

REVIEW Packet Test 1: Scientific Processes

Name Key
 Period _____ Date _____

60pts

You should review all materials from this unit. This review packet is for additional review and is not a replacement for studying those other materials. Study materials in chunks – group topics together – and study a little each night. Be sure to come in for tutoring, if you need it, with any of the 7th grade Science teachers.

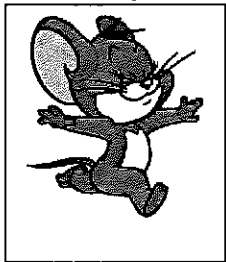
Vocabulary: Matching

- | | |
|--|---|
| <u>D</u> 1. hypothesis | A. a variable or group of variables that are kept the same throughout the experiment |
| <u>C</u> 2. independent/manipulated variable | B. what the person sees, hears, feels, smells, tastes |
| <u>H</u> 3. inference | C. the variable you change on purpose |
| <u>E</u> 3. dependent/responding variable | D. prediction about the outcome of an experiment |
| <u>A</u> 4. control/controlled variables | E. the variable that changes as a response to the independent variable; the variable you use to obtain your results |
| <u>B</u> 5. observation | F. statement that sums up what you learn from the experiment |
| <u>G</u> 6. data | G. numbers and facts collected during the experiment |
| <u>F</u> 7. conclusion | H. a conclusion drawn from the available evidence |

List the steps of the scientific method:

① Identify Problem, ② Form Hypothesis, ③ Create Experiment ④ Perform Experiment (collect data also)
⑤ Analyze Data ⑥ Communicate Results
⑦ * if data is inaccurate or experiment flawed, Modify the Experiment

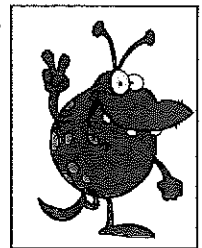
Observation/Inference: Record "O" for observation, "I" for inference:



- I 1. Jerry is dancing. O 2. Jerry has 6 whiskers. I 3. Jerry is happy.

Make an observation with an inference about the picture.----->

O: It has 2 hands, it has antennae, it has 3 teeth, it is standing on one foot
 I: It is happy, It is a peace-maker, It likes people



Write the following problem in the proper hypothesis format (IF, THEN).

Will a helicopter fly faster by changing the position of the blades?

If the position of the blades are changed, then it will fly faster.

Determine if the following statements include QUALITATIVE (A) or QUANTITATIVE (B) observations:

- A 1. Ms. Hotchkiss is grading yellow papers.
- B 2. Mr. Lim put one hundred binders in a box to donate to charity.
- A 3. Ms. Johnston saw a pink, orange, yellow, and purple sunrise this morning.
- B 4. There are six science classrooms in the hall.

Variables

Identify the independent and dependent variable in the following statement:

Apple trees that receive the most water produce the largest apples.

independent: amount of water

dependent: size of apple

Tinkerbell sprinkles fairy dust on a frog. Her fairy dust usually allows objects to fly. This time the frog did not fly. Tinkerbell wants to know how many times she must sprinkle the frog until it flies.

IV: how much fairy dust (# of sprinkles)

DV: flying of frog

Scientific Method Practice

Mr. Lehman wanted to know whether or not his students would do better on a quiz if he promised them candy. He guessed that the more candy that his students were promised, the better they would do on the quiz. He had all of his classes participate in the experiment. There were four groups in all. Each group had the same amount of boys and girls, they were all given the same quiz, they were all the same age, the same ability, and they were all from the same background. The first group was not promised any candy if they did well on the quiz. The second group was promised 1 candy bar if they did well on the quiz. The third group was promised 2 candy bars if they did well on the quiz. The fourth group was promised 3 candy bars if they did well on the quiz. Group #1 got an average of 70% on the quiz. Group #2 got an average of 80% on the quiz. Group #3 got an average of 90% on the quiz. Group #4 got an average of 95% on the quiz. Mr. Lehman then decided that the more candy a group was promised, the better they did on quizzes. He then repeated the experiment with different students.

1. State the problem: Does the amount of candy promised affect quiz scores?

2. Write the hypothesis in an If, Then format.

If more candy is offered, then quiz scores will be higher.

3. What is the IV? amount of candy

4. What is the DV? quiz score

5. Which group is the control group? group 1 - no candy

6. What is the conclusion? the more candy offered, the higher the grade on a quiz

Graphs. Record as Bar, Line, or Circle/Pie Graph.

Used to compare separate, but related items. bar graph

shows data as parts of a whole. circle/pie graph

Used to show a variable changing as a response to another variable. line graph

Types of Investigations. Record each problem as **Descriptive (D)**, **Comparative (C)**, **Experimental (E)**

1. Describing and/or quantifying different organisms or objects with a fair test, variables and a control. E
2. Describing organisms or objects or quantifying them. D
3. How many Hot Tamales are in a box? D
4. How does temperature affect the growth of bacteria on a Jelly Bean? E
5. Recording observations and collecting data about an object. D
6. How does the melting point of a Jolly Rancher compare to a Milky Way? C
7. How does the humidity level affect the rate of evaporation of 1 L of Coke? E
8. How many Hershey Bars will melt in 1 minute at 30°C? D
9. Describing or quantifying objects or organisms under different conditions. C

Scientific Law vs Theory. Record an "L" for Law or a "T" for Theory.

- T 1. Explains a wide range of observations. Is a well-tested concept, but future tests could prove it incorrect.
- L 2. Occurs so often that it is sure to always happen.
- L 3. What scientists will always observe under certain conditions.
- T 4. May be revised or abandoned altogether.

Data Tables & Graphing

Allie predicts that caffeine will increase the growth rate of plants. She waters 7 of the same type of plant with varying amounts of coffee. She then measures the plant height after 14 days. Use the data table provided to make a graph showing the data. Use the graph paper on the back of this page. Include all necessary items for a line graph.

Amount of Coffee (mL)	Plant Height (cm)
20	14
40	16
60	15
80	12
100	8
120	3
140	1

Name 2 possible problems with this experiment.

- * no control group* unclear about other controls-
- type of coffee? amount of caffeine in the coffee? type of soil? sunlight, location, temperature, etc.

Coffee Amounts related to Plant Growth

✓ Title - descriptive

✓ IV on X-axis

✓ DV on Y-axis

✓ units on X-axis

✓ units on Y-axis

✓ scales spaced appropriately for paper size

✓ plotted all points

✓ used a ruler

