

**Earth/Environmental Science
Final Exam Review**

Name _____

Period _____ Date _____

Unit 1: Earth Science

1. The first thing you need to do as you begin a scientific investigation is to
 - a. obtain measuring instruments.
 - b. decide who will perform each part of an experiment.
 - c. publish your theory.
 - d. make an observation and ask a question.
2. A preliminary answer to a question is a
 - a. hypothesis.
 - b. theory.
 - c. conclusion.
 - d. fact.
3. How would you identify the independent variable in an experiment? _____

4. A piece of information that we get through our senses is known as a(n) _____.
5. The imaginary line that circles Earth halfway between the poles is the
 - a. Equator.
 - b. Meridian.
 - c. Parallel.
 - d. Prime Meridian.
6. Every point on a contour line has the same
 - a. slope.
 - b. temperature.
 - c. rock type.
 - d. elevation.
7. _____ maps are the only type that represents Earth without distorting shapes of distances. Why? _____

8. The _____ on a topographic map represents the difference in elevation between two contour lines.
9. The coordinates for a point on Earth are its _____ and _____.

Unit 3: Rocks

1. Fossils are usually found in
 - a. igneous rocks.
 - b. sedimentary rocks.
 - c. metamorphic rocks.
 - d. lava rocks.

The answer to this question is "b". Explain why other rocks cannot contain fossils.

Igneous _____

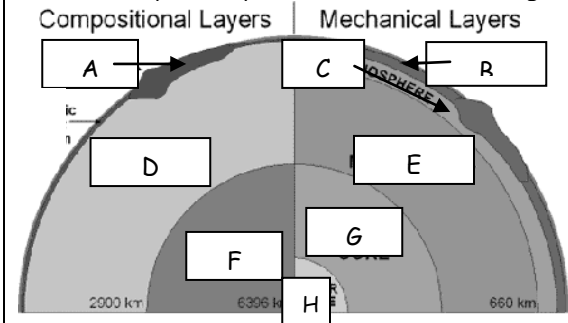
Metamorphic _____
2. The type of rock most common at Earth's surface is
 - a. igneous.
 - b. sedimentary.
 - c. metamorphic.
 - d. magma.
3. What is the most common elements found on Earth? 1) _____ & 2) _____
4. Magma is called _____ when it rises above the ground.
5. What is the definition of a rock?

6. Name the 3 types of Rocks and how each are formed.

7. What drives the Rock Cycle?

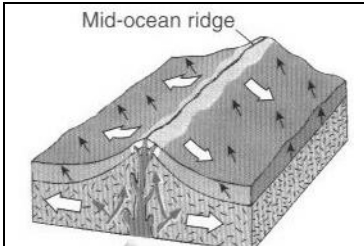
Unit 5: Plate Tectonics, Earthquakes, and Volcanoes

1. Identify the layers of Earth on the diagram below.



- | | |
|---------|---------|
| A _____ | E _____ |
| B _____ | F _____ |
| C _____ | G _____ |
| D _____ | H _____ |

2. What structure is formed from the process shown in the diagram below? _____



3. As the distance from the mid-ocean ridge increases, the age of the rocks
- | | |
|---------------|----------------------|
| a. increases. | c. remains the same. |
| b. decreases. | d. is unpredictable. |
4. The continental crust is not down into the mantle because it is
- | | |
|---------------------------------------|-----------------------------------|
| a. less dense than the oceanic crust. | c. hotter than the oceanic crust. |
| b. more dense than the oceanic crust. | d. larger than the oceanic crust. |

5. What is polarity and reverse polarity in regards to paleomagnetism? _____

6. What is the theory of Plate Tectonics?

7. The Hawai'ian Islands were formed by

- | | |
|---------------------|-----------------------|
| a. a hot spot. | c. a subduction zone. |
| b. a rift eruption. | d. an earthquake. |

8. A volcanic mountain with a wide base and gently sloping sides is a

- | | |
|-----------------|--------------------|
| a. shield cone. | c. composite cone. |
| b. cinder cone. | d. caldera. |

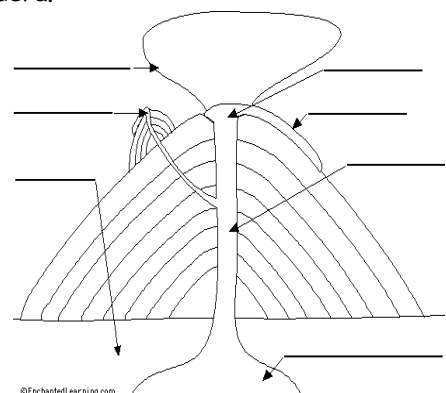
9. Identify the structures on the volcano diagram to the right.

