

Exam Review Sheet
Unit 5 - Rocks

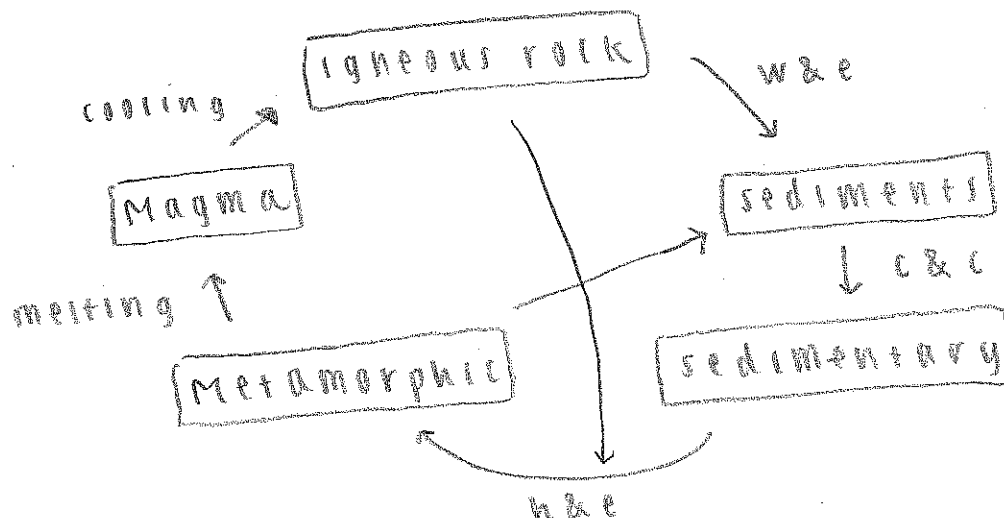
1. Igneous rocks are formed ... By cooling of magma/lava
2. What is a rock? collection of minerals
3. Sedimentary rocks are formed ...
cementation of sediments
4. Metamorphic rocks are formed ...
with heat and pressure
5. Sediments are substances such as sand, gravel, mud, clay, and fossils that are identified by
size of fragments
6. All of the different types of rock can become any other type of rock (True/False)
7. A sedimentary, igneous, or metamorphic rock can become an igneous rock by
... melting and then cooling
8. A rock type can become sediments from the process of evaporation and weathering
9. All rock types can become metamorphic rocks when they undergo heat and
pressure
10. Sediments become sedimentary rocks by what three step process? deposition
compaction cementation
11. Is the rock cycle one single pathway, or a complex web of alternate pathways?
12. All igneous rocks originate from magma
13. Igneous rocks formed from lava above the ground are called extrusive; this produces
fine-grained texture.
14. Igneous rocks formed from magma below the ground is called intrusive; this produces
a coarse texture.
grain
15. Rocks that come from lava that cooled so quickly that no crystals had time to form have a
texture that is described as glassy. An example of this type of texture is obsidian.
16. Lava flows and ash deposits are considered (intrusive/extrusive structures.)
17. Why is granite coarse-grained?(intrusive)
Minerals had longer time to grow
18. The process of sediment settling out of the water or wind that was carrying it is
called weathering?

19. Fossils are most likely found in what type of rock? sedimentary
20. In the rock cycle, rocks are classified by A? (A. origin B. color C. grain size D. mineral composition)
21. The sediments that make up sedimentary rocks are first weathered then carried by streams where they are later deposited and then cemented or hardened into rocks
22. Coal is classified as an organic sedimentary rock and is formed from plant matter
23. Minerals are inorganic, which means it does not contain materials that were once alive.
24. There is no name for the color of a mineral but there is the "streak" of a mineral, meaning the color of its streak.
25. Which type of metamorphism is formed from high heat from magma, it is considered to be local metamorphism. contact metamorphism
26. Which of the following most likely results in the formation of a fossil? (A. Mesozoic clam lies exposed on the surface of the sea floor. B. Mesozoic clam is washed up onto the beach. C. Mesozoic clam is eaten by a large predatory fish. (D) Mesozoic clam is buried by a mudslide)
27. (Angular rounded) rock fragment probably traveled the longest in a river.
28. Metamorphic rocks with a layered or banded look are called foliated
29. Metamorphic Rock without layers is called. non-foliated

Define these terms: compaction, cementation, erosion, deposition.

DEPOSITION - PROCESS IN WHICH SEDIMENT IS LAID DOWN
 EROSION - ROCKS ARE REMOVED DUE TO WEATHERING
 CEMENTATION - SEDIMENTS ARE "GLUED"
 COMPACTION - SEDIMENT PUSHED TIGHTLY

Be able to diagram the rock cycle: (Draw and label the rock cycle below)

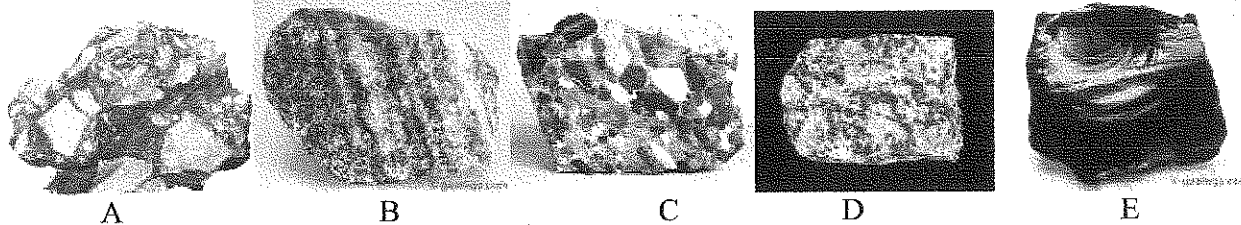


Define the following terms:

