

Bell Work, Sept 9 - 12, 2013

Mass and Change, Inquiry

Bell Work, Monday, Sept 9

1. For the chemical reaction



how much C will result from mixing 100 grams of A with 50 grams of B?

$$100 \text{ g of A} + 50 \text{ g of B} = x \text{ g of C}$$

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

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

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

COM: grams of reactants = grams of products

Bell Work, Monday, Sept 9

2. For the chemical reaction



How much chemical A is mixed with 180 grams of chemical B to produce 205 grams of precipitate C?

$$\text{x g of A} + 180 \text{ g of B} = 205 \text{ g of C}$$

$$\text{x g} + 180 \text{ g} = 205 \text{ g}$$

$$\text{x g} = 205 \text{ g} - 180 \text{ g}$$

$$\text{25 g of A}$$

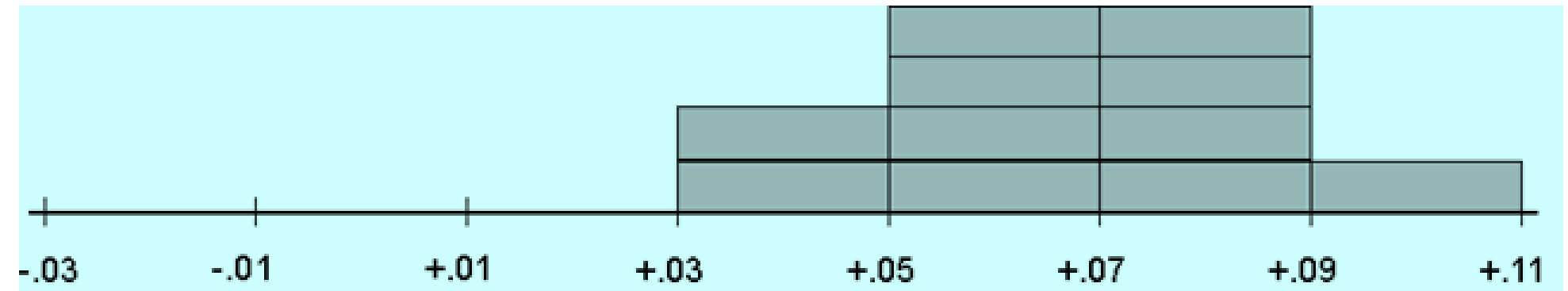
$$25 \text{ g of A} + 180 \text{ g of B} = 205 \text{ g}$$

$$\text{grams A \& B} = 205 \text{ g, grams of C} = 205 \text{ g}$$

COM: grams of reactants = grams of products

Bell Work, Monday, Sept 9

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.

1. What are variables?

Things that change (vary).

2. What are constants or experimental controls?

Things that do not change.

3. Which variable is the “I change” variable?

- a. The independent variable (IV)**
- b. The dependent variable (DV)**
- c. All of the above**
- d. None of the above**

4. Which variable is the “depends on what I change” variable?

- a. The independent variable (IV)**
- b. The dependent variable (DV)**
- c. All of the above**
- d. None of the above**

Bell Work, Tuesday, Sept 10

5. All experiments have a cause and effect.

Which variable is the “cause” of the effect?

- a. The independent variable
- b. The dependent variable
- c. All of the above
- d. None of the above

6. Which variable is the “effect”?

- a. The independent variable
- b. The dependent variable
- c. All of the above
- d. None of the above

7. Identify the IV (circle it) and the DV (rectangle it) in the following: The **Effect of Submersion Time** on **Absorption**

8. What is the purpose of a data table

The purpose of data tables is to present information in a grid (grid = column and rows) that communicate the meaning of the data; the effect of the independent variable on the dependent variable.



Bell Work, Wednesday, Sept 11, 2013

1. Explain hypothesis as it applies to an experiment.

A prediction and/ or explanation of how changing the independent variable will change the dependent variable.

