Dear Educator:

The school year is almost over, yet the adventure is not! This issue of Young Explorer gives students plenty to think about and do, even after the last bell rings.

On a warm summer night, you may see a light flash in the sky. There’s another—and another! In “Living Lights,” students will learn about some of the plants and animals that make their own light.

In our next article, “Star Bright,” we keep our sights on the sky—and beyond. Students will learn about Earth’s closest star, the sun, and why it is so important to life on Earth.

Finally, “Me and My Shadow,” takes us up to space and back to Earth again. Students learn about shadows and how they are made. They’ll also learn why night and day happens.

We’ve had a great year exploring together. Don’t miss out on all the new adventures we have planned for you. Please renew. We can’t wait to bring the world to your classroom.

Sara Chauhan
Editor, Young Explorer

Living Lights, pp. 2–9
Curriculum: Standards
- **Life Science:** All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce; students know plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places
- **Language Arts:** Develop academic vocabulary; relate pictures and illustrations to the overall story in which they appear; with prompting and support, ask and answer questions about details in a text; tell a story

Star Bright, pp. 10–15
Curriculum: Standards
- **Earth Science:** Observe that some objects are far away and some are nearby as seen from Earth; know that the sun warms the land, air, and water; investigate and understand the basic relationship between the sun and Earth
- **Language Arts:** Develop academic vocabulary; relate pictures and illustrations to the overall story in which they appear; with prompting and support, ask and answer questions about details in a text

Me and My Shadow, pp. 16–23
Curriculum: Standards
- **Earth Science:** Recognize the repeating pattern of day and night; recognize that shadows occur in nature when sunlight is blocked by an object and that night and day are caused by the rotation of Earth; understand that the sun appears to move across the sky in the same way every day; observe, record, and predict the sun’s position at different times of day (morning, noon, afternoon, or night)
- **Language Arts:** Develop academic vocabulary; relate pictures and illustrations to the overall story in which they appear; with prompting and support, ask and answer questions about details in a text
Before Reading
Have students look at the “Explore New Words” side of the poster. Say, *These words will help you read and understand the articles in this magazine.*

Then have students read the words on the poster aloud with you. After each word is read, point to the picture that accompanies it. Have volunteers describe what they see.

After reviewing the content words on the poster, have students complete the activity master on p. T15 to assess their comprehension of each word.

Science Picture Dictionary
Encourage students to make a picture dictionary for all content words in the issue. As students learn or review a word, have them create an entry for it consisting of the word, its definition, and a small illustration. After reading the issue, have students work in pairs to arrange the pages of the dictionary in ABC order.

Web Connect
Invite students to access the *Young Explorer* website at [www.nationalgeographic.com/nyoungexplorer/](http://www.nationalgeographic.com/nyoungexplorer/).

They can listen to the “Explore New Words” poster. This is an excellent way for students to build fluency and gain a better understanding of the vocabulary presented in each story.

**Explore New Words**

**About the Poster**
Before reading this issue of *Young Explorer*, display the “Explore New Words” side of the poster. Explain that it lists some important new words from the magazine’s articles. Before reading, students will learn or review these words.

As you read each article with students, keep the “Explore New Words” poster displayed. Challenge students to listen for the words on the poster as each article in the issue is read. Instruct students to raise their right hand when they hear one of the words. If students miss any word, stop and identify it before moving on.
Content Vocabulary
Display the additional key content vocabulary words: 
flashes, another, deep, sea

Have volunteers give the meaning of words they know. Then turn to less familiar words. First, read a simple dictionary definition of the word. Then help students develop a simpler version in their own words. Have students then enter each word, its definition, and a drawing in their science picture dictionary.

Explore Science
Have a student read aloud the text on p. 2. Say, Fireflies are usually out and about in the evening. Sometimes you can spot them before the sun goes down. Ask, Why wouldn’t you notice them as much before the sun goes down? (It’s easier to see them light up in the dark.)