10. Which type of volcano has the most violent type of eruption?

11. Which type of volcano can be found by itself or on the side of another volcano? _____

12. The point on the fault at which movement first occurs is the

- | | |
|---------------|----------------|
| a. epicenter. | c. plate. |
| b. focus. | d. seismogram. |



13. The fastest seismic waves are
- S.
 - P.
 - Surface.
 - none - they all have the same speed.
14. Put the following statements in the order in which they occur during elastic rebound. Place a 1, 2, 3, 4 in front of the statement.
- _____ Rocks return to the original shape
 - _____ Rocks are stretched
 - _____ Energy accumulates
 - _____ Rocks are bent to their breaking point

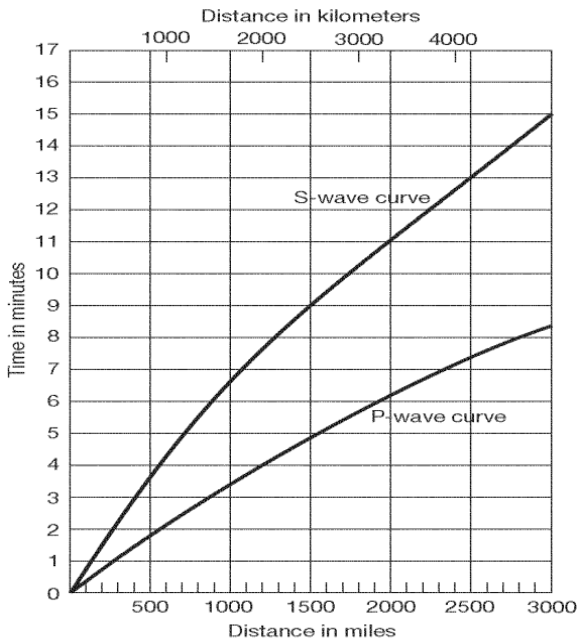
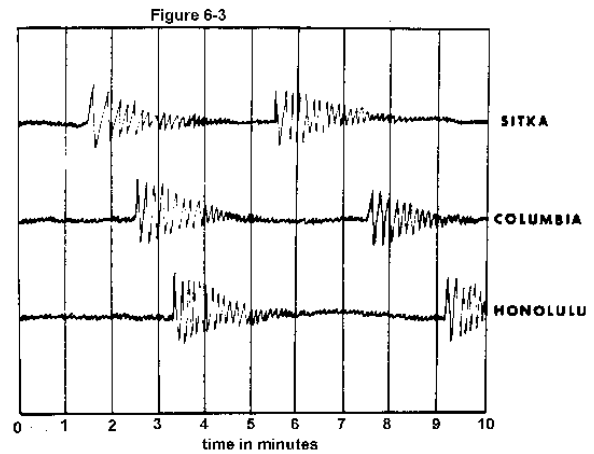
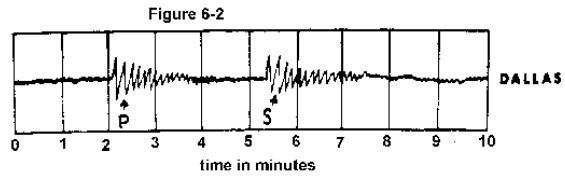


Figure 8-1



15. Using figure 8-1, what is the difference in arrival time of the P and S waves in 2500mi from the epicenter?
2500km?
16. Compare and contrast P and S waves.
17. What is the most destructive seismic wave?
18. Using figure 6-2 and 6-3, identify the arrival times of the P and S waves for each city.
19. What is an earthquake and how is it measured?
20. What are the movements that proceed and follow an earthquake?

