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Science Earth to Intro about Worksheet الملف

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### Preventing Accidents

- Accidents in the science lab, as in the home or work place, can be \_\_\_\_\_:
  - Stop to \_\_\_\_\_!
  - \_\_\_\_\_ will help, if exercised
  - What will be the \_\_\_\_\_ of what I do next?
  - If in doubt, ask the teacher.

### Eye Protection

- Safety goggles should be worn when using \_\_\_\_\_ or when \_\_\_\_\_ objects or tools are being used.
- Safety goggles can be used by more than one person if \_\_\_\_\_ between uses. Goggle sanitizers are used for this purpose.

### Proper Attire

- Avoid \_\_\_\_\_ garments; avoid things that \_\_\_\_\_
  - These get \_\_\_\_\_ up in equipment or glassware and cause accidents
  - Avoid long, loose \_\_\_\_\_ styles for the same reason.
  - When Bunsen burners are in use, \_\_\_\_\_ sometimes catches on fire
- It is not safe to wear \_\_\_\_\_ footwear, so avoid \_\_\_\_\_ and \_\_\_\_\_ on lab days.

### Using Dangerous Materials

- Use only \_\_\_\_\_ thermometers – these are red/green and not metallic.
- Never taste or put anything in your \_\_\_\_\_ in the science lab.
- Notify a teacher immediately in the case of a \_\_\_\_\_ spill.

### Broken Glass

- Tell the teacher!
- \_\_\_\_\_ it up right away - Don't track in it all period
- Place the broken glass in a " \_\_\_\_\_ " – never in the regular trash can.

### Never Eat or Drink in the Science Lab!

- A good practice is to assume everything in the lab is \_\_\_\_\_.
- DO NOT \_\_\_\_\_ from lab equipment.
  - NOT EVEN distilled \_\_\_\_\_.
  - You do not know what another person might have added to the "distilled water" jug.

### Outdoor Labs

- Follow all teacher instructions including \_\_\_\_\_
- Pay attention to special \_\_\_\_\_ regarding things that could hurt you.
- Do not \_\_\_\_\_ things while outside without permission. We need to leave our study areas like we \_\_\_\_\_ them.

### Horseplay

- In a laboratory setting (even outside), horseplay, even if good-natured, is \_\_\_\_\_.
  - No \_\_\_\_\_!
  - No \_\_\_\_\_!

Remember, failure to follow safety rules means \_\_\_\_\_

Science Lab Safety Features – List where they are in our classroom!

1. Fire Extinguisher
2. Fire Blanket
3. Eye Wash Station
4. Fume Hood

Lab Safety Symbols –

What do these mean?



### Observations

- Scientific thinking usually begins with \_\_\_\_\_, the process of gathering information about events or processes in a careful, orderly way.
- Observation involves using the senses:

### Data

- The information gathered from observations is called \_\_\_\_\_.
- There are two kinds of data:
  - Quantitative data ~
  - Qualitative data ~
- Which kind of data did you collect about the picture?

### Inferences

- Data can be used to make \_\_\_\_\_.
- An \_\_\_\_\_ is a logical explanation based on prior knowledge or experience.
- Scientists try to explain events in the \_\_\_\_\_ by interpreting evidence \_\_\_\_\_ and \_\_\_\_\_.

### Hypothesis

- After initial observations, the researchers will propose
- A \_\_\_\_\_ is a proposed scientific explanation for a set of observations.
- Scientists generate hypotheses using \_\_\_\_\_ and \_\_\_\_\_.
- Scientific hypotheses must

### Scientific Limits

- Good scientists are skeptics, which means that
- Scientists must be open-minded and consider new \_\_\_\_\_ and \_\_\_\_\_ if data demand it.

### Setting Up A Controlled Experiment

- Testing a hypothesis involves designing an \_\_\_\_\_.
- The factors in an experiment that can change are called \_\_\_\_\_.
- Examples of variables include:

### Controlled Experiments

- Whenever possible, a hypothesis should be tested by an \_\_\_\_\_ in which only one variable is \_\_\_\_\_.
- All other variables should be kept unchanged, or \_\_\_\_\_.
- This type of experiment is called a \_\_\_\_\_.

