

## Vocab List

Jeevan Khaitan

April 25, 2019

Constellation

Spectrograph

Absolute brightness

Relative brightness

Light-year

Parallax

Hertzsprung-Russell Diagram

Main sequence

Chemical composition

Nebula

Protostar

White dwarf

Supernova

Neutron Star

Hole

Black hole

Binary Star

Eclipsing binary

Open cluster

Globular cluster

Galaxy

Spiral galaxy

Elliptical galaxy

Lenticular galaxy

Dwarf

Galaxy

Scientific notation

Big Bang

Light cone

Cosmic background radiation

Star nebula

Planetary nebula

Dark matter

Dark energy



## Vocab List

Jeewan Kharbhai

April 25<sup>th</sup>, 2019

Gravity

Gravitational pull

Gravitational Constant

Planck epoch

Electromagnetism

Weak nuclear force

Strong nuclear force

Strange nuclear force

Grand unification

Inflationary epoch

Unification epoch

Nucleosynthesis epoch

Electromagnetic force

Stars

Earth

Moon

Planets

Heat

Temperature

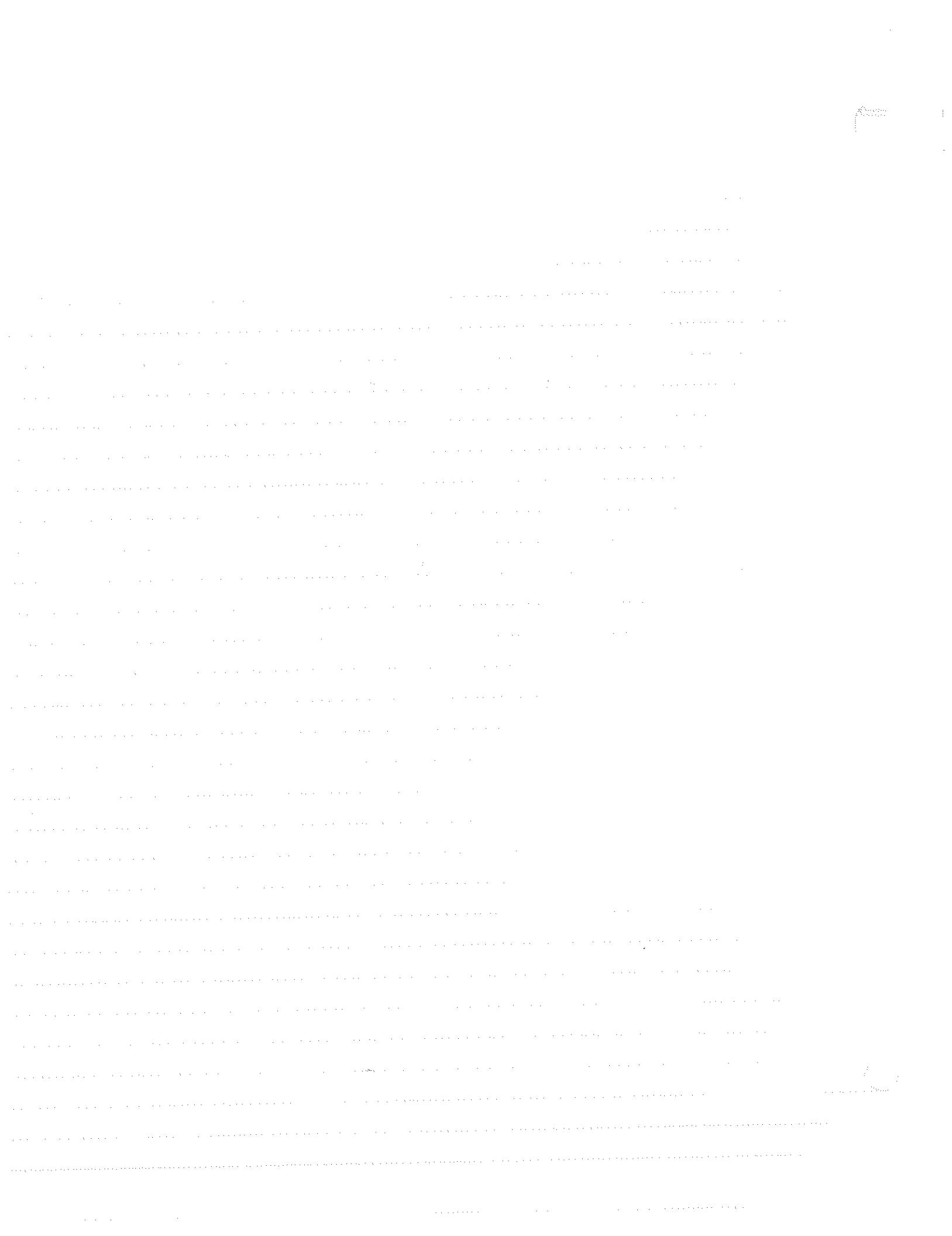
Distance

Dust

Rocks

Gas

Degrees

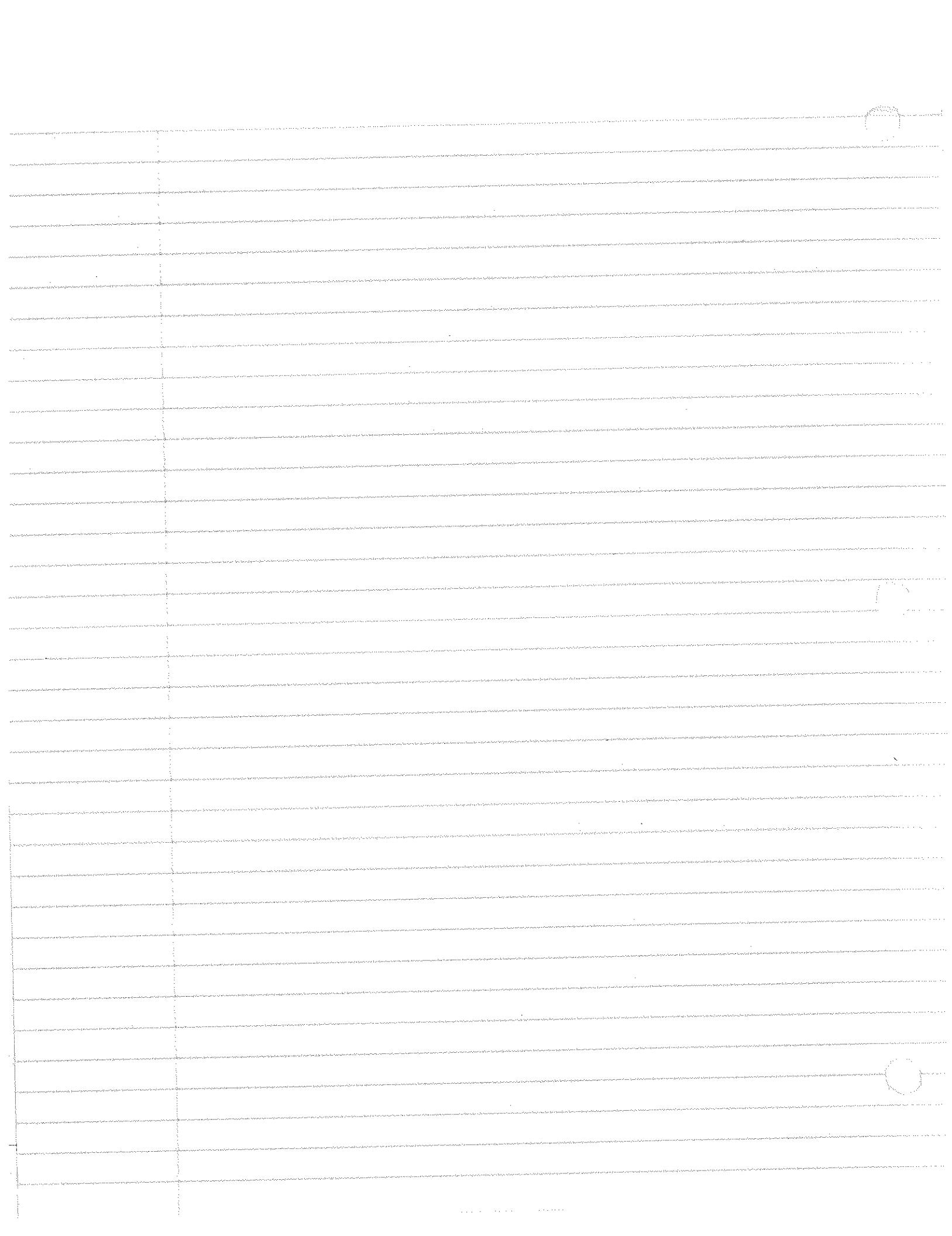


Definitions

- Constellation
- light year
- main sequence
- white dwarf
- pulsar
- Hubble's law
- planetesimal
- gravitational force
- grand unification force
- strong nuclear force
- spectrograph
- parallax
- Nebula
- supernova
- black hole
- cosmic background radiation
- dark matter
- electromagnetism force
- Unification force
- plank epoch
- apparent/absolute
- H-R diagram
- protostar
- ~~neutron~~ Neutron star
- big bang
- solar nebula
- dark energy
- inflation force
- weak nuclear force
- Nucleosynthesis Epoch

Concepts

- how are stars classified?
- how do astronomers measure distance to the stars?
- How does a star form?
- what determines how long a star will exist?
- what happens when a star runs out of fuel?
- what are the major types of galaxies?
- How do astronomers describe the scale of the universe?
- What is the big bang?
- How did the solar system form?
- How can we calculate the distance and mass between two objects?
- how was hydrogen, helium, lithium made?
- the Three minutes after big bang
- How was the Universe form?
- black hole, and its purpose
- Gravitation force ~~was~~ calculations ie.  $6.67 \times 10^{-11}$
- When ~~the~~ the Universe / Earth made
- components of the universe ~~over~~ over time
- Astronomical data and collection methods



