

AMAZING
RED
CABBAGE

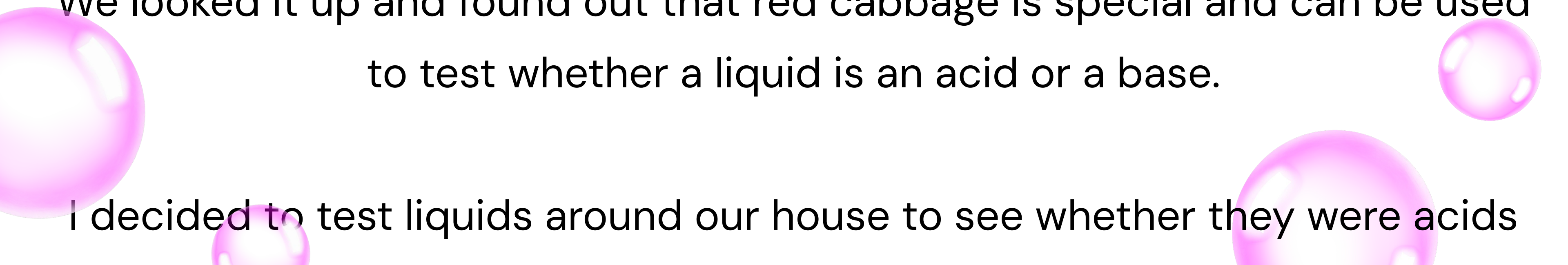


Several translucent blue bubbles of varying sizes are scattered in the upper corners of the slide. A horizontal purple line is positioned below the title.