Background: Bioluminescent organisms, like fireflies, use chemical reactions in their bodies to make light. The exact process isn’t fully understood, but it is thought that when oxygen enters the body and combines with certain chemicals, the chemicals glow and produce a light.

Living Lights

About the Story
In this story, students will be introduced to several bioluminescent organisms—plants, animals, and other living things that glow in the dark.

Before Reading
Tap Prior Knowledge Hold up the magazine and point to the insect on pp. 2-3 of the article. Say, This is a firefly. It’s called that because it makes flashes of light from its body. Then ask, Has anyone ever seen a firefly in the evening? (Some students might raise their hands.) Ask, Why do you think they make those flashes of light? (Accept several responses as a basis for a short discussion before starting the story.) Then tell students to look for the answer to that question as they read the article.
**Content Vocabulary**
Display the additional key content vocabulary words: **firefly, warns**

Have students then enter each word, its definition, and a drawing in their science picture dictionary.

**Explore Science**
Have one student read aloud the text on p. 4. When they have finished, ask, **What color is the light from a firefly?** (yellow) Continue, **The story says the light from a firefly flashes. What does that mean?** (The light goes on and off.) Respond, **That’s right. The firefly gives off a yellow light that blinks on and off.** (Note: Not all fireflies produce this light. If your community is in the western part of the United States, you are not likely to see flashing fireflies.)

**Explore Science Continued**
Say, **Remember when we started this article, we tried to figure out why fireflies flash. What were some of your answers?** (Students recall some of their previous answers.) Say, **Well, now we’re going to find out if any of you were right.** Ask students, **Why do fireflies flash?** (to call other fireflies or to warn other animals to stay away.) Say, **Yes, the flashing light does both of those things. The flashes are often signals to other fireflies.** Then ask, **Why do other animals avoid eating fireflies?** (They know fireflies taste bad.) Say, **That’s true, many animals know that certain colors, patterns, or even flashing lights mean a certain animal will not make a tasty dinner. So hungry animals stay away.** Ask, **How does this help fireflies?** (It helps fireflies stay safe from animals that would eat them) Say, **That’s right, it’s a type of protection for fireflies.**

**Fast Facts**
- Not all firefly species glow. In the United States, glowing fireflies are found primarily from Kansas to the Atlantic coast.
- Fireflies produce “cold” light. If the part of their body that produces light also gave off heat, the firefly would eventually get too hot to survive.
- The larvae of some fireflies also have organs that produce bioluminescence. Biologists think the glowing larvae are a signal to predators that the bugs taste bad and should be avoided.

**Engage Students**
Share with students the fact that fireflies have other names. For example, sometimes they are called lightning bugs. Challenge students to come up with another name for the firefly. Encourage them to take into account what it is (an insect) and what it does (flashes light). Have students work in pairs or small groups to come up with a name. Then have each group or pair present their name, and the reason they chose it.
Content Vocabulary
Display the additional key content vocabulary words:
**squid, patterns, trick**

Have students then enter each word, its definition, and a
drawing in their **science picture dictionary**.

Explore Science
Hold up your magazine and point to the squid in the inset
circle. Say, This animal is a squid. It's a sea creature with a
long body, eight arms, and two tentacles. Point to the larger
photo of the bioluminescent squid and say, This is the
same animal. How is it different? (You can only see small
dots of light on its body.) Now ask a volunteer to read aloud
the text on pp. 6 and 7. Ask, What color are the lights on
the squid? (blue) Are the lights on the squid the same
color as the flashing lights of the firefly? (no) How are they
different? (The firefly flashes yellow, while the squid's light
pattern is blue.)

Explore Science Continued
Ask students, Why does the squid have a pattern of lights on its skin? (They
call other squid and trick little fish into coming close.) Say, That's true. Other
fish are lured toward the bright light, and they become the squid's dinner.

**Background:** There are four main reasons animals are bioluminescent:
1) To fool predators in order to make a quick get-away. (One type of squid
squirts a glowing cloud at enemies and then speeds away.); 2) To attract other
animals or a mate; 3) To trick prey into coming close; 4) To identify others of
the same species.

