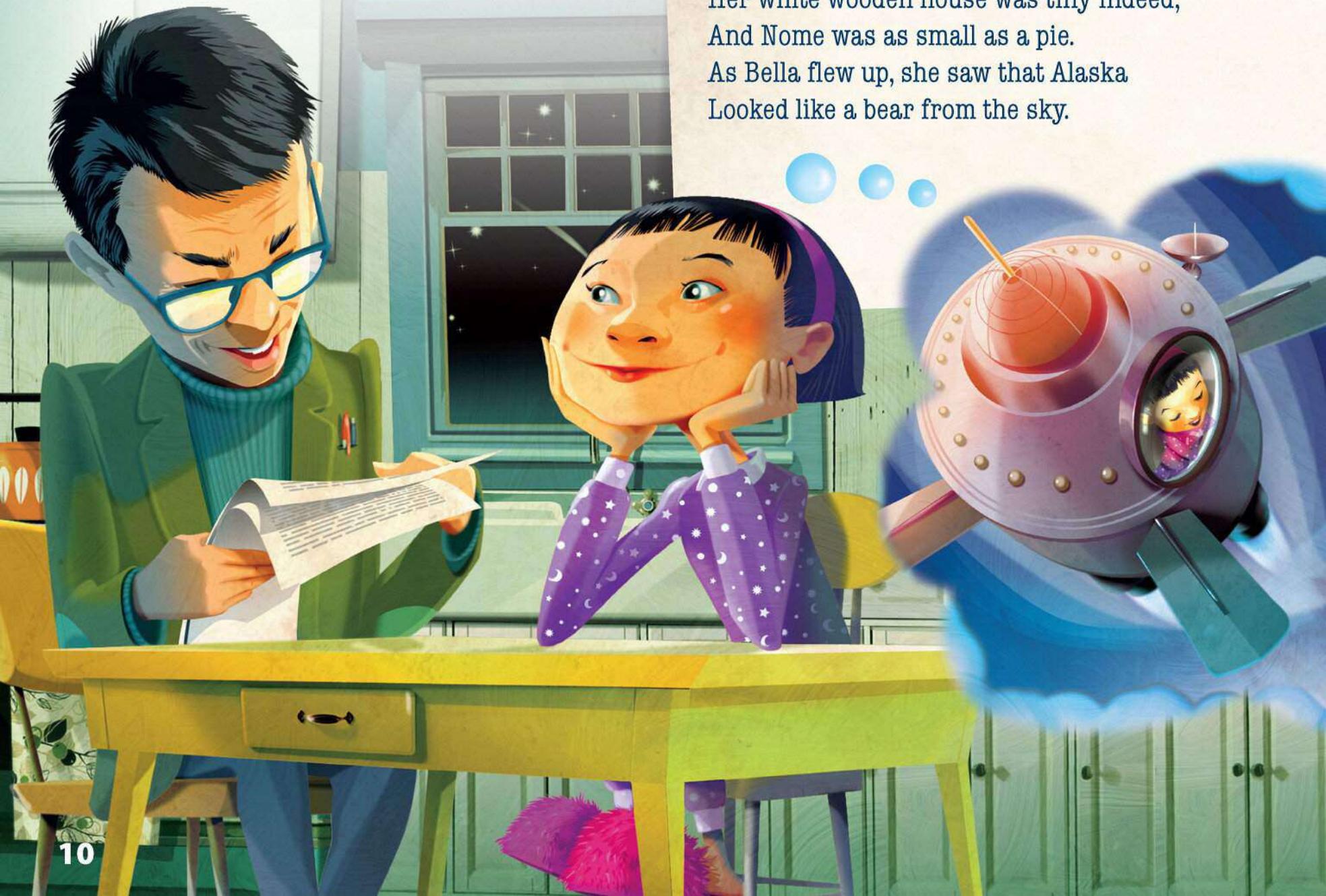
Charles decided that the best way to show Bella was not through numbers and charts, but through a poem. He sat down and wrote what he knew about the universe. He called it "Bella's Home."

Bella's Home

Bella lived in a white wooden house
On a street in the city of Nome.
Bella sat in her bedroom and thought to herself,
Where in the world is my home?

What I need, she thought, is a spacecraft
To give me a better view.
So in her mind, she climbed inside
And up in the sky she flew.

Her white wooden house was tiny indeed,
And Nome was as small as a pie.
As Bella flew up, she saw that Alaska
Looked like a bear from the sky.





Higher she flew, and Alaska, too,
Became part of something so grand.
She saw islands, countries, and continents
With blue oceans around the land.

Bella now saw her beautiful planet,
A blue ball floating in space,
And a shining moon that circled the earth
With the light of the sun on its face.

She noticed the earth was not alone;
With seven more planets it dwelled.
In a great solar system, they circled the sun
With asteroids and comets as well.

Think

How do the pictures
in your mind change
as you read?

Bella's spacecraft flew higher and higher.
Now the sun was a speck of bright light
In the Milky Way galaxy shaped like a disk.
Bella thought, What a wondrous sight!

Then billions of galaxies appeared everywhere,
Each one filled with billions of stars!
What Bella observed was the vast universe.
Her spacecraft had taken her far.

Suddenly Bella was back in her room
In her white wooden house in Nome.
I will visit those places again, Bella thought,
For wherever I go is my home!

Think

What final pictures do
you see in your mind?

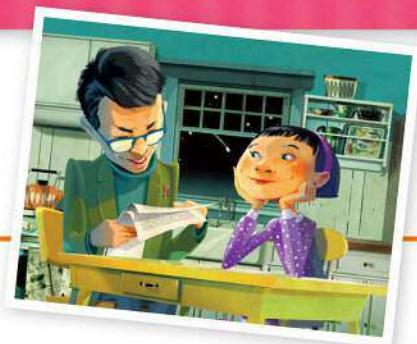
*Note: one billion = 1,000,000,000

Understand

Comprehension



Do you understand the universe better after reading the poem about Bella's travels? Why or why not?



- A In the poem, what did Bella see? Fill in the chart.

First	Next	Finally

- B Match each question to an answer.

- | | | |
|---|-----------------------|----------------|
| 1 What looks like a bear from the sky? | <input type="radio"/> | a the moon |
| 2 What is a blue ball floating in space? | <input type="radio"/> | b Alaska |
| 3 What has the light of the sun on its face? | <input type="radio"/> | c the sun |
| 4 What is a speck of bright light in the Milky Way? | <input type="radio"/> | d the universe |
| 5 What has billions of galaxies? | <input type="radio"/> | e Earth |

- C Words in Context Read each line of poetry. Circle the word that has the same meaning as the underlined word.

- 1 What Bella observed was the vast universe.
cold huge silent
- 2 With seven more planets it dwelled.
lived sang fell
- 3 Now the sun was a speck of bright light.
large ball warm fire small spot
- 4 The Milky Way galaxy was shaped like a disk.
star triangle round plate



Grammar in Use

D Listen and read along. 1.04



E Read the sentences. Which one is about what Harry believes?

- a I will miss my bed too much. b I want to travel through the universe.

F Learn Grammar **Predictions with Will**

Use **will** to make a prediction. A prediction is something you believe about the future. A prediction is not a fact.

I **will** visit those places again, Bella thought.

Three of the following sentences are predictions. Write P beside them.

Write X beside the sentence that is not a prediction.

- 1 Scientists will send a person to Mars someday. _____
- 2 The sun will rise tomorrow morning. _____
- 3 She will become an astronaut when she grows up. _____
- 4 Eric will go to space camp next summer. _____

I think scientists will find new solar systems in our galaxy.

G Make a list like this one. Make predictions and then talk to your partner about them.

Things I Predict

Scientists will find new solar systems.



Communicate

Listening



Why do people like to look up at the stars at night?

A

Learn Listening for Reasons

When you listen for reasons, first listen for questions starting with the word *why*. The answer to each question will usually have a reason.

