In This Guide
In this guide, you will find language arts and science lessons for the articles in this issue of Young Explorer Voyager.

Young Explorer Magazine
Young Explorer classroom magazines for kindergarten and grade 1 develop young readers’ literacy skills through engaging informational text. Great storytelling and stunning photographs teach students about our planet and the people, plants, and animals that live on it. Encourage your students to read and explore our world with Young Explorer magazines.

Voyager
The Voyager edition is written for first grade readers. All articles in the Voyager edition have been measured using the Lexile® Framework for Reading. Some articles will be easier to read than others, though all articles will be within the 190–400L range.

Visit Young Explorer’s website, NatGeo.org/explorermag-resources, to find additional resources for extending your students’ learning.
Your Bones

**Objectives**
- Students will ask and answer questions about key details in the text.
- Students will recognize that the first word in a sentence is capitalized and will recognize and name end punctuation.

**Summary**
Your bones hold you up, help you move, and protect you. Your backbone supports your body. Your arm and leg bones help you move. Joints connect bones. They help you bend and move. Your ribs protect what is inside you, like your heart and lungs.

**WORD WORK**
**Sight Words:** of, has, give, some, walk

**BUILD VOCABULARY AND CONCEPTS**
- bones • joints
- skeleton • move
- protect

The words above are used in the article and may be new to students. Use the following routine to introduce the words to students. Go through the routine, one word at a time. Pronounce the word. Ask students if they know the word. They can respond with a thumbs up or a thumbs down. Define each word, using student-friendly language. Post the word on a word wall. Tell students they will be adding more information about each word, such as drawings, photos, descriptions, and definitions, as they learn more. After reading, as a class, you may want to add information about each word to a word wall.

Encourage students to tell what they know about the words and to use the words as they talk about their own experiences and the article.

**READ AND DISCUSS**
Read the article “Your Bones” aloud to students as they follow along. You may want to read the entire article first, and then reread the article, taking time to stop and discuss each two-page spread.

**Pages 2–3** Read the title and text aloud to students. After reading the text on page 3 ask: What do you think we will learn about the bones of the body as we read on? (how bones hold you up, help you move, and protect you)

Ask: Where are your bones? [Possible answer: under your skin] Point out to students the different X-ray pictures on the pages. Ask: What parts of the body do each of these pictures show? (foot/ankle, hands, spine/skull/ribs). Students may not know all of these, so let them know they will learn more and see more pictures of the bones in the body as you read on.

**Pages 4–5** Ask: What does your skeleton do? (gives you your shape) Point to the skeleton diagram. Ask students to point to the bones on the diagram as you read each label. Then have students point to where these bones are on their own body.

**Pages 6–7** Ask: What did you learn about bones and joints on these pages? (bones and joints help you move and bend) What kind of movement do the pictures show? (skating, playing tennis)

Point to the X-ray picture on page 6. Read the label and ask students to point to the joints on the picture. Then have them point to their own knees and bend and move their knees. Have them move their arms as if they were playing tennis.

**Pages 8–9** Ask: What do the ribs protect in your body? (heart and lungs) Ask students to point to where the ribs are on their body.

As a class, write a sentence about bones, such as Bones help you move. Guide students to recognize that a sentence begins with a capital letter and ends with a period.

**TALK AND WRITE**
Students can respond to the article by talking and writing. Use the following prompts to guide them. You might also want to use the Language Arts Master for this article

- Talk about something new you learned about your bones.
- Draw what you learned about your bones.

**Resources**
- Language Arts Master (page 4)
Your Bones

SCIENCE

Objective
• Students will learn that people have bones. Bones help your body stand and move.

Resources
• Science Master (page 5)

Science Background
The human body has 206 bones. More than half of these bones are the small bones in the hands and feet. The hands have 54 bones (27 in each hand), and the feet have 52 bones (26 in each foot). The largest/longest bone in the body is the thighbone, or femur. The smallest/shortest bone in the body is in the ear. It is called the stirrup. The focus of this article is on some of the bones that help hold the body up and help the body stand, sit, and move.

ENGAGE
Engage students in a discussion about movement. Ask them to run in place, do a few jumping jacks, and bend and touch their toes. Ask: What parts of your body do you use when you run, do jumping jacks, and bend over to touch your toes? (legs, arms, back)

EXPLORE
Ask students if they know where the bones in the body are. Then ask: Have you or anyone you know ever broken a bone? If so, which bone? [Students may mention bones they have broken, or they may point to the place on the body where a bone was broken.] Guide students in a discussion about what happens when a bone breaks. Students who have broken a bone might mention that they couldn’t use their arm or leg until the bone healed. Lead students to understand that strong, healthy bones allow us to stand and move easily.

