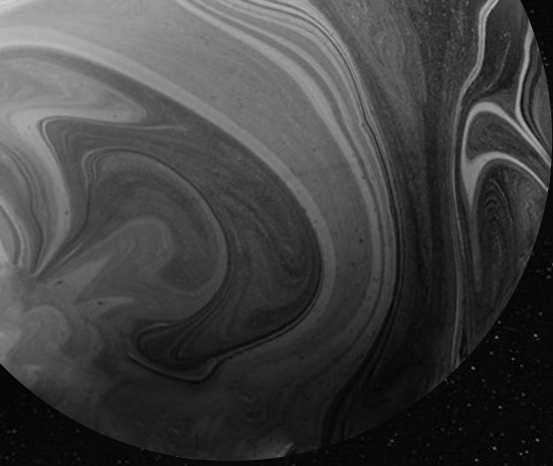


OPEN THIS PICTURE
FULLSCREEN ON YOUR
PHONE AND HOLD IT
AT ARM'S LENGTH.

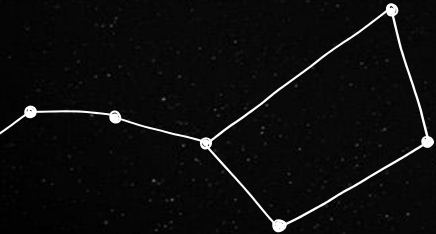


THERE ARE
50,000 GALAXIES
IN THIS CIRCLE.

ASTRONOMY FACT: THERE
ARE TOO MANY GALAXIES.



Universe Week





True or false: Everything in space
that has matter has gravity.



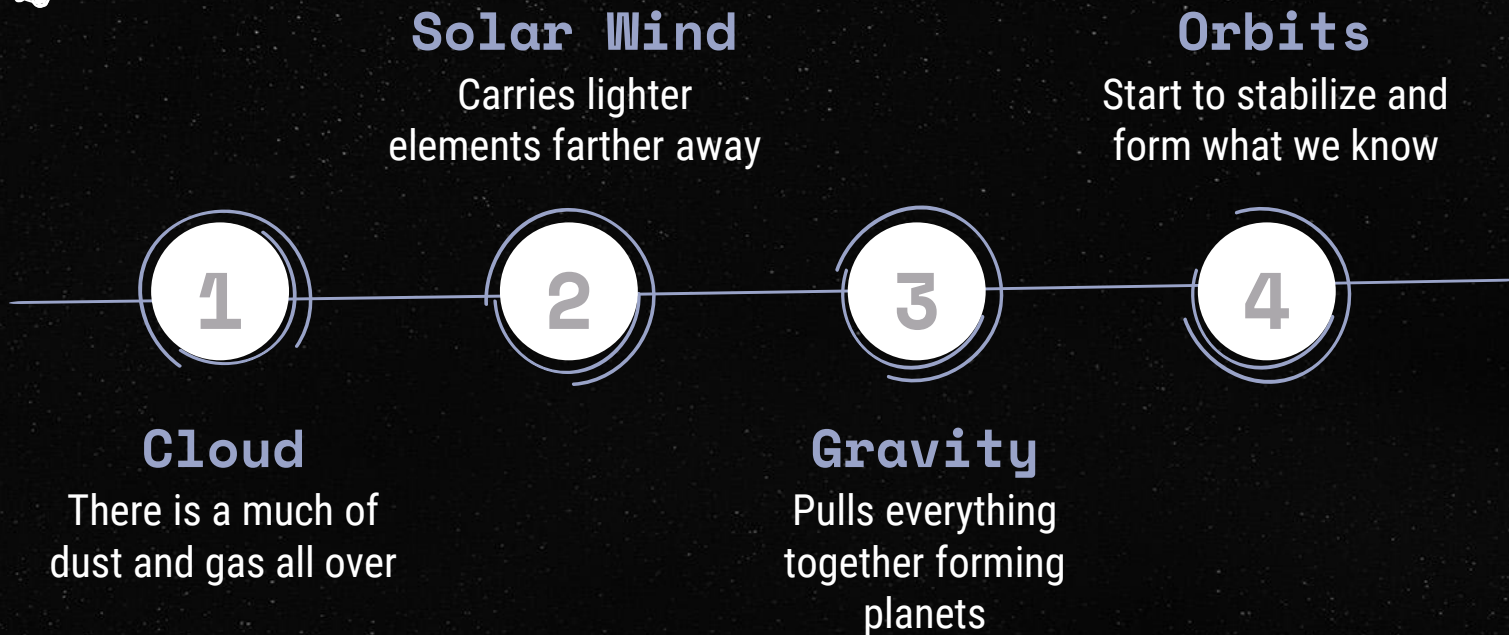
So how does
gravity cause
things to
form?