Listen. Match each question with a reason. 1.05

- | | | |
|---|---|--|
| 1 Why are stars so easy to see on Grandpa's farm? | • | • a It's close to Earth and has clouds that bounce sunlight to Earth. |
| 2 Why is Venus so bright? | • | • b It's shaped like a disk. We are in the disk, and we can look through it. |
| 3 Why can we see the Milky Way galaxy when we're in it? | • | • c There are fewer lights shining outside of a big city. |

B Listen again. Why is our galaxy called the Milky Way? Write your answer. 1.06

Speaking 1.07

C Look at the two pictures. Talk about the differences with your partner.

In the first picture, I see the Milky Way.



In the second picture, I see ...



Word Study

D Learn Words with ei

The vowel combination **ei** often has a *long a* sound.

Charles lived in a quiet **neighborhood** in Nome, Alaska.



Listen and read the words. Look them up in the dictionary. Then listen to the sentences. Write the *ei* words you hear in your notebook.

1.08

eighty freight reins sleigh veil weigh

A-Z page 186

Writing Study

E Learn Complete Sentences

Complete sentences always need a subject and a verb. This is true for statements, questions, and commands. We usually don't see the subject in a command, but we understand what it is.

Earth revolves around the sun. (statement)

Is the sun in the Milky Way galaxy? (question)

Sit down. (command meaning You sit down.)

Read the paragraph. Circle two commands. Underline three incomplete sentences and rewrite them as complete sentences in your notebook.

The universe is a beautiful place. A mysterious place. It has more stars than we can count. Old stars and new stars. Try to count them. Our galaxy is the Milky Way. Look in the sky. Can you see a belt? A milky, white belt? That's our galaxy!



Now practice writing in the **Workbook**

page 9

BIG QUESTION 1



Where are we in the universe?



We're on a planet in a solar system.

We're in a galaxy called the Milky Way.



Words

A Listen and say the words. Then read and listen to the sentences.  1.09

astronomer

space probe

core

gravity

orbit

matter

distance

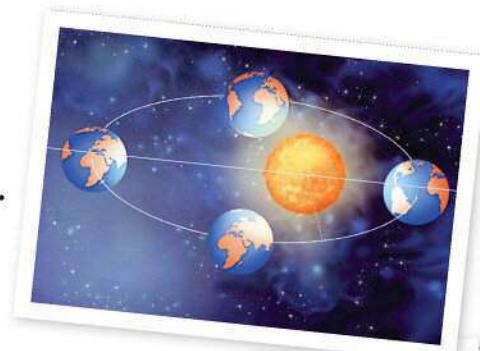
diameter

surface

craters

unique

- 1 The **astronomer** studied the moons of Jupiter.
- 2 Scientists sent a **space probe** to Mars.
- 3 The **core** of Earth is 1,800 miles below the surface.
- 4 Without **gravity**, people on Earth would float into the air.
- 5 Earth's **orbit** around the sun is not a perfect circle.
- 6 Planets and stars are full of **matter**.
- 7 There is a big **distance** between the sun and Earth.
- 8 The **diameter** of Venus is similar to the diameter of Earth.
- 9 Many plants and animals live on our planet's **surface**.
- 10 You can see the moon's **craters** with a telescope.
- 11 Earth is **unique** because it has living creatures.



B Two of the three words are correct. Cross out the wrong answer.

- 1 Some people study this.

matter

unique

gravity

- 2 You use this to measure something.

distance

diameter

craters

- 3 This is part of Earth.

orbit

surface

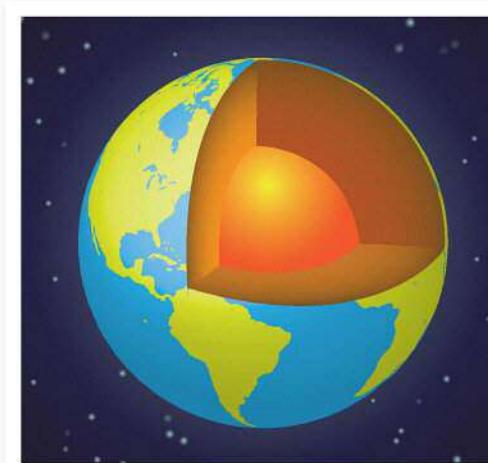
core

- 4 You can find this outside of Earth.

space probe

astronomer

craters



C How is Earth unique? Write a sentence. Then share your sentence with your partner.

Before You Read



Think Why is the sun important? How would life be different if we didn't have the sun?

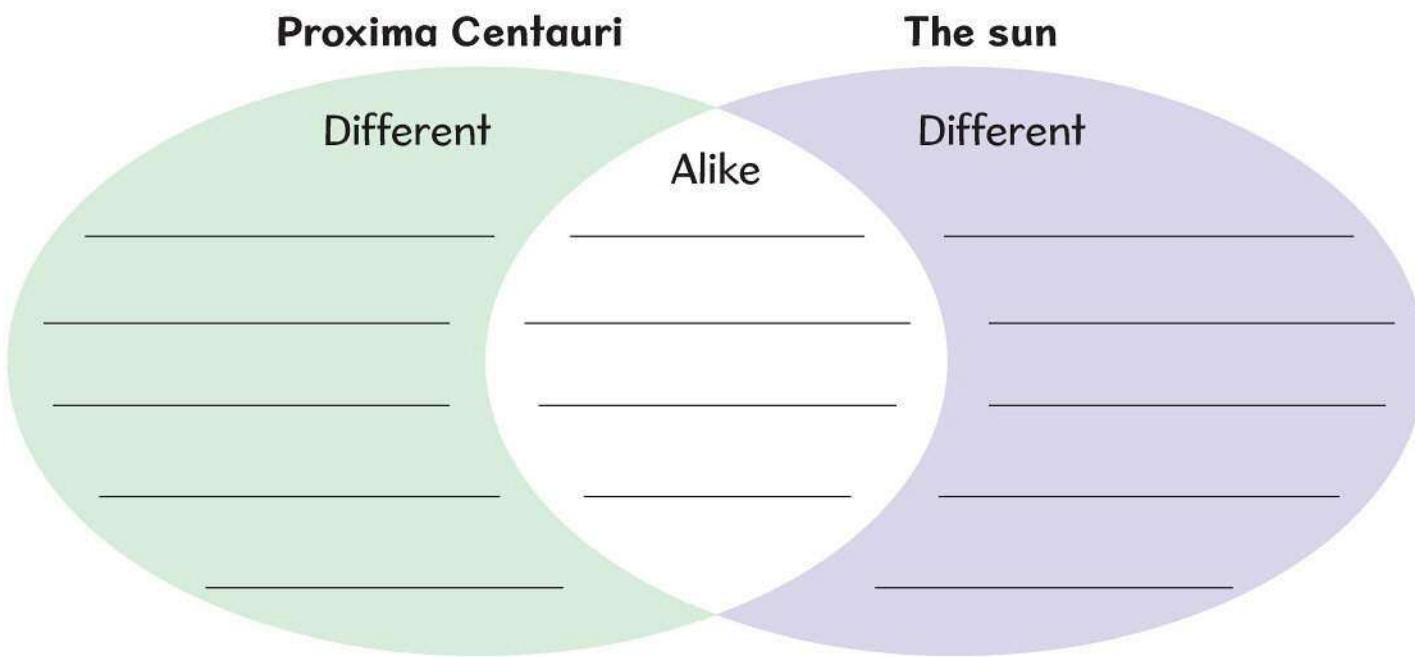


Learn Compare and Contrast in Science

Remember, when you **compare and contrast**, you talk about how things are alike and different. When you read about science, look for numbers and other information to decide how things are alike or different.

How are Proxima Centauri and the sun alike and different? Read the information and complete the diagram.

Proxima Centauri is the closest star to the sun. Did you know that the sun is also a star? They are both in the Milky Way galaxy. The sun is a yellow dwarf star. Proxima Centauri is a red dwarf star. Proxima Centauri's diameter is only $\frac{1}{7}$ of the sun's diameter.



