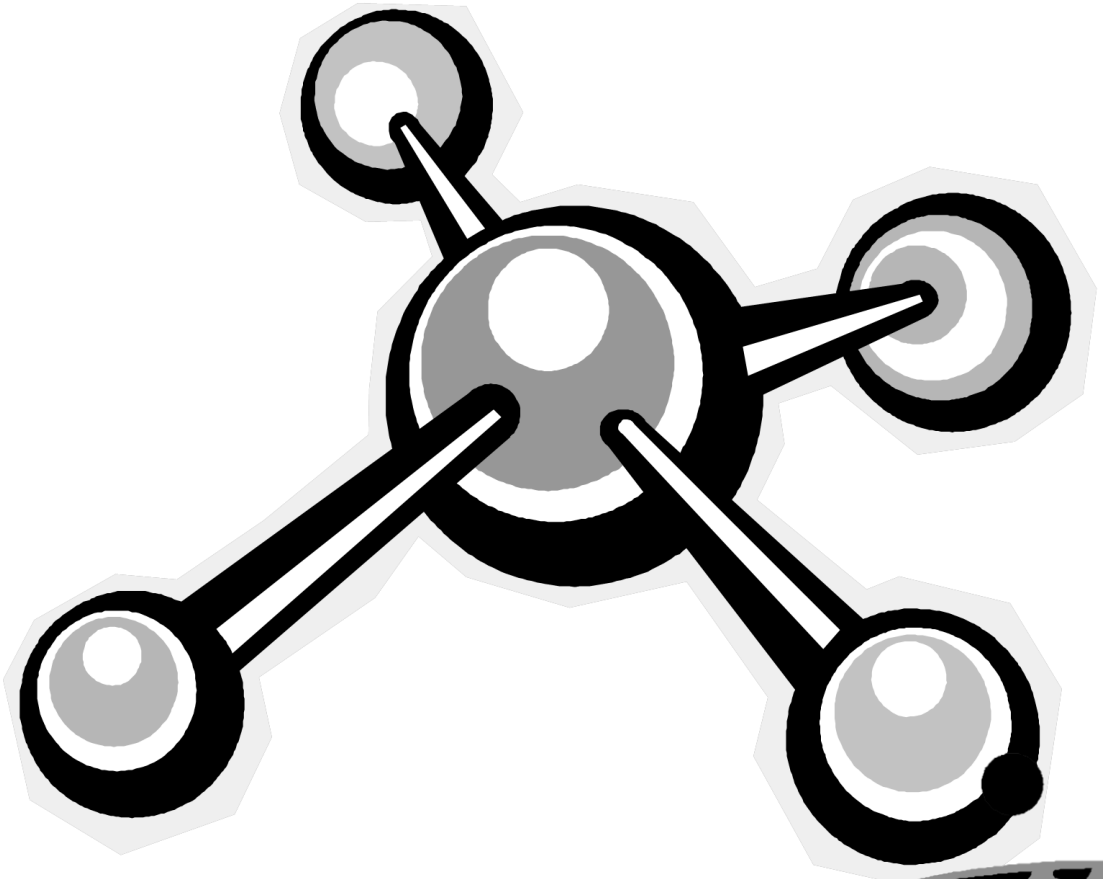


Nature of Science

Table of Contents

Textbook Scavenger Hunt

/15

Use the textbook to answer the following questions. You will need to use the table of contents, glossary, index, etc. (1 pt. Each)

1. What Unit is Earth's Internal Processes? _____
    a. What page does this Unit start on? _____
    b. How many chapters are in the Unit? _____
2. What Chapter is on Earth's Energy and Mineral Resources? _____
    a. What page in this chapter does section two start on? _____
    b. How many vocabulary words are in section 2? _____
3. What Page does the Reference Handbook start on? _____
    a. What is the equation to convert Celsius to Fahrenheit? _____
    b. On what two pages is the periodic table? (Hint: NOT THE BACK COVER)_____
4. What is the definition of Science? _____

    _____

    _____

    a. What chapter, section and page is the definition of science located? _____

        _____

    b. What page has a picture of Devil's Postpile? _____
    c. What state is Devil's Postpile in and how was it made? _____

        _____

5. What 5 pages mention the Hubble Space Telescope? _____

    _____

6. What two things did Johannes Kepler discover? _____

    _____

    _____

Textbook Scavenger Hunt

/19

Use the textbook to answer the following questions. You will need to use the table of contents, glossary, index, etc. (1 pt. Each)

a. What page talks about Johannes Kepler? _____

7. What object started the age of **technology**? _____
   a. What were they used for? _____
8. How many Eons are there in the **geologic time** of the Earth? _____
   a. How many Eras? _____
   b. How many periods? _____
   c. How many Epochs? _____
   d. What was the big event that happened in the Devonian Period? _____
   _____
9. What type of filter does **sewage** get treated with last? _____
10. Draw a diagram of the Rock cycle. Make sure to label the diagram **(10 pt. Each)**.