Sedimentation	Rock Cycle	Lithification	Rock Sequence
Non-foliated texture	Contact Metamorphism	Cooling	Grain Shape
Regional Metamorphism	Grain Size	Foliated	Metamorphism
Igneous Rock	Metamorphic Rock	Sedimentary Rock	Sediments

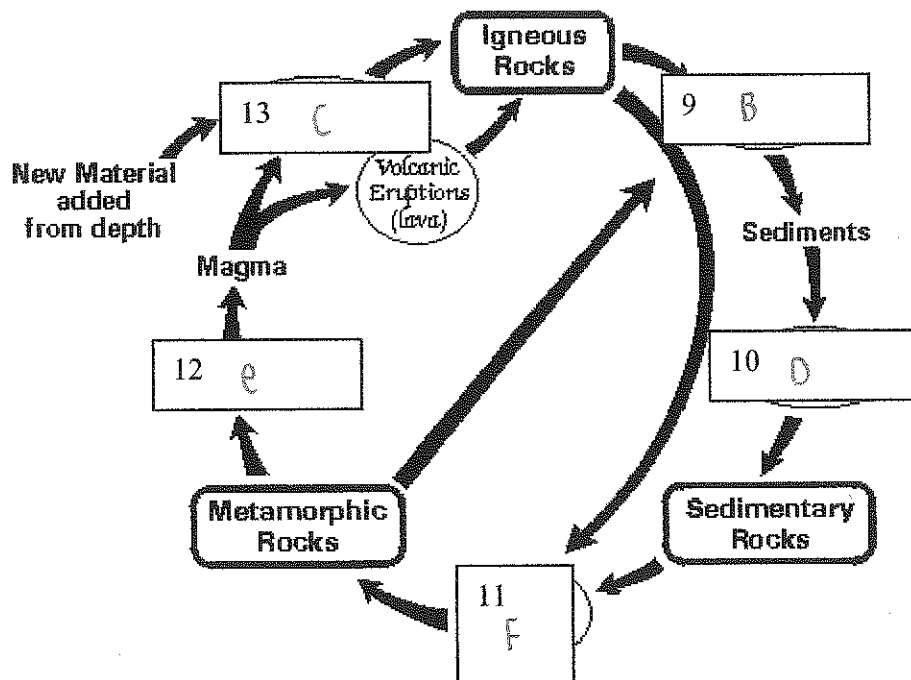


1. Identify the following rocks as igneous, metamorphic, and sedimentary. Name the rocks as well.



2. How are Igneous Rocks formed at divergent plate boundaries?
3. What happens at convergent plate boundaries to the sedimentary rock at the ocean floor?
4. What occurs when the crust melts?
5. How hot must the temperatures be to form metamorphic rock?
6. As hot magma pushes to the surface at both convergent and divergent boundaries and comes in contact with the rocks, what happens?
7. What is regional metamorphism?
8. What is Contact Metamorphism?

The Rock Cycle



- a. deposition and lithification
- b. weathering and erosion
- c. cooling and crystallization
- d. compaction and cementation
- e. melting
- f. heat and pressure

VOCAB

Sedimentation - Act or process of depositing or forming a sediment

Rock cycle - process in which rocks are formed, altered, destroyed & reformed

Lithification - unconsolidated materials are converted into a solid rock.

Rock sequence - rocks placed in layers

Non-foliated texture - Metamorphic rock that does not show light or dark texture.

Contact metamorphism - Mineralogy & texture of a body rock are changed by exposure to pressure

Cooling - when liquid magma turns into a rock

Grain shape - Geological history of a sediment

Grain size - tells how much a rock has moved

Foliated - set of layers visible in many metamorphic rocks

Igneous rock - Any rock formed from cooled and hardened magma.

Metamorphic rock - Rock from other rocks

Sedimentary rock - Rock that has been through deposition & solidification

A
1. sedimentary - sandstone

B
Metamorphic - Granite

C
sedimentary - limestone

D
Metamorphic - sandstone

E
Igneous - obsidian

2. When two plates move apart, magma will rise. Once it cools, it is an igneous rock.

3. The ^{sedimentary} rock is compacted, causing sediments to wash off.

4. When the crust melts, it turns into magma, forming an igneous rock.

5. The temperature must be really hot, but not hot enough to melt the rock.

6. When magma pushes into the boundaries and comes in contact w/ the rocks, causing igneous rocks to form.

7. Regional metamorphism is all the pressure around a rock.

8. Contact metamorphism is formed from high heat from magma.

Final Exam Review
Unit 7 – Oceans and Climate



1. Diagrams that you should know. Please draw and label the following on a the bottom or back of this sheet of paper:
 - A. The major currents in Northern and Southern Hemisphere. (Are they warm or cold?)
 - B. The direction of the currents flow in the Northern and Southern Hemisphere.