E Words in Context Scan the reading on pages 18–19 and circle these words. As you read, guess what the words mean.

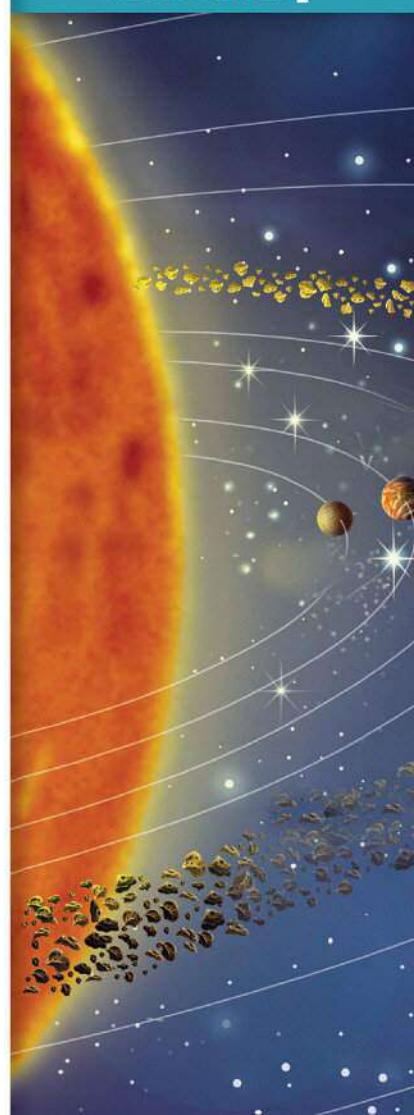
bodies explore inner outer

F Look at the pictures in the article on the next page. What do you see? What would you like to learn in this article?

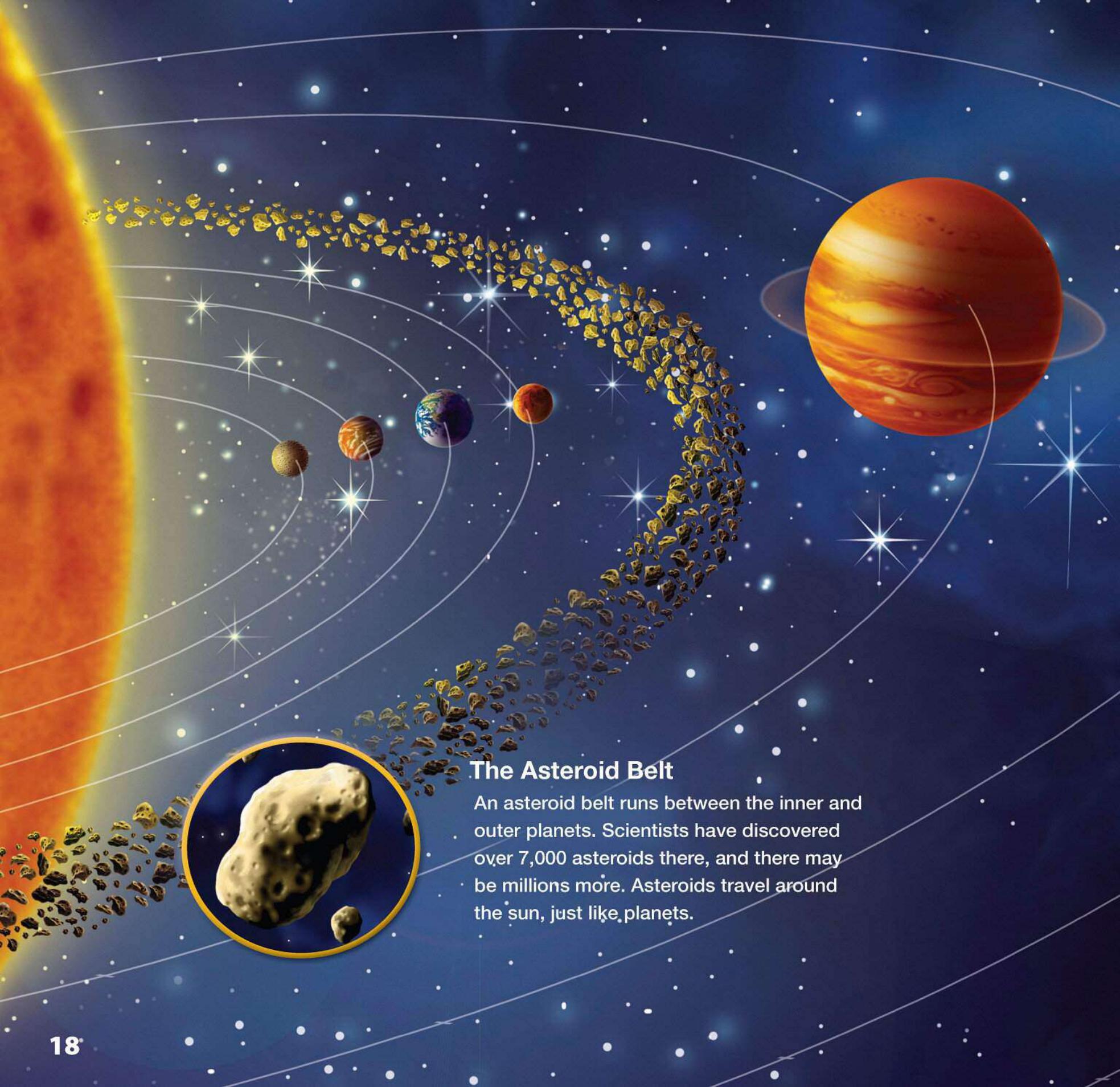
Traveling Together Around the Sun

In this *science article*, you will learn about the planets, moons, and other objects that move around the sun as a solar system. Science articles are full of facts and information about our world and universe. As you read, compare and contrast objects in our solar system.

Science: Astronomy



Traveling Together Around the Sun



The Asteroid Belt

An asteroid belt runs between the inner and outer planets. Scientists have discovered over 7,000 asteroids there, and there may be millions more. Asteroids travel around the sun, just like planets.

The sun is a star, and it is very important for our planet Earth. It gives us light and heat. However, Earth is not alone. It shares the sun with seven other planets. Together, these planets revolve around the sun in a solar system. Other bodies travel in this solar system, such as moons, asteroids, and comets. They all move around the sun because the sun's gravity is very strong.

Each planet's path around the sun is called an orbit. The planets that are closer to the sun have smaller orbits, so they take less time to go around it. Mercury takes 88 days to complete one orbit. Earth completes one orbit in 365 days, or one year. Neptune's orbit takes 60,200 days, or almost 165 years!

Each planet in our solar system is unique. For example, Mercury is the smallest planet. It has lots of craters, just like our moon. Jupiter is the biggest planet. Its diameter is eleven times bigger than Earth's. Saturn has giant rings of matter around it. Neptune is the farthest planet from the sun.

Mars is a neighboring planet, and scientists are learning a lot about it. They send many space probes to Mars. A space probe called Curiosity landed on Mars on August 6, 2012. Curiosity is as big as a car, and it moves over the surface of Mars. It recently found rocks that had strange shapes. Running water made these shapes. This is an important discovery. Space probes like Curiosity continue to explore the planets, moons, and other bodies in our solar system. If technology continues to grow, we will travel to these places ourselves.

Iron and rock make up most of the four smaller inner planets of our solar system. Gas and water make up most of the four larger outer planets. This means that you can stand on the surface of Earth, but you can't stand on Saturn. In fact, if you tried to stand on Saturn, you would sink down to the core of the planet.

Drawings of our solar system show the planets close to the sun. However, the distance between the planets and the sun is very far. For example, it would take 176 years to drive a car from Earth to the sun. It would take 5,300 years to drive from Neptune to the sun!