# Vocab

Aaron

Constellation

Hubble's law

Spectograph

Cosmic background radiation

Apparent brightness

Star nebula

Absolute brightness

Planetesimal

Light-year

Dark energy

Parallax

Dark matter

Hertzsprung-Russell diagram

Moving galaxies

Chemical composition

Age of the universe

Light-year

The inner planets

White dwarf

The outer planets

Super giants

Accelerating expansion

Orion

Red giant

Nebula

Main sequence stars

Protostar

Planck epoch

Pulsar

Grand unification

Neutron star

Inflationary Epoch

Black hole

Unification epoch

Supernovas

Quarks

Clusters

Electromagnetic force

Star Systems

Weak nuclear force

Eclipsing binaries

Strong nuclear force

Globular clusters

Gravitational force

Open clusters

Right ascension

Galaxy

Declination

Spiral

Density

Elliptical

Mass

Astronomers

Atom

Irregular galaxies

Electrons

Quasars

Periodic

Milkey Way

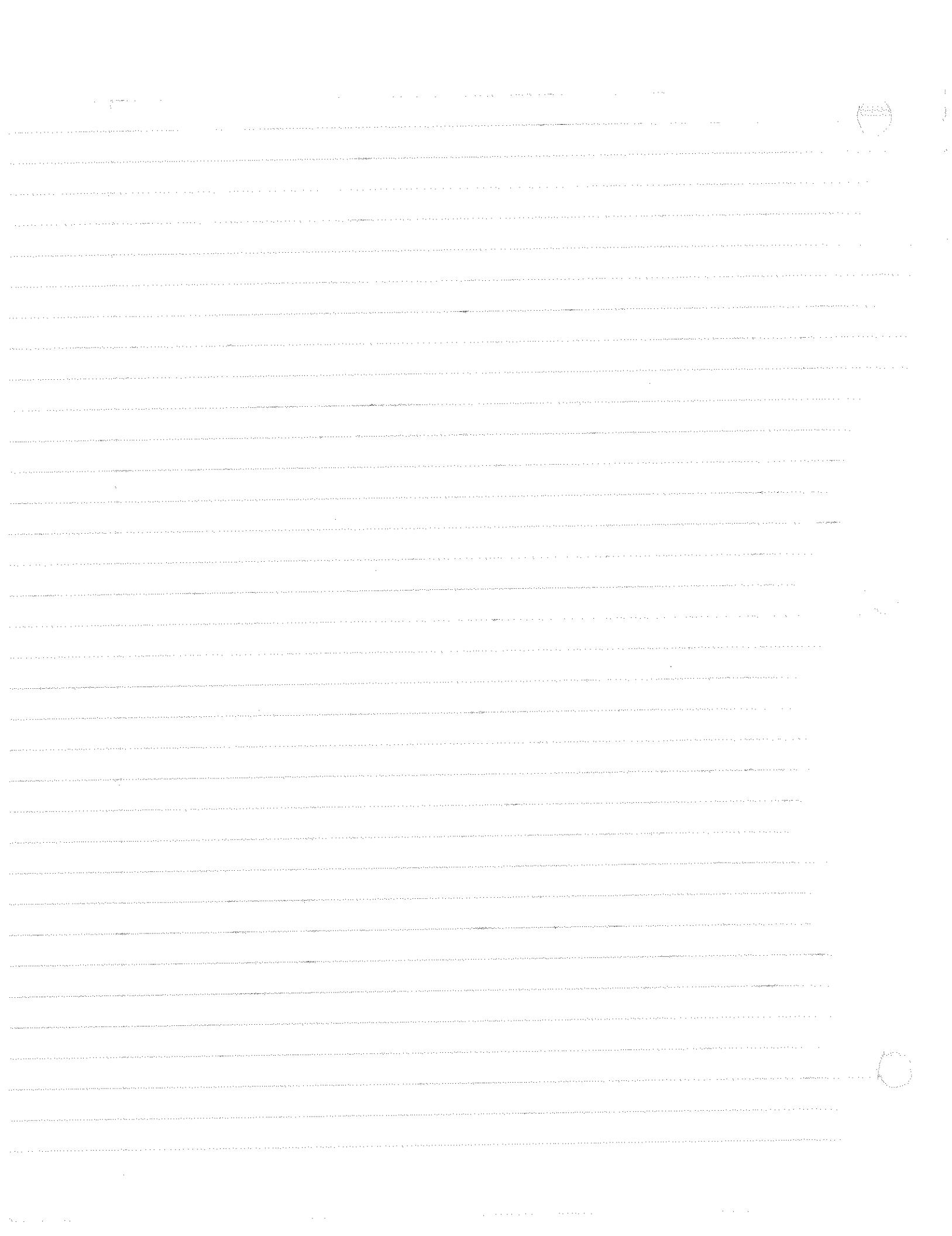
Bohr model

Scientific notation

Imminency of Space

Super clusters

Big bang



Sukman, V Vocab list

Constellations:

Color and Temperature

Size

Chemical composition

Spectrograph

Brightness of star

Apparent Brightness

Absolute Brightness

Light year

parallax

parallax in Astronomy

Hertzsprung-Russel diagram

Lives of stars

\* Concept a Star is born

Nebula

\* Lives of Star

\* Death of Stars

white dwarf

\* Super Nova

Newton stars

black dwarf

Black holes

Galaxies

Protostar

Right Ascension

Ddeclination

Solar flare

black hole

binary star

Eclipsing Binaries

## Summary

- Multiple star systems
- Milky Way

## Immetry of space

Concept: Hubbles law

## Wavelengths

## Cosmic Background Radiation

## Age of universe

## Solar Nebula

## Planets;imals

## Inner Planets

## Outer Planets

## Future of the Universe

## Dark Matter

## Dark energy

## # Planets around other stars

## Star Clusters

## Spiral Galaxies

Galaxies

Elliptical Galaxies

Irregular Galaxies

-quasars

-pulsars

-Hubble's law

Cameron

April 25, 2019

Constellation(s)

Spectrograph

Apparent Brightness

Absolute Brightness

Light-Year

Parallax

Hertzsprung - Russel Diagram

Main Sequence

Radio Telescope

Characters of stars

Chemical Composition of Stars

Protostar

Annar

Pulsar

Nebula

Red Giant

Supergiant

High-mass Star / Proto star

Right Ascencion

Elliptical

Coordinates

Low-mass Star / Protostar

Declination.

White Dwarfs

Super Nova

Neutron Star (if spinning Pulsar)

