THE STANDARD

Brightness of the Sun and Stars

Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.

ANCHORING PHENOMENON

The Flashlight That Disappears Down the Hallway

A bright flashlight sits a few feet away and it is almost too bright to look at. A classmate carries the same flashlight slowly down a long hallway. With every step it gets dimmer, until at the far end it looks like a tiny, weak dot. The bulb never changed. Only the distance did. 5th graders will wonder if the night sky works the same way.

> **DRIVING QUESTION**
> *"If the flashlight bulb never changed, why did it look so dim once it was far away?"*

INVESTIGATIVE 1

The Sun Is a Star, Just the Closest One

At night the sky fills with tiny points of light. Each one is a star, a giant ball of hot gas like our sun, and some are far bigger. Yet they look like faint specks. Our sun is a star too. The only reason it blazes so much brighter is that it sits far closer to Earth than any other star.

> **DRIVING QUESTION**
> *"If the other stars are giant suns too, why do they look like dim specks while our sun lights up the whole day?"*

INVESTIGATIVE 2

Two Bright Dots, One Box

Two identical small bulbs are placed inside a long cardboard box, one near a peephole and one at the far end. Looking through the hole, the near bulb glows bright and the far one looks faint, even though the bulbs are exactly the same. Same setup as the anchor, but now both lights are visible at once so 5th graders can compare them directly.

> **DRIVING QUESTION**
> *"The two bulbs are identical, so why does one look so much brighter than the other?"*