It's kind of like this:




This is called accretion

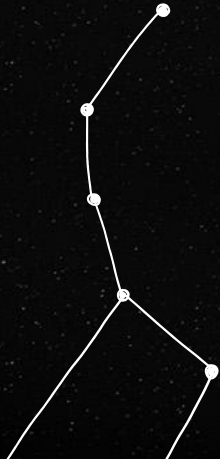
Process of Accretion



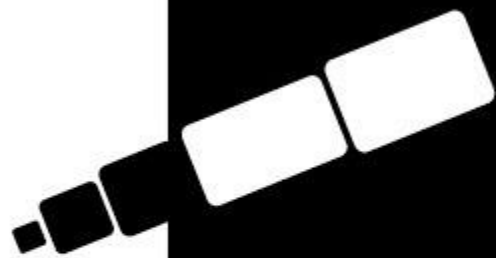




Scale that up
and you get...
Galaxies!

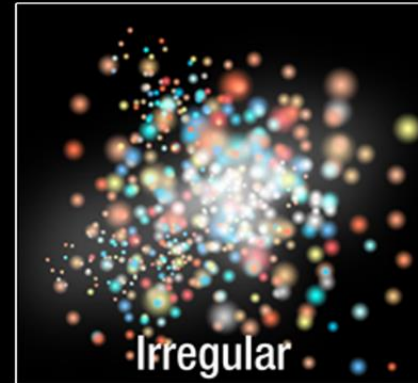
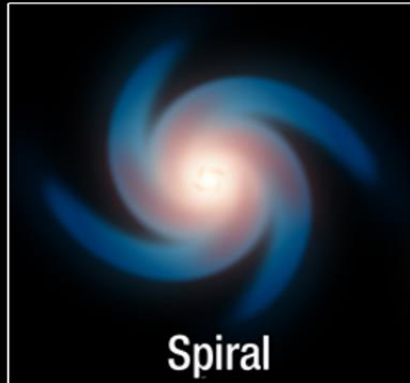


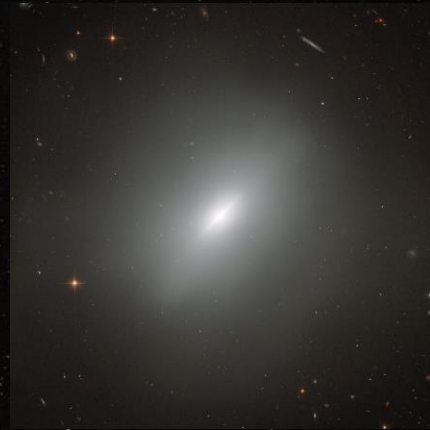
WHAT IS



A GALAXY?