21. Complete the chart

Plate Boundaries	What it looks like	Actions	Place on Earth
Transform Fault			
Oceanic-Oceanic Divergent			
Continental-Continental Divergent			
Oceanic-Oceanic Convergent			
Continental-Continental Convergent			
Oceanic-Continental Convergent			

Unit 7: Natural Resources

- An example of a nonrenewable resource is
 - wood.
 - petroleum.
 - soil.
 - water.
- The most commonly used energy resource is
 - solar energy.
 - energy from coal.
 - nuclear energy.
 - tidal energy.
- Recycling would most help preserve our supplies of
 - coal.
 - petroleum.
 - oxygen.
 - minerals.
- Coal and petroleum are _____, which were formed from the remains of plants and animals millions of years ago.
- _____ resources can be replaced by the environment.
- How is nuclear power produced? _____

7. Give one pro and one con of nonrenewable and renewable resources.

Nonrenewable Resources

Renewable Resources

Pro _____

Con _____

- From where does the energy come from to produce energy resources? _____
- What energy sources involve the movement of a turbine? _____

Unit 8: Water Resources

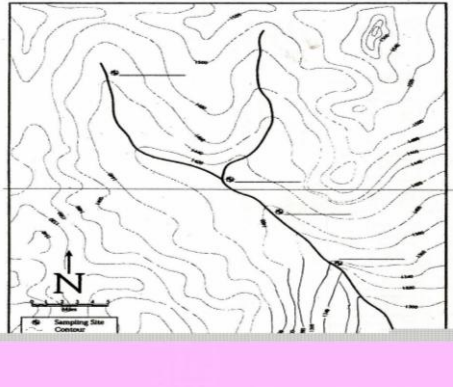
1. An example of a permeable material is
a. granite. b. bedrock. c. sand. d. clay.
2. The _____ is the surface of the zone of saturation.
3. The _____ is the region of permeable rock or soil containing the water.
4. What is the difference between a rivershed and a river basin? _____

5. What causes a cone of depression? _____

6. Draw a picture of the water cycle. Be sure to include all of the following processes: transpiration, evaporation, condensation, precipitation, runoff, infiltration.

7. In which river basin do we live? _____
8. In which part of the state are the river basins found that are completely contained in the state of North Carolina? _____
9. In which part of the state do the river basins drain into the Mississippi River? _____

10. Identify the 4 parts of the river on the map to the right.
Confluence, Falls, Headwaters, Downriver,
11. In which direction would any underground containments flow?



Unit 10: Atmosphere and Weather

1. Ozone forms from
a. carbon dioxide. b. argon. c. osmium. d. oxygen.
2. Which variable is used to separate the atmosphere into four layers?
a. Temperature c. Wind direction
b. Humidity d. Cloud types
3. What are the layers of the atmosphere and the boundaries between each layer from the surface of Earth to space? _____

4. The two atmospheric layers in which temperature decreases with altitude are the
a. Troposphere and mesosphere c. Stratosphere and thermosphere
b. Troposphere and thermosphere d. Stratosphere and mesosphere
5. The method of heat transfer that involves currents within a fluid or gas is
a. radiation b. conduction. c. insolation. d. convection.
6. The layer in which most of the mass of the atmosphere can be found is the _____.
7. In which layer is the ozone layer found? _____ The weather occurs? _____
8. What are the four types of air masses found in the world? a) _____, b) _____, c) _____, & d) _____
Which one influences the weather in Charlotte the most? _____

