

Mass & Change, Mass & Volume

Mar 24– 27, 2014

Bell Work, Monday, 3/24/14 (5 questions)

1. Who was the man who lived from 460 B.C.–370 B.C. and was among the first to suggest the idea of atoms? (1)

- a. Atomos
- b. Dalton
- c. **Democritus**
- d. Thomson

2. Which of the following is part of Democritus' ideas?

- a. Matter consists of tiny particles.
- b. These particles are indivisible.
- c. These particles are indestructible.
- d. These particles combine to form other substances

3. Explain the particle model of matter

All matter is made up of particles.

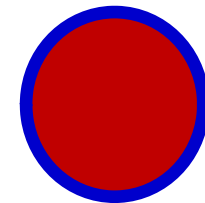
A given type of particle has distinct properties that make it different than particles of a different type.

The mass and volume of a given particle do not change.

Bell Work, Monday, 3/24/14 (4 questions)

4. How do we represent a particle?

We represent the particles with spheres or circles:



5. Complete the data table below

	Initial Mass (g)	Final mass (g)	Change in mass (g)
Alka Seltzer	16.15	15.95	-0.20

$$\text{Final} - \text{Initial} = \text{Change}$$

$$\text{Final Mass} - \text{Initial Mass} = \text{Change}$$

$$15.95 - 16.15 = -0.20 \quad - \text{ indicates mass loss}$$

+ indicates mass gain

Bell Work, Tuesday Mar 25, 2013 (six questions)

1. Consider the following chemical equation:



The reactants are _____ and the products are _____.

a. A & C, B & D

c. A & B, C & D

b. C & D, A & B

d. A & D, B & C



2. Reactants . The starting material, are always written on the left of the arrow and products (the stuff that is produced) are always written on the right of the arrow.

3. The arrow means:

Produces, makes, turns into, yields.

Bell Work, Tuesday, Mar 25, 2014

4) Define solute

Solute – The thing being dissolved. It is present in lesser quantity than the solvent.

5) Define solvent

Solvent – is the dissolving stuff; it is in excess (more solvent present than solute.)

6. In the sugar water, name the solvent & name the solute

Solute: sugar; Solvent: water

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Bell Work, Wednesday, 3/26/14 (7 questions)

1. What is a system?

The thing you are experimenting with including the container.

2. Define “open system”?

Stuff can enter and exit the system.

3. Define closed system.

Nothing can enter or exit the system.

4. State the law of Conservation of Mass (COM)

Matter is neither created nor destroyed during a chemical reaction.

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



Bell Work, Wednesday, 3/26/14

5. For the chemical reaction



how much product will result from mixing 100 grams of X with 50 grams of Y?



6. For the chemical reaction



if you produce 25 grams of P and there was originally 10 grams of M, how many grams of N did you start with?

7. What property of matter does not change even though the appearance may change?

- a. mass b. area c. shape d. volume**

Bell Work, Wednesday, 3/26/14

5. For the chemical reaction



how much product will result from mixing 100 grams of X with 50 grams of Y?

The law of Conservation of Mass (COM) says grams of reactants = grams of product

$$100 \text{ g of } X + 50 \text{ g of } Y = \text{g of } Z$$

$$100 \text{ g} + 50 \text{ g} = 150 \text{ g}$$

$$150 \text{ g of } Z$$

grams reactants = 150g, grams of product = 150g

Bell Work, Wednesday, 3/26/14

6. In the chemical reaction $M + N \rightarrow P$

25 grams of P are produced. If there was originally 10 grams of M, how many grams of N did you start with?

$$10 \text{ g of M} + ? \text{ g of N} = 25 \text{ g of P}$$

$$\text{g of N} = 25 \text{ g P} - 10 \text{ g M}$$

$$\text{g of N} = 15 \text{ g}$$

grams reactants = 25 g, grams of product = 25 g

15 g of N

7. What property of matter does not change even though the appearance may change?

a. mass

b. area

c. shape

d. volume

Bell Work, Thursday, 3/27/14 (six ques)

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?

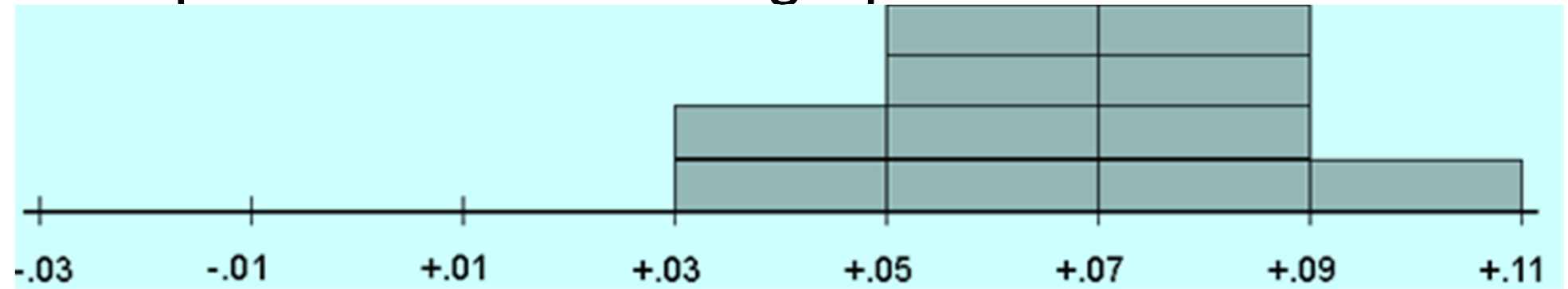
A chemical change results in a new substance(s).