2. Define the following Terms.
 - A. Global Conveyor Belt – major system that carries heat in the ocean
 - B. Thermohaline Current – flow of ocean water caused by changes in density
 - C. Salinity – saltiness or dissolved salt content of a body of water
 - D. Upwelling – carries deep, cold water to the ocean surface
 - E. Density – density of a fluid is its mass per unit volume
 - F. Coriolis Effect – Apparent deflection of a freely moving object to the right in the northern hemisphere.
 - G. Gulf Stream – warm current originates in the Gulf of Mexico
 - H. Polar Currents – cold currents that flow near poles

3. Difference between climate and weather?

climate is the long term pattern of weather. weather is the day to day pattern

4. How do different regions climate change due to oceans?

Oceans affect climate by heating & cooling the air

5. Why are some currents warm and some currents cold?

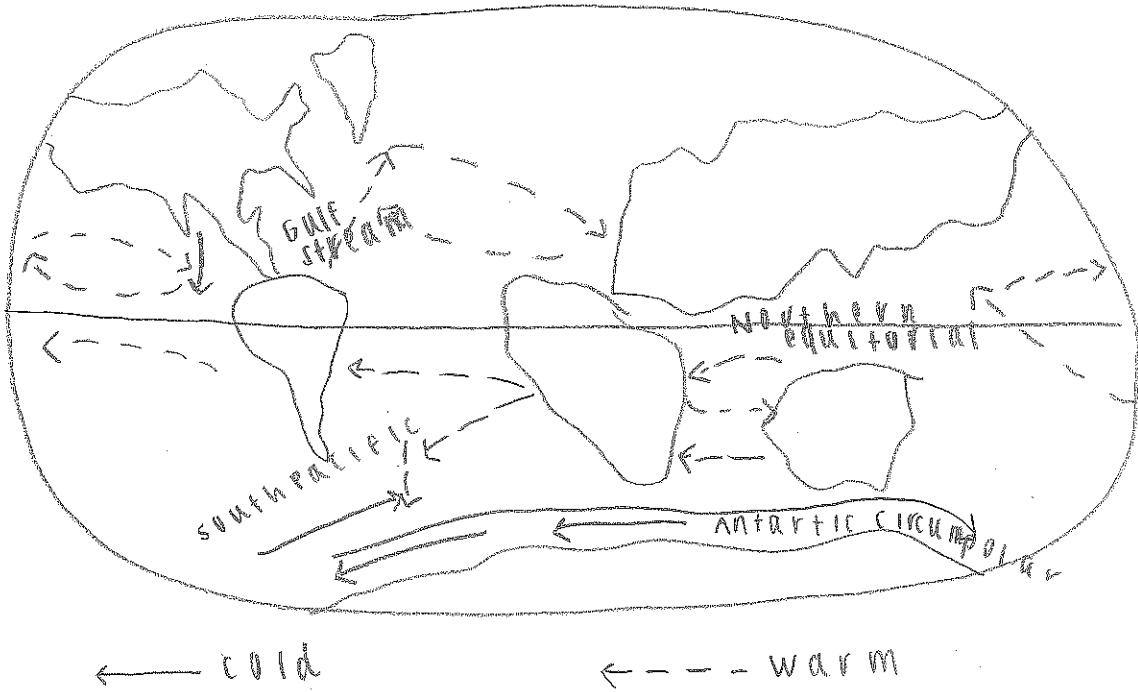
warm - near equator
cold - near poles

6. Why do currents travel in the direction that they are?
They travel the way they do because of density and Coriolis effect
7. What causes surface currents?
Blowing of the wind & earth's rotation
8. Surface currents travel in what direction in the northern hemisphere?
In the northern hemisphere they travel clockwise
9. Where is the most dense ocean water found?
Most dense water is found on the bottom of the ocean
10. What is the average salinity of ocean water?
35 ppt measured in grams is the average
11. Describe how currents move based on density.
More dense currents go to the bottom and less dense currents move to the top
12. What area have the lowest salinity and why?
salinity is lowest at the surface; warm and less dense.

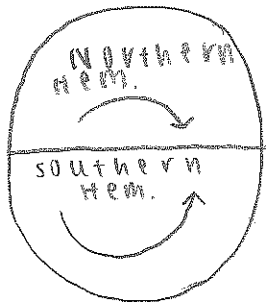
Know if the following are warm or cold currents:

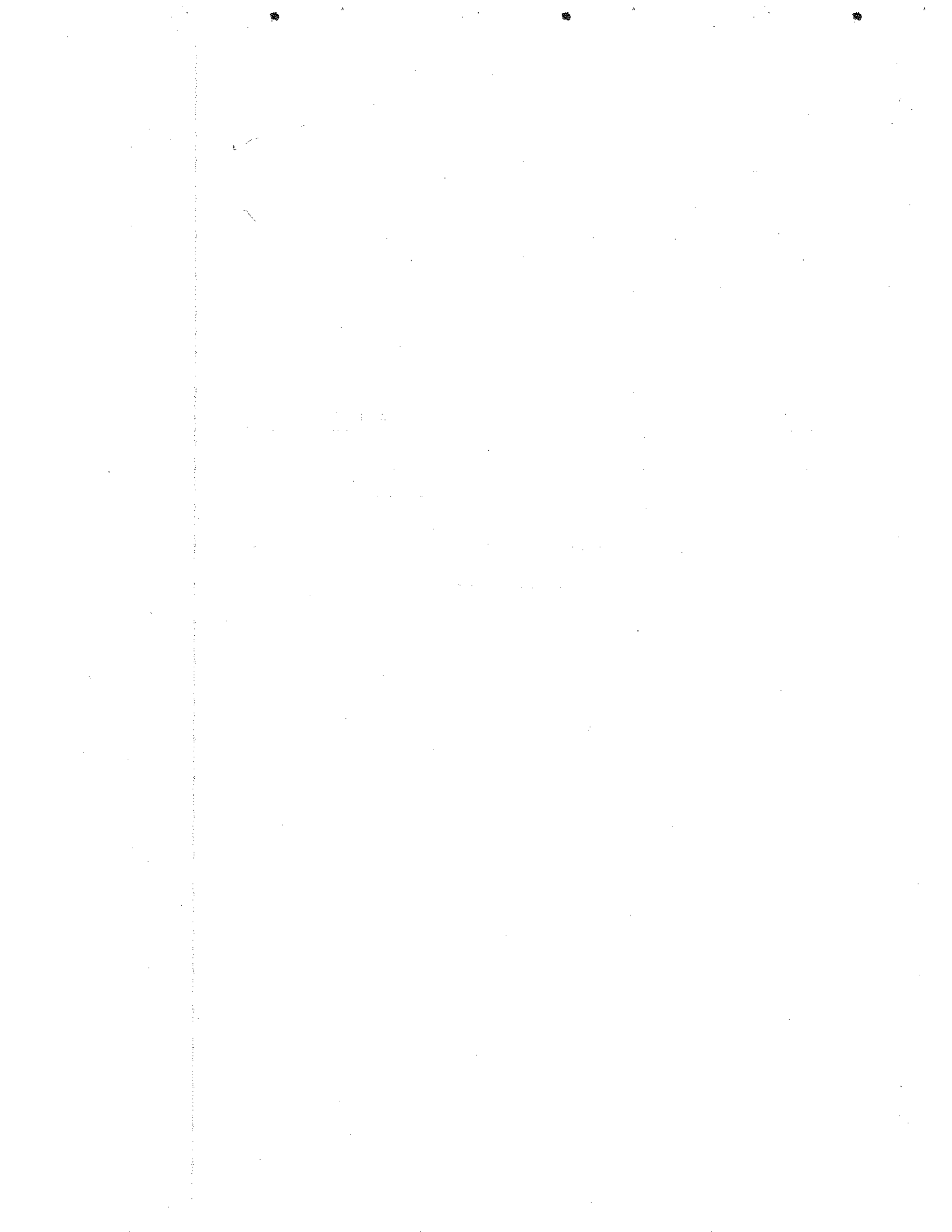
Gulf stream warm
 California Current cold
 Antarctic Circumpolar cold
 Labrador Current warm
 Canary Current cold

1a.



1b.





Final Exam Review Sheet
Unit 8 – Climate Change

1. Diagrams that you should know – Please draw and label the following:
 - A. Carbon Cycle – how carbon moves between all the earth's spheres
2. Define the Following Terms:
 - A. Greenhouse Effect – Effect produced by greenhouse gases allowing solar energy to pass.
 - B. Global Warming – increased emissions, leading to enhanced greenhouse effect.
 - C. GHG's – Gases such as water vapor, carbon dioxide, methane, and nitrous oxide.
 - D. CFC's – various gases compounds of carbon, hydrogen and chlorine.
 - E. Solar Radiation – Electromagnetic radiation
 - F. Fossil Fuels – Fuels containing carbon, coal, gas that were over millions of years.
 - G. Deforestation – Long term removal of trees from an area
 - H. Permafrost – Layer of permanent frozen of ground
 - I. Carbon sinks – Areas that absorb & hold lots of carbon dioxide.
 - J. Carbon cycle – carbon that moves between the atmosphere, oceans & living organisms.
 - K. Weather – present state of atmosphere
 - L. Climate Change – change in average weather that a given region experience.
 - M. Topography – Three dimensional arrangement of land surface

N. Closed System – system that does not interact w/ other systems

O. Water cycle – continuous cycle of water.

P. Albedo – Fraction of solar energy reflected from Earth's surface

Q. Paleoclimatology – scientific study of climate changes.

3. Climate change

A. What were ancient climates like? (how do we know?)

There many changes in climate, sometimes it was hot & sometimes cold.

B. What are the changes in climate from past to present?

Temp increased.

C. What are the effects of these warmer temps?

More radiation & droughts

D. How have humans influenced the climate?

pollute the air

4. What are the four main GHG's?

water vapor, carbon dioxide, methane, & nitrous oxide.

A. Describe each and tell where each comes from.

carbon dioxide – plant trees

water vapor – oceans

methane – cows, animals

Nitrous oxide –

fertilizer.

B. How have the levels of GHG's changed over the last century?

The levels of GHG's have been increasing

C. Relate that to how temperature has changed over the last century.

Temperature has increased causing global warming.