Some students may mention that they saw a picture or an X-ray of their broken bone. Have them share what that looked like. You could let students know there are X-ray pictures of some of the bones of the body in the article “Your Bones.”

EXPLAIN
Read the article to students.

After reading, have students explain and describe what bones do. Have them fill in the blanks in the following sentences.

• Bones __________. (hold you up)
• Bones __________. (help you move)
• Bones __________. (protect you)

Have students point to the bones on the skeleton on page 4 that help them do each of the following things.

• Which bone supports your body? (backbone)
• Which bones protect your heart and lungs? (ribs)
• Which bones help you skate? (leg bones)
• Which bones help you throw? (arm bones)

ELABORATE
Spend more time exploring the joints of the body. Have students show movements they can make using these joints:

• knees
• elbows
• hips
• wrists
• fingers
• toes

EVALUATE
Assess students’ understanding with the Science Master for this article. You might also use the following prompts.

• What do bones do?
• Draw a way you can move thanks to your bones.
**LANGUAGE ARTS: What Do Bones Do?**

Write the sentences. Circle the capital letter. Circle the period.

Bones hold you up.

Bones help you move.

Bones protect you.
SCIENCE: Bones of the Body

Write the words.

ribs  leg bones  backbone  arm bones

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Peek in a Pool

LANGUAGE ARTS

Objectives
• Students will describe the relationship between photographs and text.
• Students will use possessive nouns.

Resources
• Language Arts Master (page 8)

Summary
Tide pools are pools of water that form on a rocky shore. Many different animals live in tide pools. Crabs, sea snails, sea stars, and sea urchins live in tide pools. They use their body parts to survive in a tide pool.

WORD WORK
Sight Words: of, live, has, them

BUILD VOCABULARY AND CONCEPTS
• tide pool
• survive
• crab
• sea snail
• sea star
• sea urchin

The words above are used in the article and may be new to students. Use the following routine to introduce the words to students. Go through the routine, one word at a time. Pronounce the word. Ask students if they know the word. They can respond with a thumbs up or a thumbs down. Define each word, using student-friendly language. Post the word on a word wall. Tell students they will be adding more information about each word, such as drawings, photos, descriptions, and definitions, as they learn more. After reading, as a class, you may want to add information about each word to a word wall.

Encourage students to tell what they know about the words and to use the words as they talk about their own experiences and the article.

READ AND DISCUSS
Read the article “Peek in a Pool” aloud to students as they follow along. You may want to read the entire article first, and then reread the article, taking time to stop and discuss each two-page spread.

Pages 10–11  Read the title and text aloud to students. After reading the text on page 11, have students look at the picture and ask: What do you see in the picture? [Students should mention the water, the rocks, the shore, and the sea stars.] Let students know they will be finding out more about tide pools and some of the animals that live there.

Pages 12–13  After reading the text on page 12, ask students to look at the photo of the crab. Say: The text says the crab has a hard shell. Point out the hard shell in the picture. Then ask students: If the hard shell covers the crab’s soft body, where is the crab’s soft body? [under the shell] What does the shell do to help the crab? [It protects its soft body.] You may want to talk about the difference between hard and soft. Students can name things that are hard and soft.

After reading the text and looking at the photo of the sea snails on page 13, ask: How is the shell of the sea snail like the crab’s shell? [it is hard and protects the animal.] How is it different? [It has a different shape. The snail can hide inside it.]

The text on pages 12 and 13 uses possessive nouns. Point out the possessive nouns “crab’s” and “snail’s” to students. Let them know that “’s” is used to show ownership. Ask: How do we know the soft body belongs to the crab? [The text uses “crab’s” to let the reader know.] How do we know where the shell is on a snail? [The text says it is on a snail’s back.]

Pages 14–15  After reading the text on these pages, ask students to look at the photos and the inset photo of tube feet. Ask: How do tube feet help sea stars and sea urchins? [They help them hold on to rocks or hold them in place so the waves don’t wash them away.]

TALK AND WRITE
Students can respond to the article by talking and writing. Use the following prompts to guide them, You might also want to use the Language Arts Master for this article.

• Talk about something new you learned about tide pools.
• Draw a tide pool and one of your favorite tide pool animals.
**Objective**

- Students will learn about some animals that live in tide pools. These animals use their body parts in different ways to protect themselves.

