

Name: _____ Date: _____ Period: _____

STORY SCENARIOS

Read each of the story scenarios below. Each contains an experiment that was performed. For each of the experiments, identify the question, hypothesis, independent variable, dependent variable, control, conclusion, and makes some suggestions.

EXPERIMENT 1:



Smithers thinks a special juice will increase the productivity of workers. He creates two groups of 50 workers each and assigns each group the same task (in this case, they are supposed to staple a set of papers). Group A is given the special juice to drink while they work. Group B is not given the special juice. After an hour, Smithers counts how many stacks of papers each group has made. Group A made 1587 stacks. Group B made 2113 stacks.

Question/Problem: _____

Hypothesis: _____

Independent Variable: _____ Dependent Variable: _____

Control: _____

Constants: _____

Conclusion: _____

How could this experiment be improved? _____

EXPERIMENT 2:



Sally loved flowers and grew many in her flowerbeds on the windows of her house. She wanted her flowers to grow more quickly and she wondered if fertilizer could help. She guessed that it would, because she saw commercials on television. So, she went to the store and bought fertilizer. She put the fertilizer on one of her flowerbeds. She watered all of her flowerbeds with the same amount of water. She measured the height and width of the plants daily. She noticed after two weeks that the plants with fertilizer did grow more quickly than the flowers without, because the plants with fertilizer measured taller and wider than the plants without. She decided she would try this fertilizer on a few of her house plants and look for results too.

Question/Problem: _____

Hypothesis: _____

Independent Variable: _____ Dependent Variable: _____

Control: _____

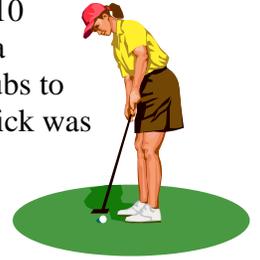
Constants: _____

Conclusion: _____

How could this experiment be improved? _____

EXPERIMENT 3:

Patrick wanted to improve his golf game, and he thought a new set of clubs would help. He didn't want to buy new clubs unless he was sure that they would improve his score. So he played 10 games of golf at the same course with his old clubs. Then he played 10 games of golf with a new set of clubs he borrowed from a friend. He compared his average score with the old clubs to the average score with his new clubs. He found his score was better with the old clubs. Patrick was glad that he didn't have to buy new clubs to improve his game. He thought he might try practicing his putting instead.



Question/Problem: _____

Hypothesis: _____

Independent Variable: _____ Dependent Variable: _____

Control: _____

Constants: _____

Conclusion: _____

How could this experiment be improved? _____

EXPERIMENT 4:

Roberta was a secretary. She was a great typist but always wore long fake fingernails. She thought she might be able to type faster if she had shorter fingernails. She decided to remove her fake fingernails every other week for four months. She then kept track of how many words per minute she could type with and without her fake nails. After four months of plotting these numbers on a graph, she determined that she actually types faster with her fake nails on. After the other secretaries in her office saw her graph, four out of the six got fake nails immediately and noticed they were also faster typists with their new nails.



Question/Problem: _____

Hypothesis: _____

Independent Variable: _____ Dependent Variable: _____

Control: _____

Constants: _____

Conclusion: _____

How could this experiment be improved? _____



SCIENTIFIC PROCESS PRACTICE

Directions: Use the information learned in class regarding the scientific process to analyze each of the following situations. Follow the directions to answer the questions for each example.

PROBLEM 1

Height of Plants ()	Types of Fertilizer	IV	
13	Scott's	DV	
23	Cow Manure		
34	Miracle Grow		

- List three errors with the above data table.
 - _____
 - _____
 - _____
- a. What type of graph would you make based on the data table above? _____
 b. Why did you choose this type of graph? _____

PROBLEM 2

Sandy wanted to determine which type of pea plant would produce the most pea pods after 30 days of growth. She planted all of the seeds in the same type of soil in the same location. They were exposed to the same amount of sunshine and moisture. Three plants (trials) were grown of each of the following types of pea plants: Garden Bean, Kentucky Wonder, Brittle Wax, and Greencrop. After 30 days, she counted the number of pea pods on each plant and found the following data. She then averaged the number of pea pods produced or each pea plant type.

IV	
DV	

Garden Bean: Trial 1= 9 pods, Trail 2 = 13 pods, Trial 3 = 22 pods

Kentucky Wonder: Trial 1 =4, Trail 2 = 3 pods, Trail 3 = 11 pods

Brittle Wax: Trial 1 = 16 pods, Trail 2 = 12 pods, Trial 3 =17 pods

Greencrop: Trial 1 = 9 pods, Trial 2 = 10 pods, Trail 3 = 12 pods

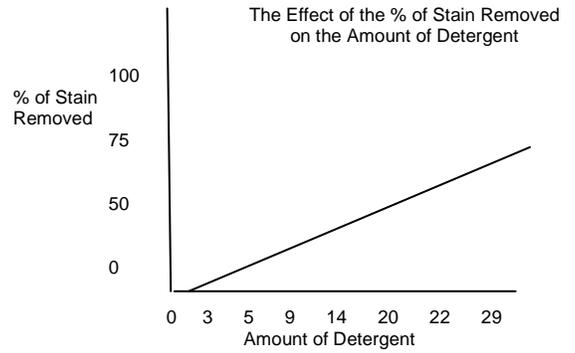
- Name 2 constants in the experiment. _____ and _____
- Create a data table for the above data.

