Washington Lab Report

9th Grade

Washington Lab Report Rubric
Washington Lab Outline

Table of Contents

1. Title

Your title is a specific description of the lab

Bubble Lab

Effect of glycerin concentration on bubble size

2. Variables

Independent Variable: What was changed or THE CAUSE

Glycerin

Concentration of Glycerin

2. Variables

Dependent Variable: What was measured about the change or THE EFFECT

Size

Diameter of the bubble

2. Variables

Control Variable: Things that were NOT changed

How we made the bubbles

Same person blows bubbles, same amount of air, angle of straw on the table.

3. Experimental/Testable Question

Question Includes BOTH the independent and dependent variable.

How big can we make the bubbles?

How does changing the amount of glycerin in the bubble solution affect the diameter of the bubble?

3. Experimental/Testable Question

Sentence Stems

How does____(IV)_____
affect_____(DV)_____?

Example: How does the concentration of glycerin affect the diameter of the bubble?

What is the effect of changing _____
on_____?

Example: What is the effect of changing the concentration of glycerin affect the size of a bubble?

4. Hypothesis

If_(*how you are changing the independent variable*)____ then___(*what you think will happen to the dependent variable*_____ because ___(*why you think this is happening THE SCIENCE)*_____.

If I change the glycerin then the bubble with change because the solution changed.

If the amount of glycerin increased then the bubble's diameter is larger because the glycerin makes the bubbles film stronger.

5. Materials

List all the materials that you used. Does not need to be a sentence.

Bubbles

Bubbles solution of soap, water and glycerin, straw, table, paper towel, ruler

6. Procedure

A list of NUMBERED steps followed to collect the data. Each step is a complete sentence.

We got the supplies then dipped the straw into the bubbles solution. We blew air into the straw and made bubbles. Measure and write down numbers. Find average.

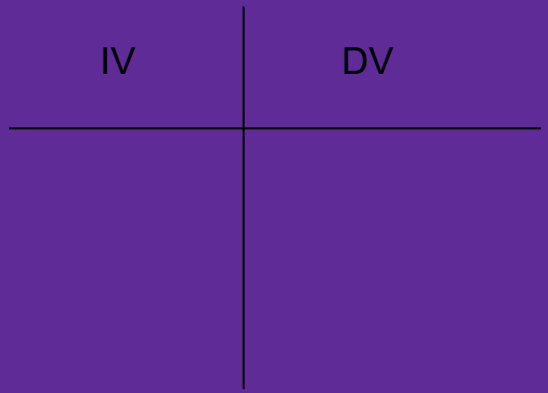
6. Procedure

1. Get the bubble solution of glycerin, water, and soap and a straw.
1. Dip straw into the bubble solution.
2. Place straw on the table at a 45^0 angle.
3. Blow air into the straw to make a bubble for 30 seconds.
4. Pop the bubble.
5. Measure the diameter of the ring made by the bubble, and record in the data table.
6. Repeat steps 2-6 for 9 more bubbles.
7. Calculate and record the average bubble size.
8. Record the concentration of the bubble solution written on the bottle.

7. Data Table

T-chart with independent variable (x) and dependent variable (y) with UNITS, along with calculated averages or values.

23 4 8 12 50



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7. Data Table

Independent Variable (Units)	Dependent Variable (units)	Average of Independent Variable (units)

Make the number of rows you need and write your data here

7. Data Table

Glycerin Concentration (Drops)	Bubble Diameter (cm)	Average Bubble Diameter (cm)
2	2, 4, 6, 7, 8, 10, 11, 12, 14, 4	8
4	2, 6, 6, 7, 8, 10, 11, 12, 23, 4	9
6	6, 4, 6, 8, 8, 10, 11, 12, 14, 22	10

8. Graphs

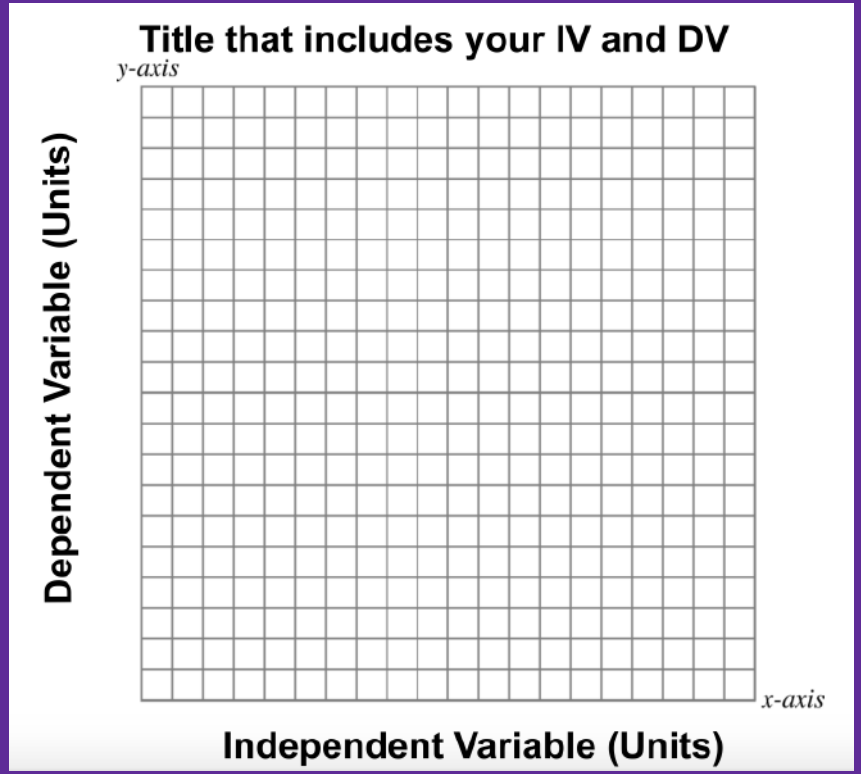
Graph needs:

- Title
- x and y axis labeled with units
- scale for x and y axis
- Key

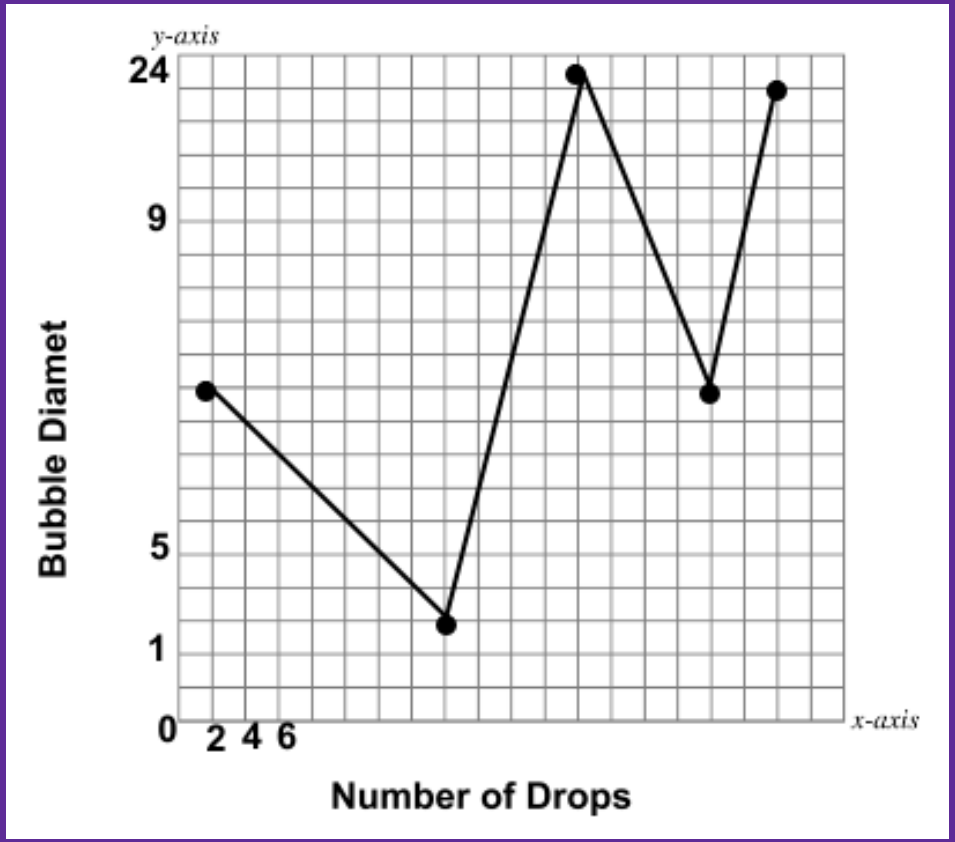
See next slides

See next slide

8. Graphs


Title that includes your IV and DV
y-axis
Dependent Variable (Units)
x-axis
Independent Variable (Units)