5. Describe the Carbon Cycle.

A. How does carbon move through all the earth's systems?

it starts of in the atmosphere, then taken by agriculture and released by methane

B. How does something go from carbon sink to carbon source?

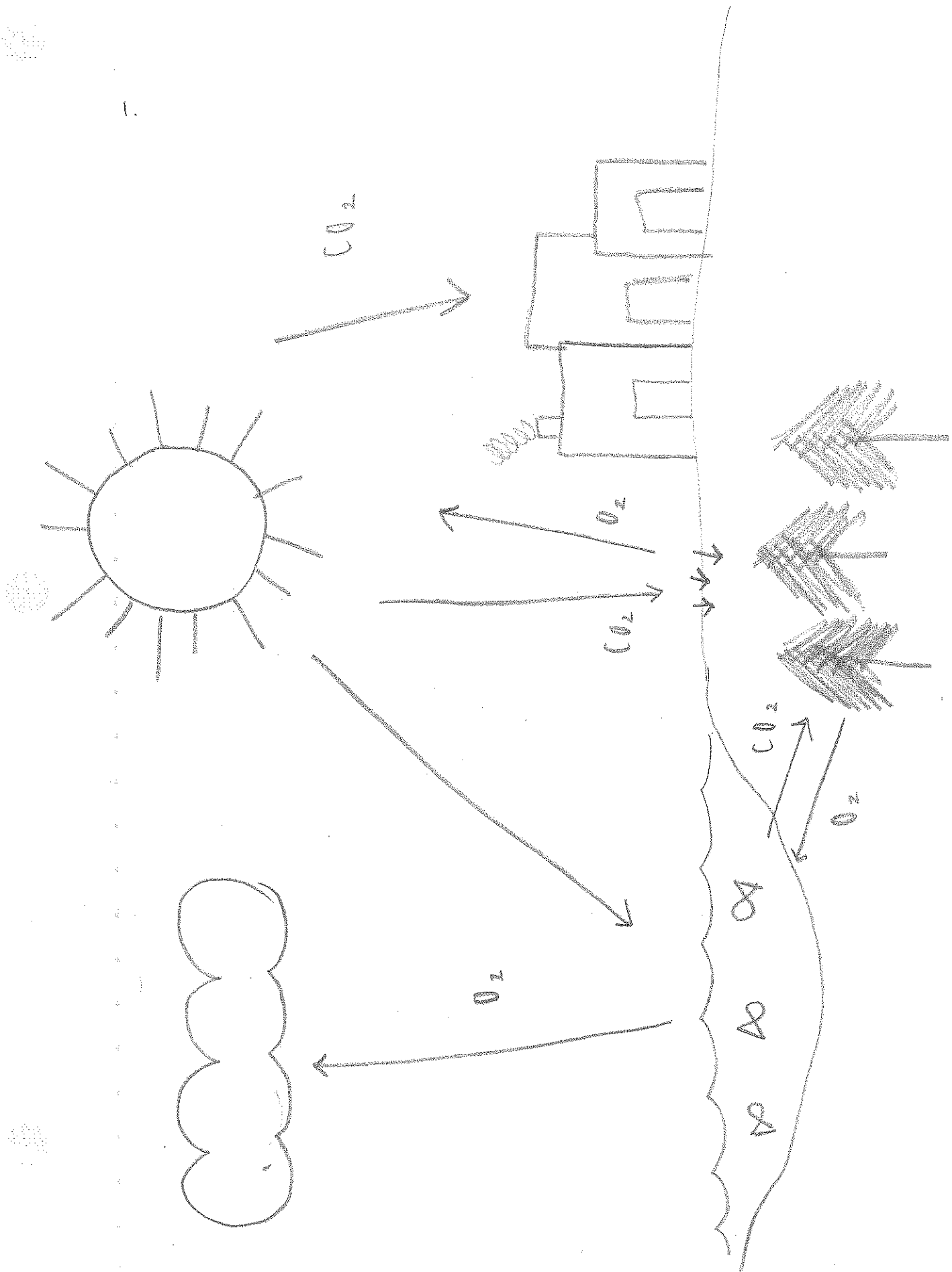
carbon sink can become a carbon source as it releases carbon into the atmosphere