Astronomers think that there are many solar systems in our Milky Way galaxy. However, our solar system is special to us. It is our home.

Think

How are the inner planets the same?

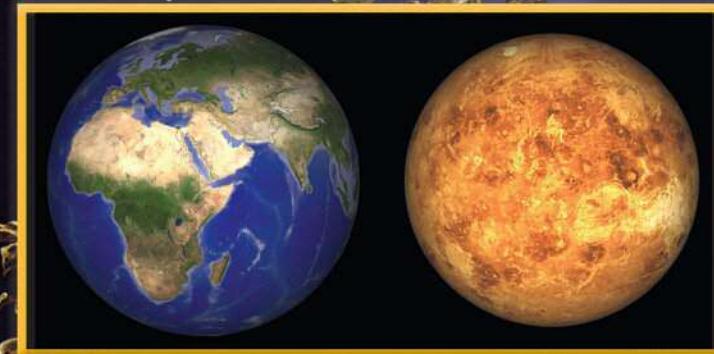
How are they different from the outer planets?

Think

How are some of the planets different from Earth?

The Sister Planets

Did you know that Earth and Venus are called "sister planets"? This is because they are almost the same size, and Venus is the closest planet to Earth. However, Venus is much hotter than Earth, and it is always covered in thick clouds.



Understand

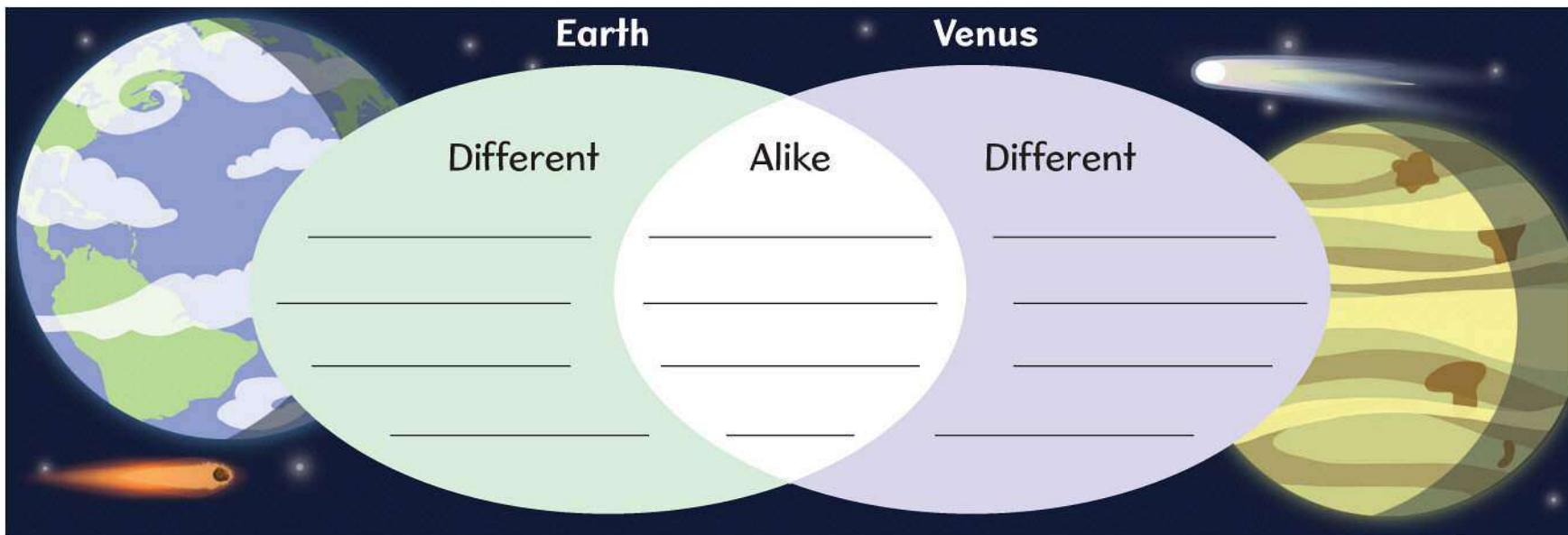
Comprehension



What interesting facts did you learn about our solar system? Discuss your ideas with your partner.



- A How are the planets below alike and different? Complete the diagram.



- B Circle True (T) or False (F).

- 1 Mercury and our moon both have craters. T F
- 2 Mars once had flowing water. T F
- 3 You can stand on the surfaces of the outer planets. T F
- 4 There are only a few asteroids in our solar system. T F

- C Words in Context Match the sentence parts.

- | | | |
|---|---|--|
| 1 Space probes explore planets and
moons. Explore means ... | ● | ● a ... far from the center. |
| 2 Many bodies travel in space. Bodies
means ... | ● | ● b ... close to the center. |
| 3 Mercury, Venus, Earth, and Mars are
inner planets. Inner means ... | ● | ● c ... to travel around a new place
to learn about it. |
| 4 Jupiter, Saturn, Uranus, and Neptune
are outer planets. Outer means ... | ● | ● d ... large objects in space. |

Grammar in Use

D Listen and sing along. **Going into Space** 1.11

If I become an astronaut,
I'll fly up through the stars.
I'll travel in a spacecraft,
And I will go to Mars!
I'll explore the planet's surface,
Its craters and dry lakes.
Life will be so interesting
If I go into space!



E Read the sentence. What has to happen before the speaker will go to Mars?

If I become an astronaut, I will go to Mars.

F Learn Grammar Future Real Conditional

Use the **future real conditional** to talk about a future possibility and what will happen as a result of it. Use the word **if** with a future possibility.

If technology continues to grow, we will travel to these places ourselves.

future possibility

result

We will travel to these places ourselves if technology continues to grow.

result

future possibility

Read each sentence. Draw a line under the future possibility. Draw two lines under the result.

- 1 If I become an astronaut, I will walk on the surface of Mars.
- 2 Wendy will search the sky if she gets a telescope.
- 3 If we study hard, the teacher will show us a video.

If I study hard, I will get good grades.

G Make a chart like this one. Then talk to your partner about it.

This will happen in the future ...

... if this happens first.

I will get good grades.

I study hard.



Communicate

Listening

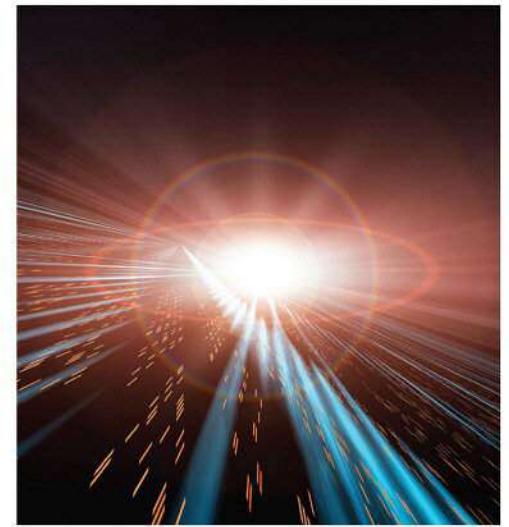


If you could travel at the speed of light, which planet in our solar system would you visit? Why?

- A Listen. What is the main idea? Write. 1-12

- B Listen again. Write the travel times at the speed of light. 1-13

Traveling in Space at the Speed of Light		
From	To	Travel Time
The sun	Earth	8 minutes
Earth	Mars	
Earth	Jupiter	
Earth	Neptune	
Earth	The nearest star	



Speaking 1-14

C Learn Asking About Quantity

Use **how much** to ask about things you cannot count. Use **how many** to ask about things you can count.

How much water is on Jupiter?

How many planets are in our solar system?

Ask and answer questions about quantity with your partner.

How many stars does our solar system have?

It has ...

How much ... ?

I'm not sure, but ...



Word Study

D Learn Words with the Suffixes *-ance* and *-ant*

Many nouns that end in **-ance** can become adjectives if you change the ending to **-ant**.

