Sun Shadows and Starry Nights

Graphing daylight to find hidden patterns



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Today we will...

WE ARE LEARNING TO

- Track how shadows change in length and direction
- Graph shadow data to reveal daily patterns
- Explain day and night and seasonal stars

SUCCESS LOOKS LIKE

- ✓ I can plot shadow length and direction on a graph
- ✓ I can describe the short-noon, long-morning pattern



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How Shadows Happen

1. Sunlight travels straight until something blocks it.
2. Opaque means no light passes, so shadow forms.
3. High Sun makes short shadow, low Sun makes long.



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One Day of Shadows

9:00 AM
Sun low east, shadow long west

12:00 PM
Sun high south, shadow short north

3:00 PM
Sun drops west, shadow long east

6:00 PM
Sun sets, shadows fade to night



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Think, pair, share

Why is the noon shadow the shortest of the day?



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Watch: Sun Height and Shadows



▶ 0:00 – 5:00

- Watch how Sun height changes shadow length.
- Listen for west to east direction shift.



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SUN THAT NEVER SETS

360°

full circle Sun makes at the poles

In summer the Sun loops around the horizon for 24-hour daylight.





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Watch: Day, Night, and Seasons



▶ 0:00 – 3:20

- Spot how spin flips day to night.
- Notice why night stars change with seasons.



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Your task

In pairs, make a bar graph of our three shadow readings to find the pattern.

1. Draw time across, shadow inches up.
2. Plot 9:00 AM 24 in, 12:00 PM 6 in, 3:00 PM 21 in.
3. Add direction arrows: west, north, east.
4. Write pattern sentence under graph.

15 min

In pairs



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Patterns We Found

- Long morning shadows
- Direction flips west-east
- Stars shift seasons

Daylight

- Short noon shadow
- Spin makes night



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Exit ticket

1. My shadow pattern today is...

2. One star question I still have...

3. Sketch tomorrow's 9:00 AM shadow



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