

Why Stars Shine

Use evidence to explain how distance and light output change what you see.

S4E1.b "Construct an argument on why some stars (including the Earth's sun) appear to be larger or brighter than others."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Circle one claim about why a star appears larger or brighter, and underline two pieces of evidence that support a claim.

A View From Earth

- ① At night, Sirius can look brighter than many stars around it. Brightness seen from Earth depends on how much light reaches our eyes. A star that is closer can look bright because its light has less space to spread out before it reaches Earth. This is why apparent brightness does not always tell a star's true size.
- ② Some stars really are larger or give off more light than others. A large, hot star may send out far more light than a smaller, cooler star. If both stars were the same distance from Earth, the star giving off more light would usually appear brighter. Its greater light output is evidence for an argument about why it looks brighter.
- ③ The Sun is not the biggest star, and it is not the brightest star in space. Yet it looks larger and brighter to us than other stars because it is much closer to Earth. To construct an argument, make a claim, then use evidence about distance or light output. Explain how the evidence supports the claim. Saying only, "It looks big," is not enough evidence.

2 ANSWER WITH EVIDENCE Use the passage

1 What claim could you make about why the Sun appears larger and brighter than other stars?

2 What evidence from the passage supports the claim that a closer star can look bright?

3 Two stars are the same distance from Earth. One gives off more light. Which star would usually appear brighter, and why?

4 Why can you not use a star's apparent brightness alone to prove that it is the biggest star?

3 YOUR TURN Your own words

Write a three-sentence argument about Star A and Star B. Claim that Star A appears brighter because it is closer to Earth, then use distance and light spreading as evidence. Explain why Star B could look dimmer even if it is larger.

PART 1 • READ AND MARK

Circle one claim about why a star appears larger or brighter, and underline two pieces of evidence that support a claim. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What claim could you make about why the Sun appears larger and brighter than other stars?	The Sun appears larger and brighter because it is much closer to Earth than other stars.
2	What evidence from the passage supports the claim that a closer star can look bright?	A closer star's light has less space to spread out before it reaches Earth.
3	Two stars are the same distance from Earth. One gives off more light. Which star would usually appear brighter, and why?	The star giving off more light would usually appear brighter because more light reaches Earth.
4	Why can you not use a star's apparent brightness alone to prove that it is the biggest star?	A closer star can appear bright because of its distance, even if it is not the biggest star.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Star A appears brighter than Star B because Star A is much closer to Earth. This distance means Star A's light has less space to spread out before it reaches our eyes. Even if Star B is larger, its greater distance can make it look dimmer.

Accept arguments that make a clear claim and accurately connect apparent size or brightness to distance and/or light output. For the open response, accept equivalent wording if the student explains that a larger but more distant star may appear dimmer.