



Name: _____

Period: 7

Week: 1-3 Dates: 8/17-9/4 Unit: Introduction to Earth Science

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
17 O	18 E *TOUR DE CLEMENT *SYLLABUS	19 O *LETTER TO YOURSELF	20 E *SELFIE *PENNANT	21 O *WHAT IS FFA?
24 E	25 O *VOCABULARY *FRAYER VOCAB	26 E *WHAT IS EARTH SCIENCE NOTES *FFA MTG 6PM L.T.	27 O *SCIENTIFIC METHOD NOTES	28 E *SPONGE BOB ACTIVITY *SYLLABUS DUE
31 O	1 E *BIG BANG THEORY NOTES *GREENHAND REG. DUE BY 3PM!	2 O *BIG BANG THEORY LAB BACK TO SCHOOL NIGHT	3 E *STUDY GUIDE	4 O *PACKET DUE *UNIT QUIZ

ASSIGNMENT	YOUR SCORE	TOTAL POINTS POSSIBLE
GOOD TO KNOW VOCABULARY WORDS		20
FRAYER VOCAB PRACTICE		20
TOUR DE CLEMENT ACTIVITY		20
FAVORITE THINGS WORKSHEET AND PRESENTATION		20
INTRODUCTION TO AG AND FFA NOTES		40
WHAT IS EARTH SCIENCE? NOTES		40
SCIENTIFIC METHODS NOTES		20
SPONGE BOB ACTIVITY		40
BIRTH OF A THEORY NOTES		40
BIG BANG THEORY LAB		40
INTRODUCTION TO EARTH SCIENCE STUDY GUIDE		40
TOTAL		340

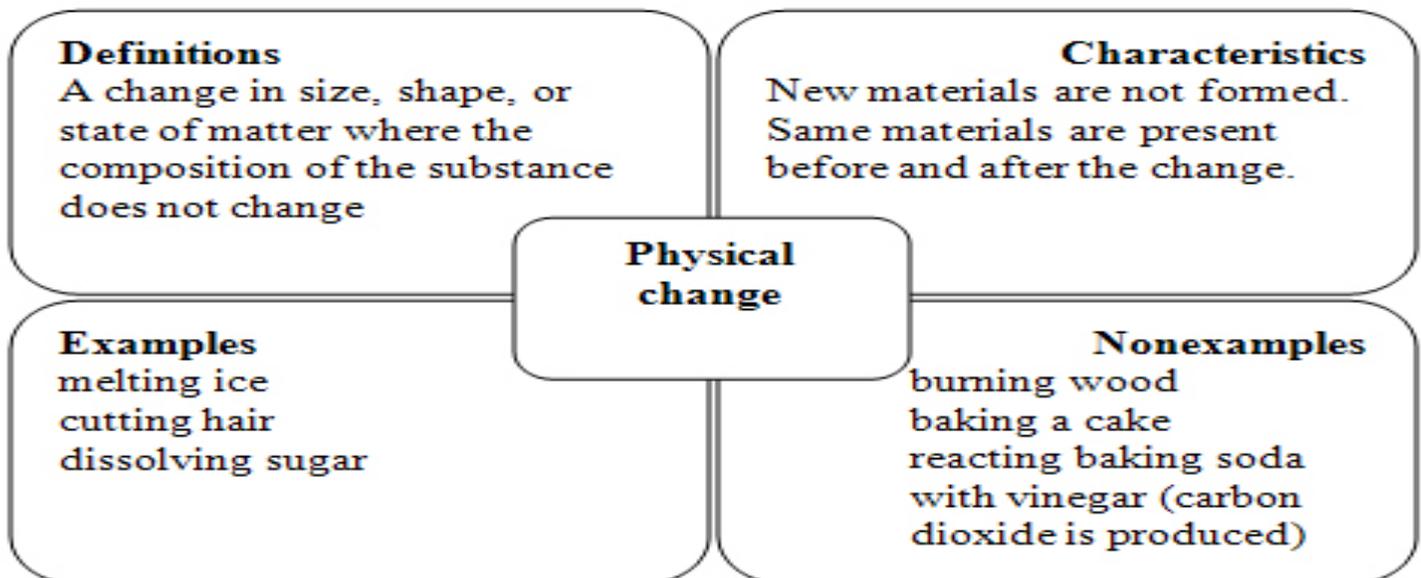
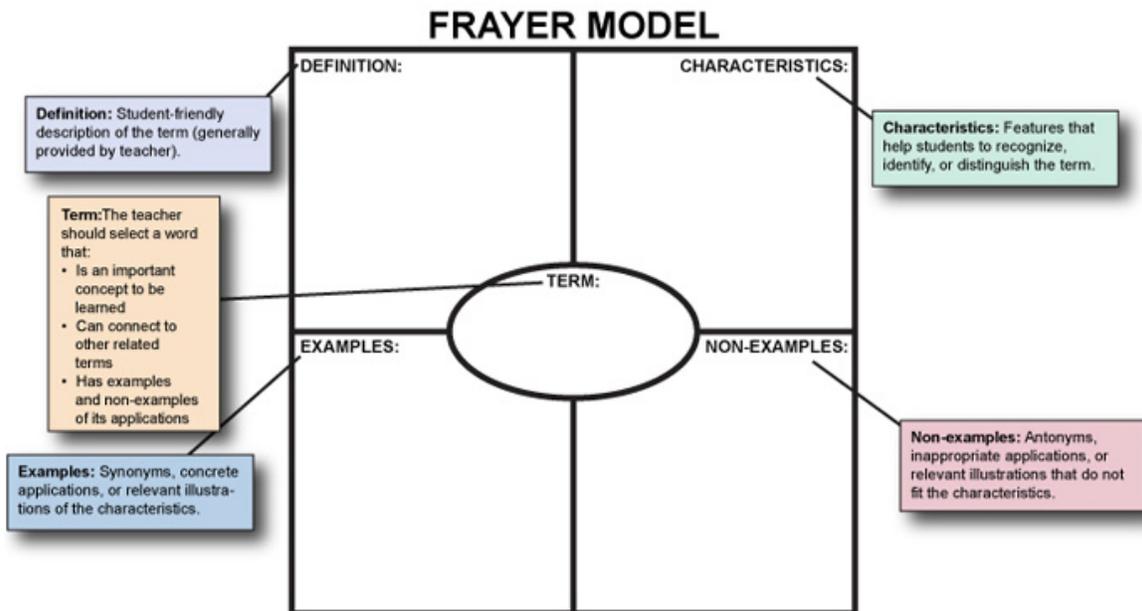
AG FACT OF THE WEEK