Black Holes

Black Dwarf

Planetary Nebula

Galaxy

Universe

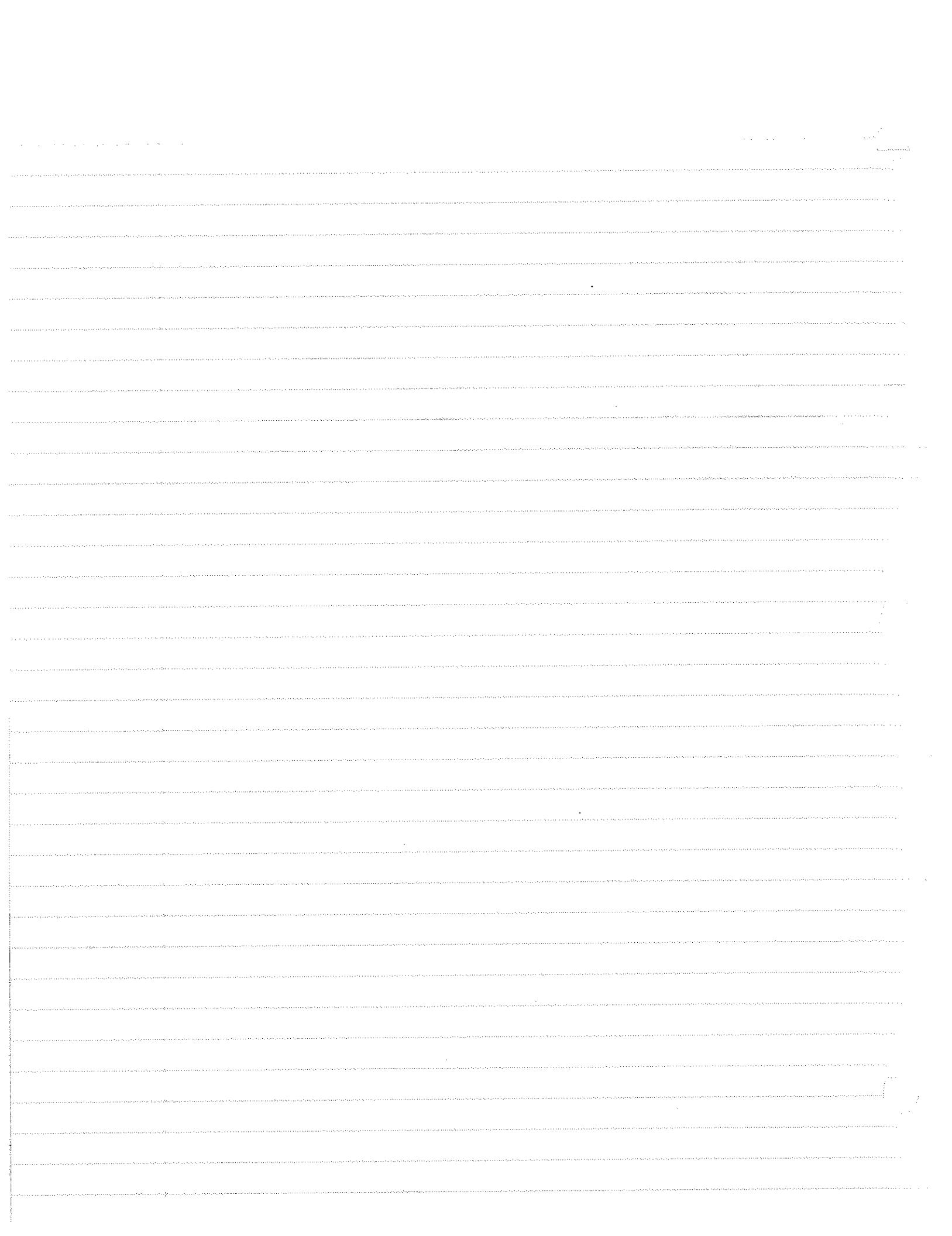
Gravity

Electromagnetism

Strong / Weak Nuclear

Solar System

Notes



Shahil Singh

Chemical composition

Astronomy

Stars

Sun's

Moons

Gravity

Nebula

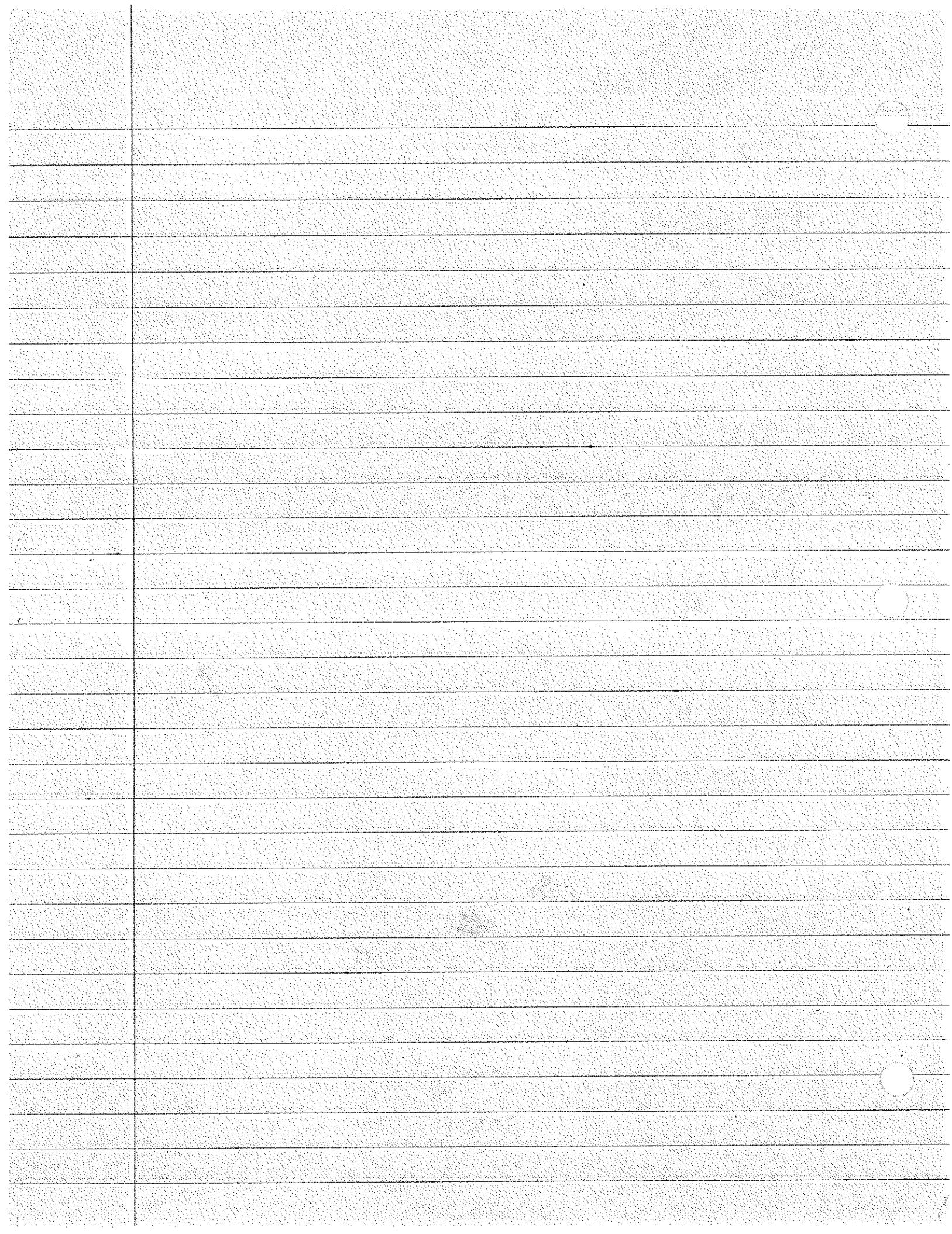
protostar

white dwarf

Neutron star

pulsar

young stars



Shakeel Singh

Vocab

Spectrograph

blue shift

red shift

Supernovas

galaxies

H-R diagram

Hubble's law

young galaxies

Arace Bo

R.A.

Solar System

planets

Gravitational Force

Electromagnetic

Weak Nuclear Force

Strong Nuclear

Fundamental forces

Big Bang

Plank Epoch

Grand Unification

Inflationary Epoch

Unification Epoch

Nucleosynthesis Epoch

black hole

light year

apparent brightness

absolute brightness

parallax

Constellation

kevin lang

# Vocab list of the universe

Forces	Alpha Centauri'
electromagnetism	Algol
Weak nuclear force	Polaris
Strong nuclear force	Rigel
gravity	Betelgeuse
grand unification	Aldebaran
Inflationary epoch	Giants
Plank epoch	Nebula
Unification epoch	proto star
Nucleosynthesis epoch	Supernova
Constellation	Pulsar
Spectrograph	black hole
apparent brightness	nuclear fusion
absolute brightness	life time
light-year	red giant
parallax	black dwarf
Hertzsprung - Russell diagram	hypothesized
main sequence	light
Orion	radio waves
Astronomers	radiation
Supergiant	binary star
White dwarf	eclipsing binary
Neutron stars	open cluster
Betelgeuse	globular cluster
Rigel	galaxy
Quarks	Spiral galaxy
Speed of light	elliptical galaxy
Proxima Centauri	irregular galaxy
Astronomy	quasar
Sirius	universe

Kevin Lang

Scientific notation  
horizon  
star clusters  
the milky way  
X-rays  
infrared radiation  
immensity  
Cat's eye nebula  
Andromeda galaxy  
Virgo Supercluster  
local group  
big bang  
hubble's law  
cosmic background radiation  
Solar nebula  
planetesimal  
dark matter  
dark energy  
Ursa major  
boots  
hydra  
big crunch  
universal gravition  
ozone

{ APRIL 24/19, WE  
Mr. Roms Winckel  
SCIENCE 10  
Bart D  
Marco Perez Ruiz

## Section 2: Characteristics of Stars

Constellations: A groups of stars that formed pictures of people or animals,  
Example:

Spectrograph: Is a device that breaks light into colours and makes an image of resulting spectrum.

Apparent Brightness: Is a star's brightness as it seen from Earth. Scientists measure brightness with the device.

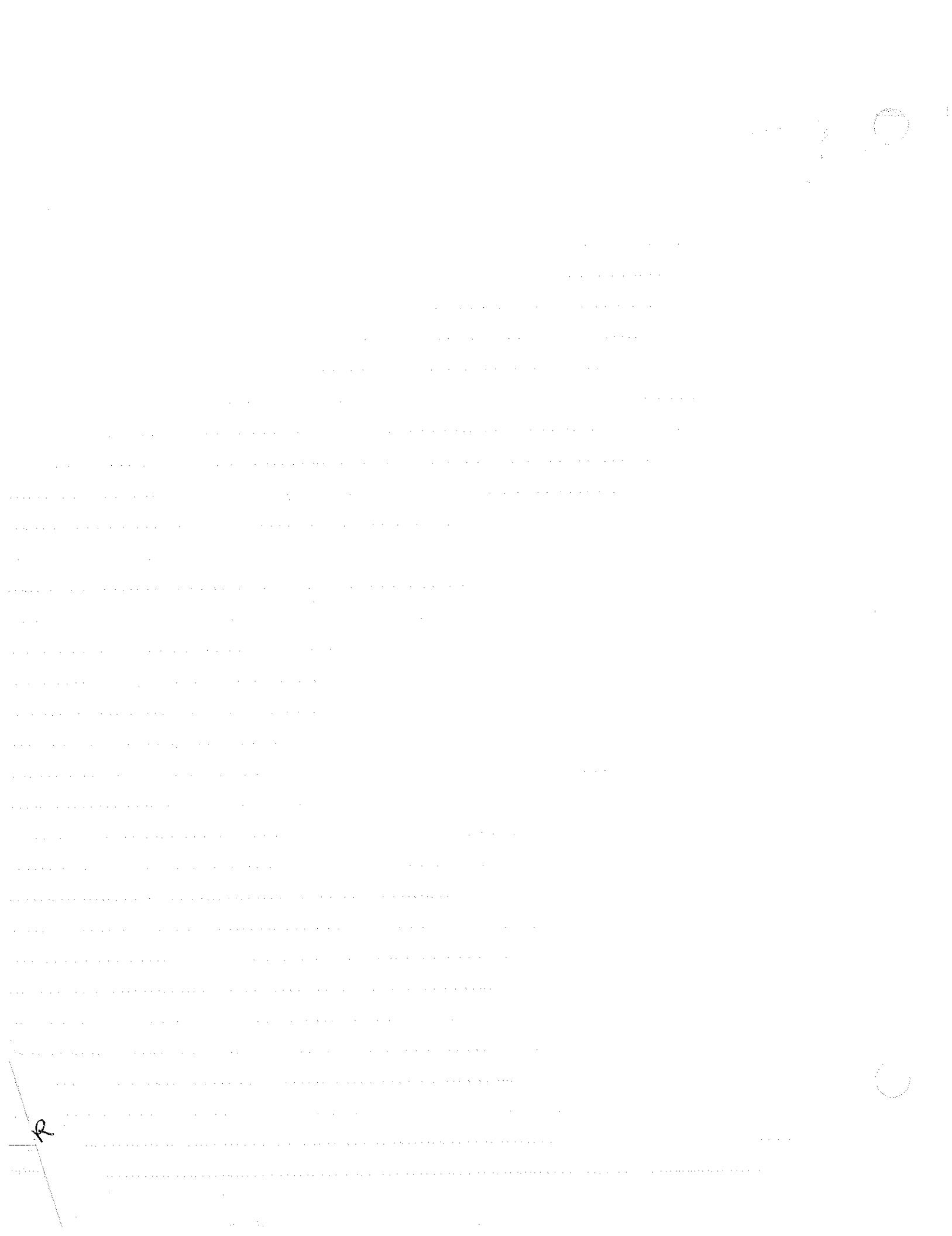
Absolute Brightness: A star's brightness the star would have if it were at a standard distance from Earth.

Light Year: Is the distance that light travels in one year about 9.5 million km. Is about the distance the light travels in one year.

Parallax: Is the apparent change in the position of an object when you look at it in different places. Move to different positions, but the object doesn't move.

Hertzsprung Diagram: A graph that finds out if the temperature, ~~if~~ and absolute brightness of stars are related.

Main Sequence: As you can see in figure 10, most of the stars in the diagram form a diagonal area.