Lab book Scavenger Hunt

/25

Use the two lab books to answer the following questions. You will need to use the table of contents, glossary, index, etc. (1 pt. Each)

Catastrophic Events Lab book

1. How many parts are in this book?_____
    a. What are the names of these parts? _____
2. What lesson covers plotting earthquakes? _____
    a. What page does the lesson begin on? _____
3. What does the bolded blue/green color indicate about the various sections of the book? _____
    _____
4. What page does the Glossary start on? _____
    a. What does the word "model" mean? _____
    _____
    _____
5. What page does the index start on? _____
    a. What page, **NOT** in the glossary, can you find the definition of model? _____
    b. What three pages talk about density? _____
6. Benjamin Franklin made some of the earliest studies of what? _____
    a. What did he investigate? _____
    b. What did he find out? _____

Earth in Space Lab Book

7. How many parts are in this book?_____
    a. What are the names of these parts? _____
8. What lesson covers surface features? _____
    a. What page does the lesson begin on? _____
9. What does the bolded blue/green color indicate about the various sections of the book? _____
    _____
10. What page does the Glossary start on? _____
    a. What does the word "scale" mean? _____
    _____
    _____
11. What page does the index start on? _____
    a. What page, **NOT** in the glossary, can you find the definition of lunar eclipses? _____
    b. What three pages talk about Mercury? _____
12. Nicholas Copernicus, in the early 1500's, modified what model? _____
    a. What did he say was the center of the universe? _____

Lab Safety Rules

/4

Lab Rules	
Clean up	

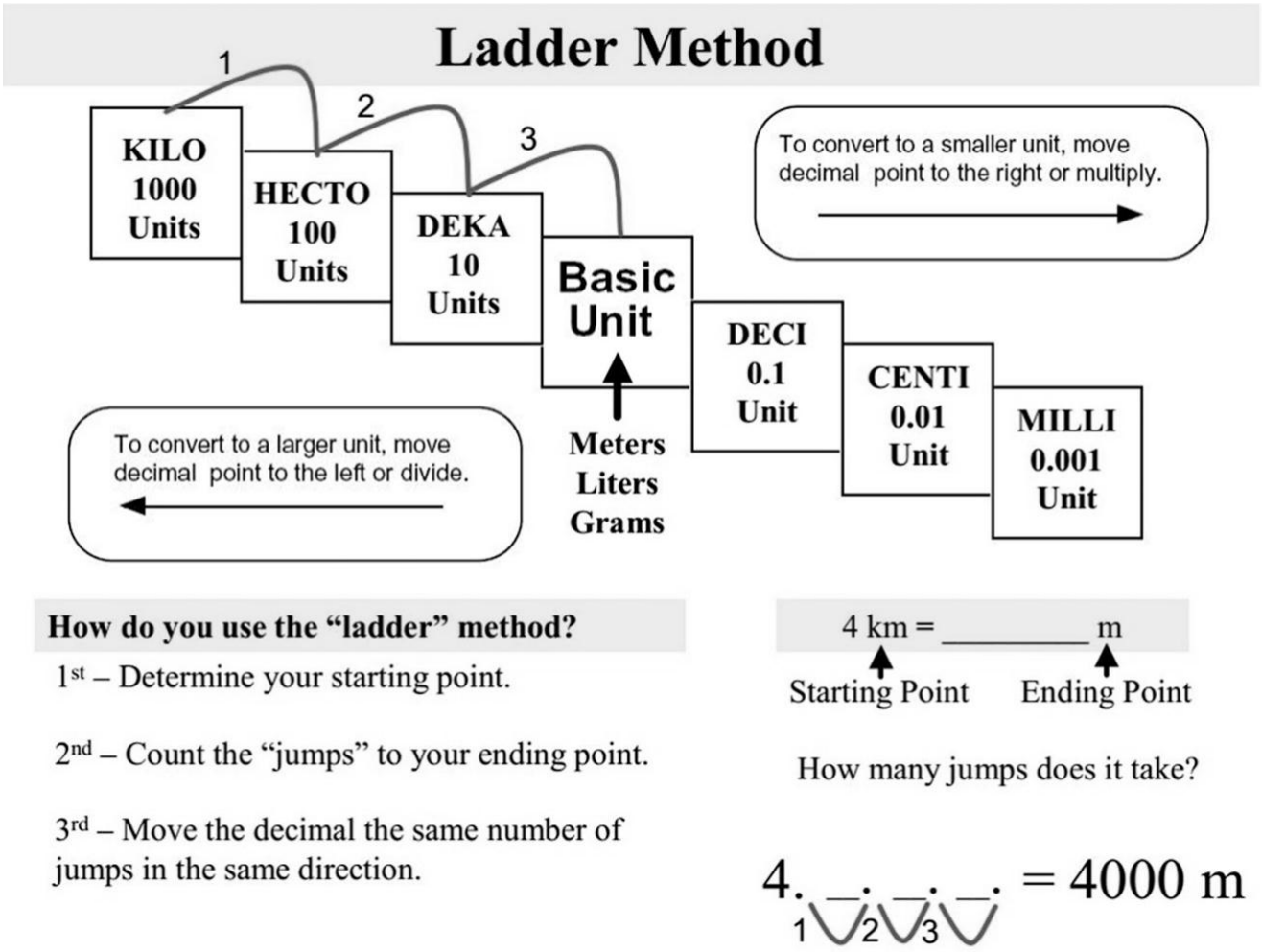
Metric System Notes

/4

Length and Distance	
Volume	
Temperature	
Mass	

Metric Ladder Method

/12



Complete the following metric conversions using the ladder method (1 pt. each)

1) 76 cm = _____mm	7) 587 kL = _____ dL
2) 9.7 g = _____kg	8) 76 cm = _____km
3) 10.8 mm = _____m	9) 67.98 dg = _____mg
4) 907 mL = _____hL	10) 0.723 m = _____mm
5) 60.09 m = _____dm	11) 9876 dg = _____hg
6) 435 mg = _____dkg	12) 7897 mm = _____m

Science Process Notes

/4

Question:

- To write a question, you first need to define your variables:
  - I will change …(Manipulated Variable)
  - I will measure…(Responding Variable)
  - I will keep the same…(Controlled Variables)
- Then, you will write a testable question:
  - What is the effect of _____ on _____?
    (Manipulated Variable) (Responding Variable)

    OR
  - How does _____ affect _____?
    (Manipulated Variable) (Responding Variable)

Hypothesis:

- If I _____, then I predict _____,
  (How I change the manipulated variable?) (How the responding variable will change?)

  because _____...
  (Why?)