2. Describe the change in the independent variable or dependent variable.

Increase, decrease, stay the same

3. Construct a format for writing a hypothesis.

If the _____ is _____

(independent variable) (explain how the ind. variable is changed)

then the _____ will _____.

(dependent variable) (explain how the dep. variable will change)

4. Fill in the form using the paper towel experiment.

What is the IV from the paper towel experiment?

What is the DV from the paper towel experiment?

Bell Work, Wednesday, Sept 11, 2013

4. If the **submersion time** is **increased**
(independent variable) (explain how the independent is changed)
then the **absorption** will **increase**.
(dependent variable) (explain how the dependent will change)

5. The experimental group is

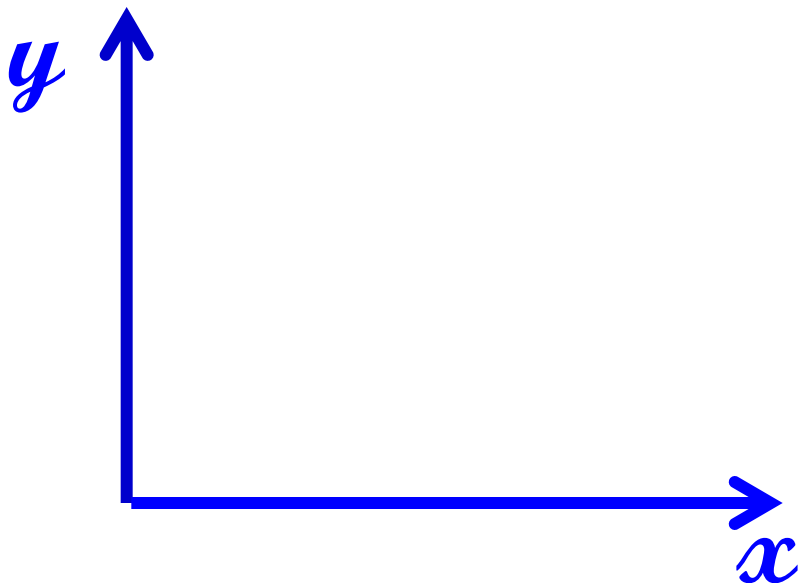
- a. the part of an experiment that includes the dependent variable.
- b. the part of an experiment that has an independent variable.
- c. the part of an experiment that is deliberately changed.
- d. all the above.

6. The Control group is

- a. the part of an experiment that includes the dependent variable.
- b. the part of an experiment that has an independent variable.
- c. the part of an experiment that is not changed.
- d. all the above.

Bell Work, Thursday, Sept 12

1. When constructing a graph, you should place the independent variable on the _____ axis and the dependent variable on the _____ axis.