**Resources**

- Peek in a Pool poster (Teacher’s Edition)
- Science Master (page 9)

**Science Background**

Tide pools are alive with sea animals, sea grasses, seaweeds, and algae. With the rise and fall of the tides and the constant motion of the ocean, tide pools are ever-changing. Sea animals and sea plants that reside in tide pools find what they need to live there. With plenty of sunlight, the sea plants and algae grow well and are a source of food for some of the sea animals. The waves bring nutrients and oxygen to the tide pool. Rocks provide some sea animals a surface to cling to and nooks and crannies to hide in and around. Sea animals that live in tide pools also have physical adaptations that help them survive there, such as claws, shells, and spines for protection and tube feet for movement and stability.

**ENGAGE**

Ask students if they have ever been to the ocean. If some of them have, ask them to describe what the ocean is like. Guide them to talk about the waves and the constant motion of the ocean. Some students may even mention the tides, if they have experienced them. Ask: What different sea animals and sea plants did you see? Did you see rocks or rocky shores? Begin to share with students information about the ocean. Tap into their experiences with the ocean and some of the living things that can be found in and around the ocean.

**EXPLORE**

Explore the concept of ocean life and what sea animals need to live there. Ask: What do you think sea animals need to stay alive? (food) What do you think they need to watch out for to stay alive? Guide students to talk about how animals have to avoid being eaten by other animals. Let students know that you are going to read an article about ocean tide pools and find out how some sea animals are able to use their body parts to survive, or stay alive, there.

**EXPLAIN**

Read the article to students.

After reading, ask: What is a tide pool? (a pool of water on a rocky shore) What tide pool animals did we learn about? (crabs, sea snails, sea stars, sea urchins) Ask the following questions about each of the sea animals in “Peek in a Pool.”

- Which sea animals have shells that protect them? (crabs, sea snails)
- Which sea animal can hide inside its shell? (sea snail)
- Which sea animals have tube feet? (sea stars, sea urchins)
- How do tube feet help? (They hold the sea stars and sea urchins in place.)
- Why is it important for the sea stars and sea urchins to hold in place? (so the waves don’t wash them away)

You may want students to pantomime what it would be like to be washed away by ocean waves, if sea stars and sea urchins were not able to hold on with their tube feet. Then have them pantomime sea stars and sea urchins holding on with their tube feet as the ocean waves push and pull them.

**ELABORATE**

Refer to the back page of the magazine to explore more about the tide pool animals students read about in “Peek into a Pool.” Students will learn about body parts that help protect sea urchins, crabs, sea stars, and sea snails. To connect this article to the “Your Bones” article, you may wish to explain that these animals do not have backbones.

Display the Peek in a Pool poster. Have students work in pairs to find the tide pool animals they read about in the article. If students wish to learn about other animals that live in tide pools, as a class, find and name each of the numbered living things on the poster.

**EVALUATE**

Assess students’ understanding with the Science Master for this article. You might also use the following prompts.

- What are some animals that live in a tide pool?
- Draw a crab or a sea snail. Label what helps protect it.
LANGUAGE ARTS: Whose Is It?

Fill in the blank to complete the sentences.

<table>
<thead>
<tr>
<th>sea star’s</th>
<th>sea snail’s</th>
<th>crab’s</th>
</tr>
</thead>
</table>

1. The [sea star’s] shell protects its body.

2. The [sea snail’s] shell sits on its back.

3. The [crab’s] feet hold on to rocks.

Draw a sea urchin. Fill in the blank to complete the sentence.

The [feet] hold it in place.
SCIENCE: Where Are the Animals?

Draw animals that live in a tide pool.
Out in Space

LANGUAGE ARTS

Objectives
- Students will use a diagram of the solar system to locate the planets and determine where they are in relation to one another and their distance from the sun.

READ AND DISCUSS
Read the article “Out in Space” aloud to students as they follow along. You may want to read the entire article first, and then reread the article, taking time to stop and discuss each two-page spread.

When you read and discuss the article, focus on these questions for each two-page spread.

Pages 16–17 Ask: What did you learn about stars? (Sometimes you can see stars in the night sky: Stars are far away. They look small.)

Pages 18–19 Ask: What more did you learn about stars? (A star is a huge ball of hot, burning gases. The sun is an important star. It lights and heats Earth.)

Pages 20–21 Ask: What are some things that make up our solar system? (the sun, Earth, planets) What did you learn about planets? (They are round objects in space. They come in many sizes. They move around, or circle, the sun.)

Have students spend time studying the solar system diagram. Ask them questions about where the different planets are in relation to one another and to the sun. Talk about the different sizes of the planets and the different characteristics of each planet; for example, color and other distinguishing characteristics such as Saturn’s rings.