Materials:

- List any items that are required to do the experiment and include tools needed to measure the variables.

Procedures:

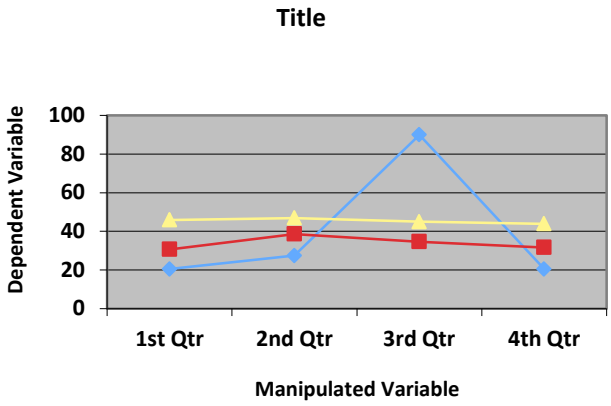
- Use detailed numbered steps
- Describe and label:
  - What you will change (manipulated variable).
  - What you will keep the same (controlled variables).
  - What you will observe/measure (responding variable).
- Explain how and where you will record your measurements (and tell what unit of measurement you are using).
- Explain that you will repeat your experiment at least 2 more times.
- Set up a table or graph to record your data.

Science Process Notes

/4

Table/Graph Samples:

Manipulated Variable (what I changed)	Responding Variable (what I measured/observed) ...include units!!!			
	Trial 1	Trial 2	Trial 3	Average



Conclusion:

Conclusive statement:

1. What is the answer to your investigation questions? _____
   _____

Supporting Data:

1. What is your lowest average? _____
   a. What variable was this for? _____
2. What is your highest average? _____
   a. What variable was this for? _____

Explanatory language:

3. What is the difference between your high and low data? _____
4. How does this number prove your answer to the investigation question? _____
   _____

Math for Explanatory Language

High

___

Low

Reflection: (Answer the following)

- Identify one change you could make to your investigation and describe how this change could improve your investigation.
- How can you apply your conclusion from this lab to the real world?

The Scientific Method Video Questions

/12

Complete each sentence by filling in the blank (1 pt. each)

1. Using the scientific method to solve questions, which affect us all, is called _____?
2. Pure science research has no immediate application to our lives; it is done because scientists are _____ about the world.
3. A hypothesis is called an "educate guess" because _____.
4. A hypothesis is testable; it is proven right or wrong by _____.
5. Often confused with hypothesis; a theory is produced _____ experimentation to explain a body of data.
6. Experiments contain an _____ variable; the factor being changed.
7. And a _____variable; the result which is measured.
8. The experiment is performed on the experimental group – the results are compared to the _____ group which has the same conditions as the experimental group except the independent variable (manipulated) variable is not changed.
9. In designing experiments scientists must try to think of all the factors, which could change the outcome of the experiment; these are the _____ variables.
10. To reduce the risk of chance affecting the outcome of the experiment, _____ must be done to average out the errors and increase confidence in the data.
11. To reduce the Placebo Effect in human studies, researchers may do _____ experiments where both experimental and control groups receive the same pill or treatment.
12. Double blind experiments are used to eliminate _____ of the scientists themselves as a factor in the experiment.

6-8 INQA - Scientific *inquiry* involves asking and answering *questions* and comparing the answer with what scientists already know.

6-8 INQB - Different kinds of *questions* suggest different kinds of scientific *investigations* about the world.

6-8 INQC - Collecting, analyzing, and displaying data are essential aspects of all *investigations*

The Scientific Method Video Questions

/8

Complete each sentence by filling in the blank (1 pt. each)

13. Scientists usually use _____ % as the level of confidence to show that the independent (manipulated) variable caused the effect seen in an experiment.

14. An average of _____ years and 39 million dollars are need to do he research to get a new drug approved for human use in the United States.

15. The U.S. _____ administration reviews all research and approves or rejects all drugs for human use.

16. Define (1 pt. each):

a. Hypothesis: _____

_____

b. Experimental Group: _____

_____

c. Placebo: _____

_____

d. Variable: _____

_____

e. Analysis: _____

_____

6-8 INQD - For an *experiment* to be valid, all (*controlled*) *variables* must be kept the same whenever possible, except for the *manipulated* (*independent*) *variable* being tested and the *responding (dependent) variable* being measured and recorded. If a *variable* cannot be *controlled*, it must be reported and accounted for.

6-8 INQE —Model— *Models* are used to represent objects, events, *systems*, and processes. *Models* can be used to test *hypotheses* and better understand *phenomena*, but they have limitations.

6-8 INQF - It is important to distinguish between the results of a particular *investigation* and general conclusions drawn from these.

6-8 INQG - Scientific reports should enable another investigator to repeat the study to check the results .