**NG Connect**
Invite students to take a look at some amazing bioluminescent creatures of
the deep sea at this National Geographic website:
http://news.nationalgeographic.com/news/2010/05/photogalleries/100507-
glowing-animals-bioluminescence-science-pictures/

Click on the photos to see the slide show titled, “Glowing Sea Beasts: Photos
Shed Light on Bioluminescence.”
Some mushrooms glow. They look like green lights in the dark forest.

Why do they glow? We don’t know. It’s a mystery.

Engage Students

Tell a Story Remind students that scientists don’t know why some mushrooms like the ones on p. 9 glow in the dark. Challenge them to have some fun creating an explanation—one that will be more science fiction than science. Ask students to come up with a tale that explains how or why the mushrooms glow green in the dark of the forest. Students can work in pairs or in a small group to think up their tales. Each pair or group should tell their story to the class. Groups can choose a representative to tell the story, or can have everyone in the group take part. Some groups might want to also act out the story.

Have students complete the activity master on p. T16 to assess their comprehension of the article.

Content Vocabulary
Display the additional key content vocabulary words: mushrooms, glow, dark, forest, mystery
Have students enter each word, its definition, and a drawing in their science picture dictionary.

Explore Science
As students follow along in their magazines, read aloud the text on pp. 8-9. Ask, What type of living things do you see in the picture below? (mushrooms) Ask, What is unusual about these mushrooms? (They glow in the dark.) What color do they glow? (green) Then ask, Why do the mushrooms glow? (No one knows.) Say, That’s right. Scientists don’t really know why they glow—yet. Explain that there are many things that scientists don’t know. That’s why they do experiments—to find the answers to questions that they cannot answer.
**Star Bright**

**About the Story**

Students learn about the sun, the star that is closest to Earth. They discover that the sun is at the center of our solar system, and that all living things on Earth depend on the sun's heat and light.

**Before Reading**

**Tap Prior Knowledge** Ask students, *What makes the sky bright in the daytime?* (Students should respond that the sun does.) Have students brainstorm words they would use to describe the sun. Display the words as they say them. (Possible answers: bright, yellow, hot, big, round) Tell students they are going to learn some interesting things about the sun as they read this article.

**Content Vocabulary**

Display the additional key content vocabulary words: Earth, star, important

Have volunteers give the meaning of words they know. Then turn to less familiar words. First, read a simple dictionary definition of the word. Then help students develop a simpler version in their own words. Have students then enter each word, its definition, and a drawing in their science picture dictionary.

**Explore Science**

Read aloud the title of the article. Then have a student volunteer read the text on p. 11. Ask, *What kind of object is the sun?* (a star) Draw students' attention to the photo of the sun on pp. 10-11. Ask, *Is this what you think of when someone says “a star?”* (Students will probably answer, “No.”) Ask, *When I say the word “star,” what do you picture?* (Students will likely describe a point of light in the night sky.) Say, *Yes, that’s right. We usually think of the bright points of light we see in the sky at night as stars—and they are stars. But this giant fiery ball of light is our sun, a star.* Ask, *How can the big, bright ball of light we see in the sky in the daytime be the same as the little points of light in the night sky?* (Accept several responses from students as a basis for discussion.) If students haven’t come up with the answer at this point, direct their attention back to p. 11, and tell them to read the first sentence in the article. Ask again, *Why does our sun look different than the other stars?* (It is closer to Earth than other stars.)

**Engage Students**

**Hands-On Science** Reinforce the fact that the sun and other stars look different to us because of their distance from Earth. You will need two identical flashlights, and a large space that you can darken. Have two students hold the flashlights, with one standing 15-20 feet in front of the other. They should be far enough apart so they don’t block each other. Have the students turn on their flashlights and point them toward the opposite end of the room, where the rest of the class is observing. (Be sure students avoid shining the flashlights in people’s eyes.) Ask, *Do both of the lights look the same.* (No.) *How do they look different?* (The light that is closer looks larger.) Next ask, *How is that like a comparison of the sun to the stars at night?* (Some of the stars at night are bright like the sun, but they don’t seem as bright because they are farther away.)
There are eight planets in the solar system. This picture shows them in order, from the planet closest to the sun, which is Mercury (point to Mercury), to the planet farthest from the sun, which is Neptune (point to Neptune at the right edge of the drawing).