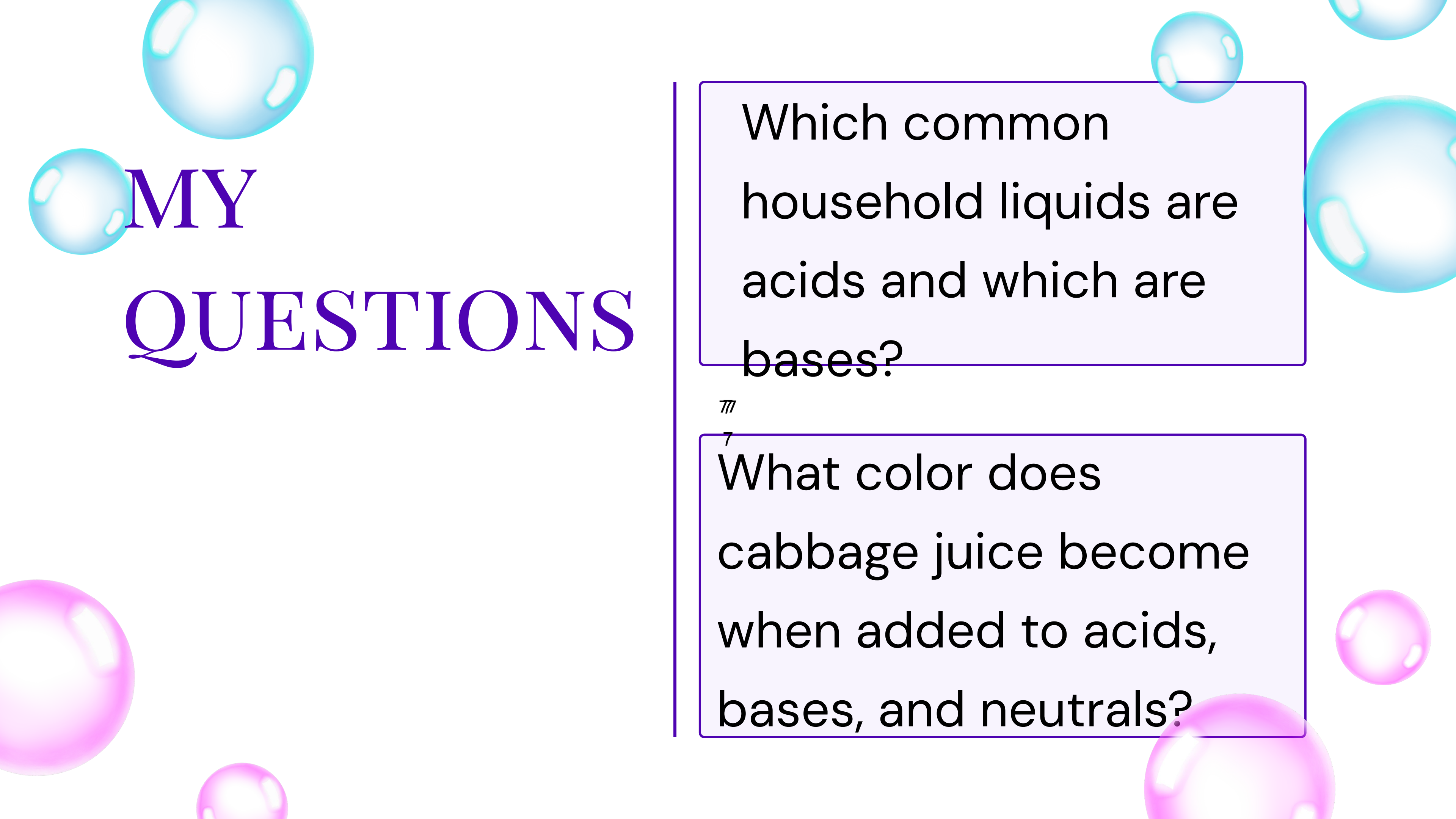
INTRODUCTION

My mom and I noticed when she was making salad that vinegar made red cabbage brighter, and raw cabbage left on our plates changed colors when it touched soap or salad dressing.

We looked it up and found out that red cabbage is special and can be used to test whether a liquid is an acid or a base.

Several translucent pink bubbles of varying sizes are scattered in the lower corners of the slide.

I decided to test liquids around our house to see whether they were acids

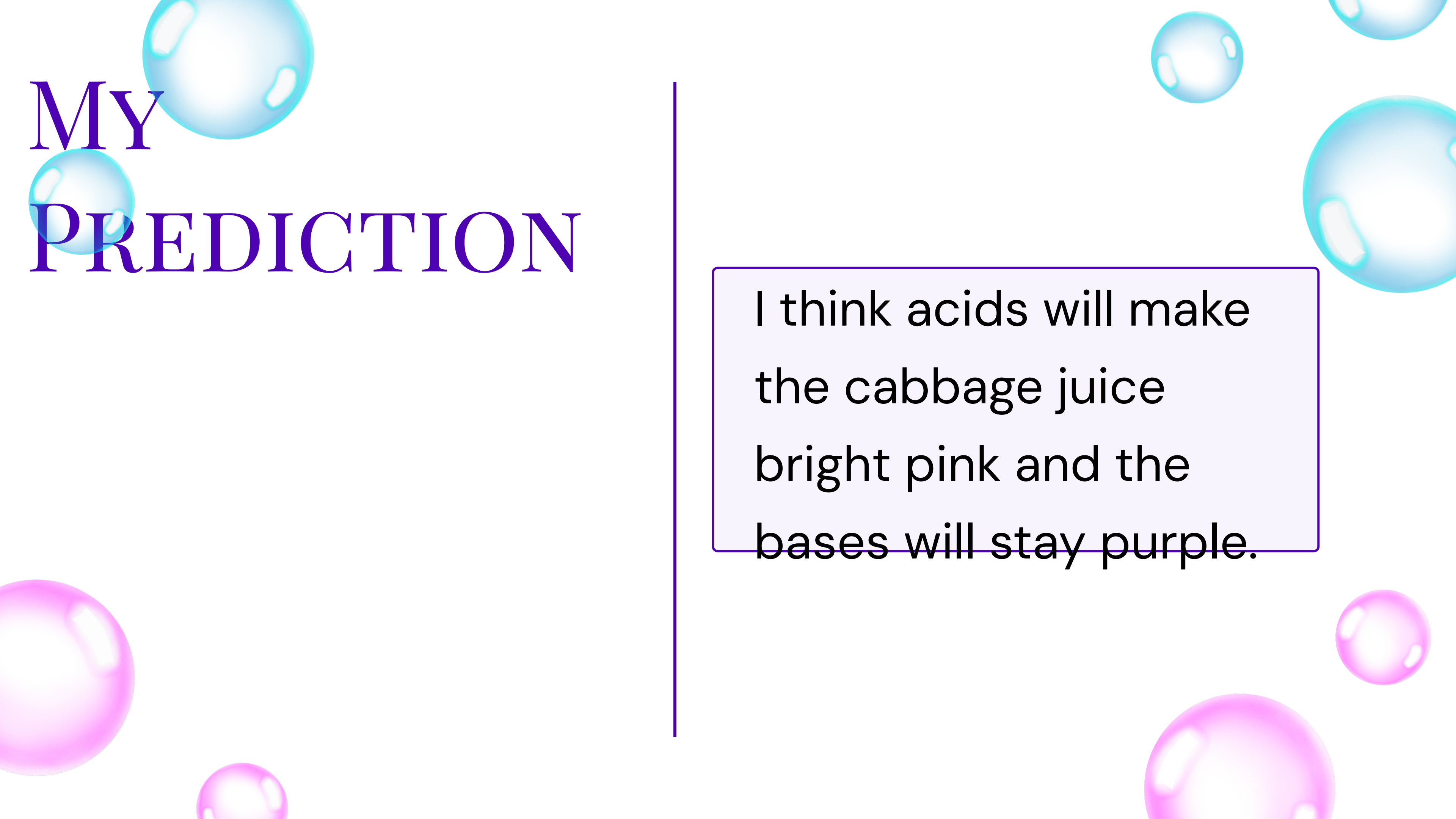
The slide features several translucent, glossy bubbles in shades of blue and pink scattered around the text. A vertical purple line is positioned to the left of the question boxes.