The Scientific Method Video
Hidden Word Puzzle

/16

Use the clues on the next page to fill in the words and you will discover the hidden words in the brackets [__]. (1 pt. each)

1. [___]___ ___ ___ ___ ___ Blind
2. ___ ___ ___ [___]___ ___ ___
3. ___ ___ ___ ___ ___ ___ ___ ___ [___] ___ ___
4. ___ ___ ___ [___] Science
5. ___ ___ [___] ___ ___ ___ ___ ___ ___ ___
6. ___ ___ ___ ___ ___ [___] ___ ___ ___ ___ ___ ___ ___ ___
7. ___ ___ ___ ___ [___] ___ ___ Science
8. ___ ___ ___ ___ ___ [___] ___ ___ ___ ___ ___ Difference
9. ___ ___ ___ ___ ___ [___] ___ ___ ___ ___ ___ ___ Group
10. [___] ___ ___ ___ ___ ___ ___ Group
11. ___ ___ ___ ___ ___ ___ [___] ___ ___ ___
12. ___ [___] ___ ___ ___ ___ ___ ___ ___
13. ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ [___]
14. [___] ___ ___ ___ ___ ___ ___ ___ ___ ___
15. ___ [___] ___ ___ ___ ___ Blind
16. [___] ___ ___ ___

The Scientific Method Video
Hidden Word Puzzle

1. Experiment in which researchers know which group is being tested.
2. Well known effect on people in an experimental group – they do what is "expected."
3. Gathering data during an experiment.
4. Science to satisfy curiosity.
5. Answer reached at the end of an experiment
6. Multiple tests of the same experiment
7. Science to answer a well-known problem
8. A real difference in the experimental group
9. Individuals being tested
10. Serves as a standard of comparison
11. Activities to test hypothesis
12. Variable that is being measured
13. Variable being changed
14. Possible answer to a question
15. Experiment in which neither the researcher nor the subjects know who is being tested
16. Evidence gathered during an experiment.

Word Bank

Double	Single	Dependent	Experiment
Experimental	Repeated Trials	Observations	Conclusion
Pure	Hypothesis	Placebo	Data
Independent	Applied	Control	Significant

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Experimental Design Practice

/9

Read the following description of the this experiments and identify the elements of the experiment. (5 pts.)

Sam's algae farm

Sam wished to investigate how fertilizer run-offaffects the growth of algae in freshwater lakes and streams. He set his experiment up in this was. He placed 900 mL of water into each of 5 – 1000 mL glass beakers. To each beaker he added 5 mL of water from an aquarium which contained a large concentration of algae. The beakers were placed under a grow light which was timed to provide 12 hourse of light each day. Liquid fertilizer was added to the beakers in the following amounts: beaker 1 – no fertilizer, beaker 2 – 2 mL fertilizer, beaker 3 – 4mL fertilizer , beaker 4 – 6 mL fertilizer, beaker 5 – 8 mL fertilizer. Each week a random sample from each of the beakers was examined under a microscope to get a count of the number of algae cells present.

1. Manipulated variable (independent) _____
2. Responding variable (dependent) _____
3. Controlled variable (constant) _____
4. Controlled variable (constant) _____
5. Controlled variable (constant) _____

Correctly complete the following data table to go along with the above experiment (4 pts.)

6-8 INQC - Collecting, analyzing, and displaying data are essential aspects of all *investigations*
6-8 INQD - For an *experiment* to be valid, all (*controlled*) *variables* must be kept the same whenever possible, except for the *manipulated* (*independent*) *variable* being tested and the *responding (dependent) variable* being measured and recorded. If a *variable* cannot be *controlled*, it must be reported and accounted for.

Experimental Design Practice

/9

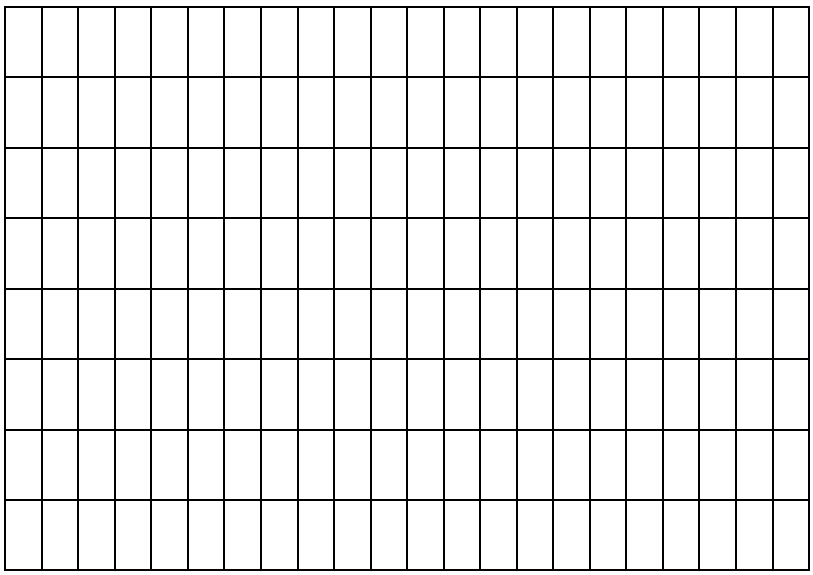
Read the following description of the this experiments and identify the elements of the experiment. (5 pts.)

Brittany's new wheels

Brittany wanted to find out which wheels were best for her skateboard. She purchased 4 sets of new wheels of different brands. She and a friend set up a slalom course on her driveway. Brittany rode through the course 5 times on each set of wheels. Her friend timed her with a stop watch and recorded the times. They then averaged the times for each wheel.

1. Manipulated variable (independent) _____
2. Responding variable (dependent) _____
3. Controlled variable (constant) _____
4. Controlled variable (constant) _____
5. Controlled variable (constant) _____

Correctly complete the following graph to go along with the above experiment (4 pts.)



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Experimental Design Practice

/13

Read the following description of the this experiments and identify the elements of the experiment. (5 pts.)

Musical tests

John's parents would not let him study while listening to CD's in his room. They told him that he could not concentrate with the background noise. He decided to test this idea with an experiment on his class. Each Friday his english class took a vocabulary quiz on 25 new words learned that week. John got his teacher's permission to try his experiment. On the forst Friday of his test he played a rock song in the classroom while the class took the test and the following week the class took the test with the normal quiet atmosphere of a classroom. John calcualted the average score on the two vocabulary test.

