

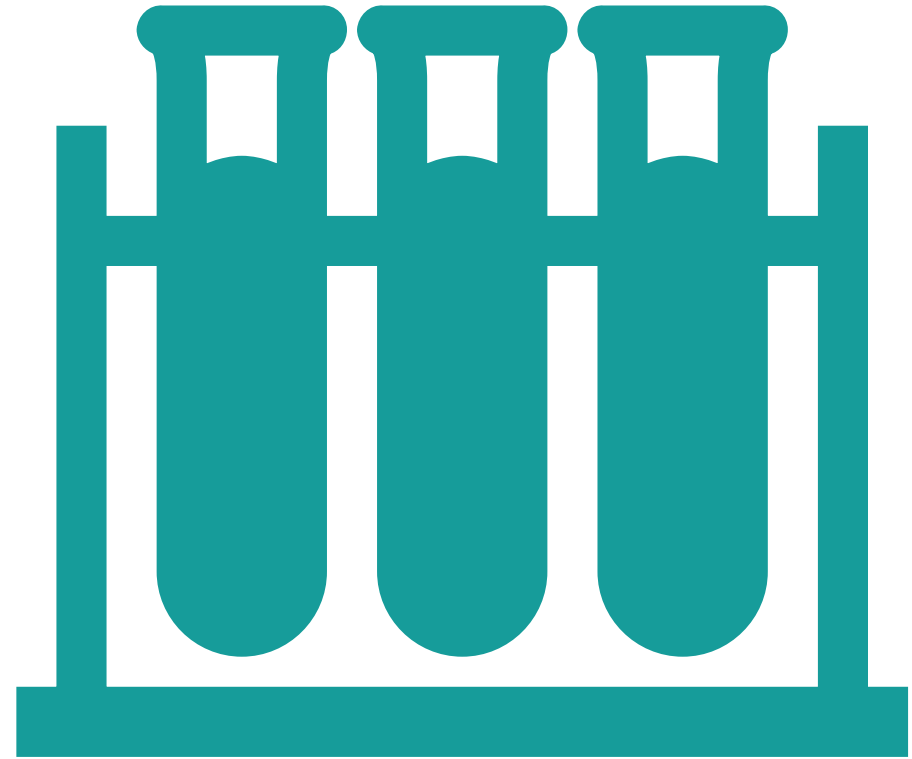
The teeth

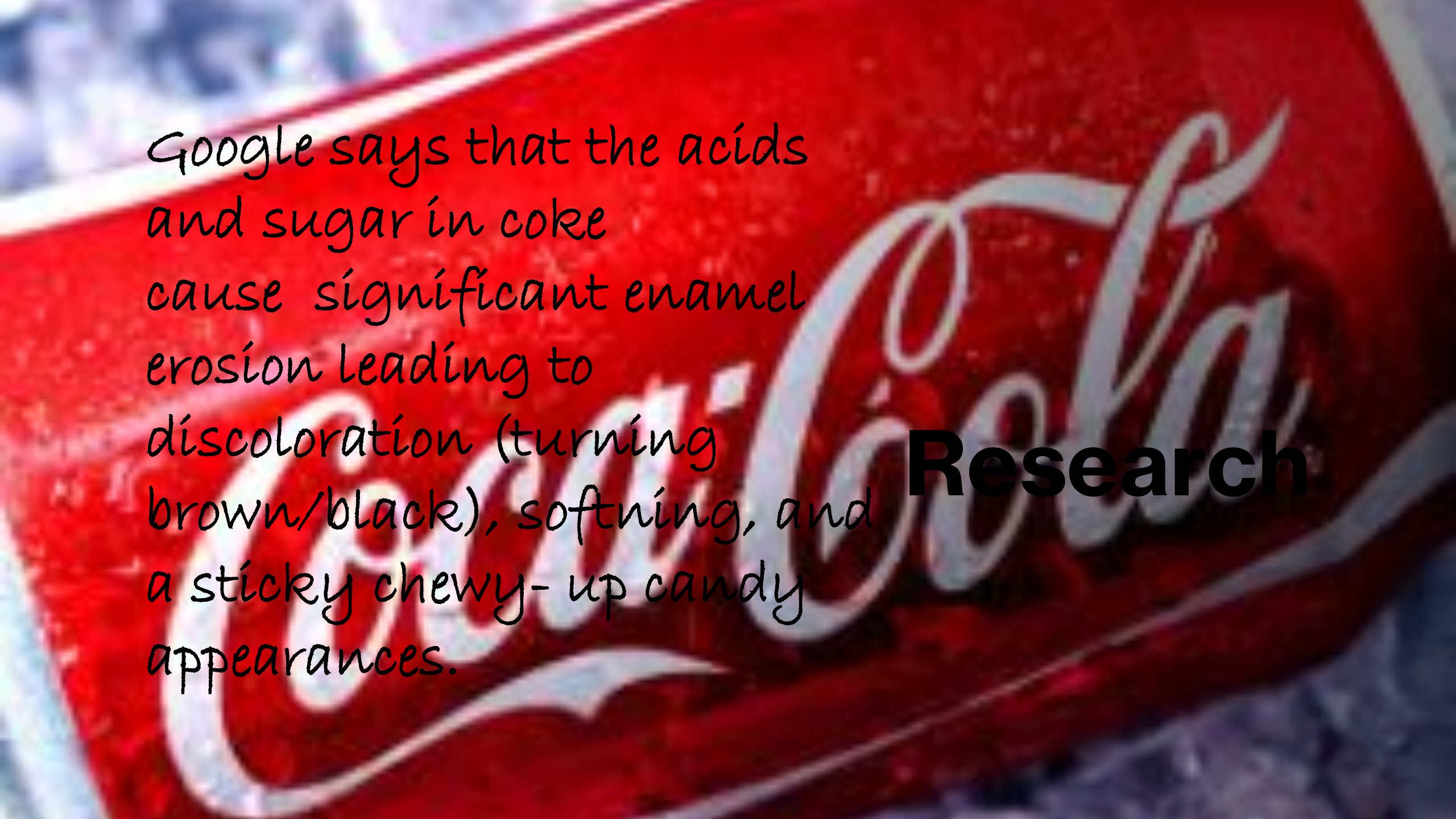
6th grade



Introduction and Research Question

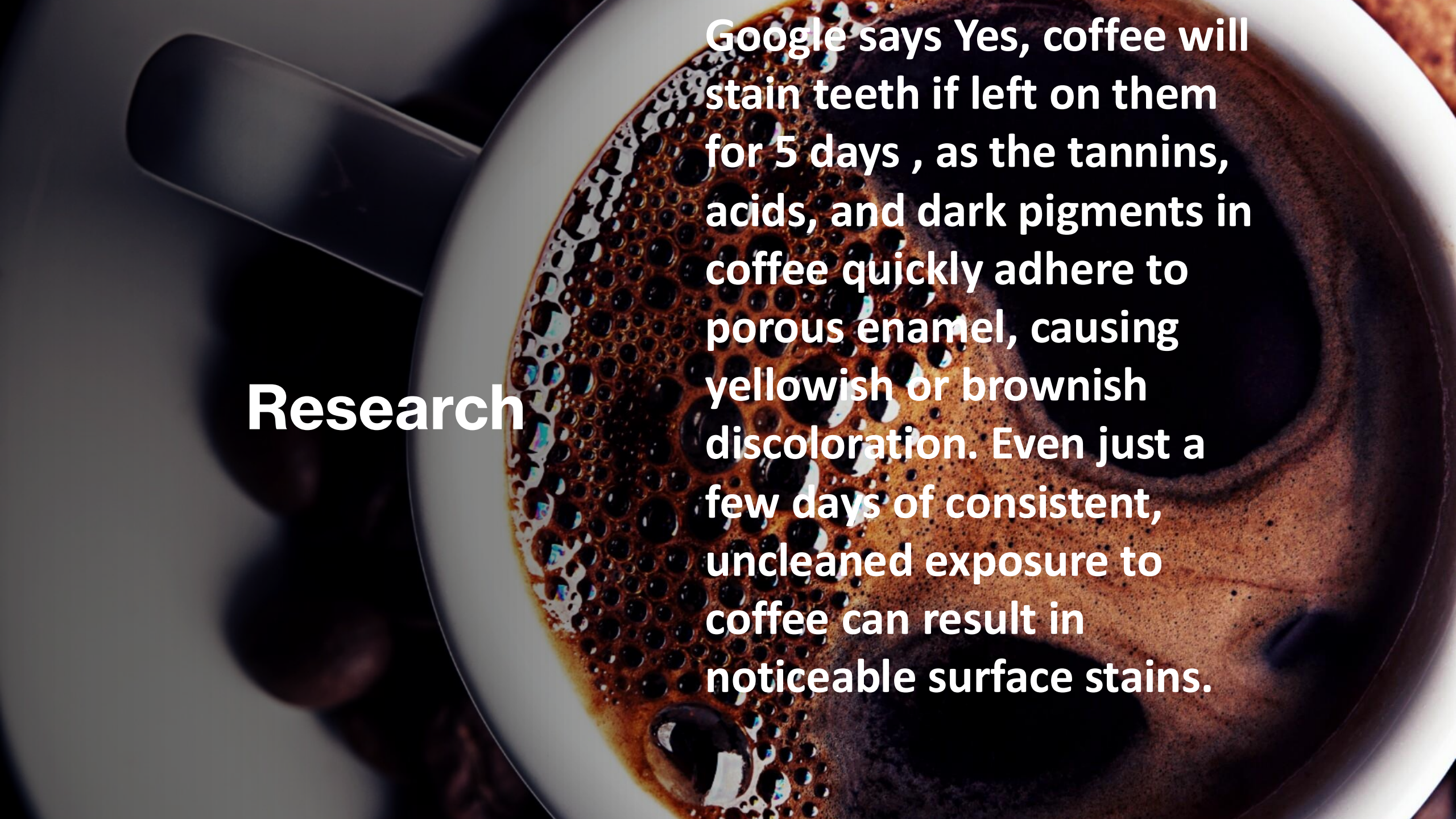
- We are interested in this because we like learning new stuff and my mom did this for her 6th grade science fair. I am trying to answer the question does your teeth get effected by soda, coffee or water?





