

# Space

## Lesson 2: Stars vs. Our Sun

### Today's focus

I will be able to:

- explain how stars can be different.
- identify the Sun as a star that emits energy (light and heat).
- identify that the Sun appears large because it is the closest star to Earth.

### **Bellringer**

Jeff thinks different types of rocket wings will affect how high a rocket can go in the air. He wants to test this idea by comparing different wings when launching his model rockets. Which of the following experiments would be the **best** test to investigate the effect of the rocket wing type on the height of the rocket's flight?

- to launch four identical model rockets using a different fuel in each and compare how high they travel
- to launch one rocket with several different types of wings on it at the same time to see how high it travels
- to launch four model rockets that have different lengths and wing types, and compare how high the rockets travel
- to launch four of the same type of model rockets, each with a different type of wing and compare how high they travel

### **Think About This!! - Why is the Sun easy to see?**

Three friends were observing the sky just before sunset and observed the Sun and another star. This is what they said:

**Cassandra:** "I think the Sun is easier to see because it's much larger than the other star."

**Kevin:** "I think the Sun is easier to see because the other star is very small."

**Sheldon:** "I think the Sun is easier to see because it is very close and the other star is very far away."

**Fernanda:** "I think the Sun is easier to see because it is very far away and the other star is very close."

Who do you agree with? Explain your thinking. \_\_\_\_\_

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## Think About This!!

### Where Do Stars Go?

Five friends were wondering where stars were in the daytime. They each had different ideas about why we do not see stars in the sky during the day. This is what they said:

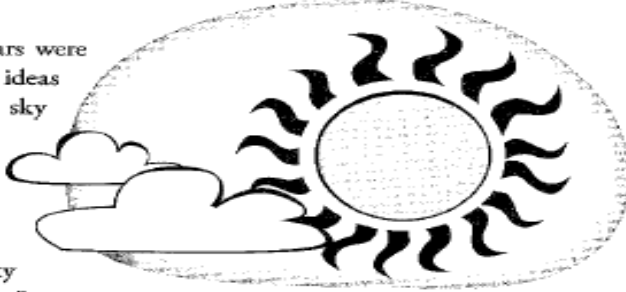
Jack: "The stars stop shining when the Sun comes out."

Shelley: "The stars are still in the sky above us, but we can't see them."

Nancy: "The stars go underneath Earth during the daytime."

Emma: "The stars cool down during the day and the Sun gets hotter."

Flavio: "The stars are on the other side of Earth where it's nighttime."



Who do you agree with and why? \_\_\_\_\_

### Reading Passage: Stars

A star is a huge, bright ball of burning gas that is held together by gravity. Our Sun is a star. The Sun is the closest star to Earth. The Sun is the only star in our solar system.

Stars can be different sizes, different temperatures (different colors), different distances from Earth, and some appear larger and brighter than other stars. Stars are not evenly distributed throughout space.

What is a star and what holds stars together?

The sky is filled with more stars than can be counted. Stars may look like points of light in the night sky, but stars are actually huge balls of hot, glowing gases. They produce their own heat and glow with their own light. They seem like tiny points of light because they are so far away or because they do not give off as much energy as other stars.

All stars give off heat and light, but they are not all the same. Stars can be classified by their size, temperature, and brightness in relation to their distance from Earth.

Why do stars in the night sky appear as tiny points of light?

\_\_\_\_\_

How are stars classified?

\_\_\_\_\_

\_\_\_\_\_

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Stars also vary greatly in size. Some stars can be as small as a planet. Other stars are huge in comparison to average stars. Larger stars are often brighter than smaller stars, because their larger size allows them to give off more light energy. In the night sky, some stars seem bigger and brighter than others. That is because they may be closer to the Earth or they may give off much more energy.

The brightness of a star as it appears in the night sky depends on its size, its temperature, and its distance from Earth.

What factors determine the brightness of a star as it is seen from Earth at night?

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List two reasons why some stars appear brighter than others.

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## Video: What are Stars?

What are two ways that stars are different? \_\_\_\_\_

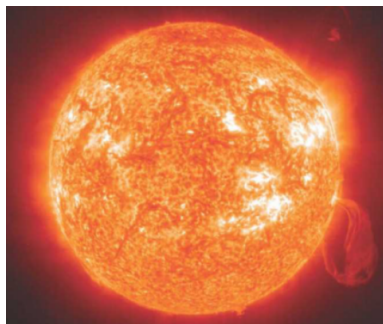
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What gives stars their glow? \_\_\_\_\_

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What types of energy do stars give off? \_\_\_\_\_

## Reading Passage: The Sun



The Sun is the star at the center of our solar system. It is the only star in our solar system. It is a medium-sized, yellow star. There are many stars that are larger and brighter than the Sun. The Sun looks so big and bright because it is the closest star to Earth. During the day, the light energy from the Sun bends as it passes through the gases in our atmosphere. The light is so bright that it blocks us from seeing the other stars in the sky. This light energy also allows us to see.

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The apparent movement of the Sun across the sky marks day and night. The Sun appears to rise in the east and set in the west. This apparent motion is caused as Earth rotates on its axis.

How many stars are in our solar system? \_\_\_\_\_  
Why does the Sun look big and bright? \_\_\_\_\_

The light and heat energy from the Sun provides the energy needed for life on Earth to exist. Without this energy, plants would not grow and the Earth would not be able to support life. Earth would be a frozen planet.

The energy from the Sun heats Earth's surface and drives the winds, weather, and water cycle. At night, when the Sun is not present in the sky, the Earth's surface cools down and the thermal energy at Earth's surface is released back into the atmosphere.

How does the light and heat from the Sun help Earth? \_\_\_\_\_

## Video: Meet the Sun

The Sun is a \_\_\_\_\_.

The Sun is located at the \_\_\_\_\_ of our solar system.

\_\_\_\_\_ days = 1 year for the Earth to go around the Sun.

We use \_\_\_\_\_ to help us understand or explain something in the world around us.

## Exit Ticket:

Which of the following is the best description of a star?

- a. A small, cool object
- b. Any round, glowing object
- c. A hot, glowing ball of gases
- d. A tool used to look at objects

Why does the Sun appear to be so much larger than all other stars?

- a. The Sun is the closest star to Earth.
- b. The Sun has the highest temperature.
- c. The Sun is brighter than all the other stars.
- d. The Sun has more gases than all the other stars.

Jerome notices that two stars appear to have the same brightness. He knows that one of the stars is much farther away than the other. What could he claim about the two stars?

- a. The one that is closer must be brighter.
- b. The one that is farther away must be brighter.
- c. Both stars must have exactly the same brightness.
- d. Both stars must give off exactly the same amount of energy.