# Bell Work, January 29 - February 1, 2018

Inquiry 3: Graphs & Experiments

# Chemistry, Bell Work, Monday, Jan 29

1. How is an experiment controlled?

By keeping all conditions constant except the IV & DV.

2. The experimental group is

The part of an experiment that is deliberately changed. It includes the independent and dependent variable.

3. The Control group is

The part of an experiment that is not changed.

4. Why are multiple trial used in an experiment?

To verify the data of an experiment by obtaining measurements that are reproducible (precise measurements).

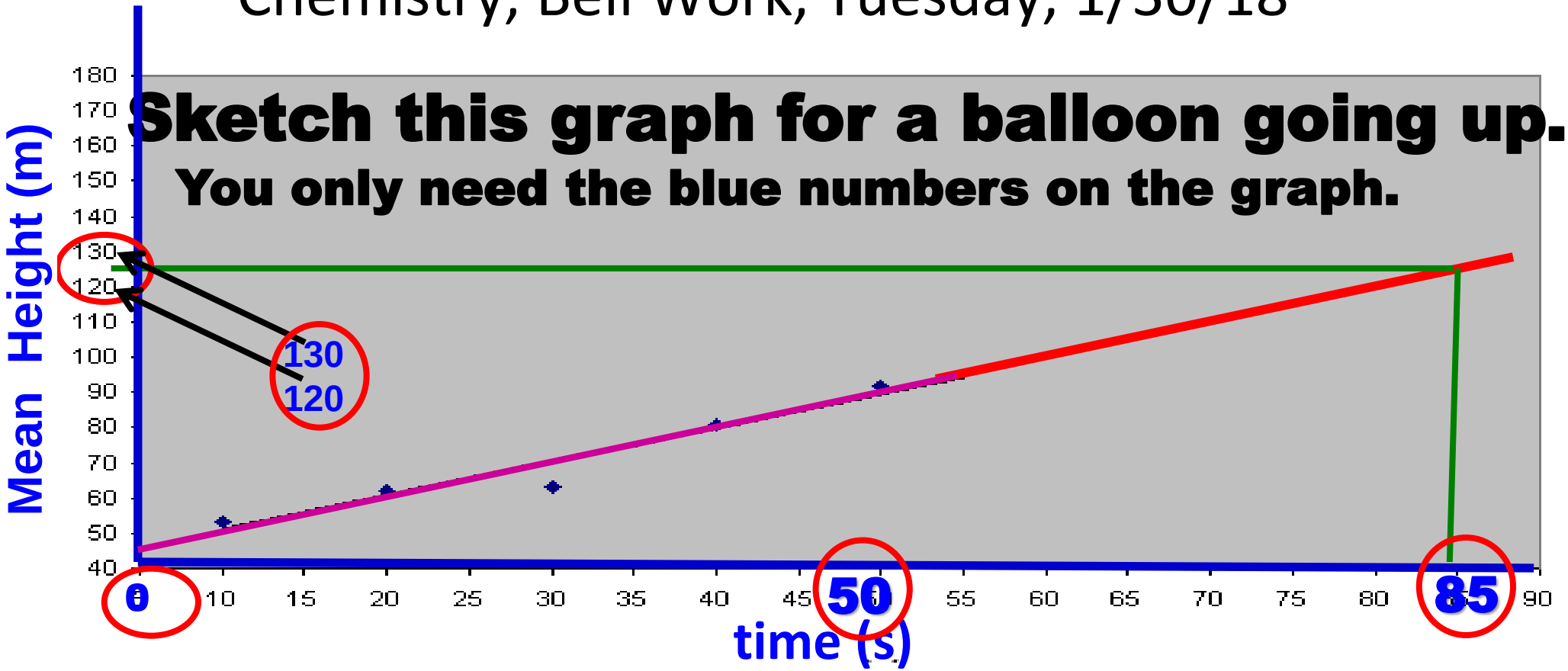
5. Why do scientist use graphs to display data:

a) Patterns and trends are revealed and the relationship between variables can be visualized (ex: when the IV is increasing, the DV is decreasing).

b) Outcomes can be predicted by extending trend lines. (This is called extrapolation.)

c) Outcomes can be predicted by using values on a graph line or curve that were not included in the data table. (This is called interpolation