Now hold up your magazine again. Have students count the planets off with you as you point to each planet in your magazine. Point to the first planet and say “one,” then to the second planet and say “two,” and so on through “eight.” Then tell students to point to the third planet from the sun. Ask, Which planet is this? (Earth) Respond, Right. Earth is the third planet from the sun. It’s also our home planet. Tell students to look at all the planets and compare their sizes. (Note: The planets in this illustration are not to scale, but the sizes are relative.) Ask, How does Earth’s size compare to the size of the other planets? Is it one of the biggest planets or one of the smallest? (Students should recognize that Earth is one of the smallest planets.) Say, That’s right. You can see that the four planets closest to the sun, including Earth, are much smaller than the four farthest away from the sun.

Instruct students to read aloud the text on p.13 together. Then ask, How do the planets move? (They circle, or move around, the sun.) Say, That’s correct. All of the planets, including Earth, move around the sun. You can’t feel Earth move, but right now we’re zooming through space. Ask, Why doesn’t Earth ever get burned by the sun? (It never gets too close to the sun.) Explain, That’s right. Earth’s path around the sun doesn’t change. It never gets too close to the sun or too far away from it. So the temperature on Earth doesn’t get too hot or too cold. It’s just right for all the living things on Earth.

Explore Science Continued

**Hands-On Science** Have students model the movement (revolution) of Earth and the other planets around the sun. Have one person representing the sun stand in the center of an empty area. Then say, All the planets in the solar system circle the sun. Who can be a planet and show us how a planet circles the sun? Allow a volunteer to model the planet’s motion by walking slowly in a circle around the student who is “the sun.” Have seven other students volunteer to model the movement of the other planets, so that your model is a solar system with eight planets orbiting the sun.
Explore another student to read the text on p. 15. Ask students, *Why is the sun important?* (Every living thing needs the sun.) Say, *Right. There would be no life on Earth without the sun.* Then ask, *What are three things we all need that we get from the sun?* (Lead students to recall that we get heat, light, and food because of the sun.)

**Fast Facts**
- The sun is so large that one million Earths could fit inside it.
- The sun is an average-size yellow star. Many of the stars that we see in the night sky are much larger or much hotter than the sun.
- It takes 8 minutes for the sun’s light to reach Earth.
- The sun’s expected lifetime is 11 billion years. Scientists think the sun is about 5.5 billion years old now.

Have students complete the activity master on p. T17 to assess their comprehension of the article.

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**Explore Science Continued**

Draw students’ attention to the photo on pp. 14–15. Then ask a volunteer to read aloud the text. Ask students, *How does the sun affect Earth?* (It gives Earth warmth and light.) Have students look at the photo again. Say, *That big round object you see in the picture is the sun lighting up the sky and making the air warm.* Then ask, *Why do plants need the sun?* (to grow) Explain, *That’s right. Plants must have the sun to live and grow.* Ask, *Then what happens to the plants?* (People and animals eat many of them.) Explain, *People and animals, like these elephants, get the food they need when they eat plants. People and some other animals also eat animals that eat plants. None of the food on Earth could grow without the sun.*
The Sun’s Family

About the Poster
This poster describes the eight planets in our solar system.

Background: Our solar system consists of the eight planets plus several other types of objects orbiting the sun. Those other objects include asteroids, comets, dwarf planets, meteoroids, and the moons that revolve around most of the planets. Until very recently, the solar system had nine planets. However, the number dropped to eight when Pluto was reclassified as a dwarf planet in 2006 by the International Astronomical Union. Pluto is tiny—approximately 30 percent smaller than our moon. But Pluto’s size alone was not enough to get it downgraded. A major feature of a dwarf planet is that it shares its orbit with other objects. Planets do not. Pluto orbits the sun in an area where there are many small, frozen objects that are remnants of the formation of the solar system billions of years ago.