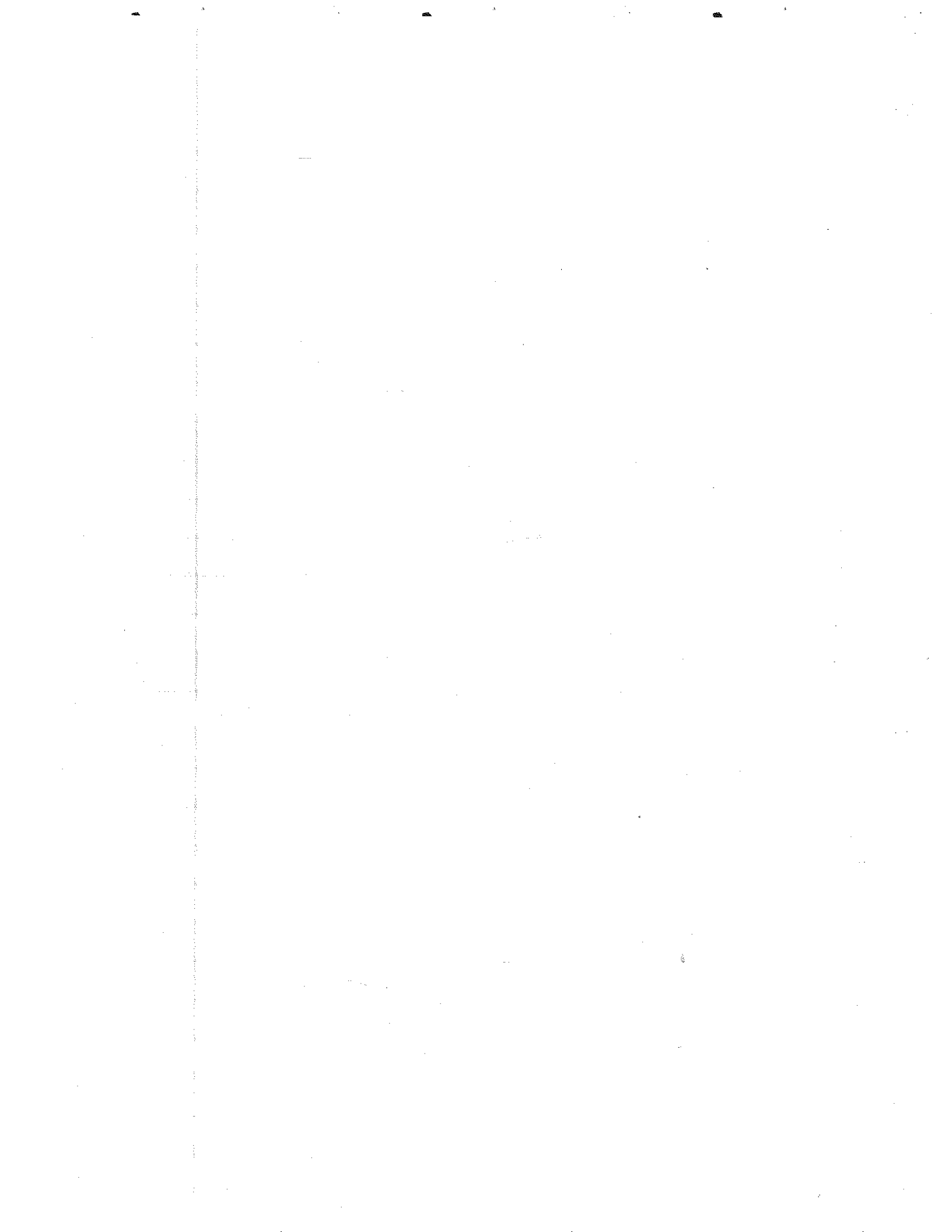
6. What are the natural mechanisms of climate change?

surface albedo, asteroids & meteoroids, plate tectonics, volcanic activity

7. Describe how the Earth is a closed system?

Earth is a closed system because we get all of our resources from it & we're not taking any matter in.





Anna Lee
~~REVIEW~~ REVIEW

- a) Define
- a. Weather
 - b. Humidity
 - c. Relative humidity
 - d. Saturated
 - e. Dew point
 - f. Fog
 - g. Precipitation
 - h. Air mass
 - i. Front
 - j. meteorologist
 - k. station model
 - l. isotherm
 - m. isobar
 - n. cloud seeding
 - o. Fog
 - p. wind shear
- b) What are the important factors in determining weather?
- c) Describe how each of the following clouds appear in the sky, what weather is associated with each and whether they are low, medium, or high in the atmosphere.
- a. Stratus
 - b. Cumulus
 - c. Cirrus
 - d. Nimbus
 - e. Cirrostratus
 - f. Cumulonimbus
 - g. Altostratus
 - h. nimbostratus
4. What types of precipitation can occur?
5. List the main air masses that affect the United States and describe the type of weather that each brings? Also know each is coming from?
6. The four types of fronts are Warm, Cold, Stationary, and Occluded. Draw the symbol of each and describe what is happening at each front along with what type of weather is most likely?

7. How can we use high and low pressure systems to predict the weather?
8. What is the difference between a watch and a warning?
9. What is the criterion in order for a thunderstorm to be severe?
10. What causes lightning and thunder?
11. How fast can tornadoes speeds reach? When do they usually occur? Where is tornado alley? What air masses make this region susceptible to tornadoes? What states are in the alley? What is the vortex?
12. What is the Fujita scale? What does it measure specifically? Look at the sheet and be able to recognize typical damage for each level.
13. How do hurricanes form? What are they called in the western pacific? What is the difference between a tropical storm and a hurricane? How fast can the winds reach? What is the eye and what is the weather like there? What is the wall?
- Define storm surges?
4. What is the saffi-simpson scale? What is it based on? What is the determining factor? Be familiar with the worksheet and know winds and effects of each level.
15. Give a brief description of each instrument
- a) Thermometers
 - b) barometer
 - c) Psychrometer
 - d) anemometer
 - e) rain gauge
 - f) weather balloons
 - g) satellites