### Variables

- The variable that is deliberately changed is called the \_\_\_\_\_.
- The variable that is observed and that changes in response to the manipulated variable is called the \_\_\_\_\_.

### Recording and Analyzing Data

- Scientists usually keep \_\_\_\_\_ of their observations or data.
- Sometimes, drawings record certain kinds of observations more \_\_\_\_\_.
- Numerical data is usually recorded into a \_\_\_\_\_, and analyzed using \_\_\_\_\_.

### Drawing a Conclusion

- Scientists use the data from an experiment to \_\_\_\_\_ a hypothesis and draw a \_\_\_\_\_.
- They use evidence to determine whether the hypothesis was \_\_\_\_\_ or \_\_\_\_\_.

### The Scientific Method

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### Reliability

- A key assumption in science is that experimental results can be \_\_\_\_\_ because nature behaves in a consistent manner.
- When one particular variable is manipulated in a given set of variables, the result should \_\_\_\_\_ be the same.
- In keeping with this assumption, scientists expect to \_\_\_\_\_

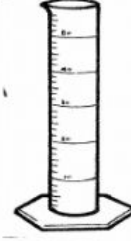
### Squidward's Symphony

Squidward loves playing his clarinet & believes it attracts more jellyfish than any other instrument he has played. In order to test his hypothesis, Squidward played a song on his clarinet for a total of 5 minutes and counted the # of jellyfish he saw in his front yard. He played the song a total of 3 times on his clarinet and repeated the experiment using a flute and a guitar. He also recorded the number of jellyfish he observed when he was not playing an instrument. The results are shown in the chart.

Trial	No Music	Clarinet	Flute	Guitar
1	5	15	5	12
2	3	10	8	18
3	2	12	9	7

- What is the independent variable?
- What is the dependent variable?
- What should Squidward's conclusion be?
- Are the results reliable?

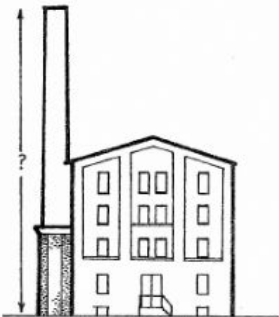
A Scientist's Equipment



Measuring

Mass

Measuring Distance

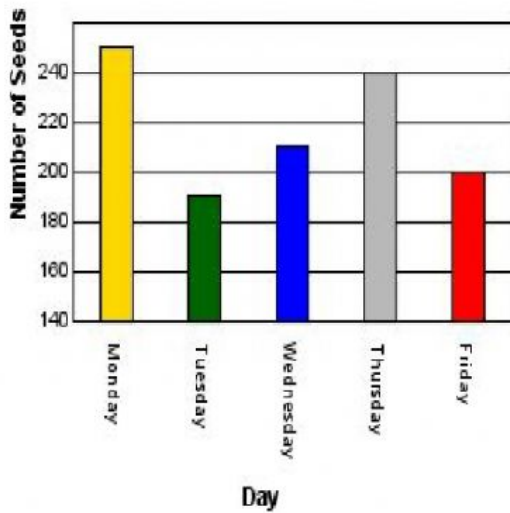


Measuring Volume

Graphs

- There are 3 kinds of scientific graphs:
  - Bar Graphs
    -
  - Line Graphs
    -
  - Pie Carts (Circle Graphs)
    -

### Bar Graphs



- What is the average number of seeds planted?
- What is the range of the data?
- Three-fourths of the seeds planted on Thursday were watermelon seeds. How many of the seeds planted on Thursday were not watermelon seeds?

### Line Graphs

- On which month(s) was there at least 12 inches of rain?
- Between which two months was there the greatest decrease in rain?
- What is the difference in inches of rain between the month with the most rainfall and the month with the least rainfall?

### Pie Charts

- List the seasons in order from the season with the fewest votes to the season with the most votes.
- What is the most popular season?

- A Fall 37%
- B Summer 21%
- C Spring 23%
- D Winter 19%