CALIFORNIA IS THE NATION'S TOP AGRICULTURAL STATE, AND HAS BEEN FOR MORE THAN 50 YEARS. AGRICULTURE GENERATES APPROXIMATELY \$37.5 BILLION A YEAR, MORE THAN ANY OTHER STATE.

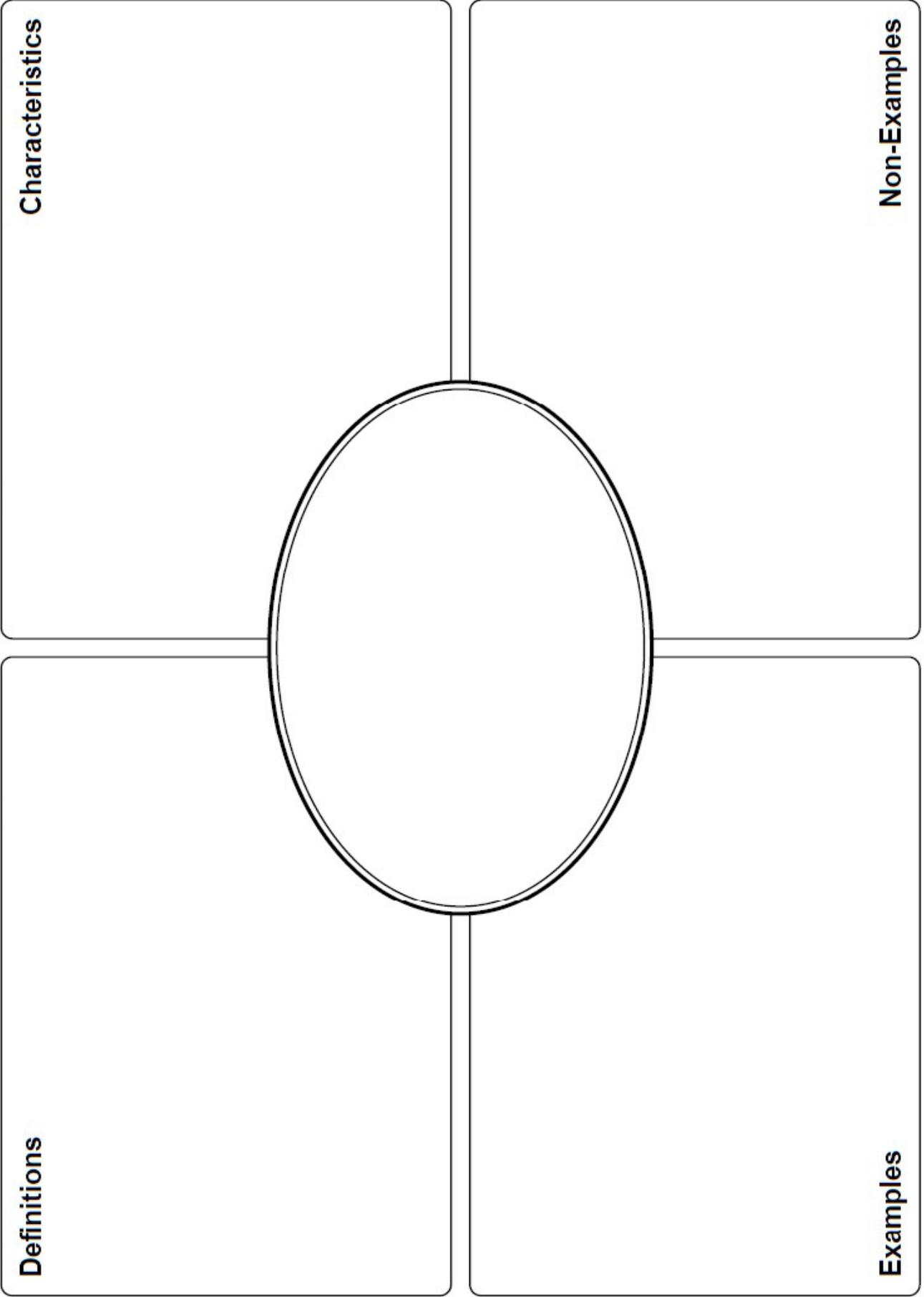
GOOD TO KNOW VOCABULARY WORDS

Word	Definition
Earth Science	
Geology	
Oceanography	
Meteorology	
Astronomy	
Theory	
Hypothesis	
Geosphere	
Hydrosphere	
System	
Variables	
Manipulated Variable	
Responding Variable	
Controlled Variable	
Prediction	

Frayer Model of Vocabulary



Frayer Model Diagram



Tour De Clement

Using your powers of observation, walk around the classroom and find these items and make some written observations:

Item	Location
Stapler	
Hall/Bathroom pass	
Pencil Sharpener	
Your class textbook. Title of Book: _____	
Emergency Management Guide	
Fire Extinguisher	
Grumpy Cat	
President Obama	
Fetal Pig Development Model	
Recycle Bin	

OBSERVATIONS Write down some observations about the classroom (facts that you can see, hear, feel, smell etc)	CONCLUSIONS What might these observations tell you about the class, the teacher and other activities happening here?

Tell Me About Your

#SELFIE

INSTRUCTIONS: Interview your partner and discover more about them. After the interview, choose four things to share with the class about your partner. Make sure to introduce them properly by saying their name and at least four things you learned about them (you choose!).

CHALLENGE! Try to remember all of their favorite things without using this worksheet.