A chemical change is a chemical reaction.

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

Bell Work, Thursday, 3/27/14

3. Consider the histogram of mass change from an experiment. Draw the graph.



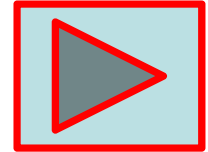
Which of the following explanations best fits the data?

A. Steel wool was strongly heated.

B. Sugar was dissolved in water.

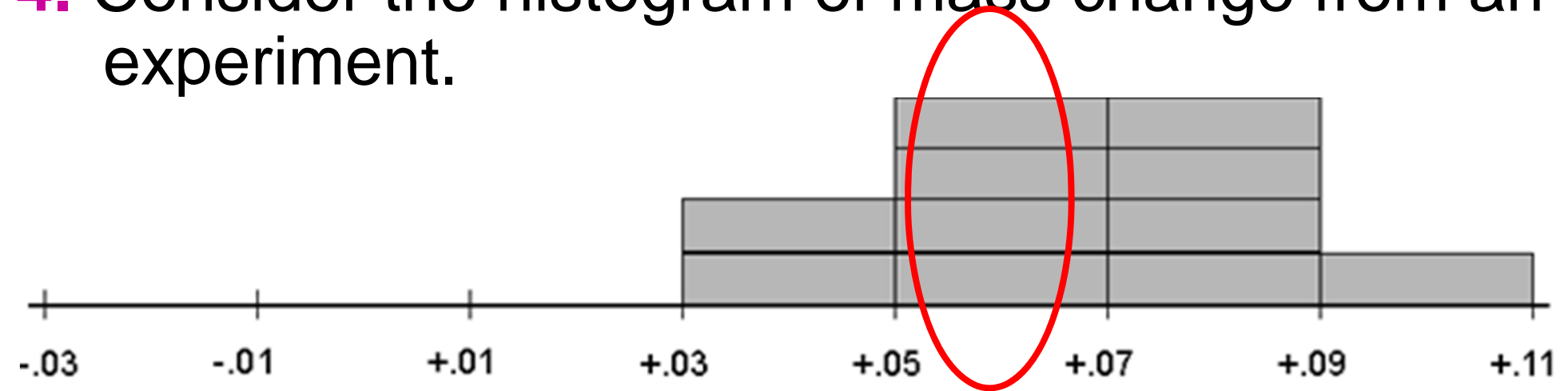
C. Two solutions were mixed and formed a precipitate.

D. Alka-Seltzer was dissolved in water.



Bell Work, Thursday, 3/27/14

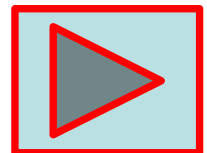
4. Consider the histogram of mass change from an experiment.



How many student lab groups had a mass change between +0.05 and +0.06?

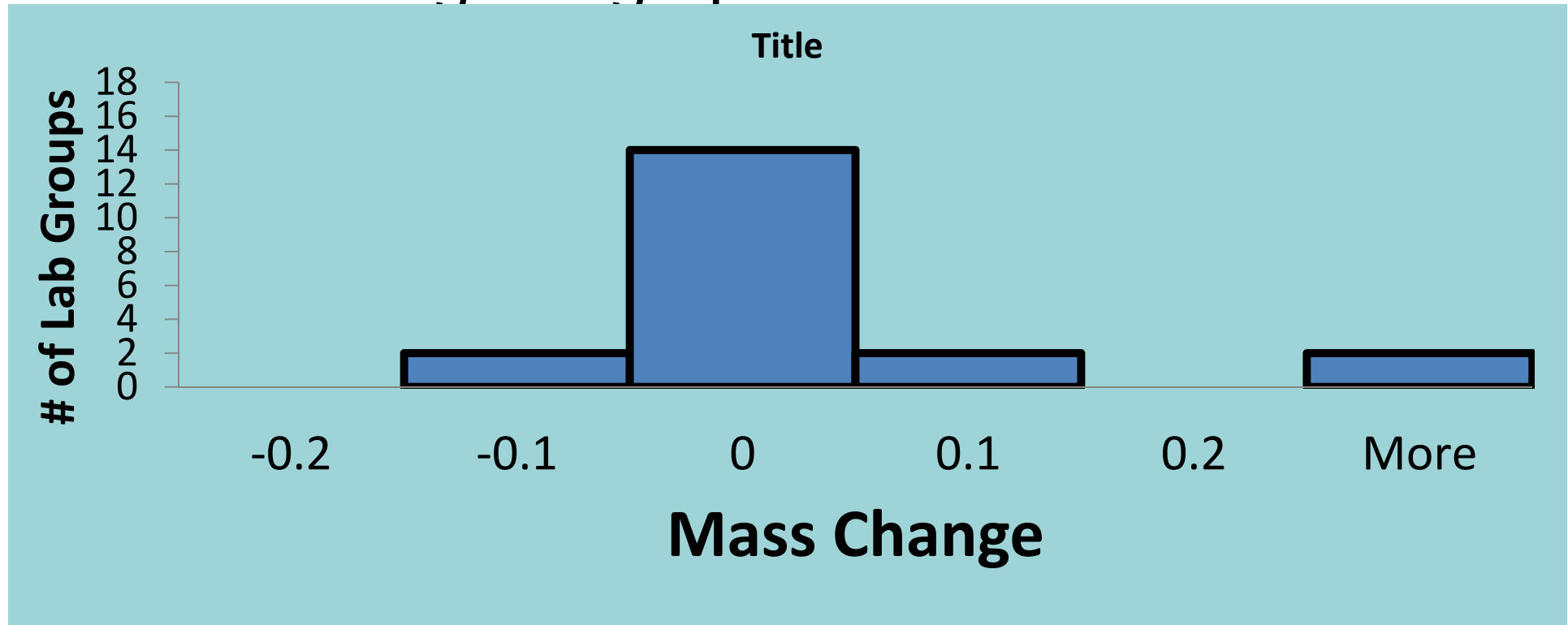
Hint: The number on the right is the start of a new column.