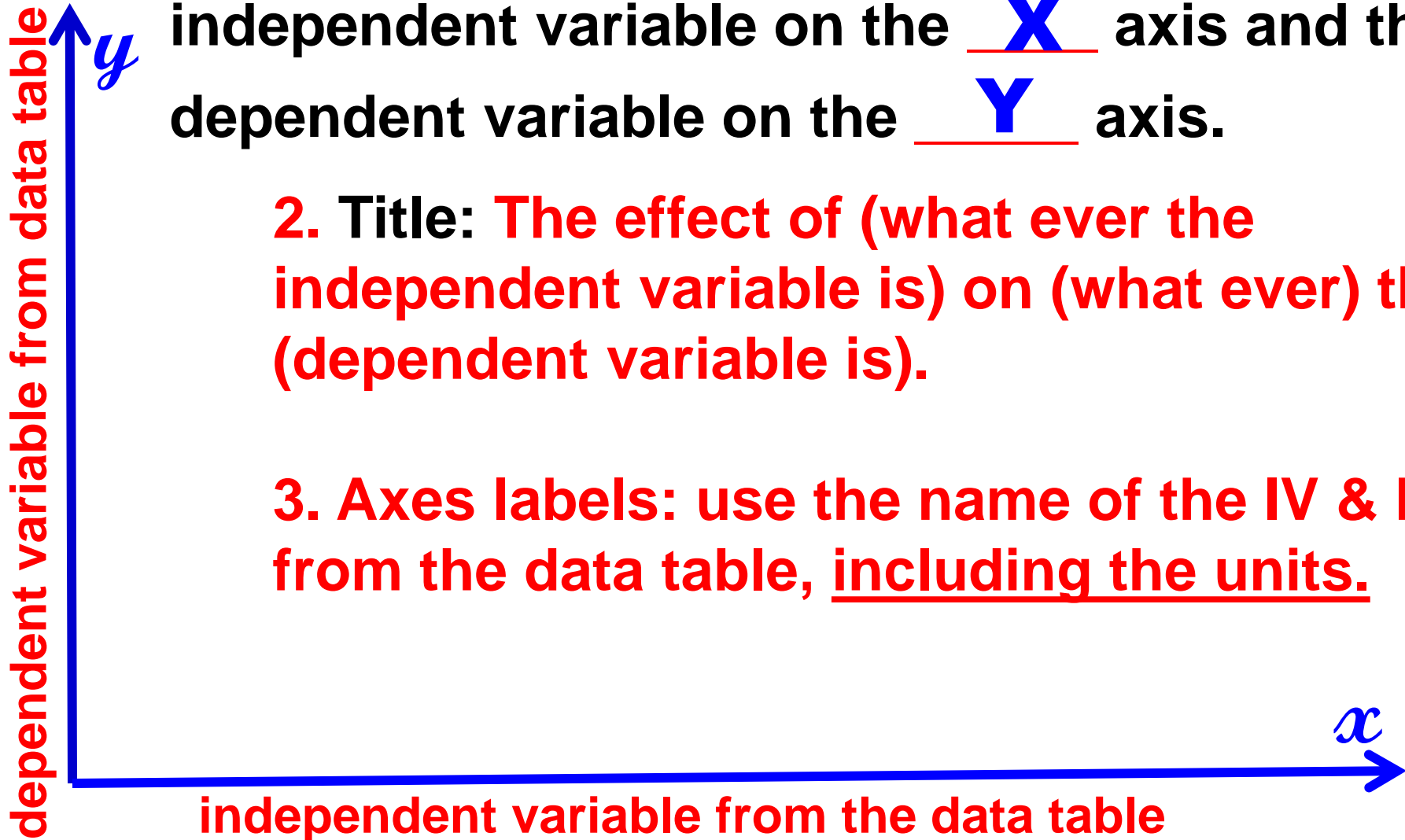
2. What is the basis for a good graph title?
3. How are the axis labeled?

Bell Work, Thursday, Sept 12

1. When constructing a graph, you should place the independent variable on the **X** axis and the dependent variable on the **Y** axis.