Types of Galaxies





Elliptical Galaxies





Spiral
Galaxies



Barred Spiral
Galaxies





Irregular
Galaxies



Fun Facts

Most Are Galaxies

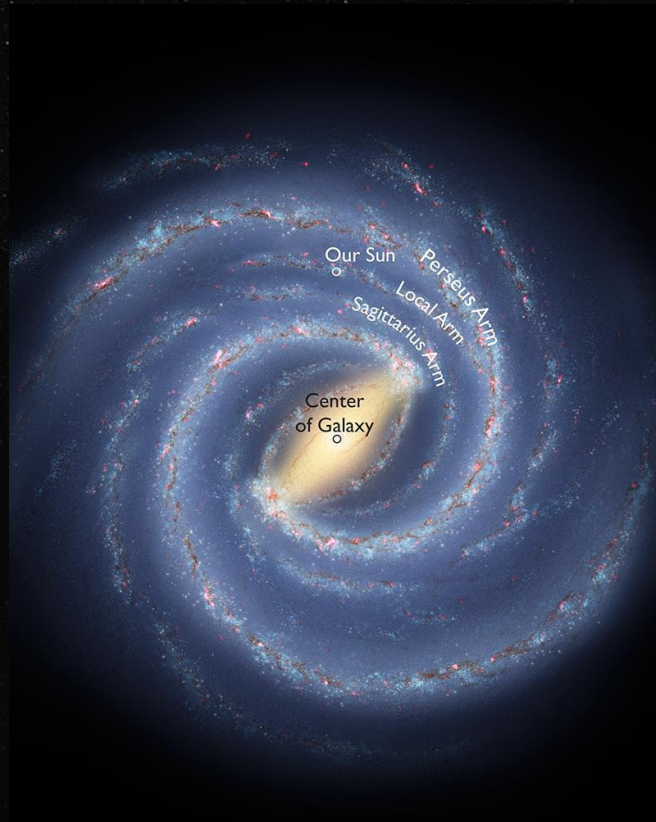
Most of what you see looking up are galaxies and not stars

So Very Many

There are so very many galaxies, and each one had so very many stars...