## Section 3: Lives of Stars!

**Nebula:** A nebula is a large cloud of gas and dust spread out in an immense volume.

**Protostar:** A contracting cloud of gas and dust with enough mass to form a star.

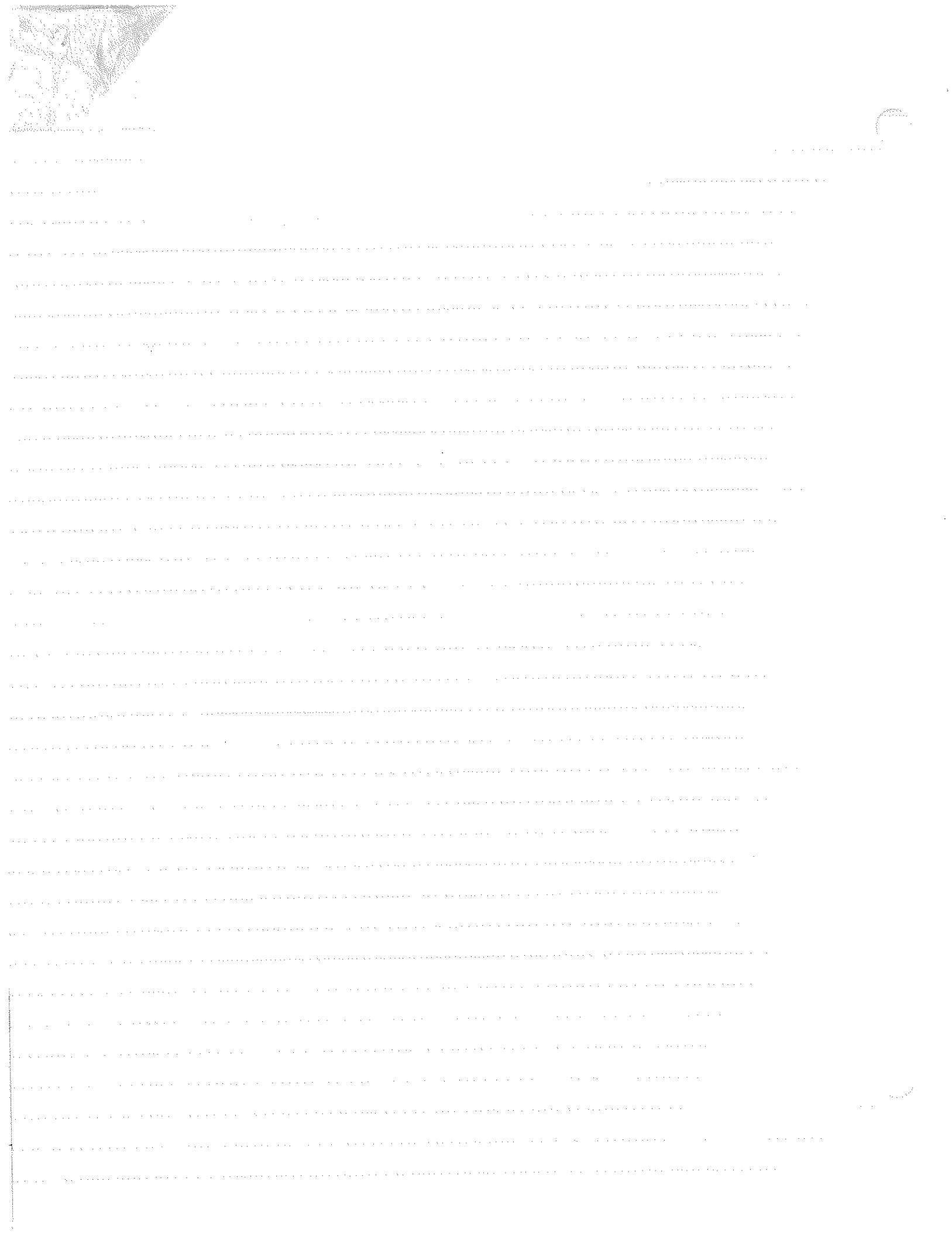
**White Dwarf:** The blue-white core of the star that is left behind cools.

**Supernova:** After a supernova, some of the material from the star expands into space.

**Neutron Stars:** Are the remains of high-mass stars.

**Pulsars:** Short for pulsating radio sources. Spinning neutron stars are called pulsars.

**Black Hole:** Is an object with gravity so strong that nothing, not even light, can escape.



## Section 4: Star Systems and Galaxies.

**binary star:** Star systems that have two stars are called binary stars.

**Eclipsing Binary:** A system in which one star periodically blocks the light from another.

**Open Clusters:** Has a loose, disorganized appearance and contain no more than a few thousand stars.

**Globular Clusters:** Are large groupings of older stars.

**Galaxy:** Is a huge group of single stars, star systems, star clusters, dust, and gas bound together by gravity.

**Spiral Galaxies:** Some spiral galaxies, called barred spiral galaxies, have a huge bar-shaped regions of stars and gas that passes through their center.

**Elliptical Galaxies:** Look like round or flattened balls. Most elliptical galaxies contain only old stars.

**Irregular Galaxies:** Irregular galaxies are typically smaller than other types of galaxies.

**Quasars:** Since quasi means "something like" in Latin, these objects were given the name quasi-stellar objects.

Scientific notation: Uses powers of ten to write very large or very small numbers in shorter form.

## Section 5: The Expanding Universe!

The Big Bang: It's a theory that the Universe was made in a instant, Billions of years ago (explosion).

Hubble's Law: It's a law that says the farther away the galaxy is, the faster it's moving away from us. This was made by Edwin Hubble.

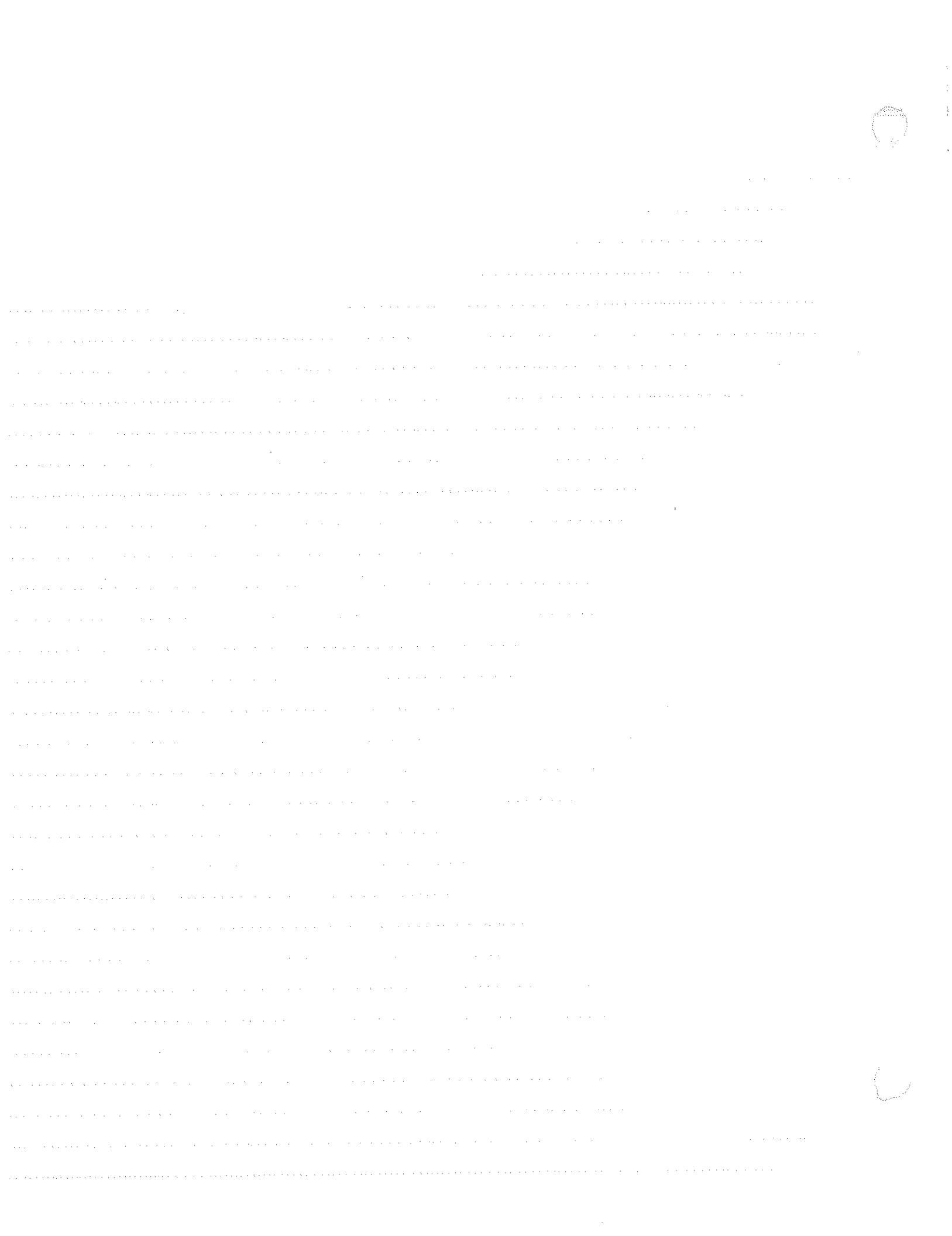
Cosmic Background Radiation: Is a glow that is left over thermal energy from the big bang. This energy went through every direction when the Universe expanded.

Solar Nebula: Is a large cloud of dust and gas such as the one that made our solar system. Gravity pulled solar nebula together it was spinning faster and faster. Gravity pulled it down into the center, the gas became hot, then the sun was born.

Planetesimals: Are the outer part of the disc were gas and dust make small asteroid like and comet like bodies. These cold, and grew larger, and make planets.

Dark Matter: Is the matter that does not give off electro magnetic radiation.

Dark Energy: Is astronomers think that a mystery new force is making the expansion for the Universe to go faster.



Pritvir Jhurty

## Origin of the universe Vocabulary

April 24/2019

Science 10

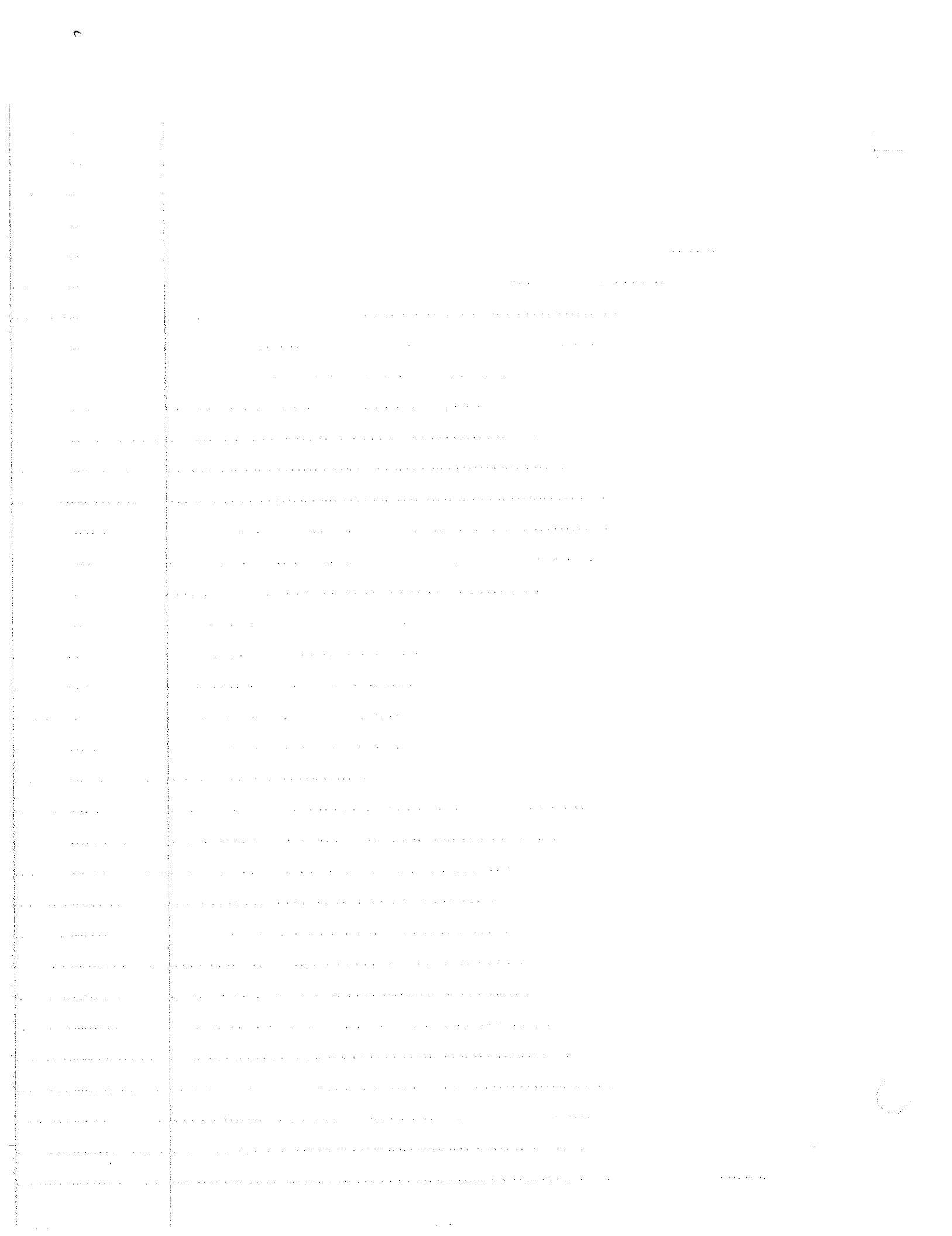
- 1) stars
- 2) constellations
- 3) Astronomers
- 4) gas
- 5) energy
- 6) nuclear fusion
- 7) nuclear
- 8) composition
- 9) chemicals
- 10) chemical composition
- 11) spectrograph
- 12) mass
- 13) telescope
- 14) spectrum
- 15) atmosphere
- 16) wavelengths
- 17) photosphere
- 18) light
- 19) apparent brightness
- 20) absolute brightness
- 21) electronic devices
- 22) Light-year
- 23) parallax
- 24) Astronomy
- 25) Astrology
- 26) Hertzsprung-Russel diagram.
- 27) surface temperature
- 28) supergiants
- 29) Main sequence
- 30) Giants
- 31) white dwarfs
- 32) blueshift
- 33) redshift
- 34) nebula
- 35) protostar
- 36) white dwarf
- 37) supernova
- 38) neutron star
- 39) pulsar
- 40) black hole
- 41) volume
- 42) dense
- 43) gravity
- 44) dust
- 45) nucleosynthesis
- 46) atoms
- 47) near
- 48) pressure
- 49) core
- 50) redgiant
- 51) planetary nebula
- 52) Moon
- 53) Earth
- 54) sun
- 55) black dwarf
- 56) radio waves
- 57) radio telescopes
- 58) pulsating radio sources
- 59) extraterrestrial
- 60) radiation
- 61) chandra x-ray observatory
- 62) binary star
- 63) eclipsing binary
- 64) open cluster