1. Manipulated variable (independent) _____
2. Responding variable (dependent) _____
3. Controlled variable (constant) _____
4. Controlled variable (constant) _____
5. Controlled variable (constant) _____

Correctly complete the following inquiry components to go along with the above experiment (4 pts.each)

6. Investigation questions _____
7. Hypothesis _____

_____

_____

_____

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6-8 INQB - Different kinds of *questions* suggest different kinds of scientific *investigations* about the world

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Matter Notes

/4

Matter	
Atoms	
Mass	
States of matter	
Volume	
Density	
Physical property	
Chemical property	

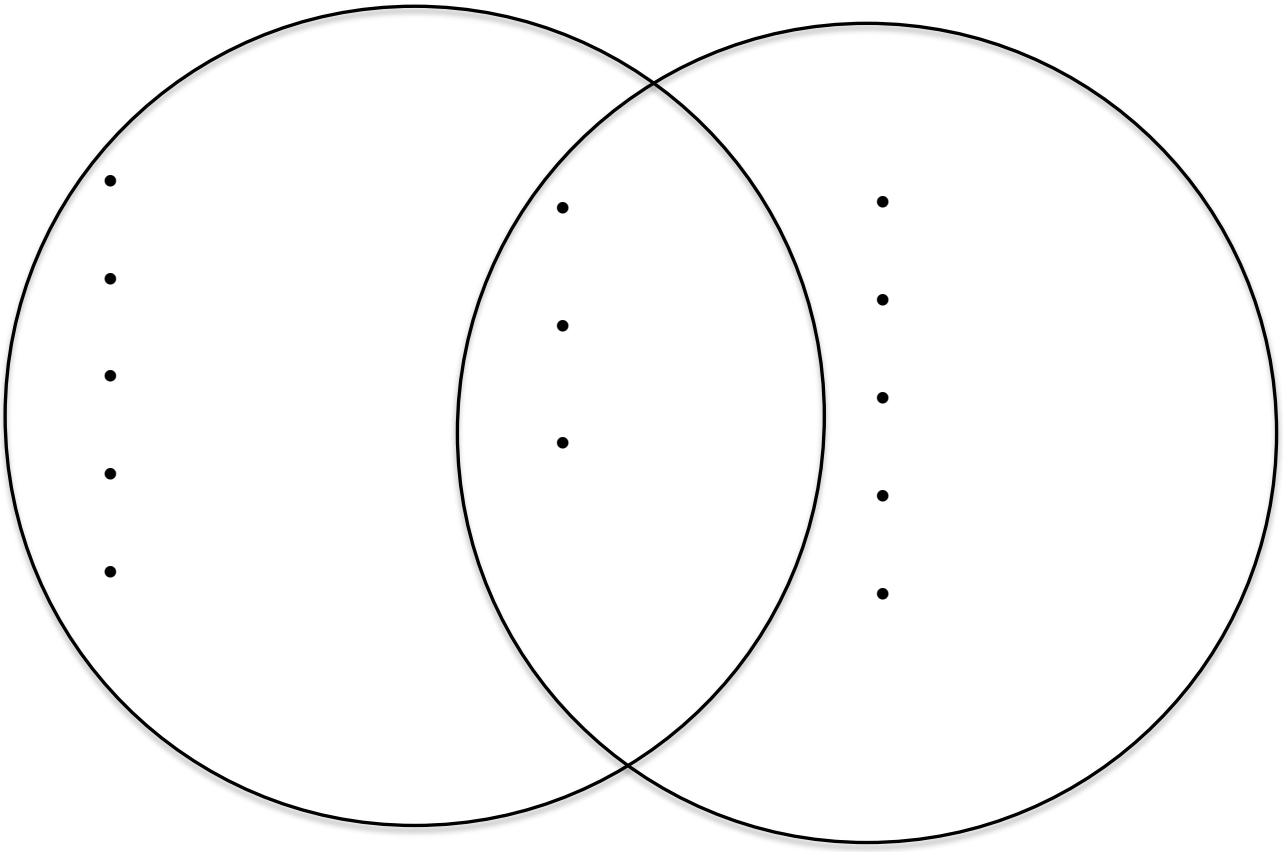
Matter Notes

/4

Physical change	
Chemical change	

Chemical property

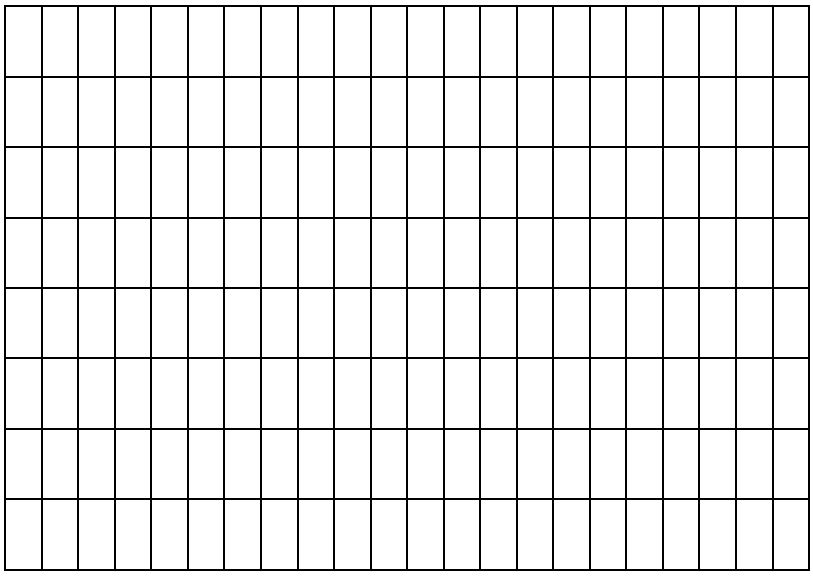
Physical property



Inquiry 14.2

/8

Complete the following data table and graph as you conducted inquiry 14.2 (4 pts. Each)



6-8 INQB - Different kinds of *questions* suggest different kinds of scientific *investigations* about the world

Inquiry 14.2

/11

Complete the following questions after conducting inquiry 14.2.

