Science Fair Logbook

From Abir and Azan

Topic: How does a carbonated drink affect your teeth

We chose this topic because this is a genuinely helpful topic this emphasizes how your teeth would react to a carbonated drink. Another reason we chose this topic is because this is a testable experiment we can prove our points because if this was a research question there could be lot's of false information spread.Our last reason for choosing this topic is because these are accessible materials if anybody else wants to try to do this experiment or even be inspired and those are all the reasons why we chose this topic.

Testable Question

Which carbonated drink affects your teeth the worst?

Which drink is the best for your teeth?

What drinks you shouldn’t and should drink.

Background Information

Soda's have chemical ingredients that deteriorate things.This happens because of the acidity of the soda which makes the item slowly lose its texture

Background Information

We learned that a carbonated drink has the chemical formula H2CO3 and the extra mix is the reason it is less dense than water. We also learned that Eggshells are mostly made of calcium carbonate ($CaCO_3$), which makes up almost 95-97% of the shell. The rest is made out of of proteins, like collagen, and minerals.Eggshells have tiny holes which makes the eggshell fresh.When eggshells come into touch with acids, a chemical reaction happens where the calcium carbonate reacts with the acid, releasing carbon dioxide Stronger acids like hydrochloric acid will dissolve the eggshell faster than weak acids like vinegar or lemon juice. Soda's have chemical ingredients that deteriorate things.This happens because of the acidity of the soda which makes the item slowly lost its texture.

Background Information

Carbonated water can affect eggshells because it contains carbon dioxide which creates bubbles in the water.When an eggshell is put in carbonated water, the carbon dioxide can react to the calcium carbonate in the shell. Over time, the eggshell can even dissolve, leaving the soft egg inside exposed. This shows how acidic stuff can weaken the outer shell that protects the soft egg

Sources of Information

Title	Author	Information (web link, publisher, etc)	Year
Unacademy		What is the Formula for Soda Water	
Merriam Webster	Merriam webster	Eggshell Definition & Meaning - Merriam-Webster	
Askifas powered by	University of florida	VM69/VM013: Concepts of Eggshell Quality	
pkp		https://unacademy.com/	
scienceworld.ca		Science world	

Variables

Manipulated / Dependent Variable

ONE thing that you will test/change: i will change the eggshells because it could get deteriorated and the results wouldn't be fair ex: I put a normal one in a coke and a deteriorated one in a mountain dew.

Responding / Independent Variable

The thing I think will change or be affected: the eggshells because we are seeing what happens to the eggshell and it is whats being affected by the carbonated drink. How will you measure it? : we will see size texture and colour of the eggshell.

Variables

Controlled Variables

Things we have to be very careful to keep the same every time we test so that they do not affect the results/outcome of the experiment:

The eggshells
The area
The glass

Hypothesis

Your prediction, or what you think will happen:

If _____ then _____ because _____.
(I do/change this...) (I think this will happen) (Why?)
*use info from your research or background knowledge to help explain)

I think the eggshells will immediately deteriorate because the acidity the acidity is strong enough to deteriorate a thin eggshell in a few seconds

Materials

What materials will you use for your experiment? Be specific about amounts whenever possible.

- 7 UP
- Coke
- Eggshells (9)
- Canada Dry
- Glass(3)

Procedure

List the step-by-step procedure you will follow to conduct your experiment. Be as specific as possible and include exact measurements, quantities, times, etc.

1. Make a hypothesis
2. Experiment trial 1
3. Trial 2
4. Trial 3
5. Make a conclusion analyse results
6. Repersent results(graph,chart ext,)

Experiment: Trial 1

Date:

Data: (measurements)

coke	Most acidic
Canada dry	2nd most acidic
sprite	Least acidic

Observations:/Notes i noticed that the colour would vary depending on the acidity of each drink the carbonation allowed for the eggshell/teeth to change cracked eggshell and the crack was brown like the coke.

Experiment: Trial 1

Photos:

7-up

coke

Canada dry

Experiment: Trial 2

Date:

Data: (measurements)

sprite	Most acidic
coke	2nd most acidic
Canada dry	3rd most acidic

Observations/Notes: i observed sprite was the most acidic by a fraction making a crack in the egg

Experiment: Trial 2

Photos:

I didnt take pictures sorry

Experiment: Trial 3

Date:

Data: (measurements)

coke	Most acidic
sprite	Least acidic
Canada dry	2nd most acidic

Observations/Notes: coke was the most acidic again because it deteriorated the eggshell first

Experiment: Trial 3

Photos:

Extensions

Because of the results of this experiment, I wonder...
Describe further experiments that could be conducted to further investigate and understand your topic:

I could have included more drinks for more results in the experiment

Results: Chart

Put your data together into a chart.
Example: (you can change the chart)

Trial 1	coke	Most acidic	
Trial 2	sprite	Most acidic	
Trial 3	coke	Most acidic	

Results: Analyze

Look at your data and observations. Look for patterns and trends. Explain what happened in your experiment and what you found out:

Trial 1-coke-Most acidic
Trial 2-sprite most acidic
Trial 3-coke most acidic

Results: Graph

Graph your data for a visual display of your results.

Use Google Sheets or another website and copy the graph onto this slide, or draw by hand and upload a photo.
Ask your Science Fair teachers for help if you need it!

Conclusion

My question was: **Which carbonated drink affects your teeth the worst?**
Which drink is the best for your teeth?

The answer to my question is:coke affects your teeth the worst

My hypothesis was <u>correct</u> because:

OR

My hypothesis was <u>incorrect</u> because: it took more than 5 minutes to deteriorate the eggshell

Applications

In what ways are your findings useful?
Who could benefit from your results and how?

The uses of our science experiment is that this teaches you how your teeth would react to some drinks.This also would help some people understand why they should and shouldn’t drink carbonated drinks

Sources of Error

Do you think your results were reliable? Were there any other factors or conditions that could have affected the results of your experiment in unexpected ways?
What could have affected your results, that would need to be controlled differently if you were to repeat the experiment?

I could have cracked the eggshells more accurate because the eggshells are a little even and only a robot can make those even

Extensions

If you were to conduct this experiment again, what would you do differently?

I would prefer to dip the eggshells for a month or 6 weeks

CONGRATULATIONS!!

You have completed your experiment!

Make sure that you enter information from this logbook into the CYSF Digital platform.

You are now ready to create your trifold display and practice your presentation.