# Pratvir Jhatty

- 65) globular cluster
- 66) galaxy
- 67) spiral galaxy
- 68) elliptical galaxy
- 69) irregular galaxy
- 70) quasar
- 71) scientific notation
- 72) Milky Way
- 73) solar system
- 74) star systems
- 75) horizon
- 76) eclipse
- 77) gravitational effect
- 78) orbit
- 79) infrared radiation
- 80) local group
- 81) big bang
- 82) Hubble's law
- 83) cosmic background radiation
- 84) solar nebula planetesimal
- 85) dark matter
- 86) dark energy
- 87) explosion
- 88) Vera Rubin
- 89) universal gravitation
- 90) plank epoch
- 91) electromagnetism
- 92) weak grand unification
- 93) inflationary epoch
- 94) unification epoch
- 95) nucleosynthesis epoch
- 96) quark
- 97) asteroid belt
- 98) ozone layer
- 99) force
- 100) Newton's law
- 101) gravitational constant
- 102) Right Ascension
- 103) declination
- 104) Doppler Effect
- 105) refracting telescope
- 106) reflecting telescope
- 107) equinox
- 108) astronomical unit
- 109) meteor
- 110) meteoroid
- 111) solar flare
- 112) comet
- 113) Kuiper Belt
- 114) photosphere
- 115) apparent magnitude

VOCABULARY WORD LIST

- Constellation
- Supernova
- Spectrograph
- Neutron star
- Apparent Brightness
- Pulsar
- Absolute Brightness
- Black hole
- Light year
- Atom
- Parallax
- Binary star
- Hertzsprung-Russell Diagram
- Eclipsing binary
- Main Sequence
- Globular Cluster
- Astronomers
- Spiral galaxy
- Nuclear fusion
- Irregular galaxy
- Color and Temperature
- Universe
- Size
- Open cluster
- Surface temperature
- Galaxy
- Supergiant star
- Elliptical galaxy
- Chemical composition
- Quasar
- Elements
- Scientific notation
- Telescope
- Star cluster
- Wavelength
- Global cluster
- Photosphere
- Barred-spiral galaxies
- Square meter
- Crab nebula
- Betelgeuse
- Solar flare
- Stars
- Electromagnetic Energy
- Milky Way
- White Dwarf
- Sun
- Sirius A
- Sirius B
- Alpha Centauri A
- Alpha Centauri B
- Bluish star
- Reddish star
- Nebula
- Protostar



Makayla

04/25/2019

1. Constellation
2. Spectrograph
3. Apparent brightness
4. Absolute brightness
5. light-year
6. parallax
7. Hertzsprung - Russell diagram
8. Main sequence
9. Supernovas
10. Neutron Stars
11. Black holes
12. Galaxies
13. Quasars
14. Big Bang Theory
15. Nebula
16. Plank Epoch
17. Grand Unification
18. Quarks
19. Inflationary Epoch
20. Unification Epoch
21. Nucleosynthesis Epoch
22. Electromagnetism
23. Weak nuclear force
24. Strong nuclear force
25. Gravity
26. Red/Blue Shift

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## VOCABULARY

- constellation
- nuclear fusion
- chemical composition
- spectograph
- wavelength
- photosphere
- apparent brightness
- absolute brightness
- light year
- parallax
- apparent movement
- Hertzsprung - Russell diagram
- surface temperature
- main sequence
- nebula
- protostar
- low-mass star
- medium-mass star
- high-mass star
- white dwarf
- black dwarf
- supergiant
- supernova
- neutron stars
- pulsars
- black hole
- electromagnetic radiation
- theory of relativity
- spacetime
- event horizon
- gravitational field
- star systems
- binary systems
- triple stars
- eclipsing binary
- star clusters
- open cluster
- globular cluster
- galaxy
- spiral galaxies
- elliptical galaxies
- irregular galaxies
- quasars
- Milky Way
- universe
- scientific inflation
- big bang
- Hubble's law
- cosmic background radiation
- solar nebula
- planetismals
- dark matter
- dark energy
- electromagnetism
- weak nuclear force
- strong nuclear force
- gravity
- plank epoch
- grand unification
- inflationary epoch
- unification epoch
- nucleosynthesis epoch
- quark
- gravitational constant  
 $(6.67 \times 10^{-11} \text{ N} \cdot \text{m}^2 / \text{kg}^2)$
- forces

+ zenith  
+ meridian  
+ magnitude  
+ right ascension  
+ declination  
+ longitude  
+ latitude  
+ ecliptic  
+ celestial sphere

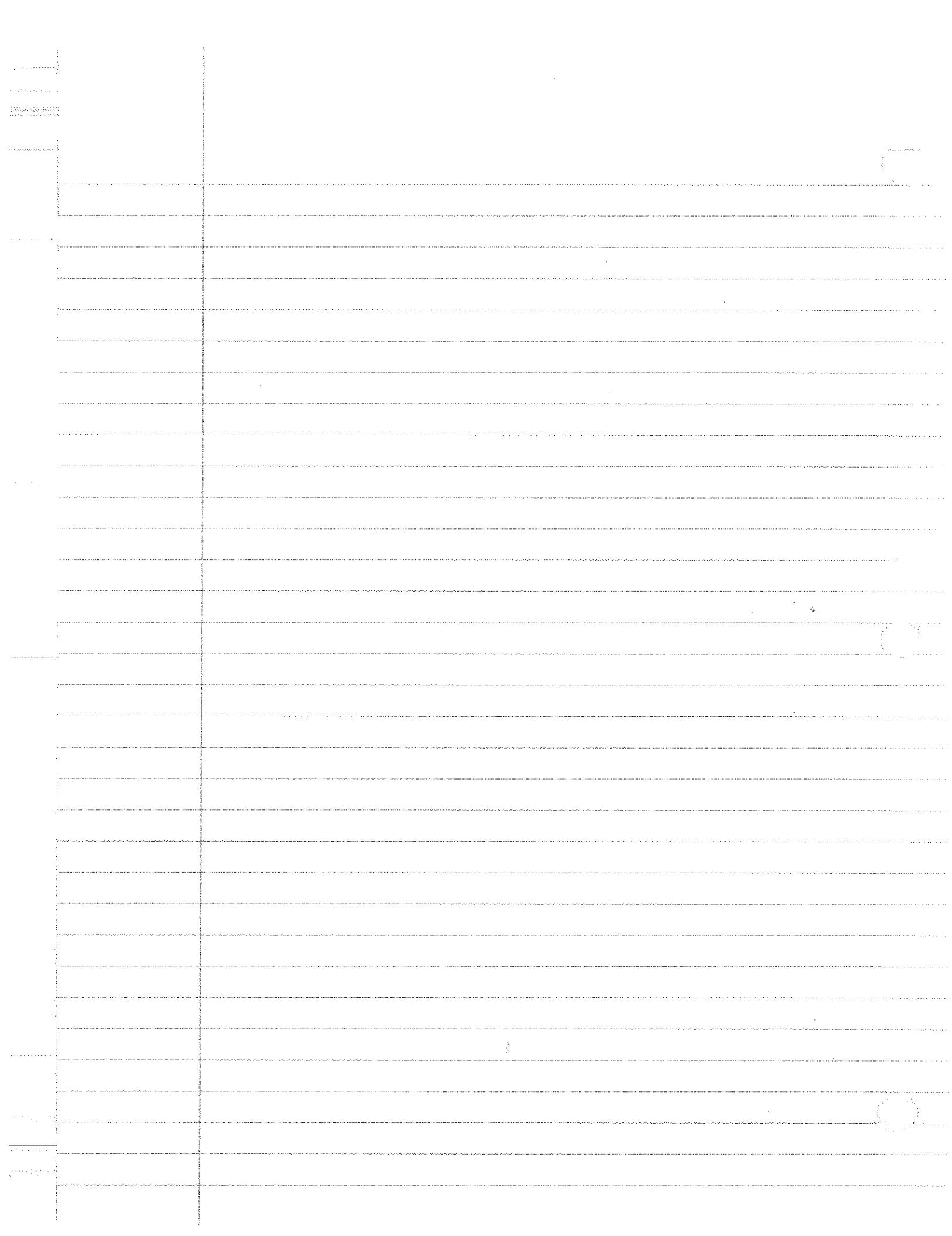
## Science 10 Key notes

Dawn Tanjili

- **Constellations** - A group of stars formed pictures of people or animals. forms pattern used by astronomers to locate objects in the night sky.
- **Spectrograph** - used by astronomers to determine the elements found in stars. It is a device device that breaks light into colours and produces an image of the resulting spectrum.
- **Apparent Brightness** - level of stars brightness than can be seen from earth fairly easily using electronic devices.
- **Absolute Brightness** - stars brightness that can be seen at a standard distance from earth.
- **Parallax** - used by astronomers to measure distance to nearby stars. It is the apparent change in position of an object when you look at it from different places.
- **Parallax Astronomy** - Able to measure the parallax of nearby stars to determine their distance. The less it moves further it is away.