Explore Science
While reading the poster, students can refer to the illustration of the planets on pp. 12-13 for the order of the planets from the sun. Read the title and introduction to the poster, and have eight students read the eight captions under the pictures of the planets. Ask students, Which is the largest planet in the solar system? (Jupiter) Say, Yes, Jupiter is larger than all of the other planets put together. Ask, How is Earth different than all of the other planets? (Earth has air that we can breathe.) Also, point out that Earth is very different than the other planets because most of its surface is covered by liquid water. Ask, What is the hottest planet in the solar system? (Venus) Continue, Yes, Venus is even hotter than Mercury, which is closer to the sun. Venus is hotter because it has thick clouds around it that hold in the planet’s heat. Ask, Which planets are made of gases? (Jupiter and Uranus) Say, Yes, Jupiter and Uranus do not have solid surfaces like Earth. They are made of gases. Saturn and Neptune are also made of gases. The other four planets—Mercury, Venus, Earth, and Mars, are made of rock.

Academic Vocabulary
Remind students that Earth and the other planets of the solar system move around the sun. Read aloud the title of the poster and the sentence below it to students. Draw students’ attention to the word orbit and display the word. Tell students that orbit is an action word that means “to circle around” or “to move around” something. Ask several volunteers to make up sentences using the word orbit.
Me and My Shadow

About the Story
In this article, students learn that when light is blocked, shadows form. They also find out why shadows change throughout the day.

Before Reading
Tap Prior Knowledge Have a student volunteer to stand in front of the room. Shine a powerful flashlight behind the student so that the shadow falls on the wall. Then ask students, What do you see on the wall? (Students should know that this is a shadow. If not, introduce the word.) Ask, Have you ever seen shadows on the ground outside? Maybe you’ve seen your own shadow. Does your shadow always look the same? Students might disagree on this point. Tell students they are going to read about how shadows form and how they change throughout the day.

Content Vocabulary
Display the additional key content vocabulary word: block
Have volunteers give the meaning of the word if they know it. Then read a simple dictionary definition of the word. Then help students develop a simpler version in their own words. Have students then enter the word, its definition, and a drawing in their science picture dictionary.

Explore Science
Ask a volunteer to read aloud the text on pp. 16-17. Then ask, How does a shadow form? (It forms when an object blocks light.) Tell students to look at the photo on pp. 16-17. Ask students, Where is the light? Is it behind the row of people or in front of them? (behind them) Say, Yes, the light is behind them. Hold up your magazine and point at the backs of the row of people and say, You can see the light hitting them on their backs. Then ask, So why does the line of people form a shadow in front of them? (They are blocking the light shining from behind them.) Say, Right. The light is shining from behind them. Shadows form in front of them because their bodies are blocking the light.
Explore Science Continued
Tell students to look at the illustration on pp. 18-19. Have students point to the sun in their magazines. Ask, What is coming to Earth from the sun? You can see it on part of Earth’s surface. (light) Explain, Yes, the sun’s light shines on Earth. Hold up your magazine and point to the light part of Earth. Say, Is the sun shining on all of Earth? (no) Now say, I want you to finish this sentence for me: The side of Earth facing the sun is ___. (light or bright) Now point to the dark side of Earth. Ask, What does this part of the planet look like? (dark) Why does that part of Earth look dark? (It’s facing away from the sun.) Say, That’s right. Earth is blocking the sun’s light, so the part of Earth facing away from the sun is in shadow. It’s dark. Ask students to finish these sentences as you read them aloud: It is ___ on the part of Earth that has sunlight. (daytime) It is ___ on the part of Earth that is dark. (nighttime)

Engage Students
Hands-On Science Demonstrate the way a spinning Earth passes from night to day and back again using a flashlight and a small plastic foam ball stuck on the end of a pencil. Have one student hold up the ball, grasping the pencil underneath. The ball is Earth. Use a marker to make a dot on the ball so you can tell when an area has moved from day to night. Shine a flashlight straight onto the ball from one side. Point out that half the ball is lit while the other half is dark. Ask, If the flashlight is the sun and the ball is Earth what are the light and dark areas on the ball? (day and night) Have the student holding the model Earth spin it slowly, while the light is still shining on it. Ask, What happens to places on Earth, like our town, as Earth spins? (Students observe that the town moves in and out of the “sunlight,” spinning from day to night and back again.)
Content Vocabulary
Display the additional key content vocabulary words: morning, rises, noon, high, afternoon, setting

Have students enter each word, its definition, and a drawing in their science picture dictionary.

