

Bell Work, Sept 2 - 5, 2013

Mass and Change, Inquiry

Bell Work, Monday, Sept 2

1. Something occurring in nature experienced through our senses to obtain information is

- a. asking questions
- b. inductive reasoning
- c. defining a problem
- d. a natural phenomenon

2. An observation is

This is a process of watching an experiment and noting what occurs.

3. The process of making a prediction or forming an explanation based on previous knowledge or observations is

- a. a problem
- b. an inference
- c. a reasonable guess
- d. Inductive reasoning

4. A hypothesis is

- a. An educated guess
- b. A prediction
- c. an explanation
- d. all the above

Answers Bell Work, Tuesday, Sept 3

1. What is data?

Factual information, usually measurements or observations.

2. Contrast qualitative and quantitative data.

Quantitative data is numerical information.

Example: the cup weighs 10.65 grams

Qualitative data is non-numerical information or descriptive information.

Example: the paper towel is wet.

3. Which of the following observations is quantitative?

- a. A chemical reaction was complete in 2.3 seconds.
- b. The solid had a mass of 23.4 grams.
- c. The pH of a liquid was 5.
- d. Salt crystals formed as the liquid evaporated.
- e. The crystals are yellow

Answers Bell Work, Tuesday, Sept 3

4. Which of the following observations is qualitative?

- a. A chemical reaction was complete in 2.3 seconds.
- b. The solid had a mass of 23.4 grams.
- c. The pH of a liquid was 5.
- d. Salt crystals formed as the liquid evaporated.**
- e. All the above

Bell Work, Wednesday, Sept 4

1. What is a physical change?

Physical change: does not result in a new substance.

A physical change can usually be undone and result in the original composition of the substance.

Example: water can be frozen into ice then melted back to water.

2. What is a chemical change?

A chemical change results in a new substance(s).

A chemical change is a chemical reaction.

Example: Burning (combustion) a match results in ash, water vapor and carbon dioxide

3. List the six changes from the Mass and Change lab as physical change (pc) or chemical change (CC).

Stretch steel wool, **pc** dissolve Alka Seltzer. **cc**

melt ice, **pc** heat steel wool. **cc**

dissolve sugar, **pc** form a precipitate. **cc**

Bell Work, Wednesday, Sept 4

4. Consider the following chemical reaction where mixing chemical A and chemical B results in chemical C:



The reactants are always written on the (a) left and the products are always written on the (b) right.

The reactants are (c) A + B and the product(s) is/are (d) C + D.

The arrow means (e) forms or produces or yields.

Reactants are starting materials (they are reacted).

Products are produced (from the stuff that is reacted).

Bell Work, Thursday, Sept 5

1. Explain an experimental system

The system is what you are studying (or experimenting with) including the container that you put the stuff in.

2. Contrast open and closed system.

- If the system is open, stuff can enter and exit the system.**
- If the system is closed, nothing can enter or exit the system.**

3. State the law of conservation of mass.

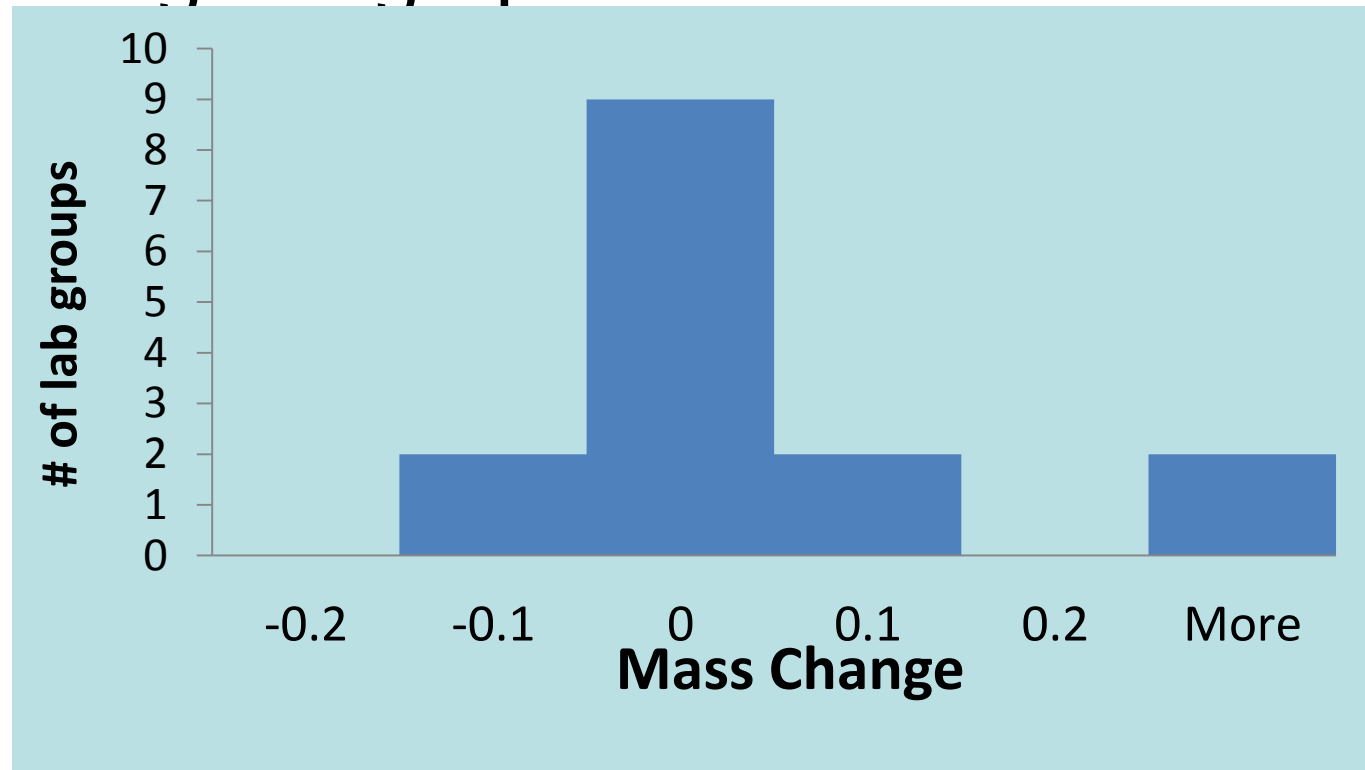
Matter is neither created nor destroyed during a chemical reaction.

Therefore, the mass of a closed system should remain constant during any chemical process.

Whatever amount you start with, that's what you end up with (can only be measured in a closed system).

Bell Work, Thursday, 9/5

4. Draw the histogram graph.



4. Which of the following explanations best fits the data?

A. Steel wool was strongly heated.

B. A few groups were careless and lost material.

C. Two solutions were mixed and formed a precipitate.

D. Alka-Seltzer was dissolved in water.