MY QUESTIONS

Which common household liquids are acids and which are bases?

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7
What color does cabbage juice become when added to acids, bases, and neutrals?

The background of the slide is decorated with several translucent, glossy bubbles. In the top left and top right corners, there are blue bubbles. In the bottom left and bottom right corners, there are pink bubbles. A thin vertical purple line is positioned to the right of the title.

MY PREDICTION

I think acids will make
the cabbage juice
bright pink and the
bases will stay purple.

MATERIALS

red cabbage

clear cups

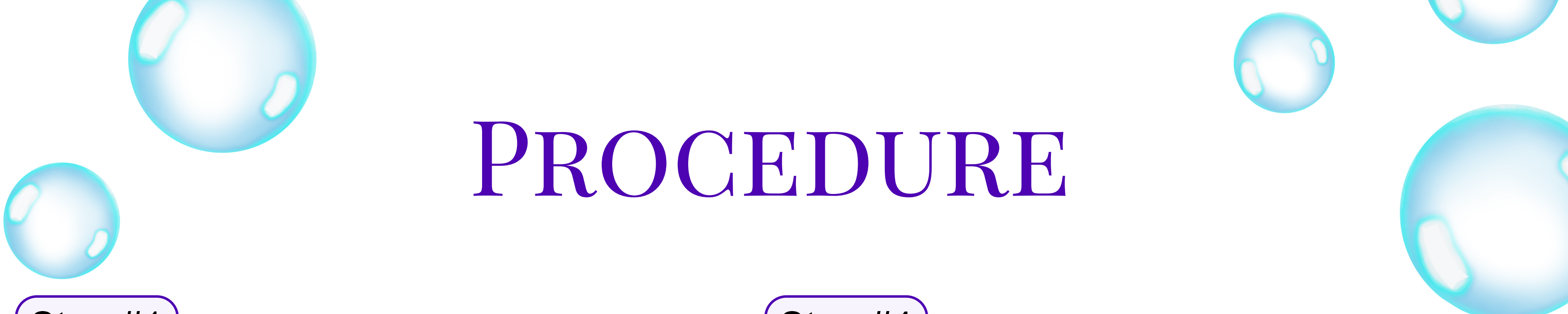
droppers

index cards

white paper

markers

household test liquids: white vinegar, tap water, bottled alkaline water, bleach, lime soda, plain soda water, baking soda water, isopropyl alcohol, hand soap



PROCEDURE

Step #1

Gather materials and liquids.

Step #2

Make red cabbage indicator.

Step #3

Measure 15ml of red cabbage indicator into each cup.