Reflection Questions:

A. What is the weight of five washers? (1pt) _____

B. When you increased the mass of the cylinder, what happened to its weight? (1pt)
_____

C. How are mass and weight related? (2pt) _____
_____

D. From your reading, you know that a force is a push or pull on or by an object. What is the name of the force that makes the cylinder have weight? (1pt) _____

E. In what direction does this force pull on the cylinder? (1pt) _____

F. If weight is the measure of the force of gravity pulling on an object, which planet has a greater force of gravity pulling on objects; In what direction does this force pull on the cylinder? (2pt)
1. _____ 2. _____

G. What force holds us to Earth's surface? (1pt) _____

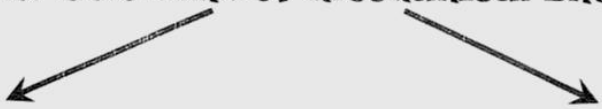
H. What two factors affect the gravity at a planet's surface? (2pt)
1. _____ 2. _____

Energy Notes

ENERGY!

Mechanical Energy: is the energy an object has because of its motion or position.

The Two Kind of Mechanical Energy



Potential Energy Energy stored in matter.	Kinetic Energy Energy of motion.
Thermal Energy is the vibration and movement of the atoms and molecules *within* substances. As an object is heated up, its atoms and molecules move and collide faster (when thermal energy is transferred it becomes heat energy). **Gravitational Energy** is energy stored in an object's height. The higher and heavier the object, the more gravitational energy is stored. **Electrical Energy** is energy that is produced by electric charges. It's what is stored in a battery, and can be used to power a cell phone or start a car. **Elastic Energy**: energy stored when a body is deformed. Compressed springs and stretched rubber bands are examples of stored mechanical energy or elastic energy. **Chemical Energy** is energy stored in the bonds of atoms and molecules. It can also be called food energy because it is the energy stored in the food we eat. A chemical change occurs when we eat the food. Our bodies convert the energy in food into kinetic energy to do work. **Nuclear Energy** is energy stored in the nucleus of an atom.	**Heat Energy:** When an object's thermal energy is transferred by: ➢ **Conduction:** the transfer of thermal energy from a warmer substance to a cooler substance through direct contact. ➢ **Radiation:** transfer of thermal energy in the form of electromagnetic waves or rays. Energy is released by one body, transmitter through the space between, and absorbed by another body. ➢ **Convection:** the transfer of thermal energy in a fluid (liquid or gas), in which warmer fluid rises and cooler fluid sinks in a convection current. **Sound** is the movement of energy through substances in waves. Sound is produced when a force causes an object or substance to vibrate — the energy is transferred through the substance in a wave. **Radiant or Light Energy:** is energy carried by light and other kinds of electromagnetic waves. It includes visible light, sunlight, light beams, solar energy, x-rays, gamma rays and radio waves.

Energy Notes

/4

Energy	
Heat	
Radiation	
Conduction	
Convection	

Density Lab- Cube Identification

/11

Complete the data tables as you go through the Density Lab – cube identification. (4 points each)

Variables	Cube number					
	#1	#2	#3	#4	#5	#6
Volume						
Mass						
Density						
Identity						

Variables	Cube number					
	#7	#8	#9	#10	#11	#12
Volume						
Mass						
Density						
Identity						

Complete these questions as you go through the Density Lab – cube identification.

A. Which cube has the most amount of matter? Explain your answer. (1 pt.) _____

_____

B. Which cube has the least amount of matter? Explain your answer. (1 pt.) _____

_____

C. If 1 cm^3 is equal to one ml, calculate the density of a 500mL bottle of water that masses 20g. (1 pt.) _____

_____

Density Lab- Irregular objects

/8

Complete the data table as you go through the Density Lab. (4 points each)

Variables	Object					
	Blue Marble	Small Metal Sphere	Medium Metal Sphere	Dice	Washer	Penny
Volume						
Mass						
Density						

Complete the graph as you go through the Density Lab – irregular objects. (4 points each)

Density Lab- Irregular objects

/3

Complete these questions as you go through the Density Lab – Irregular Objects.

