

# Big Idea Questions

Learning Goals

Guiding Thoughts

*Unit 1: Orientation*

# Looking Deeper into Big Ideas

These questions represent **Big Ideas** that you should completely understand and integrate into your mental model of how the universe works.

Every **Enduring Understanding** can be displayed at (at least) six deeper levels, from **Essential Questions** that extend in these lines of thinking:

- Explain
- Interpret
- Application
- Perspective
- Empathy
- Self-knowledge

# Big Idea Question 1

## Why do we have day and night?

- Explain: What physically happens to cause day and night, and how we commonly perceive them?
- How does the sun move across the sky over the course of a day?

# Big Idea Question 2

## How do we define night?

- Self Knowledge: Does the definition I have been using for night since childhood accurately represent reality?
- V Sauce: What is the speed of dark?  
(defining twilight)
- How do the stars move across the sky over the course of a night?

# Big Idea Question 3

**Why do the days get shorter or longer?**

- Perspective: Is this effect the same all around the Earth?
- How does the sun move through the celestial sphere over the course of a year?

# Big Idea Question 4

## Why are there seasons?

- Interpret: How do the astronomical seasons connect to the meteorological seasons?
- Explain: How does the sun move through the celestial sphere over the course of a year?

# Big Idea Question 5

What kinds of objects are out there in the universe, and how do we group them?

- Explain: What is the sun? What is a star? Planet? Moon? Asteroid? Comet? Dwarf planet? Ring? Solar system? Galaxy? Universe?

# Big Idea Question 6

How do we map out the location of the stars and other objects in the sky?

- Application: Why do there need to be two systems for mapping out the locations of objects in the sky?
- Explain: What is the difference between the AZ/ALT and RA/DE coordinate systems? Which is better for global-scale use?



# Big Idea Question 7

What is a constellation?

- Perspective: What does it mean to us that different cultures/ civilizations saw different constellations in the night sky? And that every culture had constellations?
- Why do we see different stars at different times of the year?

# Big Idea Question 8

What is (and is not) special about the locations of the constellations of the zodiac?

- Self-knowledge: What does it mean that I am a Taurus?
- [Discovery News: Why Astrology isn't real Science](#)
- [Astrology Debunked - Richard Dawkins in Enemies of Reason](#)

# Big Idea Question 9

What is space?

- Perspective: What is NOT space? (*Reductio ad absurdum*)

# Big Idea Question 10

What is time?

- Interpret: How is the definition of time separate from knowing the answer to the question: “What time is it?”

# Summary of the Big Idea Questions

1. Why do we have day and night?
2. How do we define night?
3. Why do the days get shorter or longer?
4. Why are there seasons?
5. What kinds of objects are out there in the universe, and how do we group them?
6. How do we map out the location of the stars and other objects in the sky?
7. What is a constellation?
8. What is (and is not) special about the locations of the constellations of the zodiac?
9. What is space?
10. What is time?