Pages 22–23 Ask: What did you learn about Earth’s moon? (It is a round object in space, but it is not a planet. It circles Earth.) What did you learn about space and our solar system? (Earth, Earth’s moon, planets, and the sun are in space. They are part of our solar system.)

TALK AND WRITE
Students can respond to the article by talking and writing. Use the following prompts to guide them, You might also want to use the Language Arts Master for this article.

- Talk about something new you learned about space.
- Draw and label one of the planets in our solar system.

Write a sentence about the planet.
Out in Space

SCIENCE

Objective
• Students will understand that the sun, moon, stars, and planets are in space and are part of our solar system.

Resources
• Our Solar System poster (Teacher’s Edition)
• Science Master (page 13)

Science Background
As a kid, Jedidah Isler liked looking at stars. When she was twelve years old, she decided she wanted to be an astrophysicist. Today, she has a Ph.D. in astrophysics and is a postdoctoral fellow and National Geographic Emerging Explorer.

There are many different objects in space. Our solar system is in space. It is made up of many objects, including the sun, planets, moons, asteroids, comets, and meteoroids. All of the planets revolve around the sun. The sun is the largest object in our solar system. Its light and heat makes it possible for life on Earth. There are four inner planets—Mercury, Venus, Earth, and Mars. There are four outer planets—Jupiter, Saturn, Uranus, and Neptune.

ENGAGE
To engage students in a discussion about space ask:
What do you see when you look up into the night sky? (Students are likely to mention stars and the moon.) What is in the sky during the day that provides light and heat? (the sun) Let students know that these objects—the stars, the moon, and the sun—are all in space.

EXPLORE
Explore that stars appear small because they are far away. Ask: What do stars look like? (small points of light in the sky) Let students know that stars are very far away from us. They appear small, but they are really very large. Explore the concept of how things close by appear larger than they do when they are far away. Ask: Have you ever been in an airplane? If so, have you looked about the window before you started flying above the clouds? What did cars and buildings look like? Did they appear smaller or larger than they do when you are on the ground? Discuss with students that the farther away something is from you the smaller it appears.

EXPLAIN
Read the article to students.

After reading, have students explain and describe some things about space and our solar system. Students should note some of the following:
• Stars are in space. They look small because they are far away.
• Stars are huge balls of hot, burning gases.
• Our sun is a star. It lights and heats Earth.
• The sun is part of our solar system. There are eight planets, including Earth, in our solar system. The planets move around the sun.
• Earth has one moon. The moon is not a planet. It circles Earth.
• The sun, the planets, and the moon are all in space. They are part of our solar system.

ELABORATE
Share the Our Solar System poster with students. Have students work in pairs to use the solar system map to answer the questions.

1. How many planets are in our solar system? [eight]
2. Which planet is your home? [Earth]
3. Which planet is closest to the sun? [Mercury]
4. Which planet is farthest from the sun? [Neptune]
5. Which is the largest planet? [Jupiter]

EVALUATE
Assess students’ understanding with the Science Master for this article. You might also use the following prompts.
• What is in our solar system?
• Draw Earth and the moon.
Use the words to label parts of our solar system.

<table>
<thead>
<tr>
<th>Earth</th>
<th>Mars</th>
<th>sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venus</td>
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<td></td>
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<tr>
<td>Jupiter</td>
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<tr>
<td>Neptune</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uranus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SCIENCE: What’s in Space?

Draw lines to match the pictures to the words. Then complete the sentences.

1. The _________ is a star.

2. Saturn is a _________.

3. Earth has one _________.
ANSWER KEY

Your Bones

Language Arts: What Do Bones Do?, page 4
Students should write the sentences and circle the capital letter that begins each sentence and the period that ends each sentence.

Science: Bones of the Body, page 5
Students should correctly label the parts of the body using the words in the word bank: ribs, leg bones, backbone, arm bones.

Peek in a Pool

Language Arts: Whose Is It?, page 8
Students should fill in the blank with the correct possessive noun.

Science: Where Are the Animals?, page 9
Students should draw animals that live in a tide pool.

Out in Space

Language Arts: Our Solar System, page 12
Students should correctly label Earth, Mars, and the sun.

Science: What is in Space?, page 13
Students should draw a line to match each picture to a word.

image of crescent moon → moon
image of Saturn → planet
image of sun → sun

Then students should fill in the blanks to complete the sentences.

The sun is a star.
Saturn is a planet.
Earth has one moon.