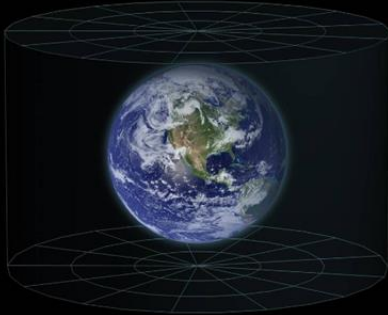


Our Milky Way Galaxy

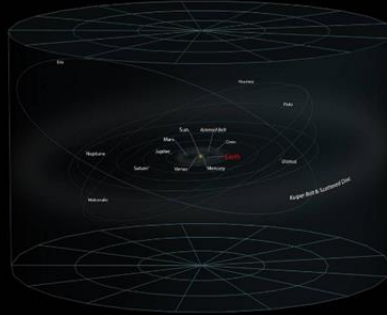


Earth to the Observable Universe

Earth



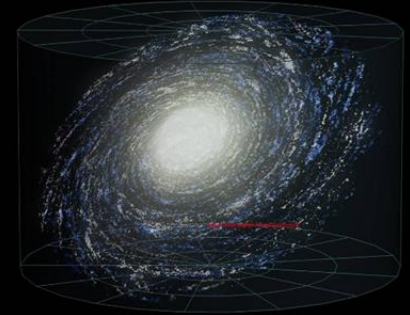
Solar System



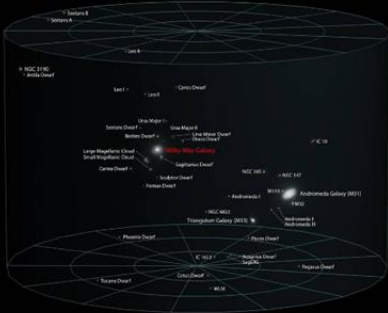
Solar Interstellar Neighborhood



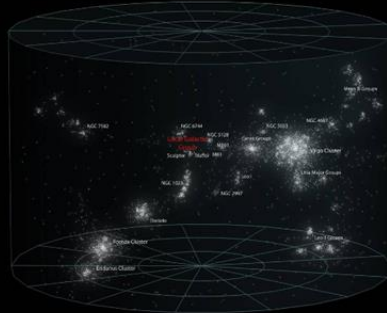
Milky Way Galaxy



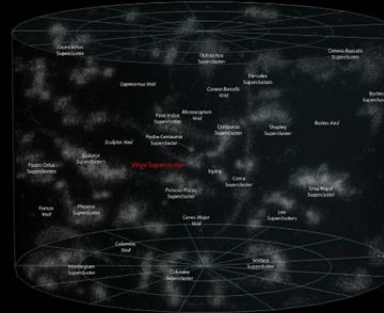
Local Galactic Group



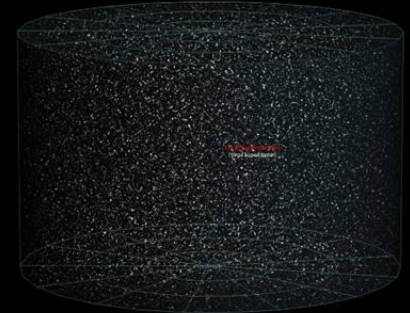
Virgo Supercluster

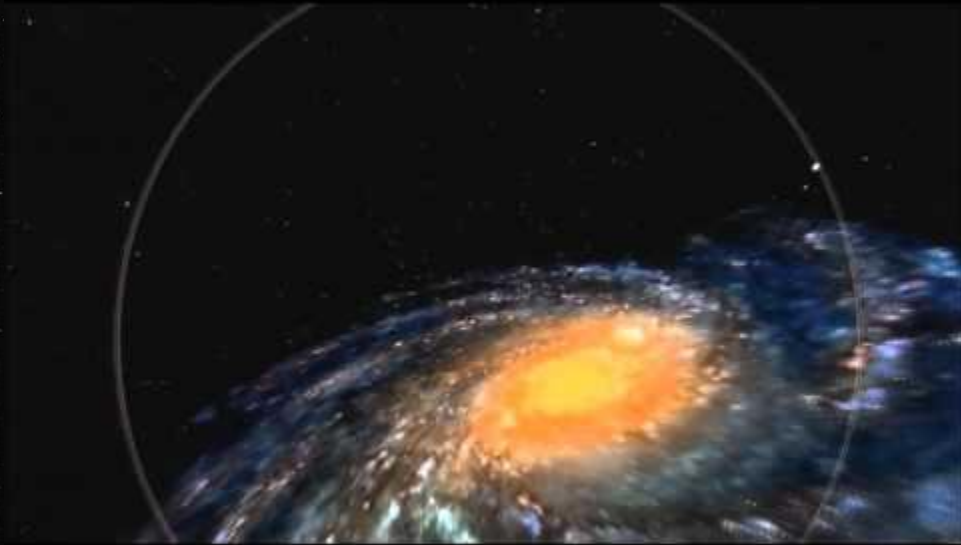


Local Superclusters



Observable Universe





(Each larger circle is zoomed out 10x more than the last circle)

**And it all
starts
with a
nebula**





Links to Check Out

01 Formation Theories

Solar system theories [here](#)

02 Galaxies

Info on galaxies [here](#)

03 Types of Galaxies

Different types of galaxies [here](#)

04 Size of Space

Explore the size of things [here](#)

05 Zoomable Gigapixel

Zoom in and see more [here](#)

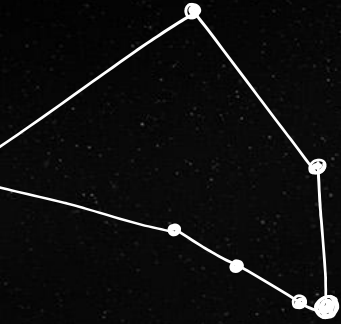




Citizen Science

Want to help astronomers classify galaxies?
Check out Zooniverse [here](#)





Describe the
different types
of galaxies.



Long Term Space Missions

- Can we survive? <https://ed.ted.com/lessons/could-we-survive-prolonged-space-travel-lisa-nip>
- Planning for it all: <https://www.npr.org/2021/11/01/1051223852/planning-for-a-space-mission-to-last-more-than-50-years>
- Tardigrades for the win! <https://phys.org/news/2022-01-tardigrades-stars.html>
- The body in space: <https://www.nasa.gov/hrp/bodyinspace>
- Biggest challenges: <https://astronomy.com/news/2020/11/the-biggest-challenges-to-humans-on-long-term-spaceflights>
- Known effects: https://racetomars.ca/mars/article_effects.jsp
- Brain effects: <https://www.discovermagazine.com/the-sciences/the-toll-of-long-term-spaceflight-on-human-health>
- Mental health effects: <https://www.theguardian.com/science/2014/oct/05/hallucinations-isolation-astronauts-mental-health-space-missions>
- Twin study once again: <https://www.nasa.gov/feature/how-stressful-will-a-trip-to-mars-be-on-the-human-body-we-now-have-a-peek-into-what-the-nasa>
- NASA's resource page about this: https://www.nasa.gov/centers/hq/library/find/bibliographies/Long-Term_Challenges_to_Human_Space_Exploration

Done early? Go online and look into "space elevators" because they are super interesting and might be a way to get to space without some of these issues.

