Space

Lesson 6: Patterns of Stars/ different seasons

Today's focus

I will be able to:

- observe that the patterns of stars in the sky stay the same, although they appear to shift across the sky nightly, and different stars can be seen in different seasons.

Bellringer

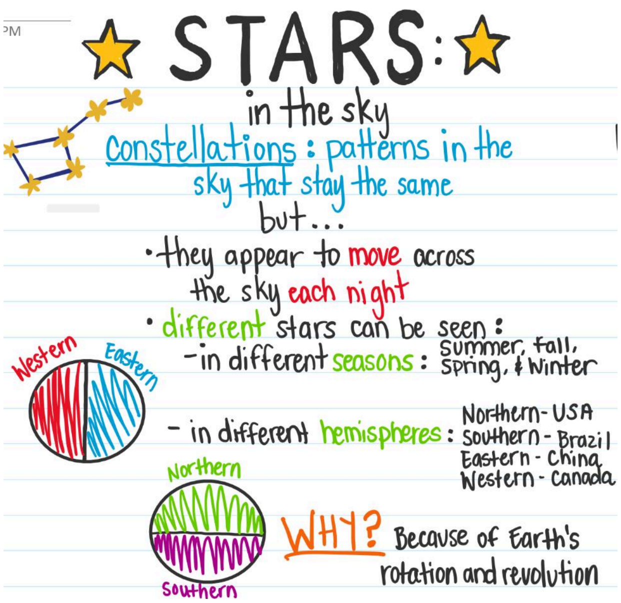
Gerald is interested in how plants are affected by the environment. He decides to do an investigation to find out whether fertilizers can change plant growth. Gerald plants six plants. He gives three of the plants (Group A) a small amount of fertilizer. He gives the other three plants (Group B) a greater amount of fertilizer. Then he measures the growth of the plants. His data are recorded in the table below.

Group	Plant	Amount of Fertilizer (g)	Starting Height (cm)	Ending Height (cm)
A	1	5	10	12
	2	5	9	13
	3	5	11	14
B	4	10	10	15
	5	10	12	16
	6	10	11	14

Gerald makes the claim that fertilizers help plants grow faster. Which **best** explains why Gerald's claim is NOT valid?

a. He did not include control plants without fertilizer.
b. He did not measure the height of the plants enough times.
c. He should have only used one plant per group.
d. He should have used a third group that got more than 10 g of fertilizer.

Brain Dump:



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Think About This!!!:

A boy scout troop was camping out in the forest, they laid under the stars. During the night they saw a pattern of stars in the Eastern part of the sky. Later that night they noticed that it was now in the western part of the sky. He wanted to know how the stars moved across the sky so he asked some of the other campers if they knew.

Zekimah said that just like the Sun, the stars at night rise in the east and set in the west.

Omar stated that stars don't move, that they just appear to be moving because the Earth is rotating.

Steven said that the stars don't move but it is because of the Earth revolving that causes this to happen.

Who do you agree with? Explain your thinking. ____
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Video: Apparent Motion of Stars Across the Night Sky

Why do the stars appear to shift across the sky?

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Passing Overhead: Star patterns in the Night Sky

In the dark of night, patterns of stars appear and shine in the sky. Patterns of stars are called constellations. Just like the Sun, star patterns appear to rise from the east, sweep across the night sky, and set in the west. But the Sun and the stars are not actually moving; they just appear to be moving. The reason why stars appear to move across the sky at night is because the Earth is spinning, or rotating, on its axis. Because Earth is in constant motion, the stars will not appear to stay in the same place in the night sky. If you notice a constellation in the sky at 8 PM, when you go back out at 11 PM it will have shifted towards the west. You will get a different view of the stars throughout the night because Earth is rotating on its axis.

The article states that "But the Sun and the stars are not actually moving; they just appear to be moving." What does the author say causes the stars to appear to be moving across the night sky?

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If you were to identify the star patterns (constellations) in the summer sky, they would be different from the constellations you see in the autumn, winter and spring sky because as the Earth revolves around the Sun, it's orientation to other objects in space changes. As Earth circles the Sun, different parts of space are visible from Earth.

You can also see different constellations in the night sky depending on where you are on Earth's surface. We live in the Northern Hemisphere. There are constellations that we see in the night sky that cannot be seen by someone living in the Southern Hemisphere, like Australia.

For example, say you're in the Northern Hemisphere looking into the night sky on September 21. You'll probably be able to see the constellation Pisces. But you won't see Virgo because that constellation is on the other side of the Sun. During that time of year, Virgo's stars would only be visible during the daytime – but you'd never see them because of the brightness of our Sun.

The exact opposite happens on March 21. You would be able to see the constellation Virgo. But you won't see Pisces because that constellation is on the other side of the Sun. During that time of year, Pisces's stars would only be visible during the daytime – but you'd never see them because of the brightness of our Sun.

Based on what you now know, complete the following chart.

	When will you see it?	When will it be behind the Sun?
Scorpius		
Leo		
Gemini		
Capricornus		

Writing

Write 2-3 sentences explaining why the stars seem to move across the sky at night and why different stars can be seen at different times of the year.

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Exit Ticket/Check What You Know

1. Fen knows that she can see different star patterns in the fall than in the spring. Which of the following explains why this happens?

   a. Earth rotates on its axis.
   b. The stars rotate around Earth.
   c. Earth revolves around the Sun.
   d. Earth's revolves around the Moon

2. Daniel was looking at the night sky for many hours, studying the stars. He drew a picture of some stars at the beginning of his observation. Then he drew the picture again at the end. He noticed that the stars appeared to have shifted across the sky. What is the best explanation for Daniel's observation?

   a. The stars appear to shift through the night sky because the Earth is turning on its axis.
   b. The stars appear to shift through the night sky because the Earth is turning around the Moon.
   c. The stars appear to shift through the night sky because the Earth is turning around the Sun.
   d. This could not happen. Daniel drew his picture incorrectly.