Neptune is a long **distance** from the sun. (noun)

Neptune is a **distant** planet from the sun. (adjective)



Listen and read the words. Look them up in the dictionary. Circle *-ance* or *-ant* in each word. Then listen to the sentences. Write the *-ance* or *-ant* word you hear in the correct space. 1.15

fragrance arrogance ignorance fragrant arrogant ignorant

A-Z page 186

Noun

1 fragrance 2 _____ 3 _____

Adjective

4 _____ 5 _____ 6 _____

Writing Study

E Learn Choice Questions

A question can offer a choice between two or more things. Use the word **or** in **choice questions**. The answer is never yes or no.

Is Ganymede a planet **or** a moon? It's a moon.

Is Proxima Centauri bigger **or** smaller than the sun? It's smaller.

Circle **or** in each question. Underline the choices. Then write.

1 Is Mars a moon, a planet, **or** a star? It's a planet.

2 Does Earth go around the sun **or** around the moon? _____

3 Is Jupiter bigger **or** smaller than Earth? _____



Now practice writing in the **Workbook**. page 17

Writing

A Read this compare and contrast report about an imaginary solar system.

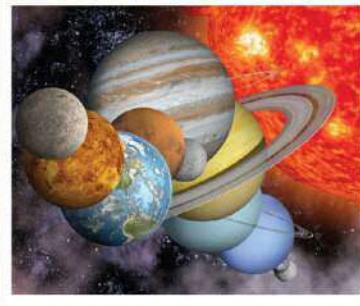
Title — The FWCP Solar System

Introduction — What is it like to live in a solar system filled with color? In my imagination, I visited the FWCP solar system in the Milky Way galaxy. FWCP means "Filled with Colorful Planets." FWCP and our solar system are alike in many ways, but there are also many differences between them.

Similarities — FWCP and our solar system are alike in three important ways. First, FWCP has eight planets that travel around a star like our sun. Next, FWCP has an asteroid belt like ours. Finally, the inner planets of FWCP are smaller than the outer planets, just like in our solar system.

Differences — However, FWCP is different than our solar system. First, each planet in FWCP has a bright, colorful surface. Some planets in our solar system are not as colorful. Next, there are no moons in FWCP. Finally, all the inner planets in FWCP have people. In our solar system, only Earth has people.

Conclusion — FWCP is an interesting place. I will visit it again very soon. When I compare FWCP to our solar system, I can understand more about the universe.



B Answer the questions.

- 1 How are the two solar systems alike?
- 2 How are the two solar systems different?

Learn Compare and Contrast Report

- Start your report with an introduction paragraph.
- Describe how two things are alike in the second paragraph.
- Describe how two things are different in the third paragraph.
- End your report with a conclusion paragraph. This should have a strong, final thought.

Review the Writing Process

- Brainstorm your ideas and write them down.
- Organize your ideas into groups.
- Take your ideas and put them into paragraphs.
- Revise what you wrote.



Now go to the **Workbook** to plan and write your own compare and contrast report. **page 18**

Project: Creating a Model

C Create a model of the solar system. Then present it.

- In your group, you will make a solar system model.
- Decide what you will use to make the model, who will make each part, which parts your group will compare and contrast, and what each student will say.
- Write down some words to help you remember your ideas.
- Use compare and contrast words, such as *but* and *however*.
- Practice your presentation with your group.
- Show your model and give your presentation to the class.
- Make eye contact with other students, gesture toward your model, and speak in a loud, clear voice.



BIG QUESTION 1

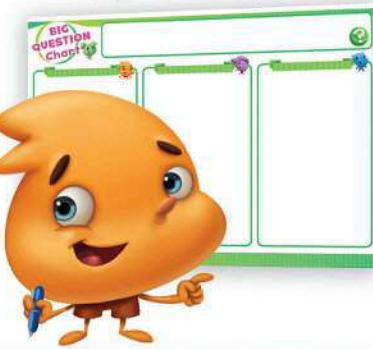
Where are we in the universe?

A Watch the video.

What did you learn about our place in the universe?

B Think more about the Big Question. What did you learn?

C Complete the Big Question Chart.



In units
3 and **4**
you will:

WATCH
a video about
uncovering the past.

LEARN
how we know
about the past.

READ
about ancient soldiers
and a boy's discovery.



WRITE
a descriptive
report.

CREATE
a time capsule.



BIG QUESTION 2

How do we know what happened long ago?

A Watch the video.

B Look at the picture and talk about it.

- 1 What is the boy taking a picture of?
Why is he taking a picture?
- 2 Where do you think the boy is?
What else do you think is in this place?

C Think and answer the questions.

- 1 Why do people want to learn about the past?
- 2 What time in the past do you want to learn more about?

D Fill out the **Big Question Chart**.



What do you know
about studying the
past? What do you
want to know?

Words

- A** Listen and read the words. Listen again and say the words.  1-16



army



soldiers



uniform



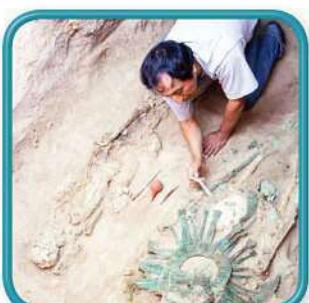
emperor



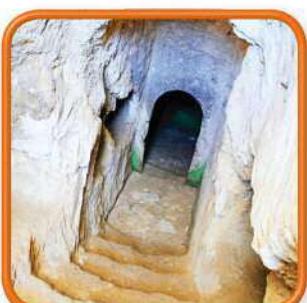
armor



treasure



archaeologist



tomb



jade



clay



peasant

- B** Write the following words in the correct places on the chart below. Then talk about your answers.

armor clay emperor jade soldiers
archaeologist peasant uniforms

People	Things to Wear	Things to Create Something

- C** Circle the correct answer.

- 1 This is worth a lot of money.
clay treasure
- 2 Some people are buried in this.
tomb army
- 3 This keeps a country or town safe.
army peasant
- 4 This keeps a person's body safe.
uniform armor

Before You Read



When someone discovers an important item from the past, who should it belong to? Why?

D

Learn Author's Purpose

Every author has a **purpose**, or reason, for writing. There are three main purposes.

Persuade: to make you believe or do something

Inform: to give you information or facts

Entertain: to make you enjoy the story

Circle the author's purpose for each paragraph. Talk about your answers with a partner.

1

The copper coin's diameter is 23 millimeters. It has the name and face of a Roman emperor on it. He ruled from AD 306 to 337.

to persuade

to inform

to entertain

2

The archaeologist looked into the dark tomb. He was excited, but he was nervous, too. Slowly, he stepped forward. His torch brightened a room full of gold and jewels!

to persuade

to inform

to entertain

3

We should not sell old treasure that we find. We should display it in museums. The history of the world belongs to its people.

to persuade

to inform

to entertain

E

Words in Context Scan the reading on pages 30–31 and circle these words. As you read, guess what the words mean.

battle generals varnish coffin

F

Look at the pictures of the clay soldiers in the reading. How would you describe them to someone who doesn't know what they look like?

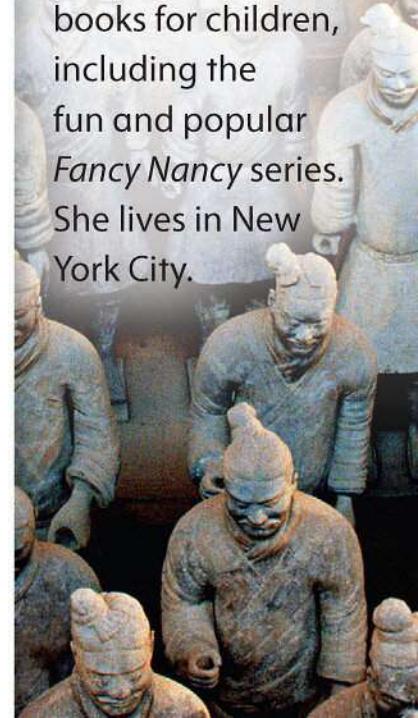
Hidden Army: Clay Soldiers of Ancient China

In this *magazine article*, you will read about the discovery of a large army of clay soldiers in China. A magazine article gives information and often has colorful pictures. As you read, remember to ask yourself about the author's purpose.