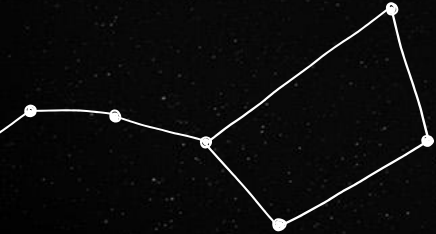
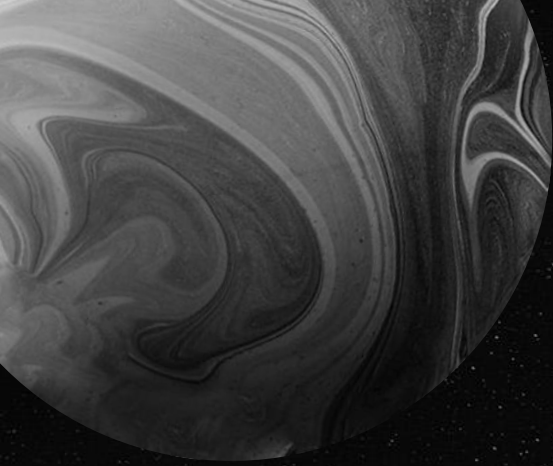


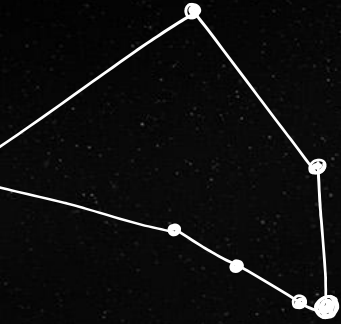
2 INCHES

TALLER

TECH
INSIDER

Future of the Universe





Are things in our
universe moving
closer together or
farther away?



THREE WAYS THE UNIVERSE COULD END



Possible Ends of the Universe



Big Crunch

Gravity wins and everything gets pushed together until it is SUPER tiny again



Big Rip

Dark energy is going to get stronger and stronger until it rips apart everything



Big Freeze

Everything gets farther and farther away until even heat is not a thing



Others

Big Slurp
Vacuum Decay
Big Bounce

Explore More!

Check out the links and videos posted in Google Classroom about possible ends to the universe.

Decide for yourself which one you think is the best and most likely to actually happen in the future.

Create a claim and be prepared to defend your claim with evidence.

I think that the universe will end by the _____.

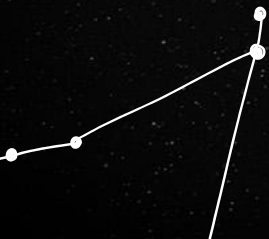
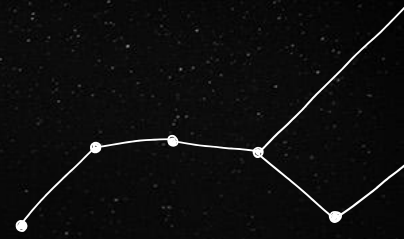

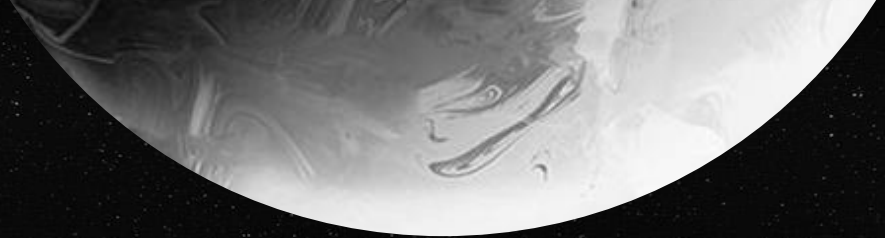
I base this claim on _____.

Explore More

- <https://www.nature.com/articles/d41586-020-02338-w>
- <https://www.forbes.com/sites/startswithabang/2019/01/04/the-five-ways-the-universe-might-end/?sh=3683e42f3496>
- <https://www.quantamagazine.org/how-will-the-universe-end-katie-mack-explains-20200622/>
- <https://futurism.com/four-ways-the-universe-could-end>
- <https://thesciencebehindit.org/how-did-the-universe-begin-how-will-it-end/>

https://www.youtube.com/watch?v=4_aOIA-vyBo&authuser=0

https://www.youtube.com/watch?v=8uQgiv_Uy7w&authuser=0



So which option do you think will happen? Why?

