



Wed March 15 - Study Guide for Friday Quiz (Solar System)

Mar 15 at 1:49pm

Coach Murray
All Sections

Hey guys here is a Study Guide for Fridays quiz:

- 1) **Vocab Cards** from the back of Ch 9. You already completed them the week before Spring Break. Tomorrow I will go over them providing all correct answers to you
- 2) **"Seasons"** section of chapter from p.366-367 of text. It will supply you with the information needed when I ask you on the quiz this question... "Explain what creates the changes in seasons here on Earth as the revolves around the sun?" Make sure you mention the following when answering (rotation, revolving, axis, Northern hemisphere, Southern hemisphere, tilt, hotter, colder, suns rays, daylight, night time) We will go over the process again tomorrow in class.
- 3) Read the **Goldilocks** article embedded here (we discussed in class earlier). Be able to take three of the five listed and describe how they are essential to life existing on our Earth. This too we will go over again tomorrow.

Goldilocks Article [\(https://apologeticspress.org/the-goldilocks-principle-the-earth-is-designed-for-us-5653/\)](https://apologeticspress.org/the-goldilocks-principle-the-earth-is-designed-for-us-5653/)

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Vocab Cards

- Rotation - 1 Full spin on it's axis
- Revolution - 1 (day) full orbit around larger body (year)
- Axis - imaginary line Earth spins on
- Inner planets - M, V, E, M
- Outer planets - J, S, U, N, P
- Constellation - arrangement of stars

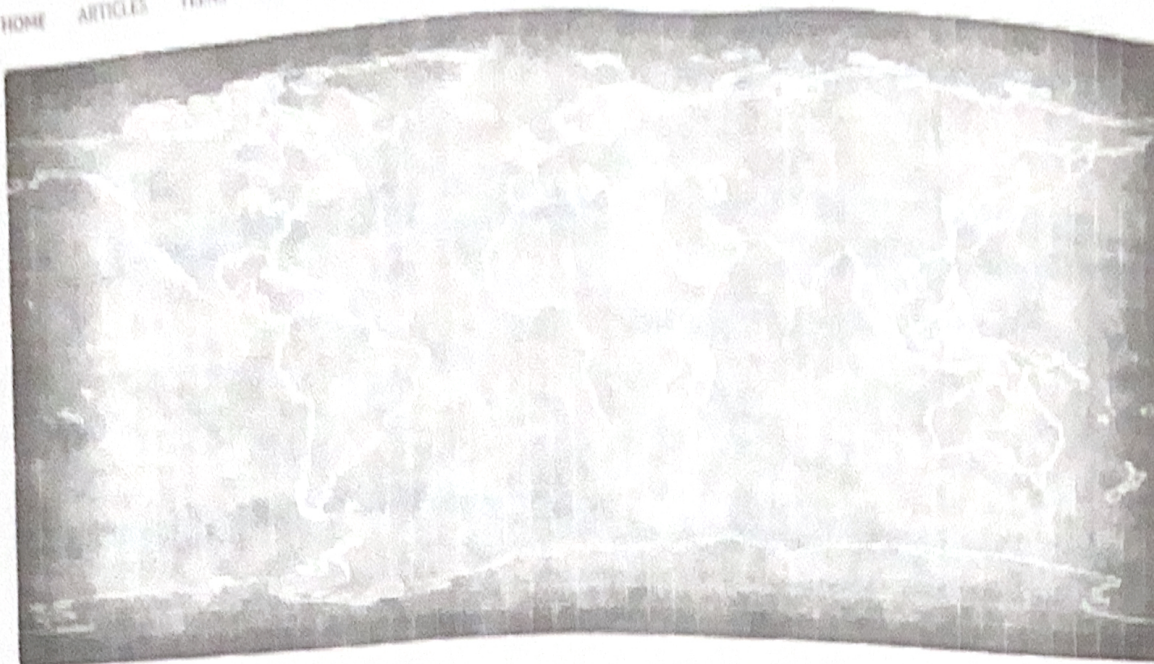
Seasons pg. 366 pg. 367



- FALL
- WINTER
- Spring
- Summer

Goldilocks

See highlights!



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The Goldilocks Principle: The Earth is Designed for Us



JEFF MILLER, Ph.D.