Title: _____

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PROBLEM 3 – Use the graph at the right to fill in the information.

IV	
DV	



5. Please list three errors you find in this graph.

- A.) _____
- B.) _____
- C.) _____

PROBLEM 4

Marie and Seth are working on a lab activity where they are tracking some leaves that are floating past them in a rain runoff channel near their home. They have to measure how far the leaves travel in different amounts of time. They place a long tape measure alongside of the runoff channel to measure distance. A stopwatch will let them record the amount of time. They plan to have time intervals that begin at two seconds and increase by two's until they get to 20 seconds. The data they recorded is below:

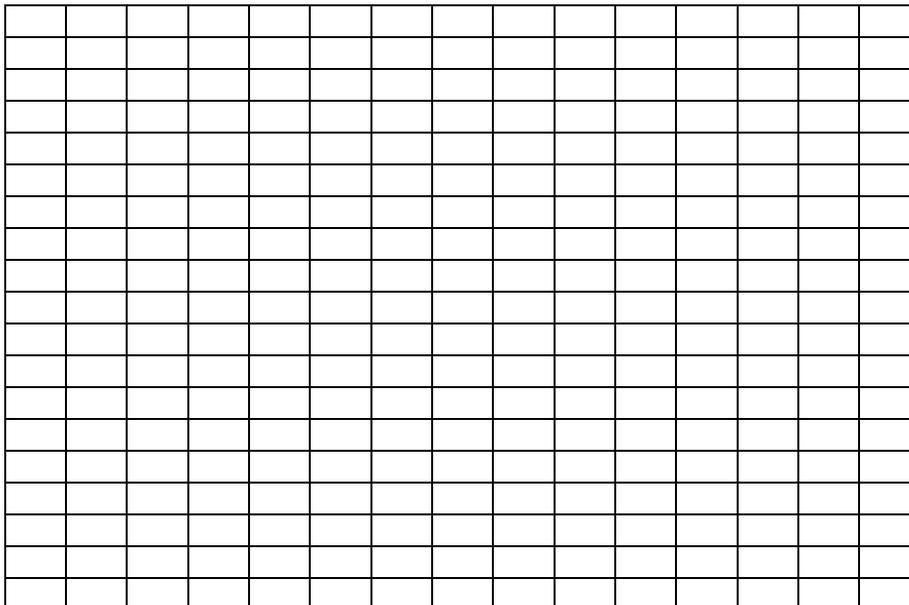
IV	
DV	

Time (s)	Distances (cm)
2	5.5
4	11.8
6	16.4
8	22.2
10	27.5
12	33.3
14	38.6
16	44.0
18	49.1
20	54.3

6. Construct a graph from the data in the table to the right.
7. What type of graph will you construct?

8. Why did you choose this type of graph?

Title: _____



9. What does the slope of the line represent? _____

PROBLEM 5

A shopping mall wanted to determine whether the more expensive “Tough Stuff” floor wax was better than the cheaper “Steal Seal” floor wax at protecting its floor tiles against scratches. An article in consumer reports had actually suggested that it was. One liter of each grade of floor wax was applied to each of 5 test sections of the main hall of the mall. The test sections were all the same size and were covered with the same kinds of tiles. Five other sections received no wax. After 3 weeks, the number of scratches in each of the test sections was counted and recorded.

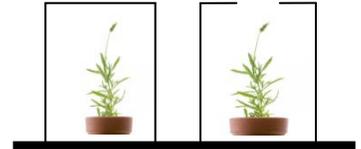
IV	
DV	

10. Use the scenario to write a title for this experiment: _____

11. Write a hypothesis for this experiment: _____

PROBLEM 6

A scientist designed an experiment where two plants are set up in separate cases and are given the same amount of water. One is in a sealed glass container. The second plant is in a glass container that has an opening in the top.



IV	
DV	

12. Write a question for this experiment: _____

13. a. What kind of data might a scientist collect on this plant? _____

b. Is this qualitative or quantitative? _____

PROBLEM 7 - Use the following information to write a title for a scientific lab report.

14. Vanessa enjoys playing with her cat. She noticed that the cat would turn its head toward her when she clapped her hands. “What would the greatest distance over which her cat would react when she clapped her hands?”, she wondered.

IV	
DV	

Title: _____

PROBLEM 8 - Read the following conclusion paragraph. Name 4 things that could be improved.

The purpose of my experiment was to see if seed color affected the type of birds that came to my feeder. My hypothesis was that the color of the seed did not affect the birds that came. My hypothesis was proved wrong. More brown birds were attracted to red and brown seed. The yellow seed attracted yellow birds. Next time, I will use a video camera to record activity all day long. This is useful because it might help people decide what type of bird seed to buy depending on what type of birds live in their area. I had fun doing this lab!!!

IV	
DV	

- a. _____
- b. _____
- c. _____
- d. _____

General:

1. What does it mean to say that “science is a way of knowing”, or a way of “looking at the world”?

2. Can science answer any and all types of questions? Explain your answer.

3. Why is science a process, rather than a set way of doing things?

4. In science how is the word “theory” used differently than in our everyday language?

5. Explain the difference between a scientific theory and a scientific law.