## Lives of Stars

- **How a star borns** : A star begins as a nebula which contains a large cloud of gas and dust of immense volume. To form a star gas and dust are compressed together with enough mass to form a star called the "Protostar" which means "the earliest" in greek.
- **How a star dies** - when a star begins to run out of fuel the core shrinks and the outer corner expands. depending on its mass it either becomes a red giant or supergiant. After it runs out of fuel it becomes a white dwarf, neutron star or a blackhole.
- **Supernova** - After a supergiant runs out of fuel it can explode. The explosion is called a supernova. After it explodes materials from the star expands into space and may become a nebula that can form a new partly recycled star.



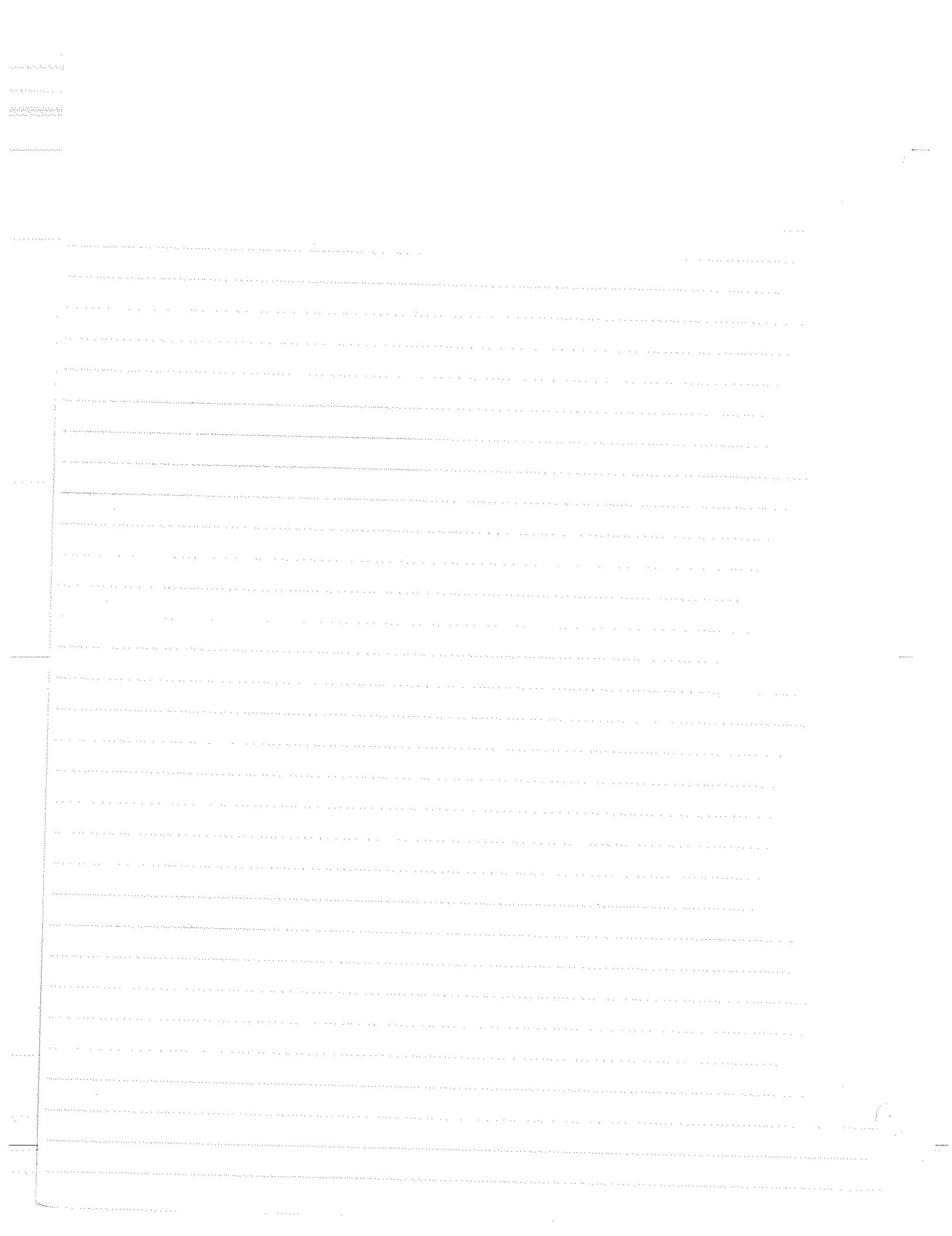
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Vocabulary words  
Definition

Leen

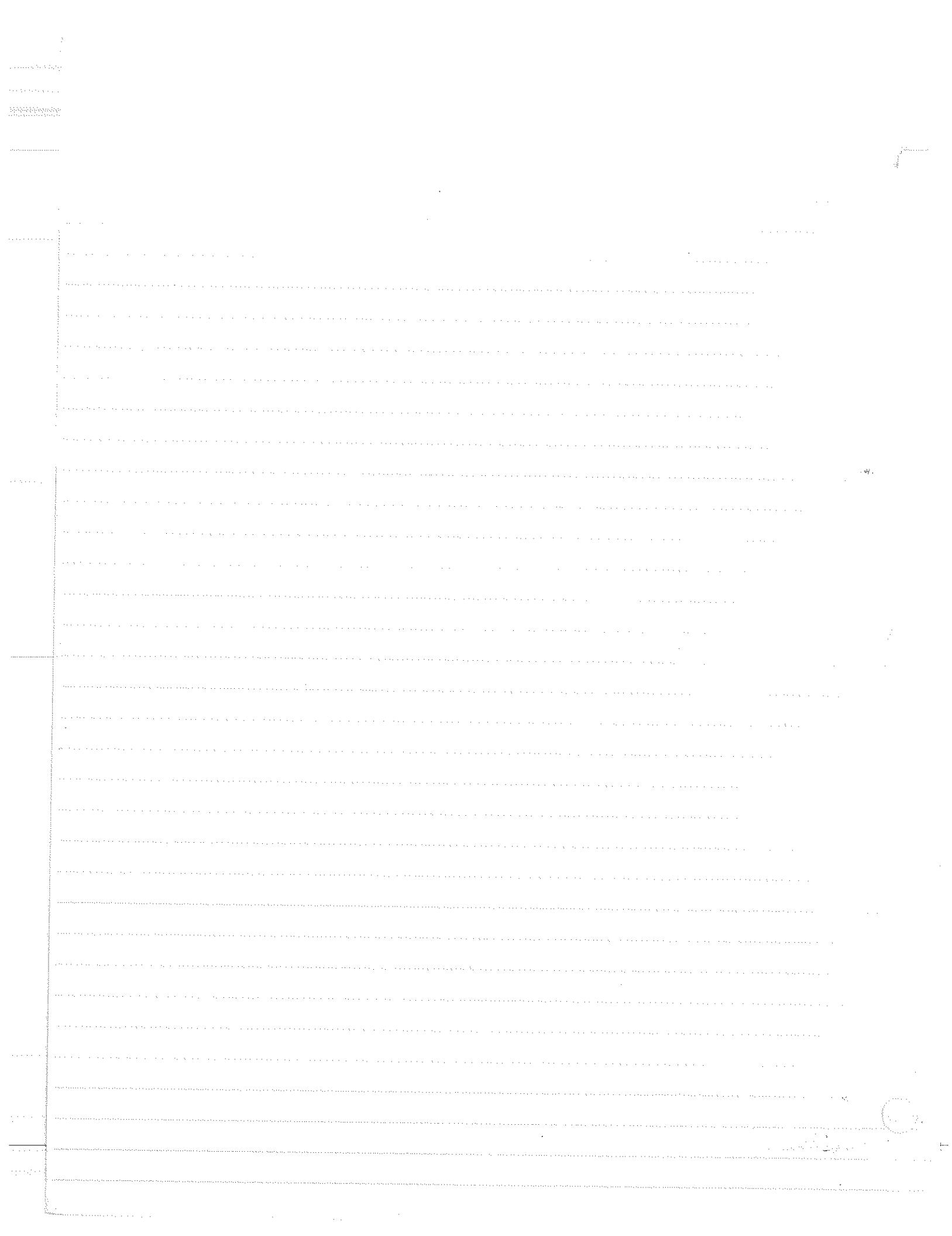
April 24  
2019

- \* Brightness of stars: The brightness of a star depends upon both its size and temperature.
- \* Apparent Brightness: it brightness as seen from earth
- \* Absolute Brightness: is the brightness the star would have if it were at a standard distance from earth
- \* light year: astronomer use it to measure distances between the stars and that light travels in one year about 9.5 million million Kilometers.
- \* parallax: astronomer often use parallax to measure distances to nearby stars and its the apparent change in position of an object when you look at it from different places
- \* Hertzsprung Russell diagram: The points formed a pattern the graph they made is still used by astronomer today. and to know how stars change over time
- \* nebula: is a large cloud of gas and dust spread out in an immense volume and the life of stars depends on its mass
- \* protostar: a star is born when the contracting gas and dust from a nebula become dense and hot that nuclear fusion starts.
- \* white dwarfs: after a star runs out of fuel it becomes a white dwarf a neutron star or a black hole.
- \* supernova: the explosion
- \* neutron stars: are the remains of high mass stars they are even smaller and denser than white dwarfs.
- \* pulsars: the source of the radio waves was really a rapidly spinning neutron star
- \* black holes: is an object with gravity so strong that nothing not even light can escape
- \* star system: most stars are members of groups of two or more stars
- \* binary stars: is the star system that have two stars and the three stars called triple stars
- \* eclipsing binary: a system in which one star periodically blocks the light from another