Google says that the acids and sugar in coke cause significant enamel erosion leading to discoloration (turning brown/black), softening, and a sticky chewy- up candy appearances.

Research



Research

Google says Yes, coffee will stain teeth if left on them for 5 days , as the tannins, acids, and dark pigments in coffee quickly adhere to porous enamel, causing yellowish or brownish discoloration. Even just a few days of consistent, uncleaned exposure to coffee can result in noticeable surface stains.

Research

- Google says "Yes, leaving teeth in diet Pepsi for 3 days will significantly stain them, as dark-colored sodas contain intense pigments (chromogens) and acids that erode enamel, making the tooth surface highly susceptible to discoloration".

MATERIALS:

- COKE
- WATER
- COFFEE
- DIET PEPSI
- CUPS
- TEETH
- TRAY
- PAPER
- PENCIL



Hypothesis

- Our hypothesis is that all of them are going to get stained except for the water even though google says that it will get stained.

The image shows a chalkboard with handwritten mathematical derivations. At the top left, a graph shows a curve $y = g(x)$ with a secant line and a tangent line. The secant line is labeled "Secant Lines" and the tangent line is labeled "Tangent Line". Below the graph, the expression $x+h$ is written. To the right, the derivative of f is defined as:

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

Below this, the derivative of $f(x) = x^2$ is calculated:

$$\begin{aligned} f'(x) &= \lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{h} \\ &= \lim_{h \rightarrow 0} \frac{x^2 + 2xh + h^2 - x^2}{h} \\ &= \lim_{h \rightarrow 0} \frac{2xh + h^2}{h} \\ &= \lim_{h \rightarrow 0} h(2x + h) \end{aligned}$$

At the bottom, the derivative of g is also shown:

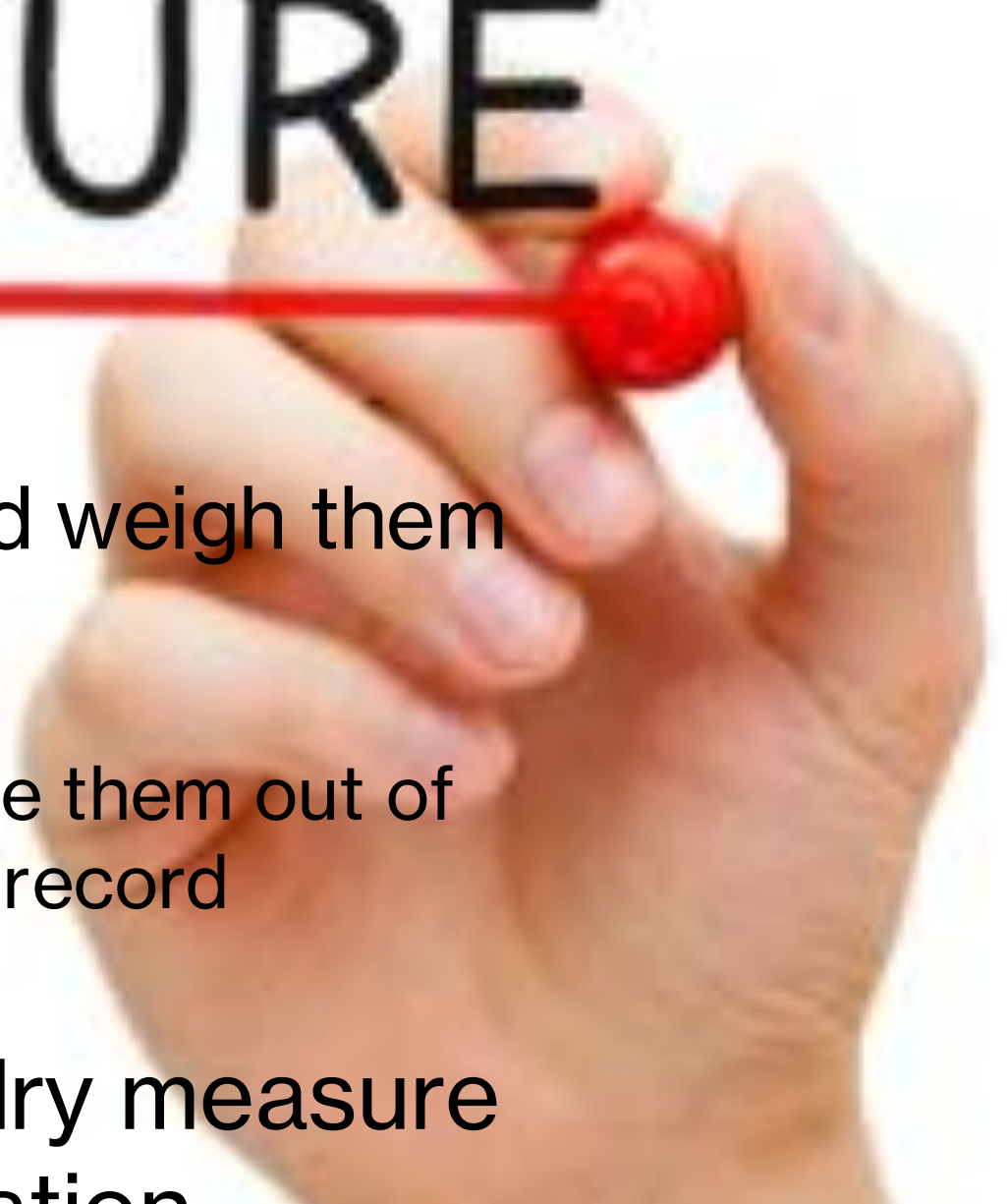
$$g'(x) = \lim_{h \rightarrow 0} \frac{g(x+h) - g(x)}{h}$$

SAFETY PRECAUTIONS

- 1.) Be very careful with the teeth and drinks.
- 2.) Put on glove when touching the project.
- 3.) Don't play with the teeth
- 4.) Don't play around the project.



PROCEDURE



1. We measure the teeth and weigh them and wait.
2. At the half-way point we take them out of the fridge and measure and record our studies.
3. We pull them out and dry measure and record our observation.

Tooth A

Tooth B

Tooth C

Tooth D



Before we
put the teeth
inside the
drinks.

BEFORE:

The teeth at the end

25 ~~oz~~ mil 1.4 Grams	25 ~~oz~~ mil 1.5 grams	25 mil 1.6 grams	25 mil 1.5 grams
Tooth A	Tooth B	Tooth C	Tooth D
			
Diet Pepsi	coke	Water	Coffee
			ratio: 5ml instant coffee 175 ml H ₂ O Americano instructions

Data and results

- The results were that coke was impacted the most and that water was the least impacted while diet pepsi and coffee weren't impacted as badly as coke because coke has more sugar in it than the rest of the drinks.

	Tooth in Water	Tooth in Diet Pepsi	Tooth in Coke	Tooth in Coffee
Starting Observations	White medium size	White medium size	White medium size	White medium size
1/27 Starting Mass (g)	1.6 grams	1.4 grams	1.5 grams	1.5 grams
1/30 Mass (g)	1.5 grams	1.4 grams	1.3 grams	1.2 grams
2/2 Mass (g)	1.4 grams	1.3 grams	1.4 grams	1.4 grams
Final Observations	Same white and a little bit smaller	Yellow-ish darker same size	Brown on one side same size	Smelled bad browner same size

CONCLUSION

Yes, our hypothesis was right since the teeth in the coke, diet Pepsi, coffee were affected except for the teeth in the water.

The struggles we had was when we were having trouble deciding when we were going to take each Tooth out and we also were having difficulty rinsing the teeth out.

Things that went right in our project was when we weighed each tooth and we were having no difficulty with them.

Another struggle was our teeth were lost in our classroom and our teacher had to find us new teeth.

Future data



If more scientist tried this project, we would recommend using more sodas.



We would also advise these scientists to wear gloves.



These scientist could leave them in longer, but we had a deadline.



The scientists should also examine the teeth every day they are in the fridge.

Sources:



Mrs. Whitaker / Mrs. Sanders



Google Gemini



https://www.youtube.com/watch?v=_Jy-4sXozIU