Step #4

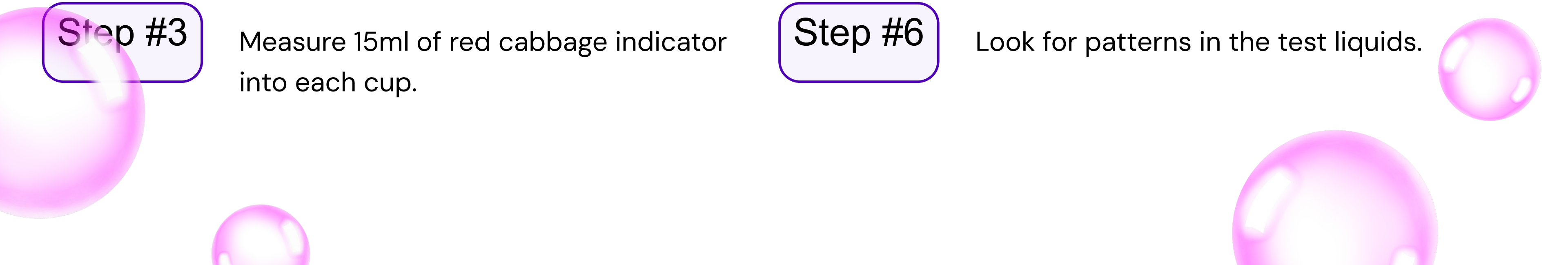
Add 5 ml of each test liquid into cups.

Step #5

Arrange cups by color. Predict pH.

Step #6

Look for patterns in the test liquids.



PROCEDURE IMAGES



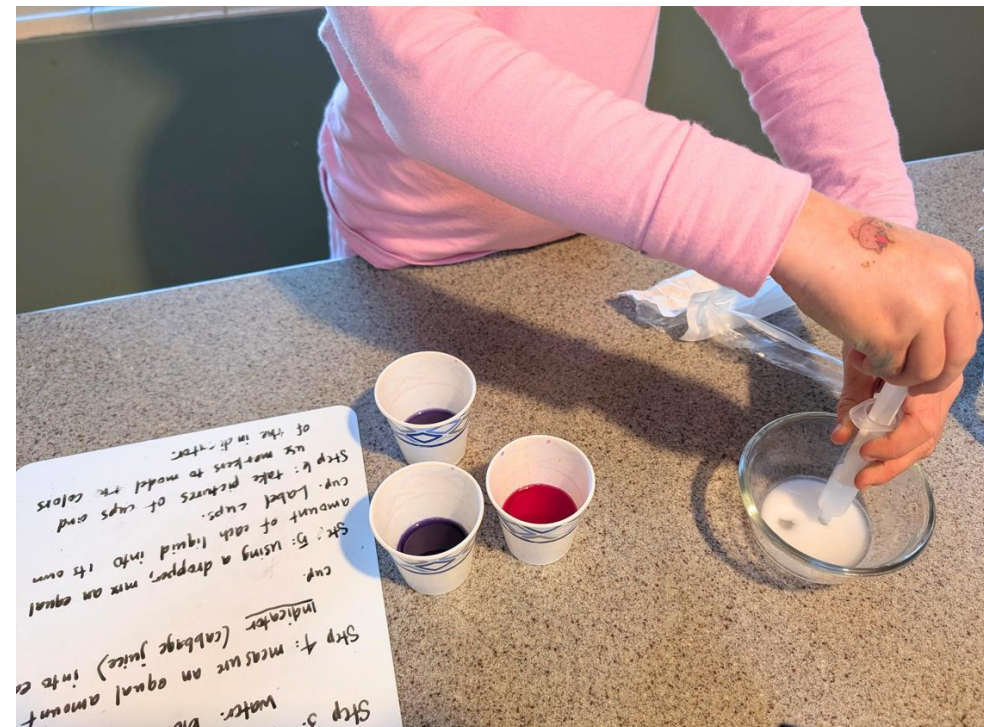
Cutting cabbage



Strained indicator



Boiling cabbage for indicator



Using droppers to add indicator to liquids

Several translucent blue bubbles of varying sizes are floating in the upper portion of the slide. One large bubble is on the left, and several smaller ones are scattered towards the top right.