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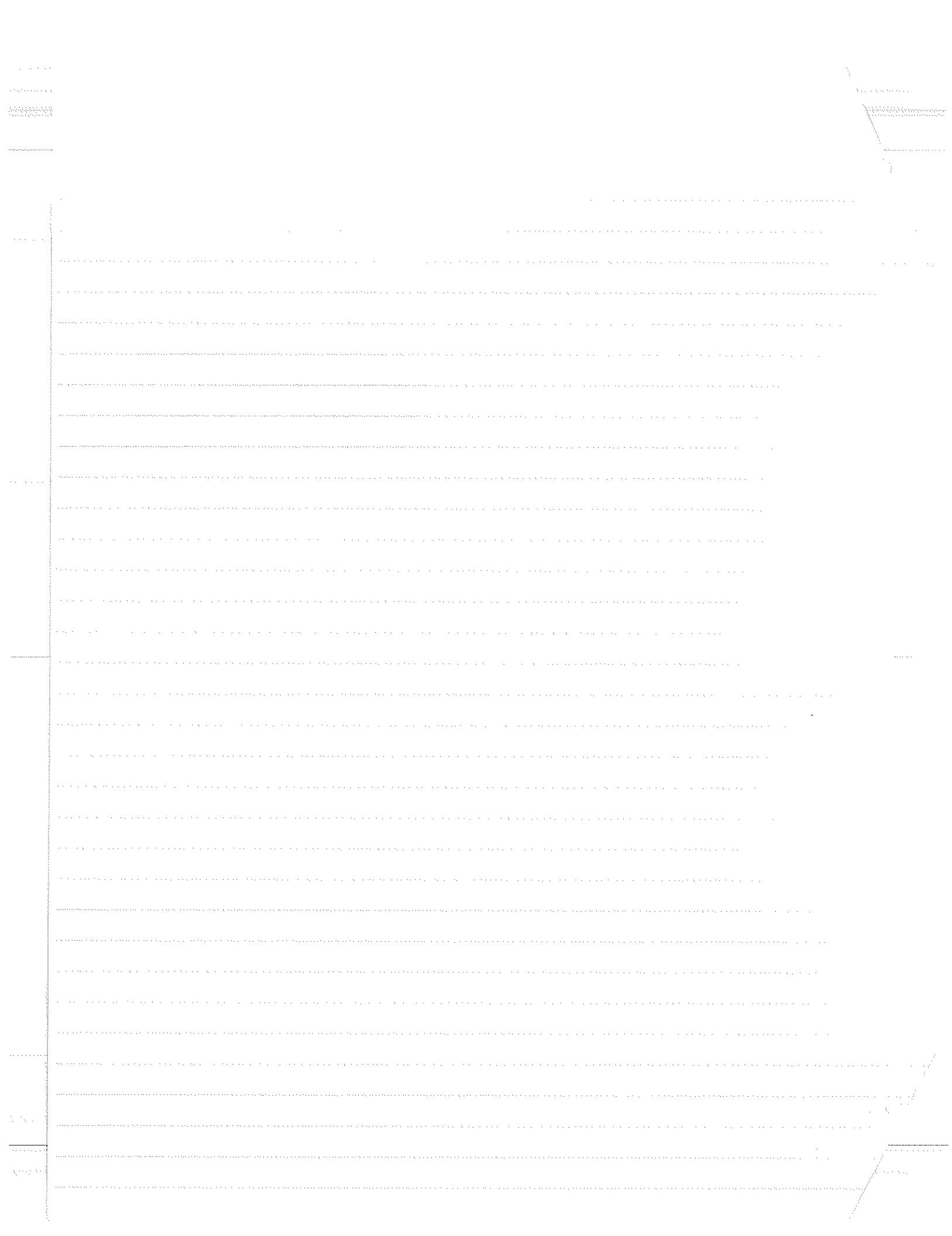
- ★ Star clusters: is that many stars that belong to larger grouping
- ★ Open clusters: have a loose disorganized appearance and contain no more than a few thousands stars
- ★ Globular star: are large grouping of older stars and they are around and densely packed with stars
- ★ Galaxy: astronomers classify most galaxies into the following types: spiral elliptical, and irregular.
- ★ Spiral Galaxies: appear to have a bulge in the middle and arms that spiral outward
- ★ Elliptical: looks like round or flattened balls these galaxies contain billions of stars but have little gas and dust between the stars
- ★ Irregular Galaxies: that do not have regular shapes and they are smaller than other galaxies.
- ★ Quasars: objects that are very bright but also far away and they are more than 10 billion years away from others
- ★ Milky Way: the spiral galaxy that located in our solar system
- ★ Scale of un: astronomers use are often very large or very small they frequently use scientific notation to describe size and distance in the universe.
- ★ Big Bang: is defined as the theory that the universe may have been created in a huge explosion at least 12 billion years ago.
- ★ Cosmic Background Radiation: this mysterious glow was coming from all directions in space
- ★ Solar Nebula: a large cloud of gas and dust such as the one that formed our solar system.
- ★ Planetesimals: the outer parts of the disk gas and dust formed small asteroid-like and comet-like bodies.
- ★ Dark matter: New observation lead many astronomers to conclude that the universe will likely expand forever, and that does not give off electromagnetic radiation.
- ★ dark energy: observation was puzzling as known force could count for it



Leen  
Block D

## NOTES:

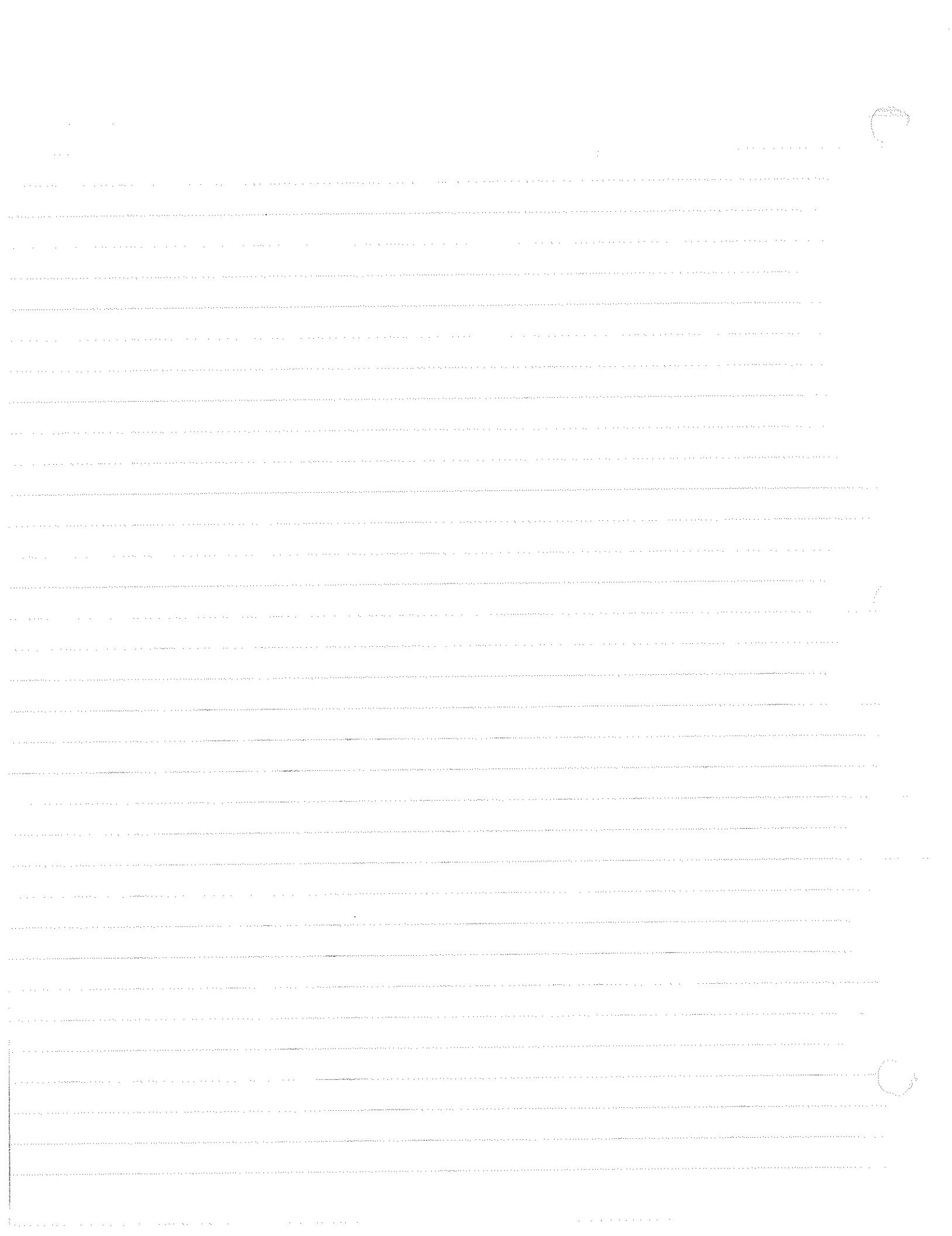
- ★ many stars are ~~tiny~~ actually about the size of the sun and some stars are much larger than the sun
- ★ a Spectrograph used by astronomers to determine the elements found in the stars
- ★ the apparent movement when you look from two different directions is ~~parallel~~ parallax
- ★ astronomers measure how much the nearby star appears to move against a background of stars that are much farther away
- ★ the less it moves the farther it moves
- ★ Generally stars that have less mass than the sun use their fuel and can live for up to 200 billion years
- ★ The most massive stars - those having more than 40 times the mass of the sun may become black holes when they die
- ★ Hubble's law states that the farther away a galaxy is the faster it is moving away from us.
- ★ astronomers estimate that the universe is about 13.7 billion years old.
- ★ PLANK EPOCH, as close to the start of the universe as we can calculate.



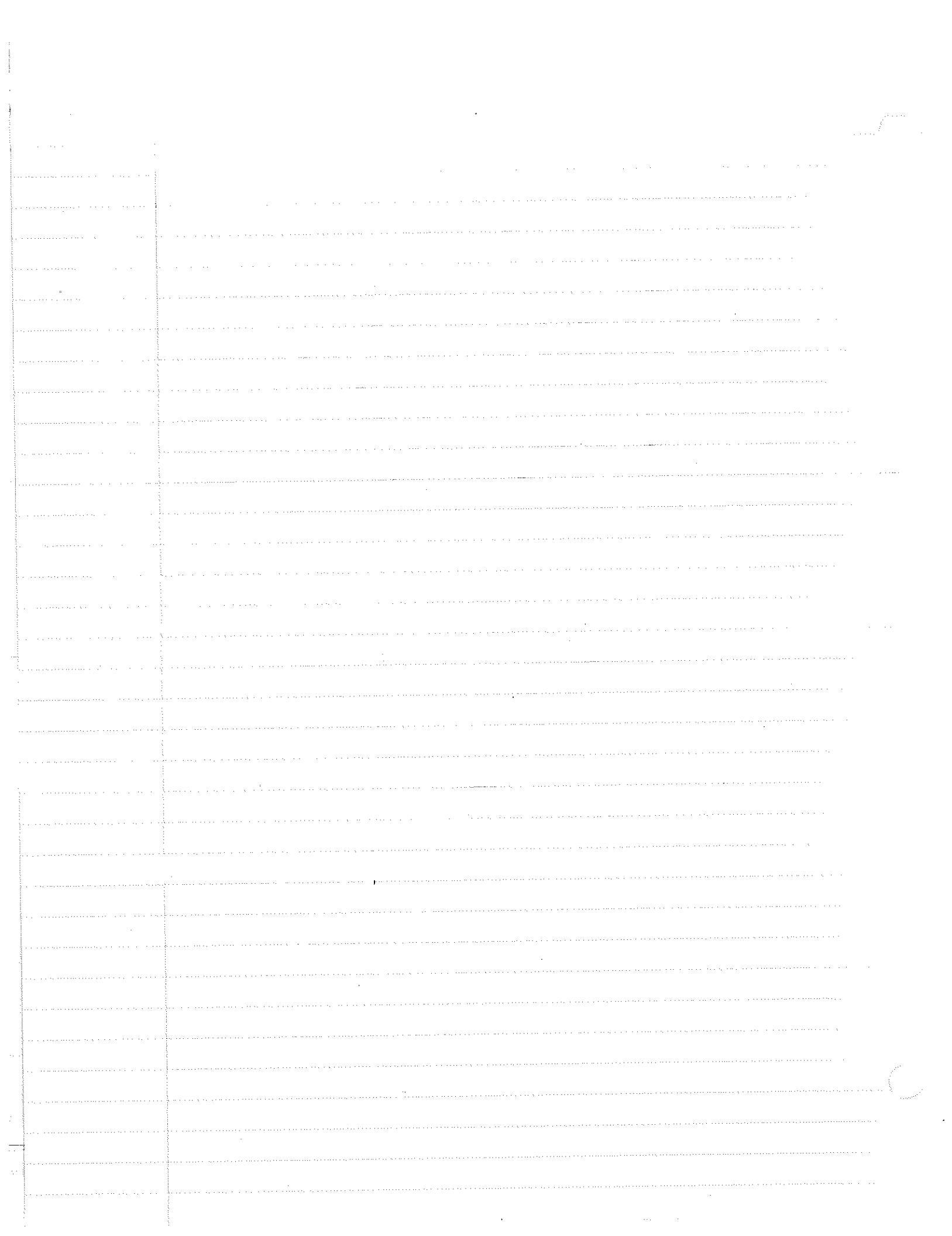
## Science 10 - Origin of the Universe List