Explore Science
Ask a volunteer to read aloud the text on p. 20, then have a second volunteer read aloud the text on p. 21. Ask students, Does the sun seem to stay in the same place in the sky all day? (no) Say, No, it doesn’t. If you observe the sky during a day, it seems to rise in one part of the sky, move across the sky, and then set in another part of the sky. Draw students’ attention to the time-lapse photo of the sun at the top of pp. 20-21. Explain that this is several photos of the sun side-by-side, with photos taken at equal intervals throughout a day. Ask, Why does the sun appear to move across the sky? (Earth is spinning.)

Explore Science Continued
Have students look at the photo of the sun at the top of pp. 20-21 again. Hold up your magazine and point as you explain, Here on the left, the sun is just rising and it is low in the sky. As the day goes on, the sun gets higher in the sky. It is highest at noon. Then in the afternoon, the sun gets lower and lower in the sky until, here on the right, it sets. Then ask students, Is the sun high or low in the sky in the early morning? (low) Ask, What do shadows look like when the sun is low in the sky in the morning? (They are long.) When the sun is high at noon, what do shadows look like? (They are short.) When the sun gets low in the sky again in late afternoon, what are shadows like? (They are long.)

Explain, Shadows are long in the early morning. They get shorter and shorter until it’s noon. Then in the afternoon, they get longer and longer again as the sun sinks lower in the sky. Tell students to look at the pictures. Say, Compare the shadows in the pictures on pages 20 and 21. Are shadows longer in the afternoon or at noon? (in the afternoon) Ask, How would you describe the way the three shadows in this picture are different? (Shadows are longer in the morning and afternoon than they are at noon.)

NG Connect

Share this photo with students—an optical illusion that uses shadows. At first glance, the photo appears to show camel silhouettes. Look more carefully, and the camel shapes become shadows. The photo is taken from directly above the camels, which are the narrow figures at the bases of the shadows.

After students observe the photo and locate the camels in relation to their shadows, ask, Based on the shadows, was this picture taken at noon, or in either the morning or afternoon? (Students should conclude that because the shadows are long, it was taken either in the morning or afternoon.)
Content Vocabulary
Display the additional key content vocabulary words: penguins’, kangaroo’s
Have students enter each word, its definition, and a drawing in their science picture dictionary.

Explore Science
Tell students to look at the photo of the penguins on p. 22. As they do, have a volunteer read aloud the text on the page. Repeat the question in the text: What time of day could it be? (Students should answer that it is around noon.) That’s right, this photo was taken around noon. How do you know? (The penguins’ shadows are very short.) Now have students look at the photo on p. 23. Have a student read aloud the text. Again, repeat the question in the text: What time of day could it be here? (It is in the morning or afternoon.) How do you know? (The shadow is long.)

Extend the Learning
Hands-On Science Work with students to make a simple sundial to show how shadows can be used to tell time. You’ll need a tall, straight object such as a pencil, stick, or dowel to use as the sundial’s gnomon (the piece on the sundial that sticks out and makes a shadow). You’ll also need a chunk of modeling clay, several large stones, and a piece of chalk. Choose an area outside, possibly on the playground, which is away from foot traffic and gets sun all day. Your stick will be your sundial. Push one of its ends into the chunk of modeling clay. Then put the clay in the empty, sunny space you’ve chosen with the stick pointing straight up. Start in the morning, at 8:00 a.m. or 9:00 a.m., if possible. Have students observe the shadow cast by the stick, and place one of the stones at the end of it at the top of the hour. With the chalk write the hour on the ground near the stone. Repeat this step on the hour until noon, and then for as many hours as possible after noon. You will then have a sundial. Leave it in place.

