Name: _____

Mid-term Review Unit 1 – Scientific Method

1. List the steps of the scientific method in order.
   1) observation
   2) formulate a question
   3) collect data
   4) formulate hypothesis
   5) test hypothesis
   6) collect data
   7) conclusion
2. Define the term scientific theory.
   A tested, possible explanation of a natural event.
3. Define the term scientific law.
   A summary of an observed natural event.
4. Describe the term variable as it pertains to an experiment.
   Anything that can change in an experiment.
5. Why do scientists test only one variable at a time?
   Because you wouldn't know with 2 variables changed the experiment
6. Compare and contrast the terms dependent and independent variables.
   An independent variable is the factor that is manipulated in an experiment. The dependent variable is measured to determine the change. Both, measured in experiment
7. On a graph, which axis would contain the dependent variable? The independent variable?
   X = independent variable Y = dependent variable
8. List the three main branches of science and give a sub-branch of each.
   a. Biology - Botany
   b. earth science - Meteorology
   c. Physical science - chemistry
9. Read the experiments below and identify the parts of the experiment.

Experiments: Identifying Variables and Groups

In each of the examples, identify the **independent variable** and **dependent variable** as well as which participants make up the **experimental group** and which make up the **control group.**

Remember:
Independent Variable = What the **investigator** manipulates; the particular treatment or condition the **investigator** is most interested in the effects of
Dependent Variable = What is measured or observed; the "**data**" collected in the experiment
Experimental Group = Those participants **exposed** to the independent variable
Control Group = Those participants treated just like the experimental group EXCEPT they are not exposed to the independent variable; the group with which the experimental group can be **compared**

1) Of 100 individuals with moderate depression, 50 receive 8 weeks of a new cognitive-behavioral therapy, while the other 50 are placed on a waiting list for 8 weeks. At the end of the 8 weeks all 100 are given psychological tests to assess their level of depression.

Independent Variable: given therapy Dependent Variable: level of depression

Experimental Group: A - given therapy Control Group: B - group on waiting list

2) A biopsychologist is studying the effects of anabolic steroids on the aggressive behavior of female rats. 24 female rats receive daily injections of a placebo (fake drug), while 24 others receive daily injections of the steroid. Round-the-clock videotapes of the communal cages of all rats allow all aggressive encounters to be counted and timed.

Independent Variable: given anabolic steroid Dependent Variable: aggression level

Experimental Group: A - given steroid Control Group: B - given placebo

3) An industrial psychologist is interested in whether lowering the temperature in a packing room will increase productivity (number of products packed). Workers in two equivalent packing rooms participate in the study. One room is maintained at 65 degrees, the other room is left at the usual company temperature of 76 degrees.

Independent Variable: room temperature given Dependent Variable: productivity

Experimental Group: A - lower temp room Control Group: B - given 76 room

NAME _____ DATE _____ CLASS 4th

Chapter 1

STUDY GUIDE

Text Pages 12–18

• Solving Problems

In the blank, write the letter of the term or phrase that best completes each statement.

B 1. The first step in any problem-solving strategy is to _____.
a. collect information about the problem b. identify the problem

B 2. The method used by scientists for solving problems is known as the _____.
a. control b. scientific method

A 3. A prediction about a problem that can be tested is a _____.
a. hypothesis b. conclusion

B 4. A _____ is a standard for comparison in an experiment.
a. variable b. control

A 5. An explanation backed by results obtained from repeated tests or experiments is a _____.
a. theory b. variable

B 6. A process that uses certain skills to solve problems is called _____.
a. theory b. critical thinking

A 7. A _____ is a changeable factor in an experiment.
a. variable b. control

A 8. The best experiments test only one _____ at a time.
a. variable b. control

B 9. If a conclusion does not support a hypothesis, the _____.
a. experiment did not work properly b. hypothesis should be revised

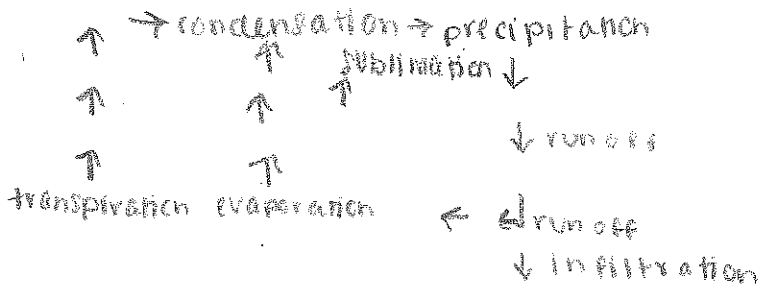
A 10. If a hypothesis is supported by new data gathered over a period of time, it may become a _____.
a. control b. theory

A 11. Making lists, drawing graphs, making a model, and eliminating possibilities are all _____ for solving problems.
a. strategies b. variables

B 12. If a hypothesis has been backed by results from repeated tests or experiments, it becomes a _____.
a. variable b. theory

Unit 2 Review – Hydrogeology Name

1. Diagram the water cycle – include all the *places* water can be and the *processes* it goes through to get from one place to another.



2. What powers the water cycle? the sun

3. Does water follow a set path through the water cycle? Explain your answer.
No because it can be going through different phases at different time

4. How long does it take for water to circulate through the water cycle?
10,000 years

5. How are the following terms related?
   a. Aquifer & groundwater
   Both include water in the ground.
   b. Aquifer & water table
   Both are level of water underground.
   c. Transpiration & precipitation
   phases in the water cycle

6. What is recharge?
The replenishment of an aquifer's ground water.

7. What is residence time?
Residence time is an expression that says how fast something moves through a system in equilibrium.

8. How does groundwater move?
It infiltrates in the ground.

9. List at least three things that can contaminate groundwater.
   - oil
   - pesticides
   - fertilizer

10. List at least three things that can be done to protect groundwater.
   - vegetation
   - no roads near water
   - don't litter

11. What percentage of earth's water is freshwater and what percent is salt water?
F = 3%, S = 97%.

12. Where is most of the freshwater on earth stored?
glaciers

13. Define point and nonpoint source pollution.
point is directly from a pipe
Non-point is pollution that doesn't come from a pipe.

14. Define the term "best management practice."
BMP means the best ways to help pollution in our groundwater

15. Define the term permeable. What type of earth material is most permeable? Clay, sand, gravel. Circle one.
Permeable means how much space is in between the particles of an object.

-Tion words

infiltration - to go into the ground.

precipitation - Any form of water that falls back to Earth's surface from clouds.

condensation - the change of a substance from a gas to a liquid.

sublimation - the change of a substance from a solid to gas.

transpiration - the evaporation of water through pores in a plant's leaves