Name of your Partner: _____

Where were you born? _____

Best meal you have ever eaten? _____

If you could invite anyone to dinner (living or dead) who would it be and why?

Best movie or TV show you have watched lately?

Farthest or coolest place you have traveled?

What would you do for a dream job?

What is your greatest fear?

Draw a portrait of
your partner :)



WHAT IS EARTH SCIENCE?

Pages 3-5

1. Branches of Earth Science

- a. _____
 - i. The study of the origin, history, and structure of solid earth and the processes that shape it
- b. _____
 - i. The study of the earth's oceans
- c. _____
 - i. The study of the earth's atmosphere
- d. _____
 - i. The study of the universe beyond earth

2. Importance of Earth Science

- a. Ecology
 - i. Earth scientists study geosphere (solid _____), hydrosphere (_____), and atmosphere (_____ surrounding earth)
 - ii. Connection between biology and earth science is _____
 - iii. Ecology: study of complex relationships between _____ things and their _____
 - iv. Ecology encompasses the ecosystems (a self-supporting system or _____)
 - v. Ecology encompasses the ecosystem with is a self-supporting system or _____.
 - vi. The largest ecosystem is the _____, which extends from the ocean floor to the atmosphere above the earth's surface.
- b. Environmental Pollution
 - i. Each ecosystem is delicately _____.
 - ii. One serious threat the to ecosystem is _____ waste can be _____.



