

# **Review for Science Test**

# Scientific Method

- Be able to order the steps of the scientific method.
- A good way to study this is to get 7 notecards.
- Write numbers 1-7 on one side of each notecard
- Write the corresponding step on the other side
- Try to place them in order (word side up)
- Flip over your cards and if they are in numerical order, you did it correctly!

# The 7 Steps in Order

- 1) State the problem
- 2) Gather information on the problem
- 3) Form a hypothesis
- 4) Design and perform the experiment
- 5) Record and analyze the data
- 6) Form a conclusion
- 7) Repeat, repeat, repeat

# Scientific Method

- Be able to ***identify*** the following:
  - Problem Statement- a question you would like to solve (includes an independent and dependent variable)
  - Hypothesis- an “if, then” statement which tries to predict the results before the experiment is completed
  - Conclusion- a statement which declares the results of your experiment

# Problem Statements, Hypotheses & Conclusions

- Examples:
  - Problem Statement: Will a Bounty paper towel absorb more liquid than a Brawny paper towel?
  - Hypothesis: If we try to absorb liquids using Bounty and Brawny paper towels, then Bounty will absorb the most.
  - Conclusion : The Bounty paper towel absorbed more liquid than the Brawny paper towel.

# Variables and Constants

- **Variables** are changes in an experiment
  - **Independent**- Intentional changes which happen at the beginning of the experiment (ex. Paper towel brand)
  - **Dependent**- The difference you are measuring for at the end of the experiment (ex. How much liquid was absorbed)
- **Constants** (sometimes called controls) are all the things that must remain the same in an experiment

# International System of Units

- Usually referred to as the “**metric system**”
- **Meter**: used to measure length/distance
- **Liter**: used to measure volume
- **Gram**: use to measure mass

# Meter

- Meter:
  - About the distance from the floor to your hip.
  - Use it to measure the distance from the art room to the office
- Centimeter:
  - About the width of your index finger
  - Use it to measure a book
- Kilometer:
  - Use it to measure a long distance
  - Think....comfy shoes.....

# Gram

- Gram:
  - About the mass of a paperclip
  - Most of the items on your teacher's desk should be measured using grams
- Kilogram
  - Feel like the weight we passed around the class
  - Items like chairs, desks, cars, dogs, etc. should be measured using kilograms
- Milligrams-  $1/1000$  of a gram

# Liter

- Liter:
  - Cut a large bottle of soda in half
  - Use it to measure the volume of a trash can, bathtub, etc.
- Milliliter:
  - A drop
  - Use it to measure liquid medicine, the amount of juice in a glass, etc.

# Graphing Data

- Students will need to make a bar graph using data provided by the teacher
  - Independent Variable
  - Dependent Variable
  - Title
  - Appropriate numbering system for data
  - Bars: consistent width, consistent spacing, bars are labeled, and they go to the correct height

# Variable and Titles on Graphs

- The **independent variable** should be on the bottom (ie. X-axis)
- The **dependent variable** should be on the left side (ie. Y-axis)
  - Don't forget to use the unit (ie. cm, kg, etc.)
- The title should be on the top and should be **independent variable vs. dependent variable**

# Numbering the Graph

- Look at the biggest number you will need to graph (example: 96)
- Round it up to the next reasonable number (example: for 96, think 100)
- Try to make your graph go to 100 by counting by something like 10.
- If counting by 10 doesn't work, try a different number.

# Numbering the Graph (cont.)

- Always try to count by numbers which are easy to count by (examples: 1, 2, 5, 10, 20, 25, 50, 100, etc.)
- When you find numbers which work for your set of data, carefully **number the lines.**

# Making the Bars

- Decide how wide your bars should be based on
  - The graph paper you are given
  - The number of bars you have to graph
- Make your bars the appropriate height
- Label each of your bars

# Which Scope?

- A **microscope** is used for looking at really small objects.
  - A bee's leg
  - A blood smear
  - A piece of hair
- A **telescope** is used for looking at objects which are far away.
  - Planets
  - Stars which are far away