A. Which irregular object has the most amount of matter? Explain your answer. (1 pt.) _____

_____

B. Which irregular object has the least amount of matter? Explain your answer. (1 pt.) _____

_____

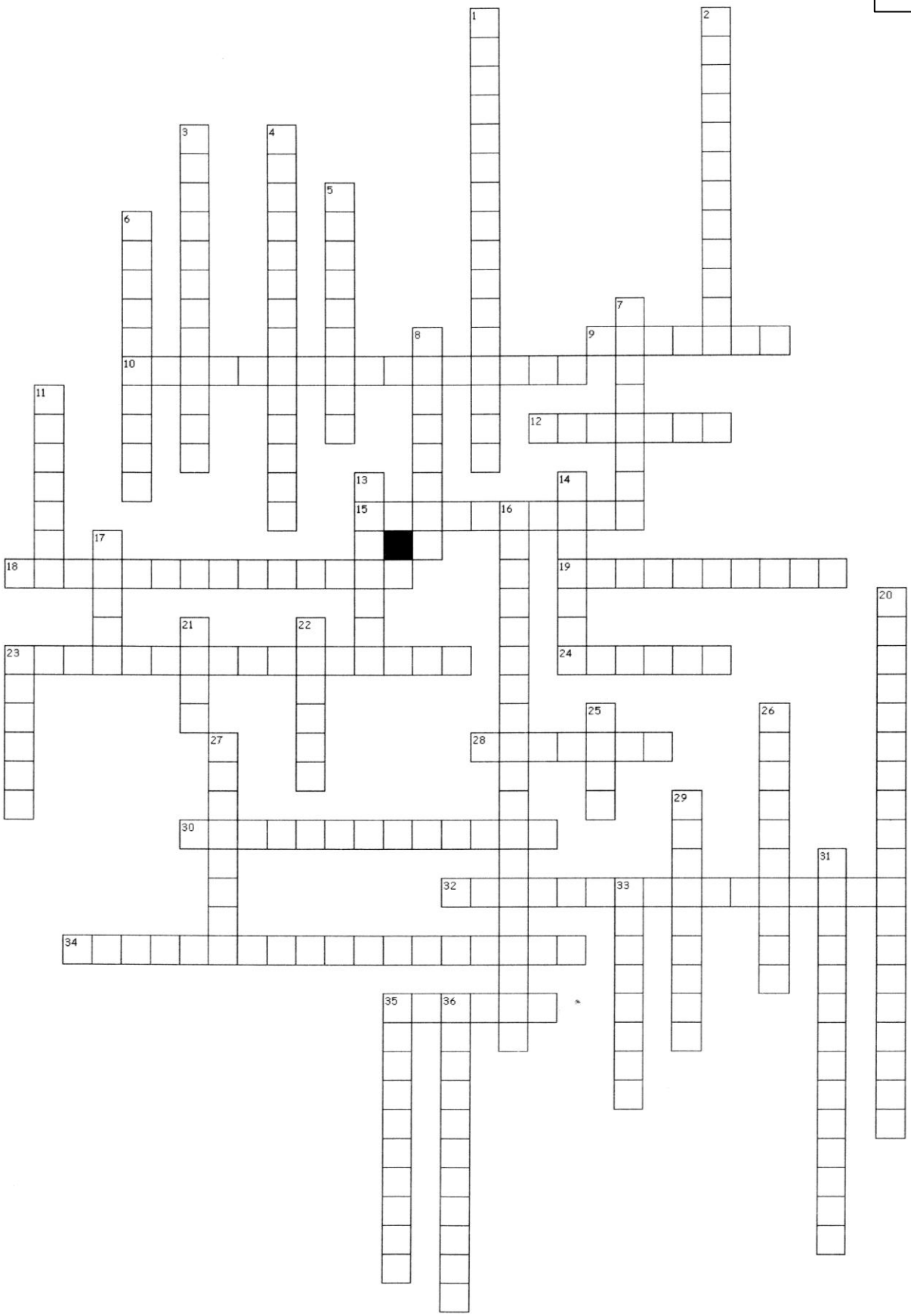
C. Explain how to find the volume of an irregular object. (1 pt.) _____

_____

_____

Nature of Science Vocabulary Review

/38



Across

9. The standard for comparison in an experiment.
10. A property that describes a change that occurs when one substance reacts with another.
12. A particle without an electric charge that is located in the nucleus of an atom.
15. The transfer of energy that occurs when molecules bump into one another (i.e. Direct contact).
18. Solid, liquid, gas, & plasma.
19. The use of scientific discoveries for practical purpose, making people's lives better.
23. A property that you can observe without changing the substance into a new substance.
24. The study of moral values about what is good or bad.
28. A property of matter found by dividing the mass by its volume.
30. Rule that describes the behavior of something in nature; usually describes what will happen in a situation but not why it happens.
32. Problem-solving procedures that can include identifying the problem or question, gathering information, developing a hypothesis, testing the hypothesis, analyzing the results, and drawing conclusions.
34. The factor being measured in an experiment.
35. Anything that has mass (made up of atoms) and takes up space; its properties are determined by the structure of its atoms and how they are joined.

Down

1. Evidence supported explanation that is supported by results from repeated experimentation or testing.
2. The number of protons in an atom.
3. The study of Earth and space, including rocks, fossils, climate, volcanoes, land use, ocean water, earthquakes, and objects in space.
4. A change that occurs when one or more physical properties of a substance are changed.
5. Different factors that can be changed in an experiment.
6. The transfer of energy that occurs by flow of material.
7. Components of a homogeneous mixture evenly mixed throughout.
8. When atoms of more than one element combine - for example, water or table salt.
11. Substance that contains only one type of atom - for example oxygen, aluminum, or iron.
13. The process of looking at and studying things in the world in order to gain knowledge.
14. Composed of two or more substances that are not chemically combined - for example, salt mixed with liquid water or rock containing a variety of minerals.
16. The factors/variables that do not change in an experiment.
17. Tiny building blocks of matter; made up of protons, neutrons, and electrons.
20. The factor that changes in an experiment.
21. The amount of matter in an object.
22. The amount of space an object takes up.
23. Positively charged particle that is located in the nucleus of an atom.
25. Personal opinion.
26. An educated guess.
27. Negatively charged particle that moves around the nucleus of an atom and forms an electron cloud.
29. The transfer of energy that occurs in the form of rays or waves.
31. A change that occurs when one or more substances are changed into new substances with different properties.
33. Atoms of the same element that have different numbers of neutrons - for example, Carbon-12 or Carbon-14.
35. The number of protons plus the number of neutrons in an atom.
36. The amount of heat/thermal energy in a substance.