2. Title: The effect of (what ever the independent variable is) on (what ever) the (dependent variable is).

3. Axes labels: use the name of the IV & DV from the data table, including the units.



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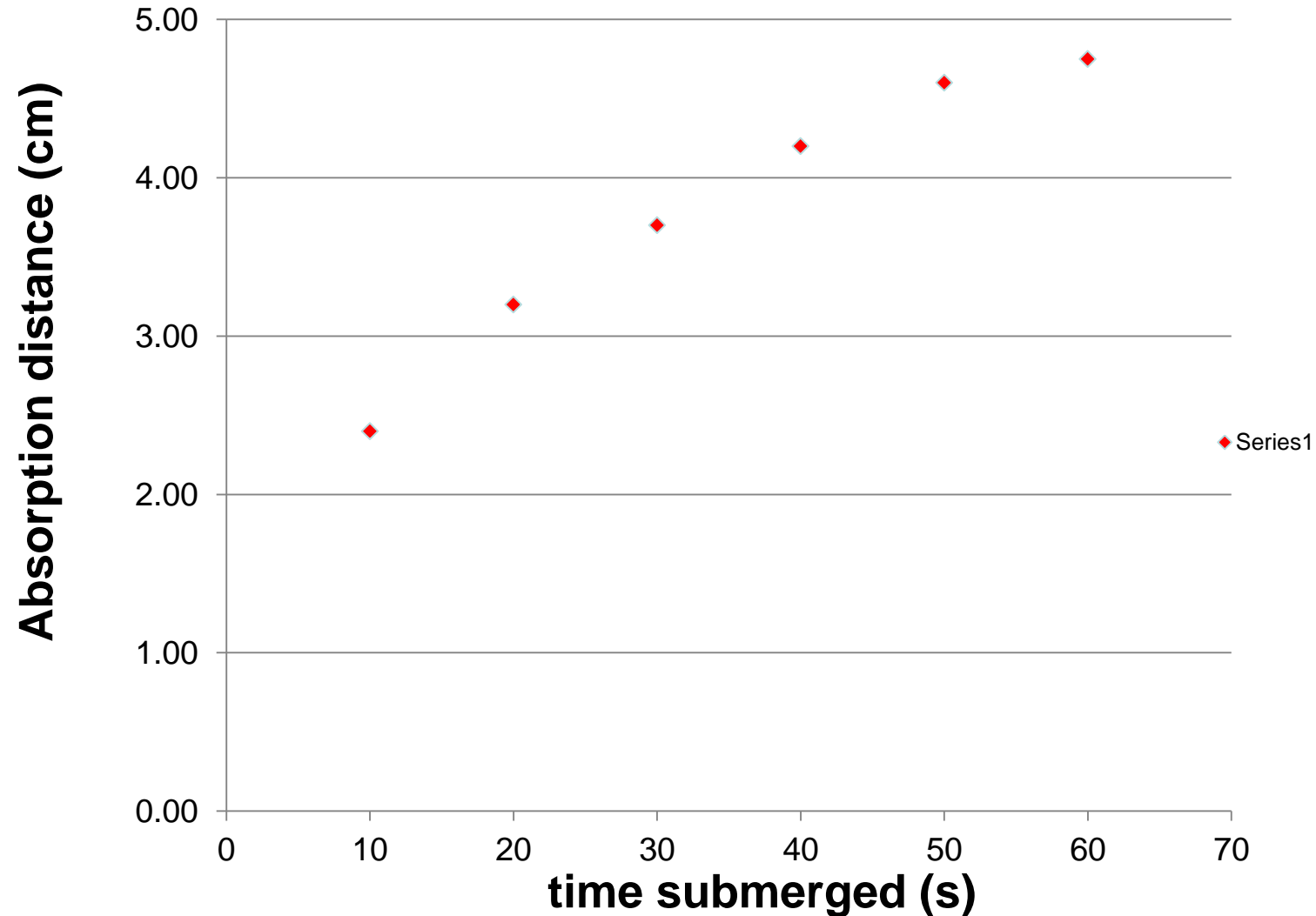
The Effect of Submersion Time on Absorption In a Paper Towel Strip

IV Time paper towel submerged (s)	DV Absorption Distance (cm)	Mean speed
x	y	
10	2.65	
20	3.1	
30	3.7	
40	4.2	
50	4.6	
60	4.8	

(x, y)
(10, 2.65)
(20, 3.10)
(30, 3.7)
(40, 4.2)
(50, 4.6)
(60, 4.8)

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The Effect of Submersion Time on Absorption





4. In a controlled experiment,

- a. one variable is fixed while all others are changed.
- b. results are obtained by computer models.
- c. one variable is changed while all others remain fixed.**
- d. the outcome is controlled.