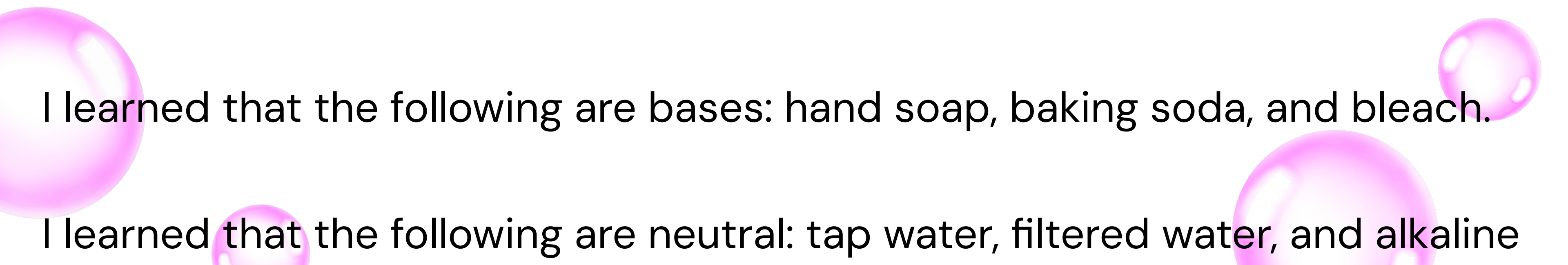
RESULTS

When I added the cabbage indicator, acids turned shades of pink and purple. Bases turned shades of teal and green, which was a surprise!

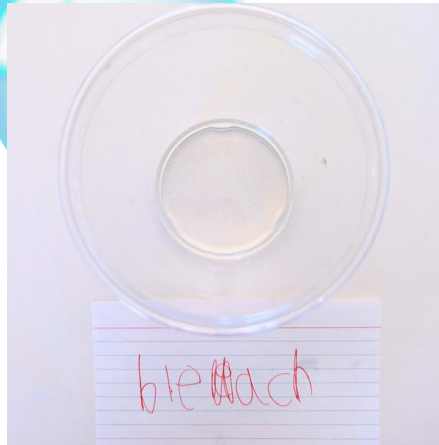
I learned that the following are acids: vinegar, lime soda, and plain soda water.

I learned that the following are bases: hand soap, baking soda, and bleach.

I learned that the following are neutral: tap water, filtered water, and alkaline

Several translucent pink bubbles of varying sizes are floating in the lower portion of the slide. One large bubble is on the left, and several smaller ones are scattered towards the bottom right.