Social Studies: History



Jane O'Connor is the bestselling author of over 30 books for children, including the fun and popular *Fancy Nancy* series. She lives in New York City.





Hidden Army:

It is 210 BC and the moment before battle. The Chinese emperor's army is ready to charge. The soldiers—thousands of them—are lined up, row after row, as far as the eye can see.

However, the army will never attack. The soldiers are not real. They are the size of real soldiers. But they are made of terra-cotta, a strong kind of clay. They are more than 2,000 years old.

Amazingly, no two soldiers are alike. Their faces are different. Some are old; some are young. Some look tired; some look like they can't wait for the battle to start.

Their uniforms are different. The uniforms are exact copies of what real soldiers wore. The archers and foot soldiers were the lowest-ranking soldiers, so they have the plainest uniforms.

The generals, of course, wore the most elegant uniforms. Some of their caps had feathers. Sometimes their shoes turned up at the toes. Their armor had small iron rings that look like fish scales.

Here you see an image of a clay general. It shows how he looked 2,000 years ago. Every single soldier in the emperor's army was painted with bright colors. So were the terra-cotta horses. Now most of the soldiers have only tiny traces of paint left. Scientists are trying to create a special varnish to brush over painted figures to hold the paint in place.

Think

What is the author's purpose in the first paragraph?



a computerized image of a clay general

Think

What is the author's purpose for this paragraph?



Clay Soldiers of Ancient China

Today, craftsmen near the pits where the soldiers were found make copies of the soldiers. This helps archaeologists learn more about how people made the original army. Modern craftsmen have much better kilns than those in ancient times. Kilns are ovens that bake clay until it hardens. Yet no copies ever come out as hard or shiny as the originals. Why? Nobody knows—it is a mystery.

An even bigger mystery is what lies inside the emperor's tomb. Nobody knows the answer because the tomb has never been opened. The Chinese government plans to keep it closed for now. Work will not start until archaeologists are sure the tomb can be opened without damaging any of the treasures inside.

As for the emperor's body, according to historical records, it rests in a heavy, bronze coffin.

In ancient times, the custom was to dress the dead body of someone important in a suit the Chinese made from hundreds of pieces of thin jade. At that time, jade was more precious than gold.



The emperor died when he was 49 years old. Three years after his death, peasants rose up against the empire. One of their leaders started a new royal family.

Yet now, millions of people come to the emperor's burial place. They visit the covered pits to see the clay soldiers. The emperor lives on in the memory of all who see his amazing hidden army.

Think

What is the author's purpose for the entire reading?

Understand

Comprehension



What does the discovery of the terra-cotta soldiers teach you? What else do you want to know about life in China 2,000 years ago?



- A** What is the author's purpose for each sentence below? Write the number for each sentence in the correct box. Talk about your answers with your partner.

- 1 The Chinese emperor's army is ready to charge.
- 2 The emperor died when he was 49 years old.
- 3 The terra-cotta soldiers are more than 2,000 years old.
- 4 It is the moment before battle.
- 5 Some look like they can't wait for the battle to start.
- 6 Their armor had small iron rings that look like fish scales.

To Inform	To Entertain
	1



- B** Circle True (T) or False (F).

- 1 Every terra-cotta soldier looks exactly the same.
- 2 The terra-cotta horses were colorful a long time ago.
- 3 The original clay soldiers were shinier than the copies.
- 4 Archaeologists know what's inside the emperor's tomb.
- 5 Many people come to see the terra-cotta soldiers.

T F
T F
T F
T F
T F

- C** **Words in Context** Match each word to its definition. Write the letter.

- | | |
|----------------|---|
| 1 battle ____ | a a clear liquid that keeps something looking new |
| 2 general ____ | b a box that a dead body is put into |
| 3 varnish ____ | c a fight between armies in a war |
| 4 coffin ____ | d a very important officer in an army |

Grammar in Use

D Listen and sing along. **The Archaeologist** 1.18

I'm an archaeologist,
And I love to study the past.
I like to hunt and then to dig
And uncover things at last!

A piece of ancient armor,
Or jade or cloth or clay,
I promise to share my treasures
To show the past today.



E Look at D. Which verbs start with *to*?

F Learn Grammar Verbs Followed by Infinitives

Some verbs are often followed by an **infinitive**. An infinitive is a verb with the word **to** in front of it.

The Chinese government **plans to keep** it closed for now.

plans **to keep**
verb infinitive

Match the two parts of each sentence. Then circle the infinitives.

- | | | |
|-----------------------------|---|---|
| 1 All the students promised | • | • a to find more terra-cotta soldiers. |
| 2 The archeologists tried | • | • b to build the clay army. |
| 3 The emperor decided | • | • c to study hard for the history test. |

G Make a chart like this one. Use infinitives with the verbs *forgot* and *promise*. Then talk about your ideas with a partner.

I forgot to pack my lunch today.

I forgot ...

to pack my lunch

I promise ...



Communicate

Listening



How were people's lives in the past different from your life?

A

Learn Listening for Similarities and Differences

When you listen to people talking about the past, try to listen for similarities and differences with the present time.



Listen and match. 1.19

Ancient Town

- 1 The houses had an upstairs floor and a downstairs floor.
- 2 It had a stone wall around it.
- 3 Salt was valuable and kept food fresh.

Now

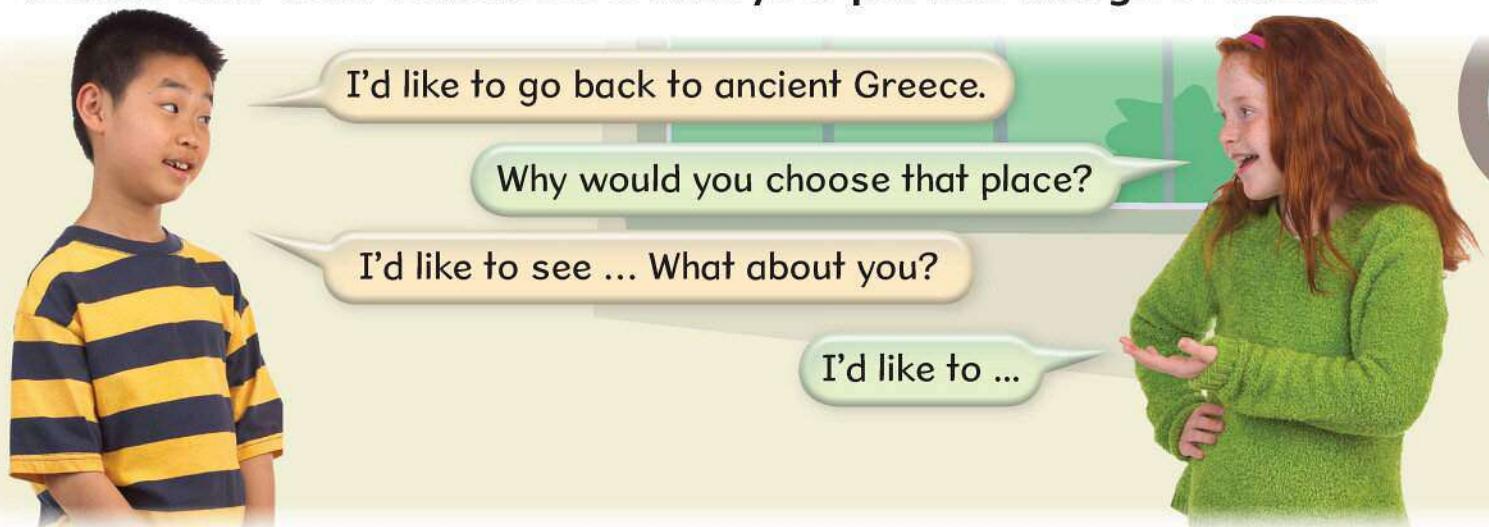
- a This product is now cheap. Refrigerators keep food fresh.
- b Many modern houses have this, too.
- c Modern towns don't have this around them.