VOLUME – _____

TEMPERATURE –_____

MASS –_____

HYPOTHESIS – _____.

SCIENTIFIC METHOD – _____

_____

_____

SCIENCE –_____.

EARTHSCIENCE –_____

VARIABLES –_____

MANIPULATEDVARIABLE – _____

RESPONDINGVARIABLE – _____

CONTROLLEDVARIABLES –_____

CONTROL – _____

TECHNOLOGY– _____

SCIENTIFIC THEORY– _____

_____

SCIENTIFIC LAW –_____

_____

ETHICS –_____

BIAS – _____

MATTER –_____

_____

ATOMS – _____

PROTON –_____

NEUTRON –_____

ELECTRON - _____

_____

DENSITY – _____

STATES OF MATTER – _____

PHYSICAL PROPERTY – _____

_____

CHEMICAL PROPERTY – _____

_____

PHYSICAL CHANGE – _____

_____

CHEMICAL CHANGE – _____

_____

ATOMIC NUMBER – _____

ELEMENT – _____

MASS NUMBER – _____.

ISOTOPES – _____

_____

COMPOUND – _____

MIXTURE – _____

_____

SOLUTION – _____

CONDUCTION – _____

CONVECTION – _____

RADIATION – _____

6-8 Inquiry Standards

Goal: Variables of an Experiment (6-8 INQD)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which could include the concept of controlling variables during an experiment. What is the importance of reporting any variables that are NOT controlled? Why is there only 1 manipulated variable? Manipulated and responding variables describe actionable things.
3 Proficient	Student can correctly identify all three types of variables in an experiment (i.e. manipulated, responding and controlled variables)
2 Basic	Student can correctly identify 2 of the 3 variables: controlled, manipulated or responding variables in an experiment.
1 Unsatisfactory	Student cannot identify 2 of the 3 variables: the controlled, manipulated or responding variable in an experiment.

Goal: Writing an Investigation Question (6-8 INQA)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which includes identifying each variable (i.e. with labels or highlighting of manipulated and responding variables).
3 Proficient	Student can design a relevant investigation question that can be tested, including what will be changed and what will be measured.
2 Basic	Student can design a relevant investigation question, but fails to describe **either** what is changed or what is measured in the investigation.
1 Unsatisfactory	Student designs an irrelevant investigation question (i.e. fails to describe **both** what is changed and what is measured in the investigation).

Goal: Writing a Hypothesis (6-8 INQB)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which could include a prediction reason **connecting** the hypothesis with examples from outside the classroom.
3 Proficient	Student can write a hypothesis that contains the IF (**manipulated** variable), THEN (**responding** variable: must specify type of change), BECAUSE (prediction **reason**) format. Prediction reason is unique from the manipulated or responding variables.
2 Basic	Student can correctly write **one or two** parts of a hypothesis (i.e. the IF, THEN, or BECAUSE).
1 Unsatisfactory	Student cannot write **any** parts of a hypothesis.

6-8 Inquiry Standards

Goal: Writing Procedures (6-8 INQB)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which includes identifying the variables (i.e. labeling or highlighting).
3 Proficient	Student can design a procedure that is appropriate for the question being asked which includes using detailed numbered steps, describing the variables, explaining how and where the responding variable will be measured and recorded, and mentions repeated trials.
2 Basic	Student can design a procedure that is appropriate for the question being asked which includes describing the variables, explaining how and where the responding variable will be measured and recorded, but fails to include one of the following: uses detailed numbered steps or mentions repeated trials.
1 Unsatisfactory	Student designs a procedure that is not appropriate for the question being asked (i.e. fails to include an explanation of where the responding variable will be measured and recorded, numbered steps, or steps are in illogical order).

Goal: Data Table (6-8 INQC)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which includes creating an orderly table including identifying the manipulative and responding variables (i.e. labeling or highlighting variables).
3 Proficient	Student can create a usable table that includes labeled headings with units based on their procedures (manipulated variable) and enough space to clearly record all collected data (responding variable) including averages.
2 Basic	Student can create a table that includes headings based on their procedures (manipulated variable) and enough space to clearly record data (responding variable). Fails to include units and/or data averages.
1 Unsatisfactory	Student creates a table showing they do not know how to organize information into a data table based on their procedures. Fails to report all data.

Goal: Graphing Data (6-8 INQC)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which could include making in-depth inferences and applications with the concept graphing data by recognizing patterns and correlations.
3 Proficient	Student can correctly graph their data points including all components of a graph: Title, X Axis, Y Axis, All data, Scale, interval, line of best fit (when applicable).
2 Basic	Student can correctly graph their data points including 3 of the 5 components of a graph: Title, X Axis, Y Axis, All data, Scale, interval, line of best fit (when applicable).
1 Unsatisfactory	Student incorrectly graph their data points and/or use 2 or less components of a graph.

6-8 Inquiry Standards

Goal: Writing a Conclusion (6-8 INQF)

Score	Description
4 Distinguished	Student will demonstrate proficiency (LV. 3) and in addition, student demonstrates higher level thinking which includes a prediction for untested values of the manipulated variable.
3 Proficient	Student can correctly answer the investigative question with a conclusive statement, and support the statement with **both** high and low data averages with mention of respective variables. Student uses explanatory language (i.e. interprets data by finding the difference between high and low values) to answer the investigative question.
2 Basic	Student correctly answers the investigative question with a conclusive statement, and supports the statement with incomplete data (i.e. no mention of respective variables, does not provide data averages).
1 Unsatisfactory	Student correctly answers the investigative question using no supportive data.