Atmosphere Review

Atmosphere Review

- 1. Define
 - o hydrosphere
 - o water cycle
 - o ultraviolet radiation
 - o chlorofluorocarbons (CFC's)
 - o Jet Stream
 - o Coriolis effect
 - o ionosphere
 - o Mountain- Valley wind
 - o Monsoon winds
- 2. What are the three most abundant gasses in the atmosphere and what is the percentage of each? Explain why we need each of them to survive.
- 3. List all of the trace gasses.
- 4. What is smog? Explain the difference between gray and brown smog.
- 5. What is the Ozone? Is it helpful or harmful? Explain.
- 6. List the layers of the atmosphere in order starting with the one closest to earth?
- 7. Which layers does the temp increase? Decrease?
- 9. Where is the ozone located? Ionosphere?
- 10. Which layer do meteoroids burn up? Where do satellites travel? Where are the aurora Borealis?
- 11. Explain the difference between aneroid and mercury barometer?
- 12. How is air pressure affected by temperature, altitude, moisture?
- 13. What is said to be destroying our ozone and how are they destroying it. Explain the process.
- 14. Explain Radiation, Conduction, and Convection. Give an example of each?
- 15. What happens to radiation from the sun as it reaches our atmosphere?
- 16. Explain the evaporation, condensation, and precipitation in detail relating to the water cycle.
- 17. Compare and contrast between land and sea breeze?
- 18. Wind is air that moves from _____ pressure to _____ pressure.
- 19. Where do the trade winds exist? Why were they named trade winds?
- 20. Where are the prevailing Westerlies and what are they responsible for?
- 21. What are the polar easterlies?
- 22. In which direction does the trade winds, prevailing Westerlies, and polar easterlies travel with respect to the northern and southern hemisphere. Make a chart to help you.
- 23. How does temperature, density, and pressure all relate?
- 24. Explain how Air Pressure helps us forecast weather?

1A. weather - present state of atmosphere

Humidity - Amount of water vapor in the air

Relative Humidity - Amount of water vapor in air compared to the amount of water vapor air can hold at a certain temp.

saturated - when air is holding all the moisture it can.

Dew point - temp. at which air is saturated & condensation begins.

Fog - A stratus cloud that forms near the ground.

Precipitation - All forms of water.

Air mass - Large body of air w/ uniform temp.

Front - boundary between air masses.

Meteorologist - person who studies water

Station Model - Model that shows patterns of weather

isobar - Line on a weather map connecting points

wind shear - Rate of wind speed or direction.

2B. Important factors are air pressure, wind, temp. and amount of moisture in the air.

3C. stratus - Lowest alt., layered, and causes fog.

cumulus - white & fluffy, flat bottom, medium

cirrus - Thin, high alt., fair weather

Nimbus - Middle clouds, brings precipitation.

cirrostratus - high alt., layered

cumulonimbus - towering rain clouds

Nimbostratus - Large, gray clouds, brings precipitation.

4. Rain, snow, sleet, & hail.

5. continental - over land, warm or cold

Tropical - over land or water, warm

Polar - over land, cold

Maritime - over water, warm/cold

6. warm - pushes into cold air mass. Brings warm, fair weather. 

cold - pushes into warm air mass. Brings storms



stationary - warm air meets cold air 



occluded - cold takes over warm, brings precipitation

7. High pressure brings fair weather & low pressure

8. A watch conditions are right for severe weather.

A warning is when severe weather is occurring.

9. 30mph winds or above must happen to be a thunderstorm

10. Static electricity from the clouds in the atmosphere.

11. Tornadoes can reach over 500 mph. They usually occur in spring & summer. Continental tropical air mass causes Tornado Alley.

12. Fujita scale is used to measure tornadoes. Level 5 is less damage than level 6.

13. Hurricanes form from humid air & warm water. Eye is the center of the hurricane. The wall is part surrounding the eye. A storm surge is high waves that hit.

14. Saffir-Simpson scale is a scale used to measure intensity.

15. Thermometer - Measures temp.

Barometer - Measures atmosphere atmospheric pressure

Psychrometer - Atmospheric humidity

Anemometer - Wind speed

Rain gauge - Amount of rain

Weather balloons - Temp, humidity, climate

Satellites - cloud cover, storms

Final Exam Review Sheet
Unit 10 – Geological Time



1. Diagrams that you should know – Please draw the following:
 - A. The order from largest to smallest of Periods, Epochs, Eras, Eons, ^{Eon, era, period,}
 - B. Divide out the Eras and know which periods go with each era. ^{epoch}

2. Define the following terms:
 - A. Fossils- Remains of a plant or an animal found in sed. rock.
 - B. Relative dating- Age of a geological structure in comparison to others.
 - C. Absolute dating- exact age ^{of an object} found by techniques.
 - D. Index fossil- fossil found over a relatively short span of geological time.
 - E. Era- division of geologic time, longer than a period & shorter than an eon.
 - F. Epoch- shortest division, longer than a period, shorter than an eon
 - G. Eon- longest division, containing 2 or more eras.
 - H. Period- division of geologic time, longer than an epoch & shorter than an era.
 - I. Glaciation- covered w/ or affected by glaciers.
 - J. Pangaea- supercontinent that occurred 250 million yrs ago
 - K. Mass Extinction- extinction of a large number of species within a relatively short period of time.
 - L. Ice Age- glacial epoch, especially the Pleistocene Epoch.
 - M. Law of Superposition- Law that states layer of rock deposited last is the oldest is on top & oldest on the bottom.
 - N. Radioactive Decay- decay of an ^{atom} element to form another
 - O. Half-life- Time it takes for half of the atoms of an isotope to decay

3. What is the Cambrian Explosion –
At the beginning of the Paleozoic Era when a great number of different organisms evolved.