RESULTS: IMAGES



pH:12



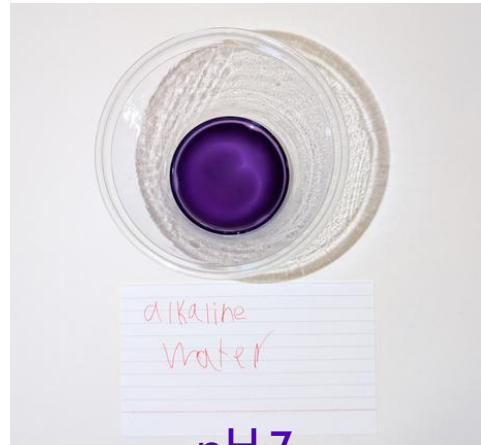
pH:11



pH: 10



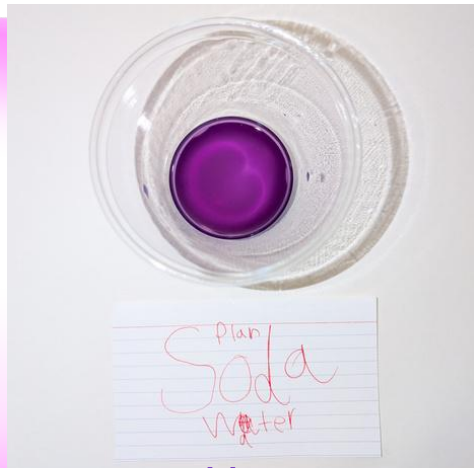
pH:7



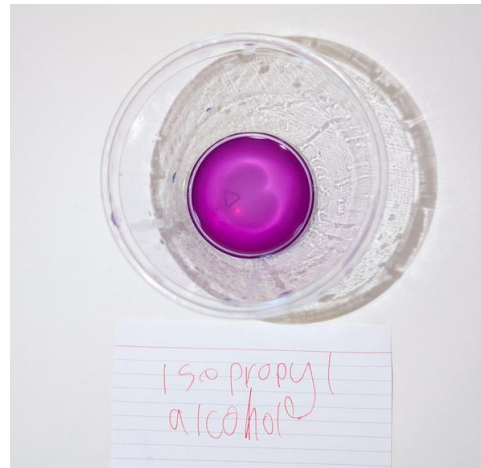
pH:7



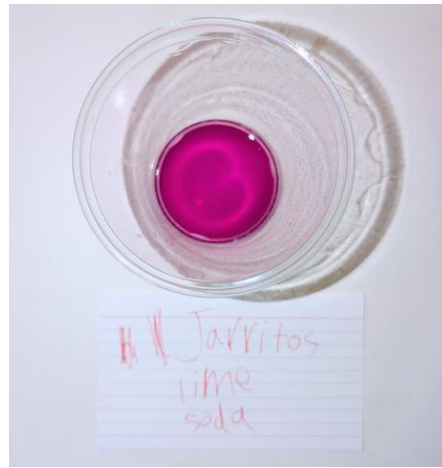
pH:7



pH:5



pH:4



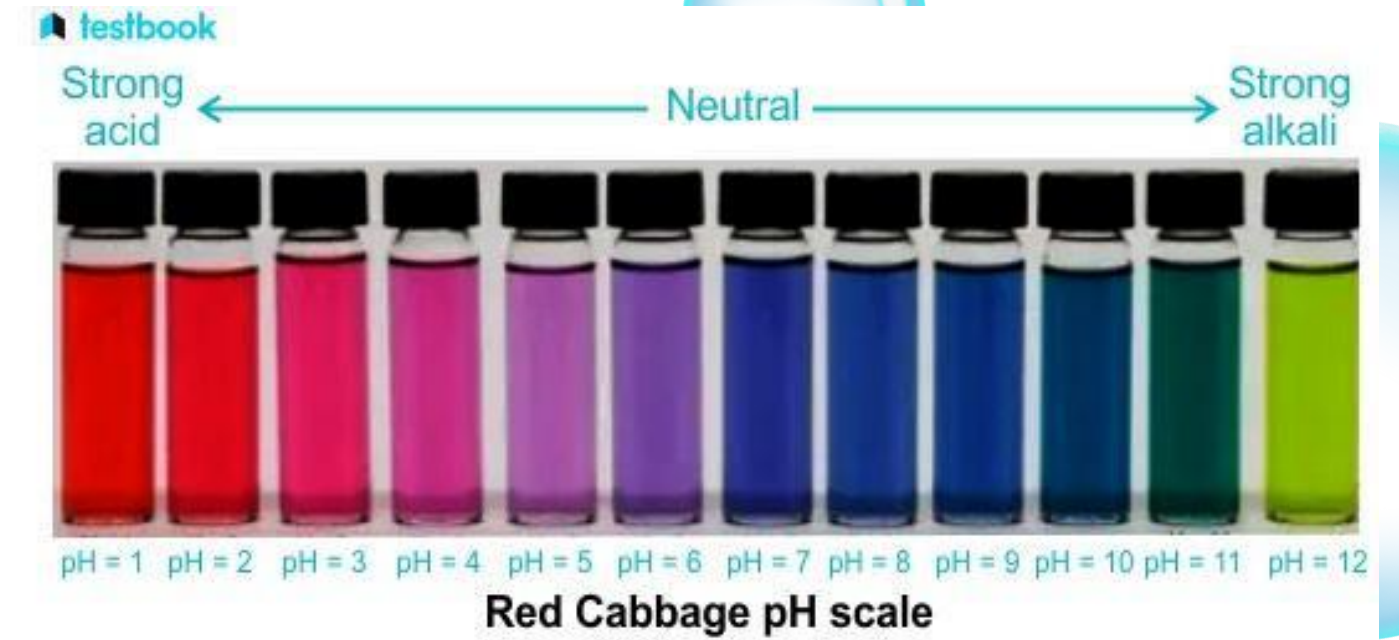
pH:3



pH:2



pH:1



pH:5?

Several translucent blue bubbles of various sizes are scattered in the top half of the slide. One large bubble is on the left, another large one on the right, and several smaller ones are in between.

