The Brightest Star

Use distance and light as evidence

E.5.8A.2 "Use evidence to argue why the sun appears brighter than other stars."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two facts about distance, and circle the sentence that explains what happens to light as it travels. Number these pieces of evidence in the order you would use them to explain why the Sun looks brighter than other stars.

Why Does the Sun Look So Bright?

1. On a clear day, the Sun looks like a blazing circle. At night, other stars look like tiny points of light. The Sun is a star, too. Stars give off their own light, but they do not all give off the same amount. A star's brightness in our sky is called its apparent brightness. That is the brightness we see from Earth, not a measure of how much light the star makes.

2. Earth is about 93 million miles from the Sun. The next closest star to the Sun, Proxima Centauri, is about 25 trillion miles from Earth. That is more than 250,000 times farther away. As light travels outward from a star, it spreads across a larger area. Less of its light reaches each small patch of space far away. Earth catches far less light from distant stars than from our nearby Sun.

3. Imagine two identical flashlights: one is a few steps away, and the other is across a large field. The nearby flashlight looks brighter, although both make the same amount of light. Stars are not all identical flashlights. Some distant stars give off more light than the Sun, yet they still look dimmer from Earth. Their great distance reduces the light we receive. A star can look faint without being a weak source of light.

2 ANSWER WITH EVIDENCE

Use the passage

1. A student says the Sun cannot be a star because it looks brighter than the stars at night. What evidence from the passage would you use to disagree?

2. How do the distances to the Sun and Proxima Centauri support the claim that distance affects how bright a star looks?

3. Why does Earth receive less light from a distant star than from a nearby one? Use evidence from the passage.

4. Someone argues that the Sun must give off more light than every other star because it looks brightest to us. What evidence shows why that claim may be wrong?

3 YOUR TURN

Your own words

Imagine a robot on a planet very close to Proxima Centauri. From there, Proxima Centauri looks much brighter than our Sun. In three or four sentences, explain why the robot and someone on Earth see different stars as brightest, using two facts from the passage as evidence.

ANSWER KEY

The Brightest Star

GRADE 5 · E.5.8A.2

PART 1 · READ AND MARK

Underline two facts about distance, and circle the sentence that explains what happens to light as it travels. Number these pieces of evidence in the order you would use them to explain why the Sun looks brighter than other stars. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	A student says the Sun cannot be a star because it looks brighter than the stars at night. What evidence from the passage would you use to disagree?	**The Sun is a star. It looks brighter because it is much closer to Earth than the stars we see at night.**
2	How do the distances to the Sun and Proxima Centauri support the claim that distance affects how bright a star looks?	**The Sun is about 93 million miles from Earth, while Proxima Centauri is about 25 trillion miles away. The much closer Sun looks brighter from Earth.**
3	Why does Earth receive less light from a distant star than from a nearby one? Use evidence from the passage.	**Light spreads across a larger area as it travels outward, so less of a distant star's light reaches Earth.**
4	Someone argues that the Sun must give off more light than every other star because it looks brightest to us. What evidence shows why that claim may be wrong?	**Some distant stars give off more light than the Sun but still look dimmer from Earth. Their distance reduces the light we receive.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

On Earth, the Sun looks brightest because it is about 93 million miles away, while Proxima Centauri is about 25 trillion miles away. The robot is very close to Proxima Centauri, so that star looks brighter to the robot than the distant Sun does. Light spreads out as it travels, so less light from a distant star reaches each observer.

Accept answers that connect apparent brightness to the observer's distance from a star. Students should distinguish how bright a star looks from how much light it gives off.