## Video: Hubble in Space

## Nebula

## Nuclear Fusion

## How stars are created

## How our solar system was created (including Earth)

## Red Giant

## White Dwarf

## Death of Sun

## Equilibrium of Stars (i.e., push v. pull)

## Supernova

## Where all elements are formed (e.g., gold, iron, oxygen, etc.)

## Why can’t our sun supernova

## How black holes are created

## Black hole

## How scientists find black holes

## Explain how galaxies move

## How many stars in a galaxy

## How many galaxies in the universe

## How does a galaxy rotate

## Dark matter

## How is the universe changing

## Dark energy

## Big Rip

**Video: Hubble in Space**

1. What do stars form from?
2. Explain the process in which stars are formed.
3. Stars: Nuclear fusion or fission?
4. How do solar systems and planets form?
5. What is the life cycle of a star?
6. How many years before the sun will run out of hydrogen fuel and turn into a red giant?
7. What will the sun then turn into after shedding its outer layers and leaving behind an inert mix of fused carbon and oxygen?
8. What is a supernova? Why can’t our sun supernova?
9. Explain the balance between a star’s gravity and fuel?
10. Where are the basic elements of all life found?
11. Explain a black hole. (how it’s created, theory, evidence, etc.)
12. How do galaxies move and rotate?
13. How many stars in one galaxy? (side note- over 1 trillion planets in one galaxy)
14. Our Milky Way is what type of galaxy?
15. How many galaxies in the universe?
16. What is the unknown, invisible matter that holds the universe together, like gravitational glue?
17. Is there more dark matter than physical matter in the universe?
18. Is the universe expanding at an accelerated rate? Explain your answer.
19. What is the invisible energy, that is opposite to gravity, which will someday cause everything to lose its binding forces that hold it together, even down to the subatomic level?
20. What is the Big Rip theory?

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The **Universe** is defined as everything that [physically](http://en.wikipedia.org/wiki/Physically) [exists](http://en.wikipedia.org/wiki/Exists): the entirety of [space](http://en.wikipedia.org/wiki/Space) and [time](http://en.wikipedia.org/wiki/Time), all forms of [matter](http://en.wikipedia.org/wiki/Matter), [energy](http://en.wikipedia.org/wiki/Energy) and [momentum](http://en.wikipedia.org/wiki/Momentum), and the [physical laws](http://en.wikipedia.org/wiki/Physical_law) and [constants](http://en.wikipedia.org/wiki/Physical_constant) that govern them.

A **galaxy** is a massive, [gravitationally bound](http://en.wikipedia.org/wiki/Gravitation) system that consists of [stars](http://en.wikipedia.org/wiki/Star) and [stellar remnants](http://en.wikipedia.org/wiki/Stellar_remnant), an [interstellar medium](http://en.wikipedia.org/wiki/Interstellar_medium) of gas and [dust](http://en.wikipedia.org/wiki/Cosmic_dust), and an important but poorly understood component tentatively dubbed [dark matter](http://en.wikipedia.org/wiki/Dark_matter).

Our [**Solar System**](http://en.wikipedia.org/wiki/Solar_System) includes the Earth and all the other objects that orbit the Sun.