# Chemistry, Bell Work, Tuesday, 1/30/18



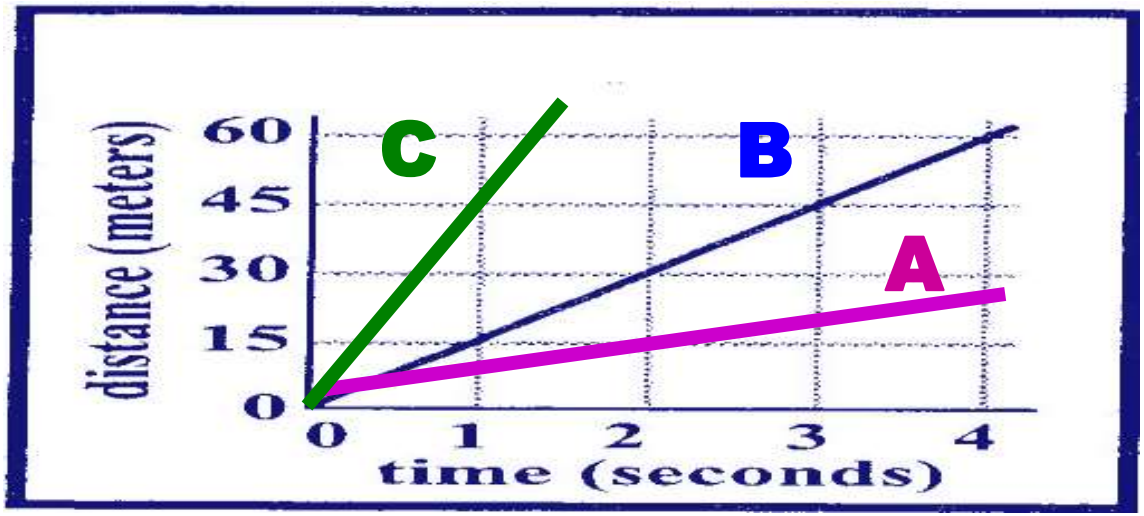

1. To predict the mean height (y axis) when the time (x axis) is 85 seconds one would **extrapolate (extend) the trend line.**
2. What is the mean height at 85 s?

   **Approximately 125 m**

# Chemistry, Bell Work, Tuesday, 1/30/18

**3. Describe the experimental control (the control).**

**The experimental control is the part of an experiment that has no independent variable (IV) or no IV applied.**




***Sketch the graph on the left side***

y axis is **distance**

x axis is **time**

**4. What does the slope of the line on this graph tell you**

$$Slope = \frac{rise}{run} = \frac{y}{x} = \frac{distance}{time}$$ **= speed**

**Slope of this graph = speed**

**5. Label the speed of the lines: slower, faster, fastest**

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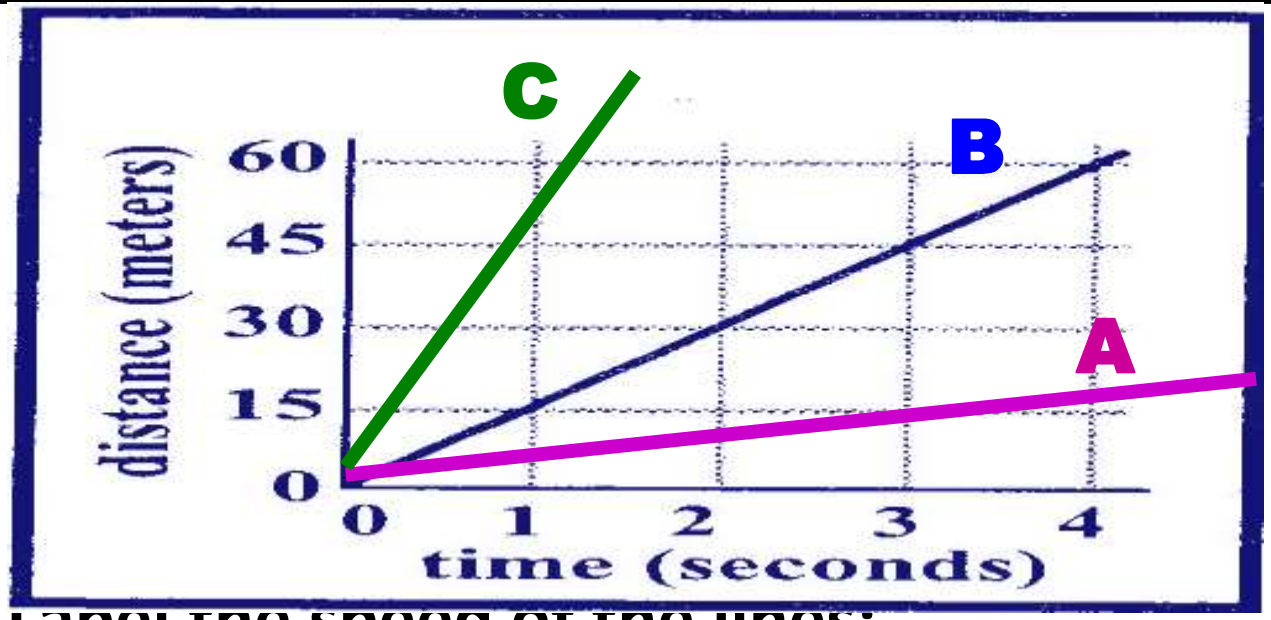
***Add lines C & A to your graph and label the lines as shown***