9. Identify the weather fronts and the weather produced by each.

Front Type

Weather Produced

10. What are the 3 stages of a hurricane? a) _____, b) _____, and c)

11. What is global warming? _____

12. How do greenhouse gases help us survive on Earth? _____

13. What are the main sources of releasing each of the following pollutants into the atmosphere?

a. Ozone _____

c. Carbon dioxide _____

b. Methane _____

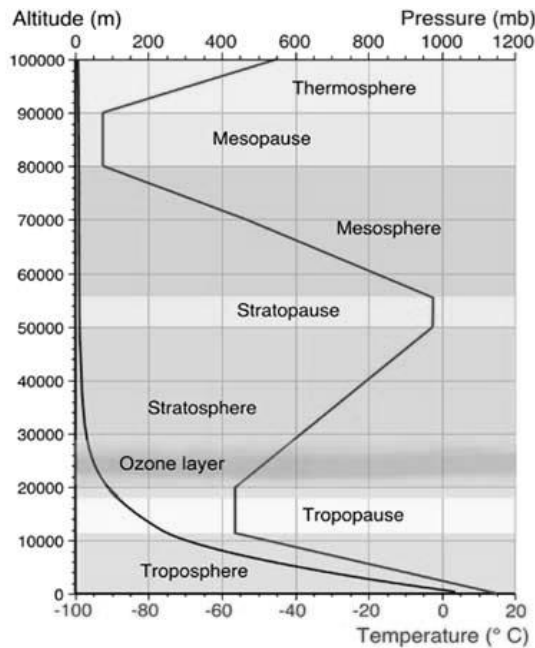
d. CFCs _____

14. Identify the names of the global winds on the diagram to the right.

15. Identify with a "d" on the map where the doldrums are and with a "j" where the jet streams are.

16. What are the stages of a thunderstorm? a) _____,

b) _____, c) _____

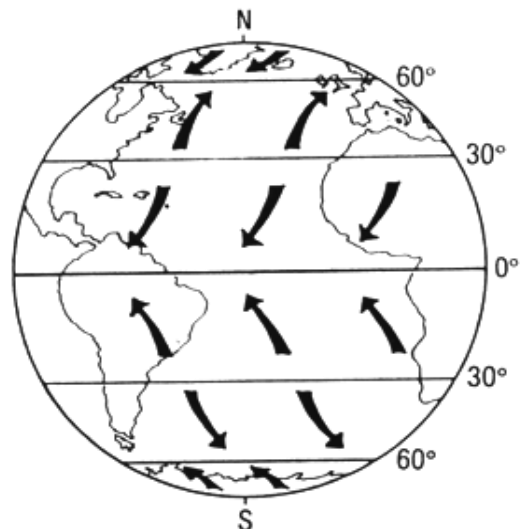


17. As altitude increases in the stratosphere what happens to the temperature?

18. As altitude increases what happens to air pressure and why?

19. What is wind? What are the three factors that affect wind?

20. Label the wind patterns on the diagram below.

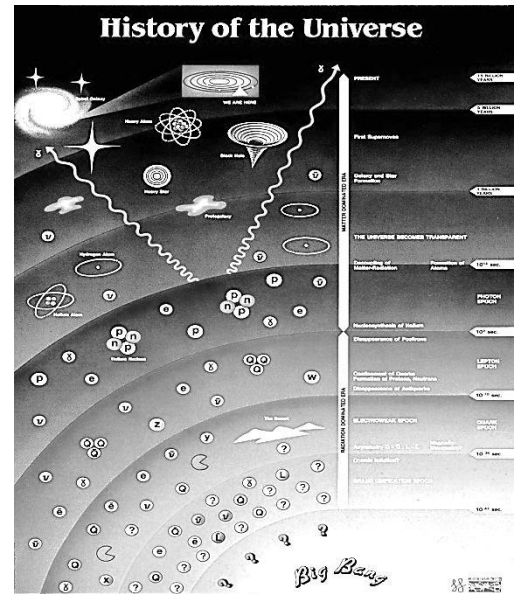


Astronomy Unit

The Beginning of the Universe - the Big Bang Theory

The Universe started as a massive, super-hot ball containing all matter

1. There was a massive explosion 14 billion years ago
 2. Matter was sent outward in all directions
 3. As the matter cooled, it condensed into atoms, then molecules, then small particles
 4. Collisions between small particles created galaxies
 5. Matter continued to collide creating stars, planets, moons, and other objects - Earth was created 4.6 billion years ago
- Doppler Shift - objects moving away from us have a red appearance (red shift) - evidence that the Universe is expanding



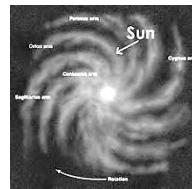
Hierarchy of the Universe

- Largest is the Universe - includes all matter in space
- Galaxies - clusters of stars and planets
- Smallest are the individual parts - star, planet, moon, asteroid, comet, meteor, etc.

Types of Galaxies

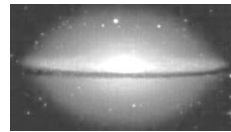
1. Spiral

- Has a central bulge
- Arms extending outward from the center
- Contains oldest stars and the Milky Way



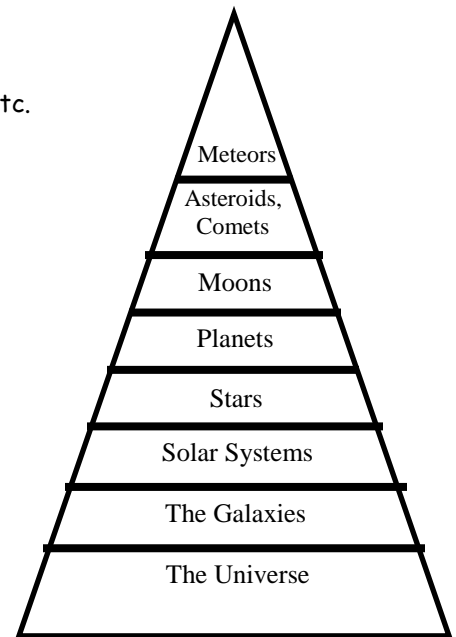
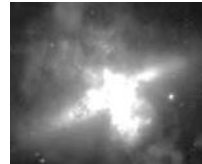
2. Elliptical