of concepts and terms Page 1 of 4

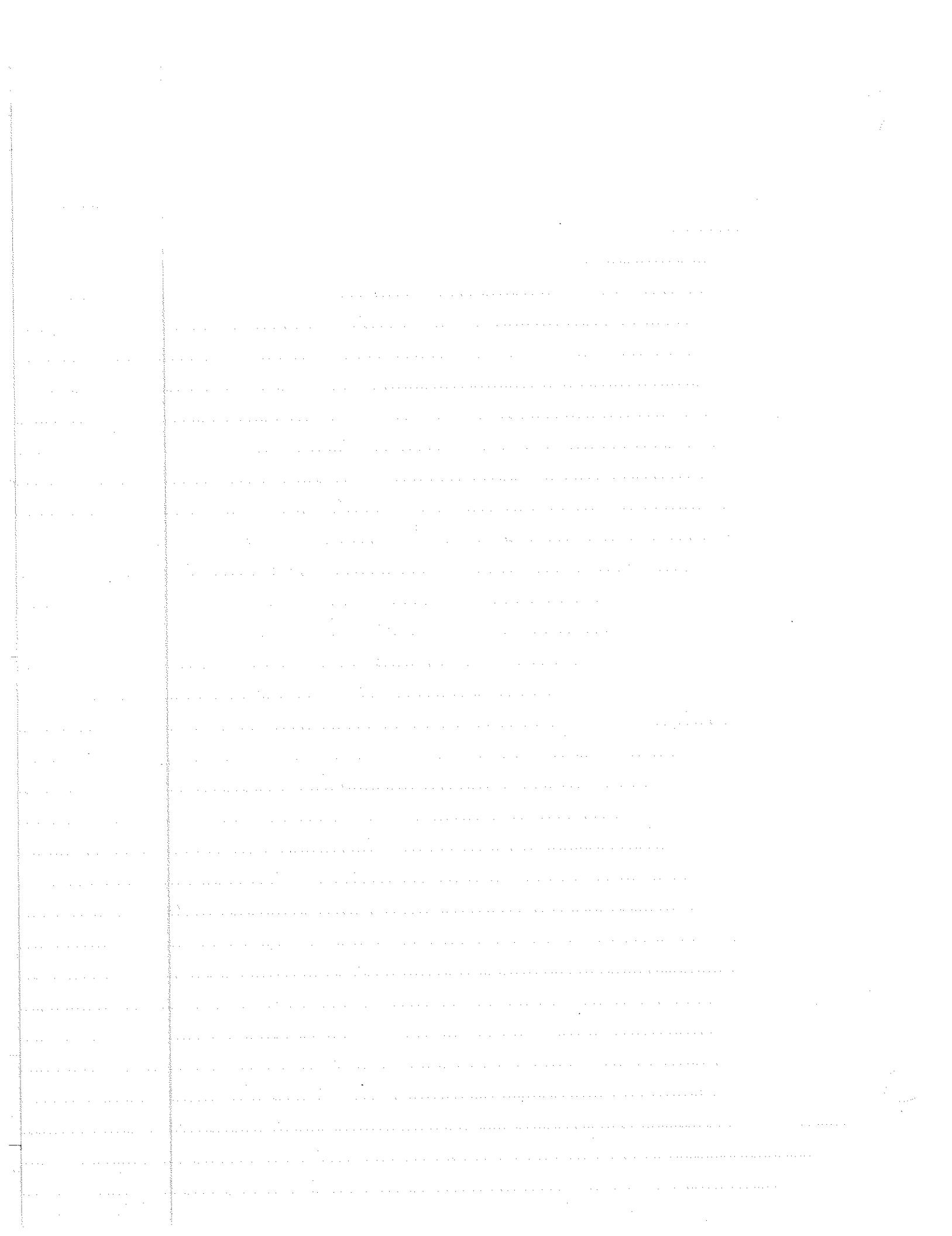
- ① Electromagnetic Spectrum ..... 35. Hydrogen
- ② Radio waves ..... 36. Helium
- ③ infrared radiation ..... 37. Nuclear fusion
- ④ Ultraviolet radiation ..... 38. Energy
- ⑤ X-rays ..... 39. Fuel
- ⑥ Gamma rays ..... 40. colour
- ⑦ Telescope ..... 41. Temperature
- ⑧ visible light ..... 42. size
- ⑨ wavelength ..... 43. composition
- 10. spectrum ..... - brightness
- 11. optical telescope ..... - Spectrograph
- 12. electromagnetic radiation ..... - elements
- 13. refracting telescope ..... - Apparent brightness
- 14. convex lens ..... - Absolute brightness
- 15. Reflecting telescope ..... - Light-year
- 16. Radio telescope ..... - Parallax
- 17. observatory ..... - Hertzsprung-Russell Diagram
- 18. Dogon knowledge of stars ..... - Main sequence
- 19. Sirius B/A ..... - Orion
- 20. Sigi ..... - Cosmic Expansion
- 21. angle ..... - balloons with dots
- 22. position ..... - electrons
- 23. sleeping Emo ..... - energy levels
- 24. Standing Emo ..... - Frequency
- 25. constellations ..... - Mercury Vapor
- 26. sky ..... - light meter
- 27. Astronomer ..... - life of star
- 28. Astronomy ..... - Nebula
- 29. Classifying ..... - Star
- 30. Mass ..... - Protostar
- 31. volume ..... - Lifetimes of stars & depends on?
- 32. gas ..... - life span
- 33. dust ..... - death of stars
- 34. dust ..... - birth of stars



- White Dwarfs
- Core
- Outer parts of star
- red giants
- Supernovas
- black dwarf
- glow of white dwarf = what?
- blazes
- flares ( solar)
- Super-giants
- Neutron Star
- Pulsars
- Black hole
- gravity
- Signs of a black hole
- friction
- revolve
- Chandra X-ray observatory
- Cardinal directions
- Meridian
- Zenith
- Ecliptic
- Celestial poles
- Right Ascension
- Longitude
- Declination
- Latitude
- Equator line
- Magnitude
- Magnitude scale
- Standard distance for Absolute brightness = 10 parsecs = ( $\approx 33$  light years)
- integrated magnitude
- surface brightness
- speed of light
- Andromeda galaxy
- Solar system
- blue or blue-white
- white
- yellow
- red-orange
- red
- Fabric of Space-time
- Moon position and gravity concept
- Comets
- Halley's comet
- tides (low)
- tides (high)
- $F = \frac{Gm_1 m_2}{r^2}$
- $F = \text{force due to gravity}$
- $G = \text{Gravitational constant}$
- Constant =  $\frac{6.67 \times 10^{-11} \text{ N} \cdot \text{m}^2}{\text{kg}^2}$
- radius
- centre of gravity
- drilling profile
- yellowstone explosion
- Earth layers
- History / formation of earth
- Earth creation
- Creation of moon
- meteorites their importance
- first life
- oxygen
- iron
- rust



- Photosynthesis
- Planets or stars (ordinary stars)
- glucose
- wobble in stars meaning
- earth crust
- Star clusters
- super continent
- Open clusters
- atmosphere
- Globular clusters
- Snowball earth
- Galaxy
- ozone layer
- Single stars
- plate movement
- Spiral Galaxies
- CO<sub>2</sub>
- arms of galaxies
- methane effect
- Barred-Spiral Galaxies
- Earthquakes
- Elliptical Galaxies
- acid rain - why and how?
- Irregular galaxies
- Ice Age
- Quasars
- bridge of ice
- Universe
- $$r = \sqrt{\frac{Gm_1 m_2}{F}}$$
- Space
- Plank Epoch
- Scientific Notation
- Forces
- local group
- Electromagnetic
- immensity of space
- Weak nuclear force
- shape of universe
- Strong nuclear force
- Universe
- Order of splitting
- Red shift
- Grand Unification
- blue shift
- Elementary particles
- how does a supernova work
- Inflationary Epoch
- Big bang
- Unification Epoch
- Andromed Galaxy
- quarks
- matter
- Nucleosynthesis Epoch
- Moving galaxies
- Milky way
- Hubble's law
- Star systems
- Rising Raisin Bread Dough
- Binary stars
- Cosmic background radiation
- Triple stars
- Thermal energy
- Eclipsing Binary
- Universe expansion
- Age of universe - (13.7 billion)



- Solar nebula
  - disk
  - rotating disk
  - Planetesimals
  - asteroid
  - asteroid belt
  - inner planet formation
  - outer planet formation
  - planet formation
  - gas giants
  - Future of universe
  - "big crunch" theory
  - matter
  - Dark Matter
  - dark energy
  - Solstice
  - Equinox
  - Revolution
  - Aphelion
  - Astronomical unit
  - Eccentricity
  - ellipse
  - heliocentric
  - perihelion
  - retrograde
  - prograde
  - Sunspot
  - meteor
  - meteoroid
  - Orbit
  - acceleration
  - hydrostatic equilibrium
  - convective zone
  - radiative zone
  - inertia
  - halo
  - stellar remnants
  - Ptolemy
  - Nebular hypothesis
  - Kepler's law of ellipses
  - Kepler's law of periods
  - Copernicus
  - Kepler's law of equal areas
  - Doppler effect
  - Synchronous rotation
  - lunar month
  - Umbra
  - Penumbra
  - Perigee
  - apogee
  - Cosmology
  - Kuiper belt
  - Oort cloud
  - Voyager
  - Galilean moon
  - Io
  - Europa
  - Ganymede
  - Callisto
- After this,  
from online worksheet  
but not taught in  
class