4. Describe Precambrian Time. Oldest division of time, most of Earth's history occurred in this time. It occurred 551-4600 mya. It is not really considered an Era but a time.
5. Describe Paleozoic Era.
second oldest time division and is broken into seven periods. Appalachian mountains began to form.
6. Describe Mesozoic Era-
Third division of time, and age of dinosaurs. Dinosaurs became extinct near the end.
7. Describe Cenozoic Era.
The Era we are currently in and is broken up into periods and epochs. Ice age occurred and formation of Grand Canyon.
8. Know the Era, Period, and Epoch that we are in right now.
Cenozoic Era, Holocene Epoch,
9. About how old is the earth?
About 4.6 billion years old.
10. Know the 3 mass extinctions or geological events. Name the extinction and what occurred. Permian ext. - Pangaea formed at that time, half the animals, trees & trilobites went extinct. Tertiary ext. - half life died out. Pleistocene ice age - did not cause a mass ext.
11. How are eras separated from each other?
Extinctions set a division between eras.
12. What are the two ways to find the age of rocks?
 - A. Absolute dating. (describe in detail what occurs) Gives an exact age of rock & can be used to tell how old a rock is.
 - B. Relative Dating. (describe in detail what occurs)
cannot provide exact age of rock.

1B PALEOZOIC ERA

- CAMBRIAN
- ORDOVICAN
- SILURIAN
- DEVONIAN
- MISSISSIPPIAN
- PENNSYLVANIAN
- PERMIAN

MESOZOIC ERA

- TRIASSIC
- JURASSIC
- CRETACEOUS

CENOZOIC ERA

- TERTIARY
- QUATERNARY

PRE-CAMBRIAN

- ARCHAEN
- PROTEROZOIC



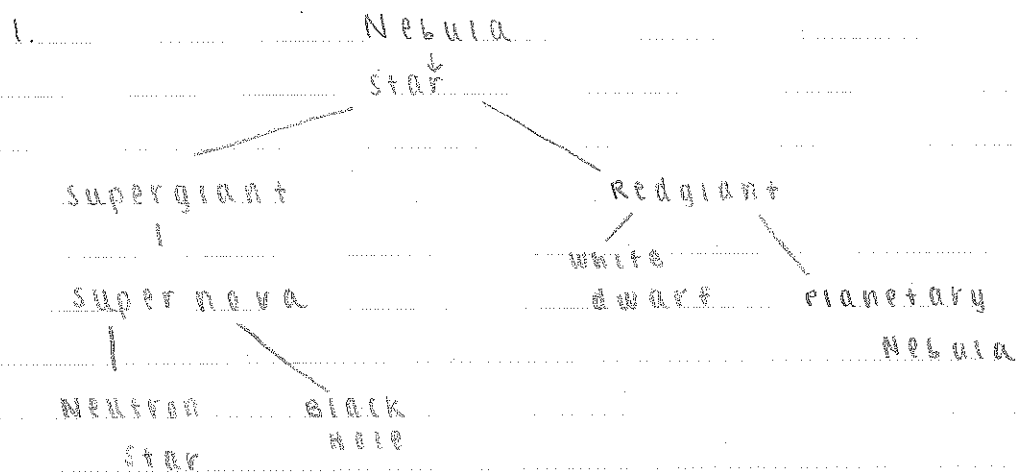
Final Exam Review

Unit 11 - Universe and Galaxies



1. A diagram that you should know is the Life Cycle of a Star. Please draw out the lifecycle of a star and label it.
2. Define the following terms:
 - A. GALAXY
 - B. Constellation
 - C. Big Bang Theory
 - D. Super giant
 - E. Red Giant
 - F. Black Hole
 - G. Nebular Model
 - H. light year
 - I. Neutron Star
 - J. White Dwarf
3. What is the Universe described as?
4. How do we know the universe is expanding?
5. What is the most well known model for the universe expanding?
6. Describe the Doppler or Red shift in terms of Big Bang theory.
7. Put in order from largest to smallest. (stars, universe, planets, clusters, super clusters, galaxies)
8. What does the brightness of a star depend on?
9. Describe the color of hot stars and cool stars.
10. What powers a star?
11. What is a nuclear fusion reaction?
12. What must be present for nuclear fusion to occur?
13. Describe a super nova.
14. What is a cool, dark spot on the sun?
15. Do these travel or stay in the same place?





2. • Galaxy - collection of stars that are held together by gravity.

B) constellation - group of stars seen as a pattern

C) Big Bang Theory - Theory to explain origin of the universe

D) supergiant - an extremely large star

E) red giant - large reddish star late in its life cycle

F) black hole - star w/ a mass 3x the size of the sun

G) nebular module - describes sun & solar system

H) light year - distance light travels in one year

I) neutron star - core remaining after supernova

J) white dwarf - small dense star (cooled)

3. The stars, galaxies, dust and everything in space

4. We know the universe is expanding because everything is getting further from us.

5. Red shift is the most well known model for the universe expanding

6. Redshift shows that the universe is expanding.
Light waves get bigger and stretch out, as they move away and shift
7. universe → cluster → super cluster → galaxies → planet → stars
8. Brightness depends on the stars: temp., size, & distance
9. The color of the youngest star is blue, a hotter star is white, middle stars are yellow and older are red
10. Fusion reactions power the sun & other stars
11. combination of hydrogen atoms into helium w/
release of energy
12. Hydrogen and energy must be present
13. supernova is when a huge star explodes
14. sun spots are cool, dark spots on the sun
15. sun spots travel across the face of the sun