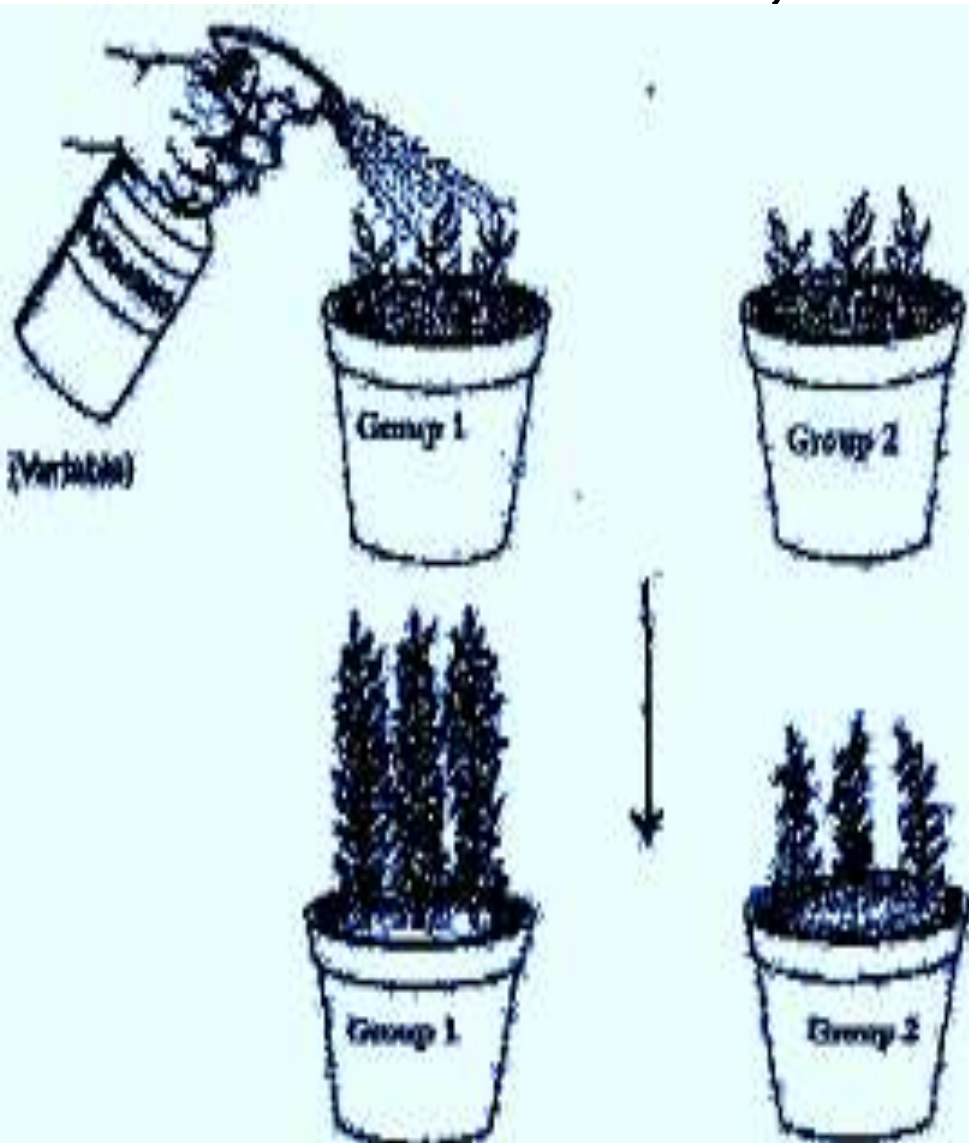
5. A judgment based on data gathered in an experiment is

- A. a skill.
- B. a conclusion.**
- C. a hypothesis.
- D. an observation.

6. The situation in an experiment where no variables are introduced or the IV has a zero value is the

- A. experimental group
- C. the experimental control**
- B. hypothesis
- D. natural phenomenon