B Listen again. Write the correct answer. 1.20

- 1 Where did the students get their information? _____
- 2 How old is the ancient town? _____
- 3 How were bricks made in this town? _____

Speaking 1.21

C If you had a time machine, what place and time would you like to go back to and visit? Talk about it with your partner and give reasons.



Word Study

D Learn Words with the Suffix *-ist*

The suffix **-ist** is often used for jobs or professions.

This helps an **archaeologist** learn more about how people made the original army.



Listen and read the words. Circle the suffixes. Then listen to the sentences. Write the *-ist* words you hear in your notebook. 1.22

cyclist cartoonist dentist florist tourist pianist

A-Z

Writing Study

E Learn Verb Tenses

Keep your **verb tenses** the same in a paragraph or a piece of writing. This will help your writing be clear.

The first emperor **died** when he **was** 49 years old. Three years after his death, peasants **rose** up against the empire.

Read the paragraph. Cross out and change the verbs that are in the wrong tense.

In 2007, a man in Vienna had a garden. He **uncovered** over 200 pieces of buried treasure. He finds rings, belt buckles, and many other items that were over 650 years old. Later, he took the treasure to a government office. The people there are very excited when they see the rare items. They wait in a long line to see the treasure that the man **find**.



Now practice writing in the **Workbook**. page 28

Vocabulary: Words with the Suffix *-ist* • Writing: Verb Tenses

Unit 3 35

BIG QUESTION 2

How do we know what happened long ago?



We uncover and study old objects.

Archaeologists help us understand the objects.



Words

A Listen and read the words. Listen again and say the words.  1-23



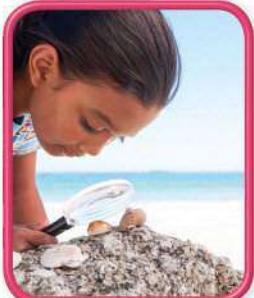
dinosaur



skull



ravine



examine



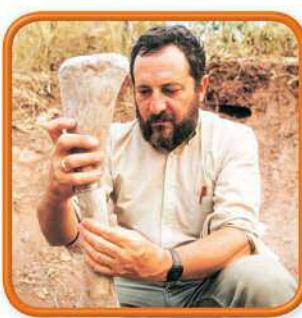
discover



excavate



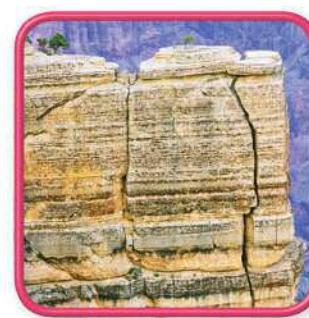
layers



paleontologist



ash



sedimentary rock

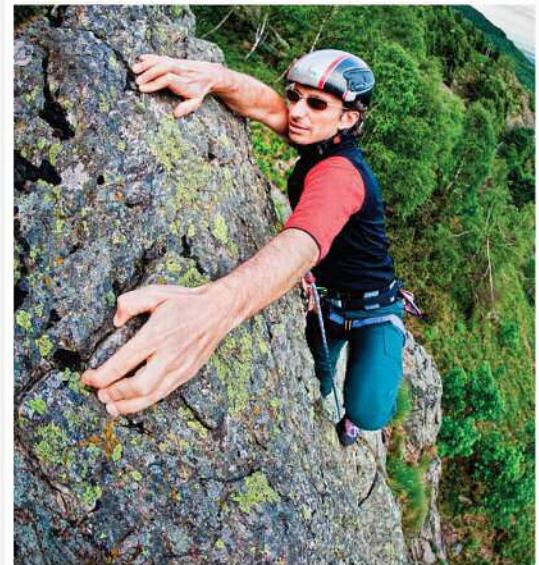


pastime

B Circle True (T) or False (F).

- 1 Dinosaurs are alive on Earth today.
- 2 Burning wood can make ash.
- 3 Sedimentary rock is in the ground.
- 4 A layer is round like a ball.
- 5 Plants have skulls.
- 6 Studying at school is a pastime.
- 7 A ravine can be hard to climb out of.

T	F
T	F
T	F
T	F
T	F
T	F
T	F



C Answer the questions.

1 What do paleontologists examine? _____

2 Why do people excavate an area when they discover a bone there? _____

Before You Read



Why do people like to find objects from the past?
What can you learn from an old object?

D Learn Predictions

A **prediction** is what you think will happen. As you read, try to make predictions. Use clues from the reading and your own knowledge to predict. You can predict by using the word *will*.

What the Story Says

Dark clouds cover the sky.

My Prediction

Rain will come.

Read the sentences below. Predict what will happen. Write.

1

Jamaal hiked for four hours in the hot sun this afternoon. Then he came home and ate a big dinner. Finally, he worked on his homework for two hours. Now he is very tired.

I predict _____

2

The paleontologist uncovered many of the dinosaur's bones in the ravine. However, she didn't have the skull yet. Suddenly, she brushed the dirt away from a large, shiny bone in the ground. A huge smile spread over her face.

I predict _____

E Words in Context

Scan the story on pages 38–39 and circle these words. As you read, guess what the words mean.

favorite dream tripped determine

F Answer the questions before you read.

- 1 What do curious people do when they find something new?
- 2 When were you curious about something? What were you curious about?
- 3 Is it good to be curious? Why or why not?

Stumbling upon the Past

In this *realistic fiction* story, a boy named Javier makes an amazing discovery in his small town in Spain. A realistic fiction story has characters, problems, and settings that seem real. As you read, try to predict what will happen throughout the story.



Stumbling upon the Past

Javier was a nine-year-old boy who lived with his parents in the hillside town of Ademuz in the province of Valencia in Spain.

Javier was a curious and energetic boy. His favorite pastime was to explore the hills and open fields around his town.

The neighboring village of Riodeva, just 26 kilometers away from Ademuz, was famous because of a great discovery there. In 2003, paleontologists found the bones of the largest dinosaur in Europe in a wheat field near the little village. When it was alive, this animal was over 38 meters long and had the weight of seven elephants.

Javier liked dinosaurs more than anything else in the world. He also believed that there was an amazing dinosaur bone buried somewhere near his own town of Ademuz. His dream was to be the first person to find it.