**5. Label the speed of the lines:**

**Slowest:** A

**Faster:** B

**Fastest:** C

**6. All slopes show _____.**

**The average rate of change of the DV relative to the IV.**

***The greater the slope, the greater the rate of change.***

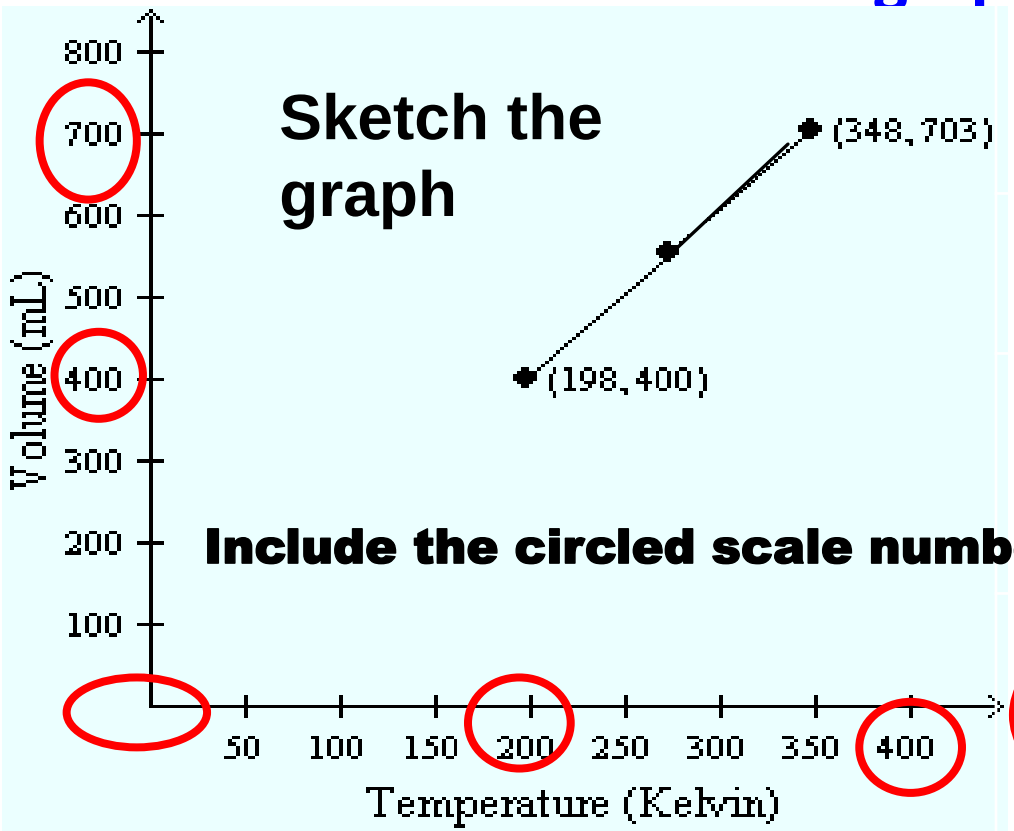
***7.What is changing?***

***The distance changes as the time changes.***

# Chemistry, Bell Work, Wednesday, 1/31/18

**1.** A researcher who wants to learn about the behavior of a particular gas examines the relationship between temperature and gas volume when the gas is held at a constant pressure.