I. Write a definition for each of the following words in YOUR own words. Yes look them up but don't copy!

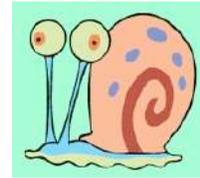
- Control -
- Manipulated variable -
- Responding variable -

II. SpongeBob and his Bikini Bottom pals have been busy doing a little research. Read the following description for each of their experiments and answer the questions provided.

Krusty Krabs Breath Mints

Mr. Krabs created a secret ingredient for a breath mint that he thinks will "cure" the bad breath people get from eating crabby patties at the Krusty Krab. He asked 100 customers with a history of bad breath to try his new breath mint. He had 50 customers (Group A) eat a breath mint after they finished eating a crabby patty. The other 50 customers (Group B) also received a breath mint after they finished the sandwich; however, it was just a regular breath mint and did not have the secret ingredient. Both groups were told that they were getting the breath mint that would cure their bad breath. Two hours after eating the crabby patties, 30 customers in Group A and 10 customers in Group B reported having better breath than they normally had after eating crabby patties.

1. Which group of people are in the control group?
2. What is the manipulated variable?
3. What is the responding variable?
4. What do you think Mr. Krabs' conclusion should be?
5. Why do you think 10 people in group B reported fresher breath?



SpongeBob Clean Pants

SpongeBob noticed that his favorite pants were not as clean as they used to be. His friend Sandy told him that he should try using Clean-O detergent, a new laundry soap she found at Sail-Mart. SpongeBob made sure to wash one pair of pants in plain water and another pair in water with the Clean-O detergent. After washing both pairs of pants a total of three times, the pants washed in the Clean -O detergent did not appear to be any cleaner than the pants washed in plain water.

6. What was the problem SpongeBob wanted to investigate?
7. What is the manipulated variable?
8. What is the responding variable?
9. What do you think SpongeBob's conclusion should be?



Squidward's Symphony



Squidward loves playing his clarinet and believes it attracts more jellyfish than any other instrument he has played. In order to test his hypothesis, Squidward played a song on his clarinet for a total of 5 minutes and counted the number of jelly fish he saw in his front yard. He played his song for a total of 3 times on the clarinet then repeated the experiment using a flute and then a guitar. He also recorded the number of jellyfish he observed before he began playing an instrument. The results are shown in the data table below.

Number of Jellyfish/Instrument

Trials	No Music	Clarinet	Flute	Guitar
1	5	15	5	12
2	3	10	8	18
3	2	12	9	7

10. What is the manipulated variable?
11. What is the responding variable?
12. What do you think Squidward's conclusion should be?
13. Are the results reliable? Why or why not?

Super Bubbles

Patrick and SpongeBob love to blow bubbles! Patrick found some Super Bubble Soap at Sail-Mart. The ads claim that Super Bubble Soap will produce bubbles that are twice as big as bubbles made with regular bubble soap. Patrick and SpongeBob made up two samples of bubble solution. One sample was made with 5oz of Super Bubble Soap and 5oz of water, and the other was made with 5oz of regular bubble soap and 5oz of water. Patrick and SpongeBob used their favorite bubble wands to blow 10 different bubbles and did their best to measure the diameter of the bubbles as they popped on the table. The results are shown in the data table below.



Bubbles

Bubble	Super Bubble	Regular Soap
1	15	10
2	10	5
3	12	16
4	18	14
5	22	11
6	13	12
7	16	11
8	18	15
9	15	15
10	12	6

14. What did the Super Bubble ads claim?
(diameter in centimeters)
15. What is the manipulated variable?
16. What is the responding variable?
17. Look at the results in the data table.
 - Calculate the average diameter for each bubble solution.
 - Super Bubble = _____ cm
 - Regular Soap = _____ cm
 - What do you think SpongeBob's and Patrick's conclusion should be?
18. Are the results reliable? Why or why not?

broken down and used by other organisms.

iii. Non-biodegradable waste is _____ to the environment in large quantities.

c. Protecting the Environment

i. Earth Scientists and Ecologist work _____ to protect the environment.

ii. Meteorologist in the 70's found that the level of _____ was decreasing.

iii. The cause was _____, compound found in aerosol sprays.

iv. The ozone helps protect the earths plants and animal life from harmful _____ rays.

Scientific Method

Pages 23-27

1. _____: is a set of guided set of sequential steps that scientists invariably follow.