CREATION VS. EVOLUTION

DESIGN IN THE UNIVERSE

DESIGN IN THE UNIVERSE

EXISTENCE OF GOD

From Issue: R&R - February 2019

Do you recall the story of Goldilocks from your youth? She struggled as she sought the right porridge, chair, and bed, but in the end, her discoveries were "just right." **The Goldilocks Principle in secular cosmology is a recognition by scientists that the Earth appears to be "just right" for life to exist on it.** Leading science magazines routinely run articles updating their audiences on the hunt for other Goldilocks planets with just the right conditions for life to exist upon them as it does on Earth. **The Earth appears to be designed for us.**

Atheistic philosopher Paul Ricci summed up the Teleological Argument for the Existence of God well when he said, "[I]t's true that everything designed has a designer.... 'Everything designed has a designer' is an analytically true statement."¹ There are an infinite number of examples of design that present themselves to us when we study the natural realm—a problem for Ricci and his atheistic colleagues, to be sure. Manuel Canales, Matthew Chwastyk, and Eve Conant wrote an article in *National Geographic* titled "One Strange Rock: 13 Things that Make Life on Earth Possible."² "Earth is well equipped as a planet and ideally placed in our solar system and galaxy to support life as we know it," they explain.³ What kinds of features make Earth so special?

- **If the Earth's rotation axis was tilted differently....** "A change in the rotation axis of the Earth... would be catastrophic. **The number of the seasons would change and their duration.** If the rotation axis became parallel to the orbital plane, as for Uranus, **we could have winter in the**

- Northern hemisphere for 6 months followed by summer. The Sun would set on the entire Northern hemisphere and not rise again for 6 months."⁴
- **If the Earth was spinning faster...**: "Hurricanes will spin faster...and there will be more energy in them."⁵ A faster rotation speed by only 10% would translate to so much water bulging around the equator, that all equatorial land would be flooded while the sea level at the poles would lower.⁶ **Human and animal life would be forced to live closer to the poles, which would result in catastrophic extinctions.**
 - **If the Earth's orbit was closer to the Sun...**: If the average distance from the Sun was "reduced by only about three-tenths of a percent," disastrous atmospheric changes would occur, including "sea-level rise, increases in extreme weather, species extinctions and agricultural disruptions."⁷ As it makes its elliptical path around the Sun, the Earth bends from its straight course "only one ninth of an inch" every 18½ miles.⁸ **"If the orbit changed by one-tenth of an inch every 18 miles, our orbit would be vastly larger and we would all freeze to death. One-eighth of an inch? We would all be incinerated."**⁹ In fact, the Earth's perfect distance from the Sun is called the "Goldilocks zone," "where it's not too close and not too far from the sun for water to be liquid on its surface."¹⁰ Earth's temperature is "not too hot or too cold."¹¹
 - **If the Earth had less water...**: About 75% of the entire area of the Earth is covered by water. If there was less water on the Earth, **it would suffer from the drastic temperature changes seen in deserts—extremely hot during the day and extremely cold during the night.** Most of the Earth does not have this problem, due in large part to the fact that the Earth has so much water on it. Water has a high specific heat capacity, which means that water can hold a lot of heat—way more than almost any other natural substance on Earth. Water can store a lot of heat or lose a lot of heat without its temperature being drastically changed, causing it to act like an air conditioning unit for the Earth, keeping its temperature relatively constant. **A different liquid other than water or less water would make Earth inhospitable for life.**
 - **If the Earth was like other planets...**: Citing the work of University of Washington's Peter Ward, Stanford University's Kate Maher, NASA's Karina Yager, and the University of Idaho's Jason Barnes, Canales and his colleagues highlighted that Earth "recycles life-friendly carbon over time," has an "ozone layer to block harmful rays," "a big moon to stabilize our axial wobble," "varied surfaces [to] support many life-forms," and a "magnetic field" that "deflects solar tempests." Earth is "situated safely away from gas giants"—if it were closer, their "powerful gravity could cause disastrous fluctuations in Earth's distance from the sun." The star of our solar system—the Sun—"is a stable, long-lasting star," as opposed to less massive, allegedly younger stars that are "often unstable and are prone to blasting their planets with bursts of radiation." Earth has "the right stuff to host a dynamic core" (i.e., sufficient radioactive elements to generate a "churning core" and protective magnetic field that could, theoretically, last for billions of years). Earth has "giant planets that protect us from afar," like Jupiter, whose size and gravity protect "Earth from overly frequent collisions that might trigger extinctions." Zooming out further to the scale of the galaxy, we observe that "our sun offers protection from galactic debris," "our galactic path steers us clear of hazards," and "our location is far from stellar crowds," reducing the "risks to Earth from gravitational tugs, gamma-ray bursts, or collapsing stars called supernovae."¹² Truly Earth is just right for us—as though it was made for humans.