**The graph below shows the data collected. What can be concluded from the information in the graph?**



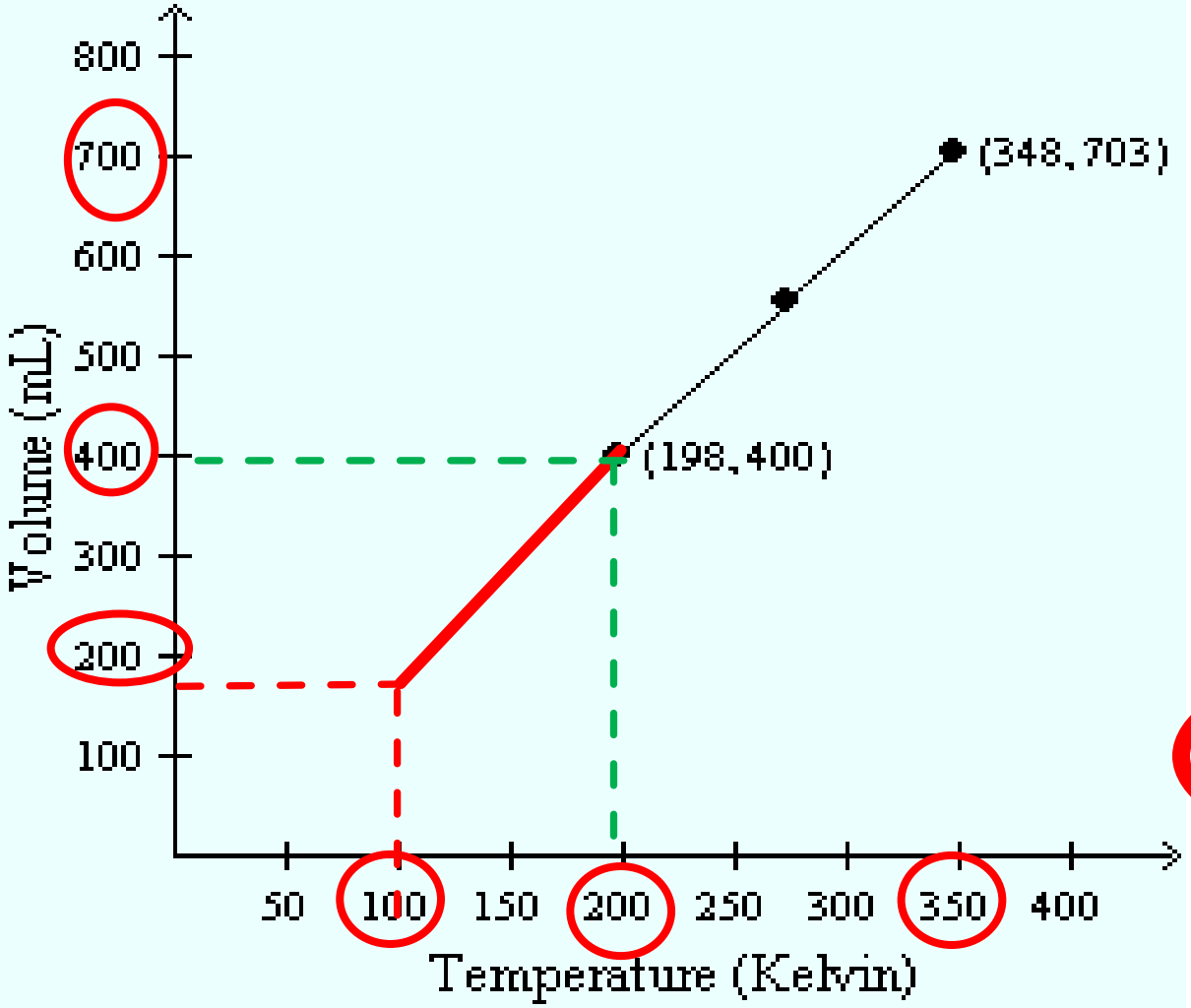

a. There is no relationship between temperature and the volume occupied by a gas.
b. As temperature increases, volume fluctuates randomly.
c. There is a relationship between temperature and pressure exerted by a gas.
d. There is a relationship between temperature and the volume occupied by a gas.