Each box is a lab group. 4 lab groups.



Bell Work, Thursday, 3/27/14

5. Draw the histogram graph.



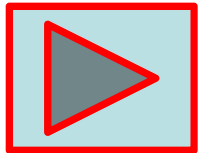
Which of the following explanations best fits the data?

A. Steel wool was strongly heated.

B. A few groups were careless and lost material.

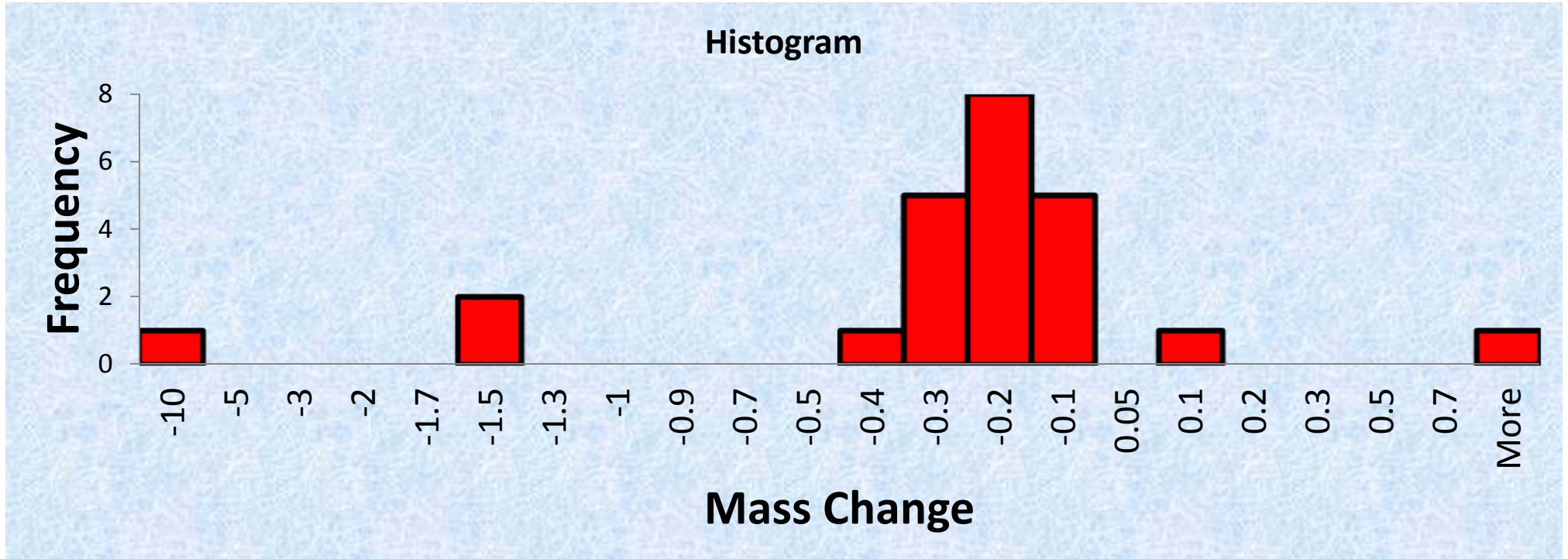
C. Two solutions were mixed and formed a precipitate.

D. Alka-Seltzer was dissolved in water.



Bell Work, Thursday, Apr 4

6. Draw the histogram graph.



Which of the following explanations best fits the data?

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- 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.**