- State the _____
- Gather _____
- Form a _____
- _____ the Hypothesis
- State _____

a. **State the Problem**

- _____: uses the senses of sight, touch, taste, hearing, and smell to gather information.

b. **Gather Information**

- Qualitative vs. Quantitative
 - (quality vs. quantity)

c. **Form a Hypothesis**

- A possible _____ (solution) to the problem
- _____ guess

d. **Test the Hypothesis**

- _____
 - scientific procedure following guidelines
 - proves or disproves the _____
- Variables
 - controlled: never _____(between tests)
 - _____: you change it
 - responding: changes due to the manipulated variable

e. **State a Conclusion**

- _____ the problem
- Tells whether the hypothesis is _____ or not
- Tells what was _____ in the experiment

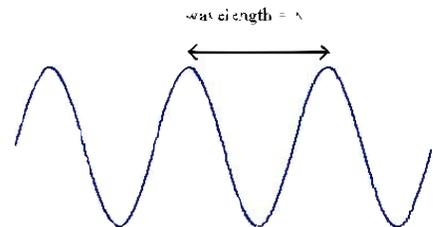
Birth of a Theory: Big Bang Theory

pages 6, 677, 718, 720-721

- Once a hypothesis has been tested and generally accepted, it may lead to the development of a _____.
- Once a theory is well established through research and experimentation, it becomes a _____.
- To become a law, a theory must be proven correct _____ it is tested.

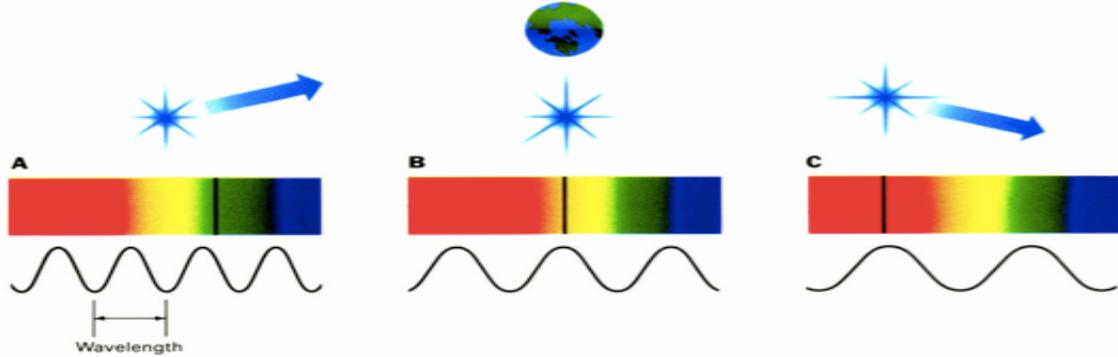
Light and the Doppler Effect

- _____ observed that sunlight passing through a glass prism produced a rainbow of colors.
- Newton named the display of colors a _____.
- Light travels in waves.
- Colors of the spectrum include: red, orange, yellow, green, blue and violet.
- Each color in the spectrum has its own _____.
- The distance from one crest of one wave to the other is considered the _____.



- Red has the _____ wavelength
- Violet has the _____ wavelength
- The bright-line spectra is a series of colored lines that indicate certain wavelengths of light.
- The Doppler Effect: The apparent shift in the wavelength of energy given off by an energy source is moving away from or toward an observer.
 - Wavelengths moving _____ the observer appear _____.

- Wavelengths moving _____ the observer appear _____.



When _____ elements are heated they too produce a spectra.

Evidence: Red Shift

- Using an instrument called a _____, scientists study starlight to determine what elements they are made of.
- The sun, for example, was found to be about 92% _____ and 8% _____ with traces of 100 other elements.
- Study of starlight spectra's, revealed that a _____ amount of systems or stars were shifting to the red end of the spectrum.
- The red shift indicates that galaxies in the universe are moving away from the _____.
- Scientist found that most distant galaxies were moving away _____.

A Theory Emerges

- **The Big Bang**
 - theory that all matter and energy in the universe was compressed into an extremely _____ volume that suddenly, billions of years ago, began _____ in all directions.

The Big Bang Theory Lab

Purpose: According to the big bang theory, almost all galaxies are moving outward from all other galaxies. You can demonstrate the principles of this expansion with a simple model.