**2. What is the relationship?**

**As the temperature increases , the volume increases.**

# Chemistry, Bell Work, Wednesday, 1/31/18

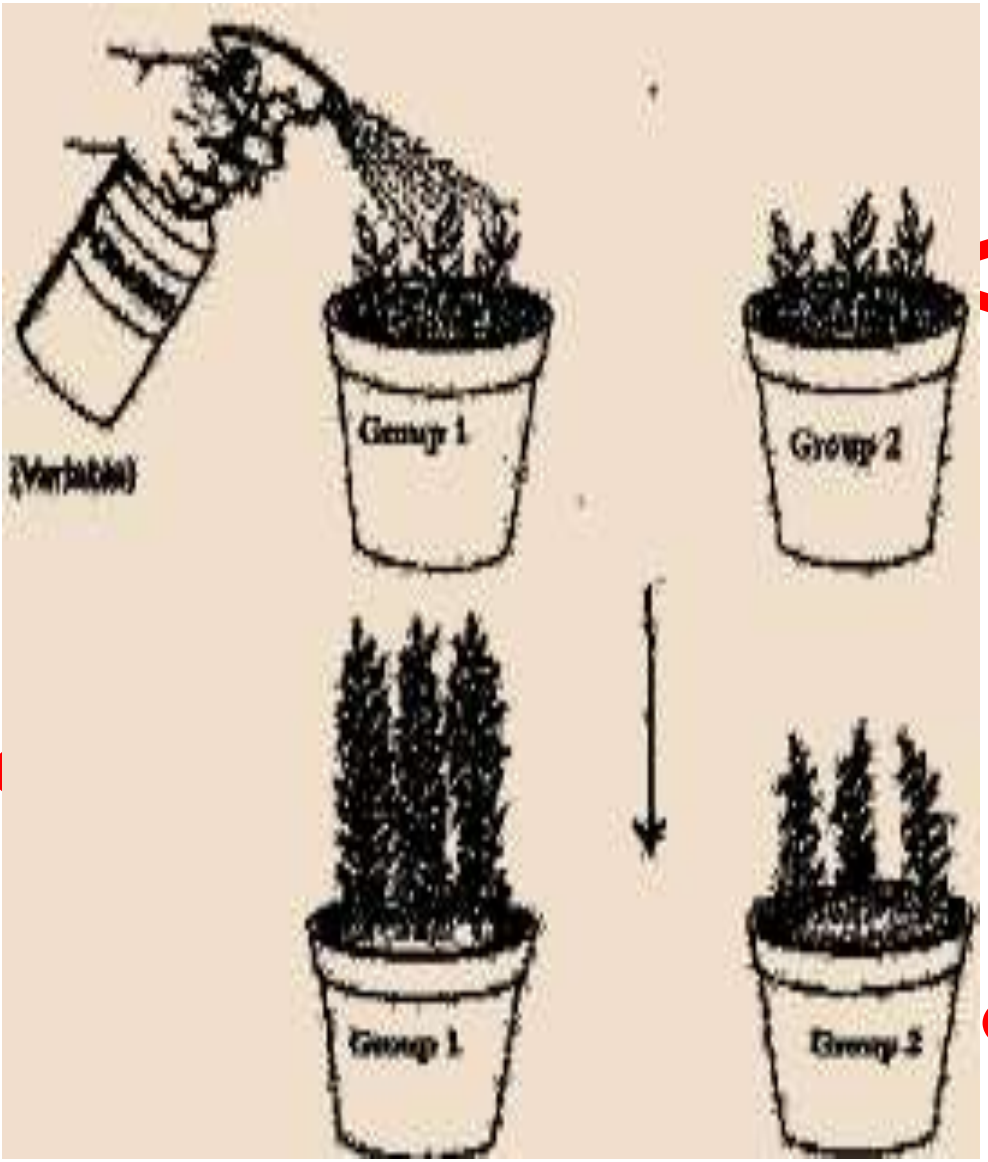
**3.** A researcher who wants to learn about the behavior of a particular gas examines the relationship between temperature and gas volume when the gas is held at a constant pressure. **The graph below shows the data collected. What would the data show if the temperature were decreased to 100°K?**




a. The volume would not change.
b. The volume would increase rapidly, then decrease.
c. The volume would increase.
d. The volume would decrease.

# Bell Work, Thursday, Feb 1, 2018

**Sketch the picture below**




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

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

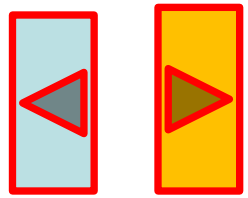
**2. In the experiment above which group is the control?**

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

# Chemistry, Bell Work, Thursday, Feb 1, 2018

**3. In the experiment above what is the independent variable.**

a. The amount of hormones.
b. The growth of the plant.
c. The type of plant.
d. All the above.



**4. In the experiment above what is the dependent variable.**

a. The amount of hormones.
b. The amount of growth of the plant.
c. The type of plant.
d. All the above.