SURPRISES

I was surprised that both lime soda and plain soda water were acidic.

I was surprised that bleach was such a strong base it made the indicator really, really light yellow, almost clear.

Several translucent pink bubbles of various sizes are scattered in the bottom half of the slide. One large bubble is on the left, another large one on the right, and several smaller ones are in between.

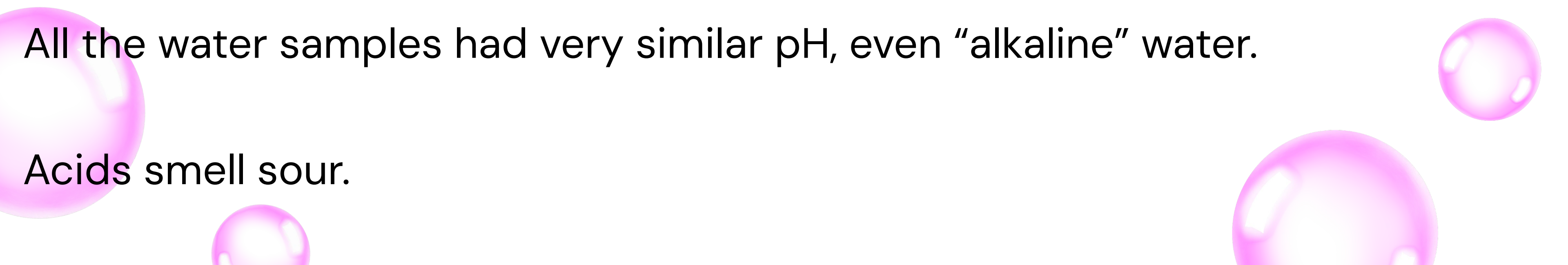
Several translucent blue bubbles of various sizes are scattered in the top left and top right corners of the slide.

PATTERNS

Here are some patterns I noticed:

The strongest bases were things we use to clean: bleach, baking soda and hand soap

All the water samples had very similar pH, even “alkaline” water.

Several translucent pink bubbles of various sizes are scattered in the bottom left and bottom right corners of the slide.

Acids smell sour.

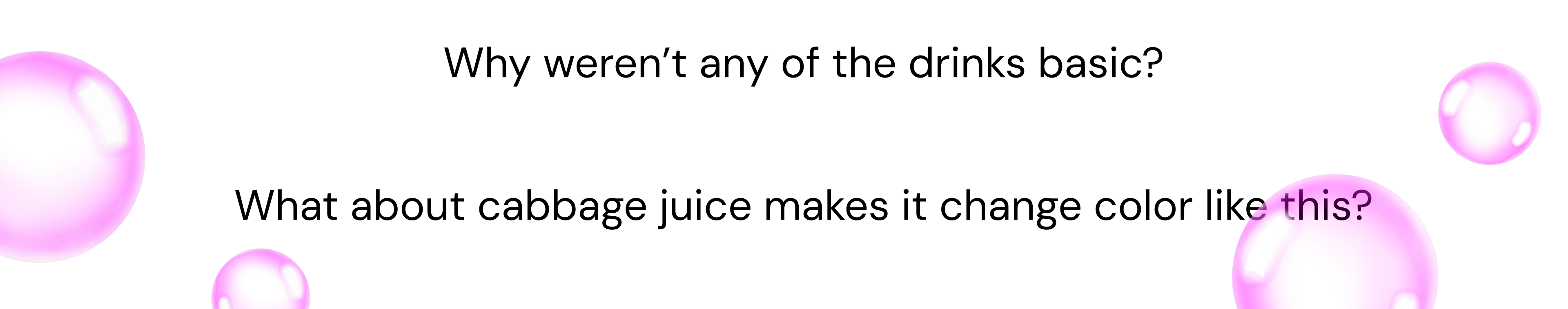
Several translucent blue bubbles of varying sizes are scattered in the top corners of the slide.