The next sunny day, have students go back to the sundial and use it to tell time. Have students look at the position of the shadow on the sundial. Based on where it points among the stones, have students tell what time it is. Check the accuracy of the sundial against a watch. Tell students that people in ancient times used sundials to tell time, long before there were mechanical clocks. Say, But sundials are not as useful as clocks, because there are times when you can’t use them. Ask, When might it be impossible to tell time with a sundial? (Possible answers: when the weather is cloudy; at night)

Have students complete the activity master on p. T19.

Engage Students
Art Have students draw an object and its shadow. Tell students that this should be a morning shadow, and the sunlight is on the left side of the paper. After students have finished with their drawings, collect them all. Without revealing names, show each of the drawings and ask the class to decide whether the shadow is correct in terms of where it is placed relative to the light source and whether it is short or long.
1. There are eight planets in our _______.

2. The sun is a _______.

3. You see your _______ on the ground when it is sunny.

Explore New Words

Earth is a _______.

Write the word that correctly completes each sentence.

Name:
1. Name a bug that glows. Write one reason it glows.

2. Name a sea animal that can glow. Write why it glows.

3. Name a plant that glows in the forest. Write why it glows.

On the back of this paper, draw a picture that shows you watching something that glows.
The sentences below tell about the sun. Write the sentences in the order you read them in the article. Then draw what each sentence says.

1. The sun helps plants grow.
2. The sun is Earth’s closest star.
3. The sun warms and lights Earth.

The sun is Earth’s closest star. The sun warms and lights Earth.
The Sun’s Family

Neptune
Uranus
Saturn
Jupiter
Mars
Earth
Venus
Mercury

Draw a line from the planet to the words that tell about it.

It is a planet made of gases.

It is the hottest planet in the solar system.

It is the largest planet in the solar system.

It is the only planet with air we can breathe.

It is farthest from the sun.

It has rings of ice and dust around it.

It is called the red planet.

It is the smallest planet in the solar system.

It is the only planet with air we can breathe.

It is the hottest planet in the solar system.

It has rings of ice and dust around it.

It is called the red planet.
Me and My Shadow

Write **day** on the side of Earth that has daytime. Write **night** on the side of Earth that has nighttime.
The sentences below tell about the sun. Write the sentences in the order you read them in the article. Then draw what each sentence says.

1. The sun helps plants grow.
2. People and animals eat plants.
3. The sun warms and lights earth.
4. The sun is Earth's closest star.

The sun helps plants grow. People and animals eat plants. The sun warms and lights earth. The sun is Earth's closest star.

Explore New Words
1. Name a bug that can glow. Write one reason it glows. Firefly: It calls other fireflies; it attracts them.
2. Name a sea animal that can glow. Write why it glows. Squid: It calls other squid; it tricks fish.
3. Name a plant that glows in the forest. Write why it glows. Mushroom: It's a mystery.

Living Lights
Explore New Words

The Sun's Family
Draw a line from the planet to the words that tell about it.

Mercury
- It is a rocky planet.
- It is the closest to the sun.

Venus
- It is a rocky planet.
- It has the hottest surface temperature.

Earth
- It is the only place in the solar system where water is liquid.
- It has oceans, continents, and mountains.

Mars
- It is called the red planet.
- It has reddish-brown soil.

Jupiter
- It has 69 moons.
- It has a great red spot.

Saturn
- It has rings of ice and dust.
- It is the only planet with a ring.

Uranus
- It has 27 moons.
- It spins on its side.

Neptune
- It has 14 moons.
- It is the farthest from the sun.

The Sun's Family

Star Bright

The Sun helps plants grow. People and animals eat plants. The sun warms and lights earth. The sun is Earth's closest star.
Me and My Shadow

Name: [Blank]

Day

Night

Write day on the part of earth that has daytime. Write night on the part of earth that has nighttime.