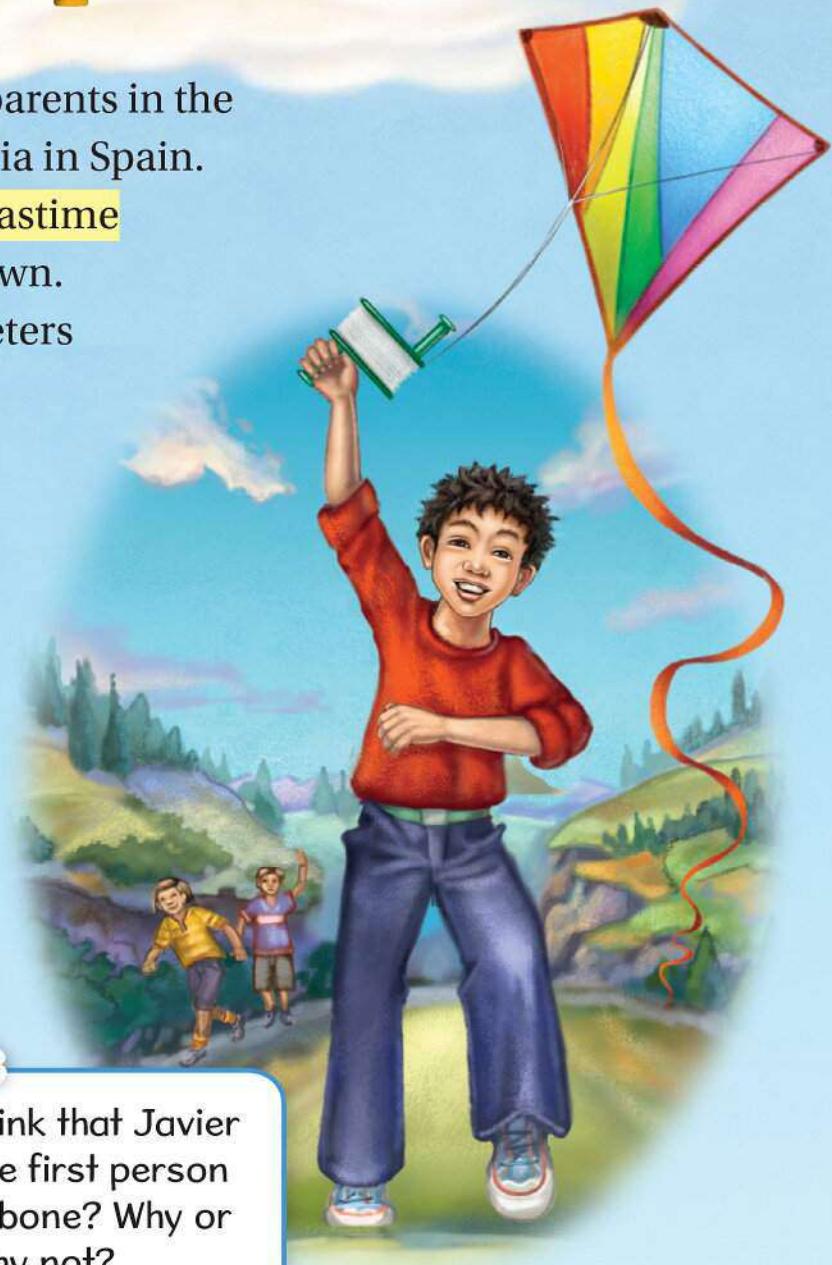
One summer morning, Javier was exploring in a field near a ravine just outside of the town. He looked up to see his two friends, Fernando and Pepe, running toward him with a colorful kite.

"Let's fly it, Javier!" they shouted.

Javier enjoyed playing with his friends. He quickly forgot about his exploring and grabbed the string of the kite. As he ran, the kite lifted into the sky. The boys cheered. Suddenly the kite spun around and dove into the ravine.

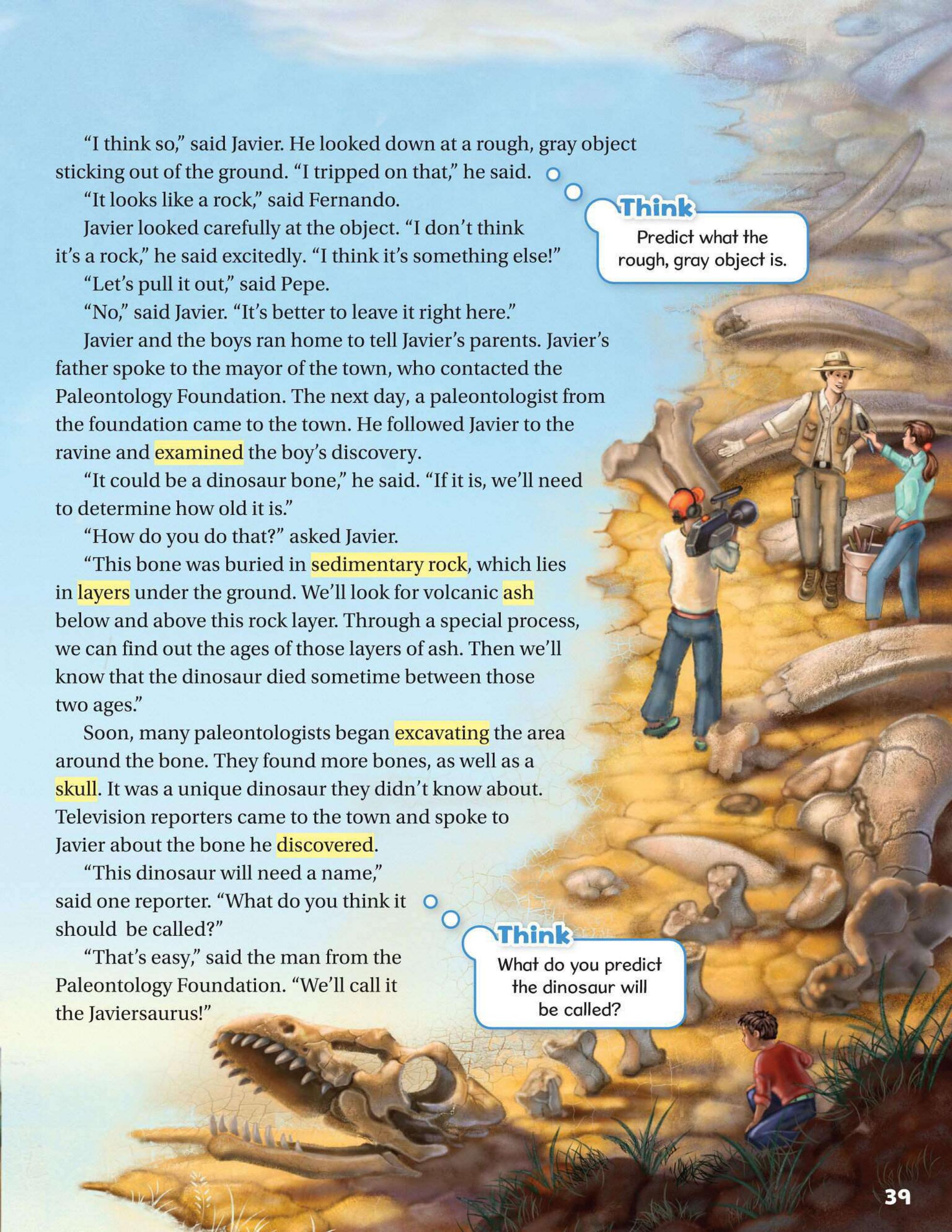
"I'll get it," shouted Javier. He ran down into the ravine. As he reached for the kite, his foot caught on something. He fell to the rocky ground with a crash. His two friends ran up as he rubbed his head.

"Are you okay?" Pepe asked.



Think

Do you think that Javier will be the first person to find a bone? Why or why not?



"I think so," said Javier. He looked down at a rough, gray object sticking out of the ground. "I tripped on that," he said.

"It looks like a rock," said Fernando.

Javier looked carefully at the object. "I don't think it's a rock," he said excitedly. "I think it's something else!"

"Let's pull it out," said Pepe.

"No," said Javier. "It's better to leave it right here."

Javier and the boys ran home to tell Javier's parents. Javier's father spoke to the mayor of the town, who contacted the Paleontology Foundation. The next day, a paleontologist from the foundation came to the town. He followed Javier to the ravine and examined the boy's discovery.

"It could be a dinosaur bone," he said. "If it is, we'll need to determine how old it is."

"How do you do that?" asked Javier.

"This bone was buried in sedimentary rock, which lies in layers under the ground. We'll look for volcanic ash below and above this rock layer. Through a special process, we can find out the ages of those layers of ash. Then we'll know that the dinosaur died sometime between those two ages."

Soon, many paleontologists began excavating the area around the bone. They found more bones, as well as a skull. It was a unique dinosaur they didn't know about. Television reporters came to the town and spoke to Javier about the bone he discovered.

"This dinosaur will need a name," said one reporter. "What do you think it should be called?"

"That's easy," said the man from the Paleontology Foundation. "We'll call it the Javiersaurus!"

Think

Predict what the rough, gray object is.

Think

What do you predict the dinosaur will be called?