NEW QUESTIONS

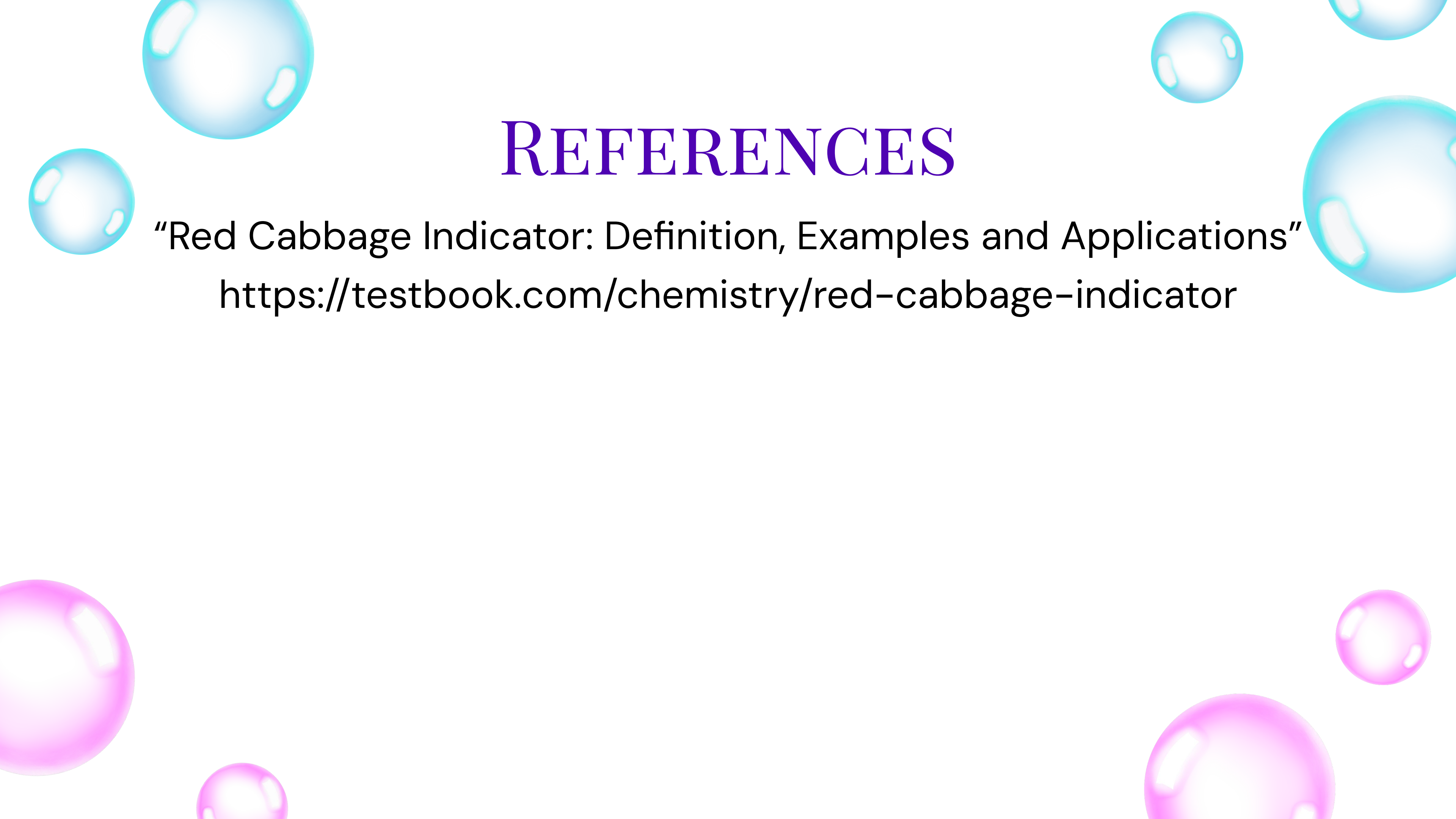
New questions I have now that my project is finished:

Why are a lot of cleaners basic?

Why weren't any of the drinks basic?

Several translucent pink bubbles of varying sizes are scattered in the bottom corners of the slide.

What about cabbage juice makes it change color like this?

The background of the slide is decorated with several translucent, 3D-rendered bubbles. In the upper corners, there are blue bubbles of varying sizes. In the lower corners, there are pink bubbles of varying sizes. The bubbles have highlights and shadows, giving them a realistic, glossy appearance.

REFERENCES

“Red Cabbage Indicator: Definition, Examples and Applications”

<https://testbook.com/chemistry/red-cabbage-indicator>