

## Review Sheet for Quiz

### To Study:

Understand the steps of the scientific method.

- a. Know the order in which they should be followed and what each step is about.
- b. Be able to ascertain (understand) what is being tested in an experiment.
- c. Be able to create a sound hypothesis for a given problem.
- d. Understand what an observation entails and the difference between the two kinds, qualitative and quantitative.
- e. Know how to draw inferences from your observations.
- f. Understand how to set-up an experiment. In other words, be able to explain a control, an independent variable and a dependent variable.
- g. Be able to understand the information contained in charts and tables.
- h. Be able to analyze data and graphs to draw conclusions about an experiment.

### Practice Questions:

1. Put the following steps of the scientific method in order.

Conduct the experiment  
Form a hypothesis  
Form a conclusion  
Report your results  
Make an observation  
Analyze the data

2. Which step of the scientific method is expressed in the following statement?

Salt will dissolve faster in hot water than in cold water.

3. Which step of the scientific method is expressed in the following question?

Are these white crystals the same substance?

4. Which step of the scientific method is expressed in the following statement?

The paper airplane flew 10 meters when 2 grams of mass was added to the nose. It only flew 7 meters when 1 gram of mass was added to the nose. Therefore, this experiment shows that more mass added to the paper airplane increases the distance it is able to fly. The original hypothesis is rejected.

5. What question is being asked (what is being tested) in an experiment where the hypothesis is the following:

As the temperature in the hot air balloon rises, the volume of the balloon will increase.

6. Why is it necessary that only one variable be changed in an experiment and that all other variables remain the same?

7. Why is it important for scientists to include in their scientific publications a section that describes the methods and materials used?

8. Write a hypothesis for the following experiment: What are the affects of temperature on ice?

9. Write a hypothesis for the following experiment: Will plants produce more or less blooms after the addition of fertilizer?

10. Circle the answer(s) that best fits the type of observations or data that are below:

- |   |             |              |
|---|-------------|--------------|
| a) The temperature is one hundred degrees today.                      | qualitative | quantitative |
| b) The oyster feels slimy.  | qualitative | quantitative |
| c) The powder is blue and has a mass of 2 grams.                      | qualitative | quantitative |
| d) There are 250 milliliters of H <sub>2</sub> O in the glass beaker. | qualitative | quantitative |
| e) Tim has 25 dollars in his banking account.                         | qualitative | quantitative |
| f) The gas contained in the tank smells like rotten eggs.             | qualitative | quantitative |

11. For the picture below, write O for observation or I for inference In the blank beside each statement.



- a) The bird is yellow. \_\_\_\_\_
- b) The bird has its mouth open. \_\_\_\_\_
- c) There are green leaves on the branch where the bird is perched. \_\_\_\_\_
- d) The bird is calling to its mate. \_\_\_\_\_

12. For the picture below, write O for observation or I for inference In the blank beside each statement.



- a) Damage from this hurricane is expected to be extensive. \_\_\_\_\_
- b) The windspeed was measured at 200 km/hr. \_\_\_\_\_

- c) The pressure has dropped to 946 millibars. \_\_\_\_\_
- d) The hurricane has a clear, round eye. \_\_\_\_\_

13. Identify a control, an independent variable and a dependent variable for the following experimental question.

How do different food colors added to water affect how fast the water will evaporate?

- a) control -
- b) independent variable -
- c) dependent variable -

14. Identify a control, an independent variable and a dependent variable for the following experimental question.

What is the effect of salt on the temperature at which water boils (boiling point)?

- a) control -
- b) independent variable -
- c) dependent variable -

15. A student lifts a small watermelon up and down as fast as possible for 2 minutes and then takes her pulse for 20 seconds.

Find the median value of her pulse after 20 seconds.

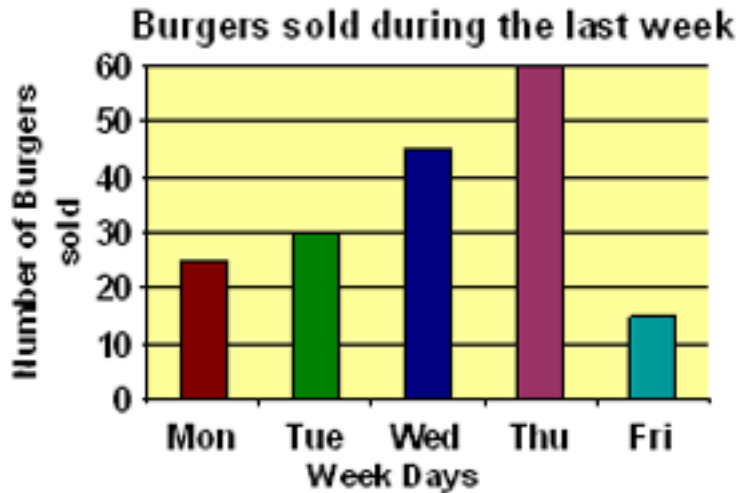
<b>Trial</b>	<b>20 second Pulse Counts</b>
1	24
2	28
3	27
Median Value	

16. A student visited several different ponds, then measured the temperature of each pond and counted the fish he observed in each pond.

<b>Date</b>	<b>Pond</b>	<b>Pond Temperature</b>	<b>Number of Fish</b>
June 6	Wood Pond	66°	36
June 6	North Pond	69°	34
June 6	Jackson Pond	77°	22
June 7	Farmer Pond	83°	3

Use the data above to write a conclusion about these findings.

17. The bar graph below describes the number of burgers sold versus the days of the week.



a) How many hamburgers were sold on Tuesday?

b) What is the best day of the week to be in the burger business?

18. A statement that consistently and correctly explains a natural phenomenon is called a \_\_\_\_\_. Examples would be evolution and the big bang.

19. Give two reasons that you can think of as to why Aristotle's geocentric model (earth centered) of the solar system was replaced with Copernicus's heliocentric model (sun centered) of the solar system.