**5. Why is group two the control group (aka experimental control or "the control")? Why is a control being used?**

- **The IV is not applied to group 2 or zero amount of the IV is used on group two.**
- **The control shows that changing IV causes DV to change.**

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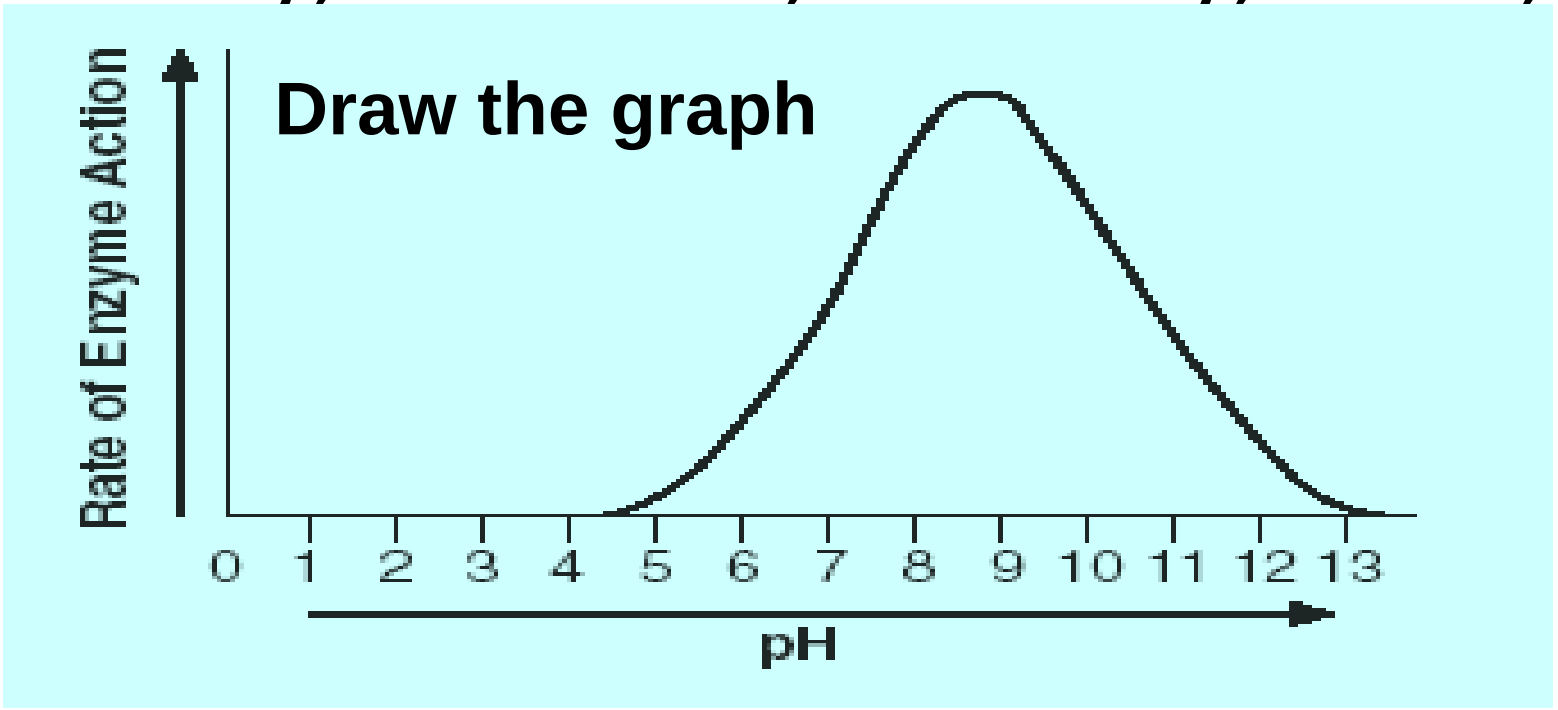


**6. Use this graph to predict the at which pH the greatest rate of enzyme action occurs.**

**A. between pH 5.5 and 6.5**

**B. between pH 7.0 and 8.0**

**C. between pH 8.5 and 9.5**

**D. between pH 11.0 – 13.0**

# Study Guide

**5. The effect of pressure on volume was tested and following data was obtained.**

| Pressure ($N/cm^2$) | Volume (mL) |
|---|---|
| 0.35 | 980 |
| 0.70 | 400 |
| 1.03 | 320 |
| 1.40 | 220 |

Pressure increasing or decreasing?

Volume increasing or decreasing?

IV: Pressure

DV: Volume

**Which of the graphs shows the data correctly?**