THE STANDARD

Observable Patterns of the Sky

Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

ANCHORING PHENOMENON

The Shadow That Won't Hold Still

Tape a stick upright in the schoolyard and trace its shadow every hour. By the end of the day the chalk marks fan out like spokes on a wheel. The shadow was long and pointing one way in the morning, tiny at midday, then long again pointing the other way by afternoon. The stick never moved. So what made the shadow swing all the way around and shrink in the middle?

> DRIVING QUESTION
>
> *"The stick never moved all day, so why did its shadow keep changing length and direction?"*

INVESTIGATIVE 1

The Daylight Is Sneaking Longer

Hand 5th graders the sunrise and sunset times for the first of every month from a calendar or weather site. They subtract to find the hours of daylight and build a bar graph, month by month. The bars are short in winter, tall in summer, then short again. Same swing as the shadow, but stretched across a whole year. The sky changes on a schedule you can chart.

> DRIVING QUESTION
>
> *"Why does the number of daylight hours keep changing month to month instead of staying the same?"*

INVESTIGATIVE 2

The Stars That Disappear for the Season

Show 5th graders a simple star chart for the same place in January, then in July. Some bright stars and constellations are missing from one and back in the other. Orion blazes in winter and is gone by summer. Have them tally which months each star shows up and graph it. Same idea as the shadow and the daylight: a repeat you can see once it is on paper.

> DRIVING QUESTION
>
> *"Why can we see certain stars only during certain months and not others?"*