Materials:

- Large deflated round balloon
- Felt-tip pen
- String
- 30 cm ruler

Procedure:

1. Mark a pair of dots 0.5 cm apart across the middle of the uninflated balloon. Label them **A** and **B**. Mark a third dot 5.0cm away from **B**. Label this dot **C**.
2. Blow into the balloon for 2-3 seconds. Record you elapsed time. Pinch the end of the balloon between your fingers to keep it inflated, but do not tie the neck.

Elapsed time: _____seconds.

3. Use the string and ruler to measure the distance between **A and B** and between **C and B**.

Distance between A and B: _____cm.

Distance between C and B: _____cm.

4. Calculate the rate of change in the distance between **A and B** and between **C and B**. To calculate the rate subtract the original starting distances between the dots from the distance measured after inflation. Divide the number by the number of seconds you blew into the balloon.

Formula: $\frac{(\text{start distance}) - (\text{inflation distance})}{(\text{elapsed time})} = \text{rate of change}$

Rate of Change for A and B: _____cm.

Rate of Change for C and B: _____cm.

5. With the balloon still inflated from step 2, blow into the balloon for an additional 2-3 seconds.

Elapsed time: _____ Seconds.

6. Measure and calculate the rate of change in the distance between **A and B** and **C and B.** To calculate the rate, use the distance measured in Step 3 as the “original” distance.

Distance between A and B: _____ cm.

Distance between C and B: _____ cm.

Formula: $\frac{(\text{start distance}) - (\text{inflation distance})}{(\text{elapsed time})} = \text{rate of change}$

Rate of Change for A and B: _____ cm.

Rate of Change for C and B: _____ cm.

Analysis and Conclusion Questions:

1. Did the distance between A and B or between C and B show the greatest rate of change?
2. Did the rate of change for either set of dots differ in Steps 4 and 6?
3. Suppose dots C and A represent galaxies and dot B represents the earth. How does the distance between the galaxies and the earth relate to the rate which they are moving apart?
4. Compare the inflation of this balloon to “The Big Bang Theory”. How are they similar? How are they different?

Introduction to Earth Science Quiz Study Guide

1. What are the four branches of Earth Science?
2. What type of earth scientist would most likely study the earth's oceans?
3. What type of earth scientist would most likely study the earth's storms?
4. What type of earth scientist would most likely study a comet's pathway?
5. Earth Scientists primarily study the what?
6. What are the parts of the geosphere?
7. Are plastics biodegradable or non-biodegradable?
8. What type of waste poses a major threat to the environment?
9. The connection between Earth Science and Biology is what?
10. The study of the complex relationship between the living things and their environment is called?
11. The ecosystem that encompasses all other ecosystems is called the what?
12. What is the upper atmosphere of the ozone formed of?
13. What are the steps in the Scientific Method? (**Hint:** People in Hawaii taste coconuts or Paul is having the cake)
14. In order for a theory to become a law is must be proven correctly how many times?
15. One way scientist state the problem is by asking questions based on what?
16. Once a theory is well established and tested, it becomes a what?
17. What was the explosion called that scientist believe created the earth?
18. According to the big bang theory, all galaxies are moving in which directions?

19. Which galaxies are moving and the fastest rate?

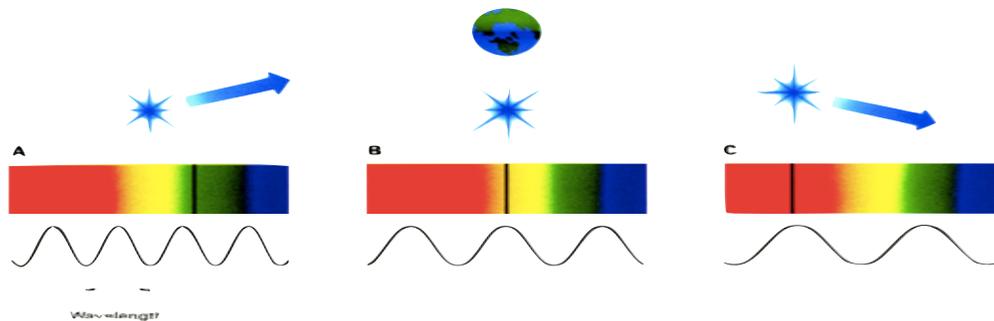
20. What element was found in large quantities in rock layers at the same time the dinosaurs went extinct?

21. What is the Doppler effect?

22. When light passes through a glass prism, it produces a band of colors called a _____?

23. When a light source is moving toward an observer the wavelength appears _____?

24. When a light source is moving away from an observer the wavelength appears _____?



25. Every element has its own what?

26. Be able to compare two light sources and tell which is red and which is blue.