Bell Work, Thursday, Sept 12



IV = amount of hormones
DV = plant growth

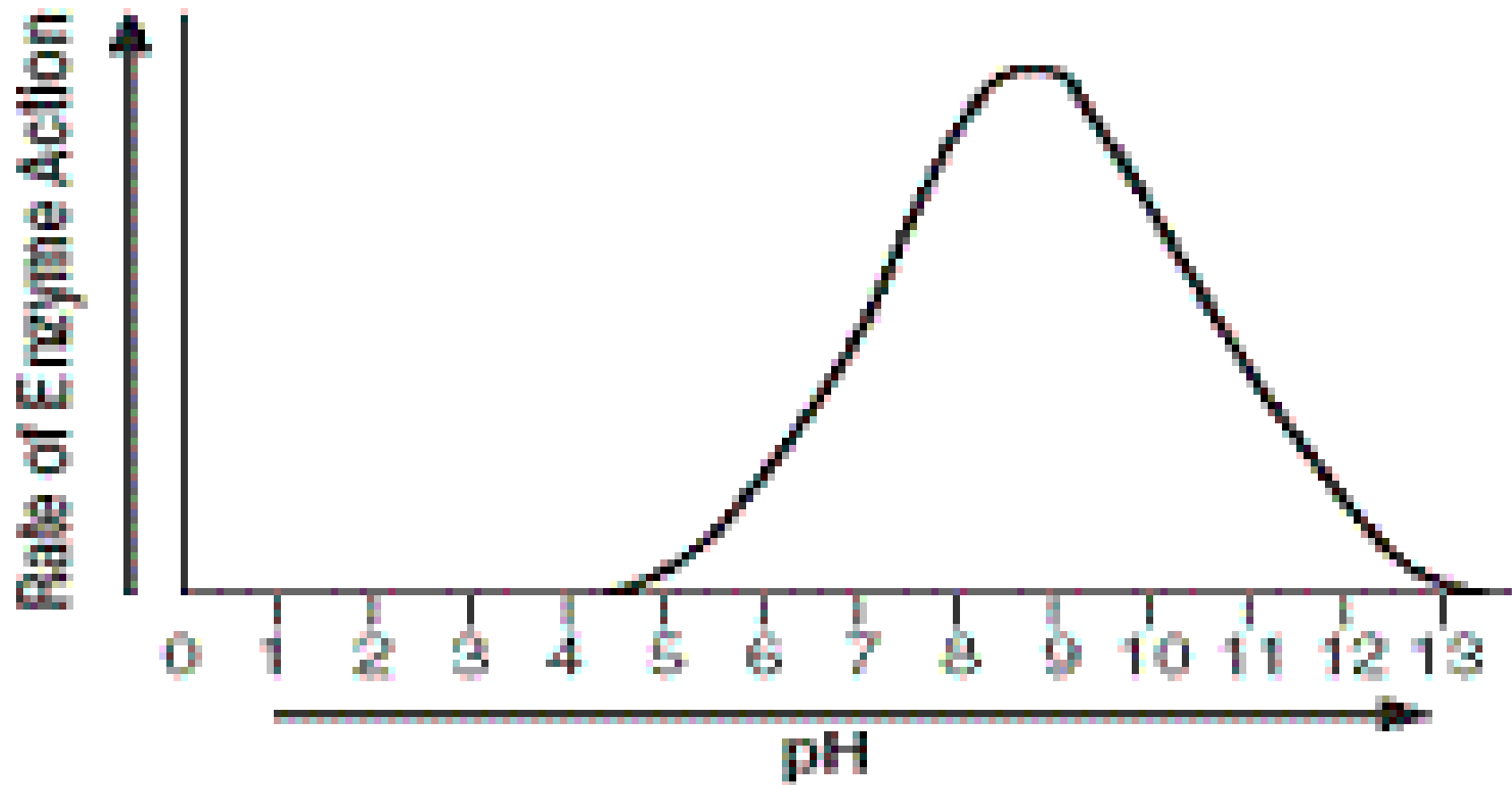
7. Group 1 receives hormones & group 2 does not. In the experiment above what factor must be controlled?

- a. The type of plant.
- b. The growth of the plant.
- c. The amount of hormones.
- d. None of the above.

8. In the experiment above which group is the control group?

- a. Group 1.
- b. The plant group.
- c. Group 2.
- d. All the above.

Bell Work Bonus, Thursday, Sept 12



Between what pH is the rate speeding up? ~ 4.5 – 8.5

Between what pH is the rate slowing down? ~ 9.5 -13