- Has a round or oval shape
- The light is brightest in the center and fades outward



3. Irregular

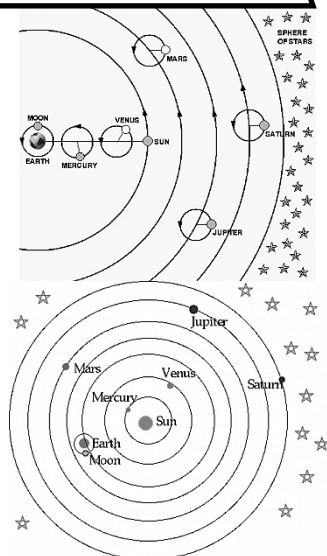
- Have no distinct shape
- Made mostly of new stars



Geocentric Model of the Solar System

Early Greeks believed in the Geocentric Model of the Solar System

- Earth is the center of the Solar System
- All other planets (Mercury, Venus, Mars, Jupiter), the Moon, and Sun orbit Earth



Heliocentric Model of the Solar System

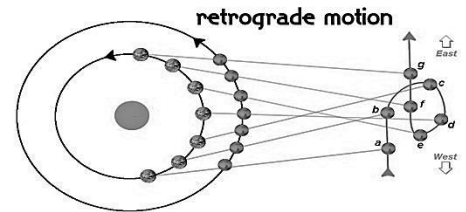
Aristarchus was the first to believe in the Heliocentric model of the Solar System about 300-200 BC

- Sun is the center of the Solar System
- All planets, including Earth, orbit the Sun
- This model was not accepted until the 1700s

Retrograde Motion

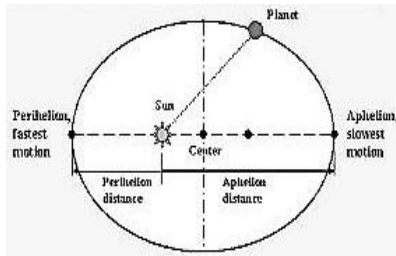
Results from different speeds of an object's orbit around the Sun

- Earth orbits faster than Mars
- Mars appears to reverse its motion

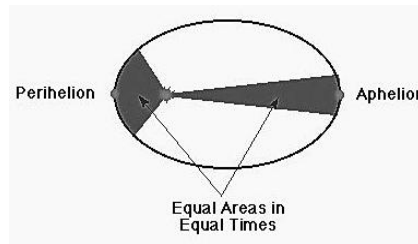


Motion of the Planets - Kepler's Laws

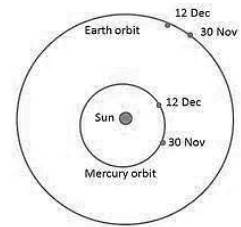
- 1st Law - Planets move around a star in an elliptical orbit and the Sun will be at 1 of the 2 foci (central points)
- 2nd Law - Planets will move around a star at the same rate, covering the same area of the ellipse in the same amount of time
- 3rd Law - The farther a planet is from the star, the slower the planet orbits that star



Kepler's 1st Law



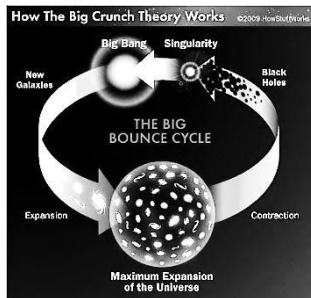
Kepler's 2nd Law



Kepler's 3rd Law

End of the Universe

- The Big Crunch - The Universe can only expand to a certain point where it will contract again
- The Multiverse - The Universe contains many more "Big Bangs" that are waiting to explode, sending matter even further out into space



1. At which end of the ellipse will a planet move fastest? Slowest?
2. Compare and Contrast the Heliocentric and Geocentric models of the universe.
3. Describe Kepler's 3 Laws of Planetary Motion.
4. Explain nuclear fission and nuclear fusion. Explain how they are different.