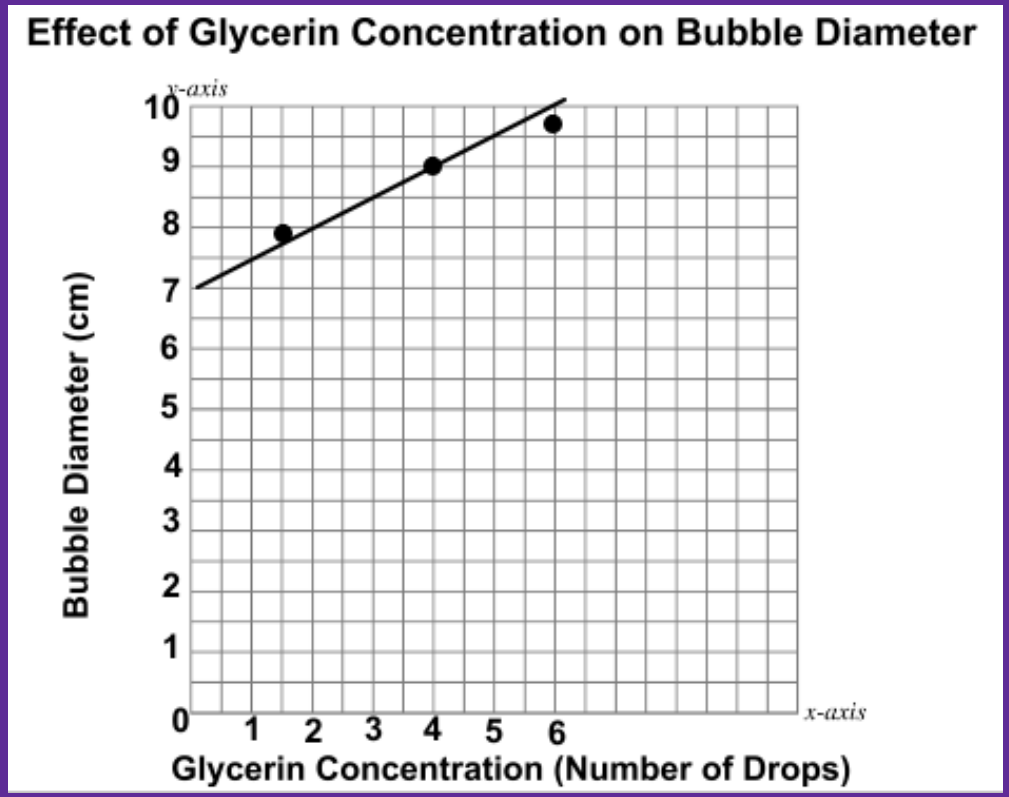
8. Graphs



Common Mistakes

- Spelling Errors
- No title
- Y-Axis scale is not in order
- X-Axis scale is not evenly spaced out.
- Points do match data
- Points connected rather than a trend line.

8. Graphs


Effect of Glycerin Concentration on Bubble Diameter
y-axis
10
9
8
7
6
5
4
3
2
1
0
Bubble Diameter (cm)
1
2
3
4
5
6
x-axis
Glycerin Concentration (Number of Drops)

9. Conclusion or Explaination

Conclusion has 3 parts: Claim, Evidence, and Reasoning.

CER Rubric

9. Claims

A statement that answers the answers the question/problem.

- 1-2 sentences long
- Refers to the problem/question

The size of the bubbles increased.

When experimenting to find out how glycerin affects bubble size it was found that the diameter of the bubbles increased when the amount of glycerin in the solution increased.

9. Claims

Tips for a good claim

- Repeat the question/problem
- Use Comparative words such as
  - Increase/Decrease
  - More/Less
- Possible Sentence starter
  - When__(IV)_____ increased/decreased then_____(DV)_____ increased/decreased.

9. Evidence

- Scientific data that supports the claim.
- The data needs to be appropriate and sufficient to support the claim.
- Experiment described for evidence collected.

The largest bubble diameter is 10.2

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9. Evidence

The average diameter of ten different bubbles made from a solution of water, soap, glycerin where calculated for three different concentrations of glycerin, 2, 4, and 6 drops.

It was found out that the bubble solution with the largest amount of glycerin, of 6 drops, had the largest average bubble size of 9 cm. Compared to the smallest concentration of 2 drops with an average diameter of 8 cm.

9. Evidence

Tips for Writing the Evidence

- Pick 2-3 data points to compare from the beginning, middle, and end of your data set.
- Be sure to use the pair of IV and DV numbers.
- Make sure every number has a unit.
- Give a brief summary of your procedure (1-2 sentences).
- Possible sentence starter
  - According to the data when ___(IV#)____ was __(DV #)___ then the __(IV#)_____ was ___(DV #)____.

9. Reasoning

Part 1: A justification that connects the evidence to the claim and why it counts as evidence.

Part 2: Use appropriate and sufficient scientific principles to explain the connection between the results and scientific concepts. **THE SCIENCE!**

The largest bubble was the highest amount of glycerin because it is the strongest.

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9. Reasoning

The data shows that when the glycerin was the smallest at 2 drops it had a smaller bubble size, when the amount of drops increased to 6 drops the size of the bubble increased. The reason why an increase in glycerin causes an increase in bubble size is because glycerin adds strength to the bubble. The film around a bubble is like a sandwich made up of soap on the outside and water in the middle. The soap and glycerin stops the water from evaporating. When the water evaporates the bubble pops so when there is more glycerin less water evaporates and the bubble can get bigger. The glycerin in the solution helps keep the water from evaporating and the soap film stronger allowing the bubble to get bigger.

9. Reasoning Tips

Tips for Writing Reasoning

- Do not repeat your claim and evidence.
- Start by writing why you used the evidence that you did.
- Make sure you include the required scientific vocabulary.
- Possible sentence starter
  - The reason____(summarize claim)_____ happened is because_____.

10. Further Investigations

What is the next experiment you want to do on this subject and why.

Find out how to make bigger bubbles.

What effect will adding more soap to the solution have on the size of the bubble? This questions will explore if the soap, not the glycerin, effects the size of the bubble.

11. Errors

In what ways can the data you collected not be perfect? These are not human mistakes.

Measured wrong, did not follow directions.

The rate air is blow for the bubble was not the same. Table did not have same amount of moisture on the table every time. Accuracy of the ruler.