Firstly, we would like to point out that it is not necessary for you to have any understanding of Chemical Reactions for this activity. The beauty of this activity is that you can discover what substances are acidic or alkali within your house alongside the children. The colour changes, reactions and fizzes are a very exciting part of this exploration. After a little bit of experimentation children begin to realise that mixing one colour with the same colour does not cause a reaction but mixing the pink with the blue does. Slowly introduce the correct terms and add different substances to expand on the activity.

Method

To make your red cabbage juice just boil the red cabbage in water. The longer you boil it, the deeper the colour of the liquid and the more obvious the colour changes during the experiment will be. Divide your red cabbage juice between the different jars you wish to use. Make sure every substance gets its own jar. Simply add a spoonful or two of each substance to the jar of cabbage juice. Hint: Mixing the pink and the dark green/blue substances will cause a fizzing reaction.

Observations, conclusions, ideas

It doesn't matter whether you have all the substances that we tested. You can test whatever you have to hand. Mixing an acid and a base will produce a reaction. So, mixing a pinkish (acid) coloured substance with a blueish (basic) one will cause a reaction.
Why not try all the different substances you can find? What causes the best colour changes? What causes the best reactions? Why?

What's the STEM?

The baking soda and vinegar reaction aka the vulcano is a common experiment in some early childhood services. But explaining why or what is happening during the reaction is often an intangible concept for children. This activity assists with the introduction of the vocabulary needed to help explain this phenomenon. The colour changes are enough to make this interesting to young children, even without the acid-base reaction. Concepts of the scientific process can be introduced such as keeping variables the same and measuring substances accurately and not cross contaminating.

Equipment list

Red cabbage juice (see alternatives below)

Substances to test:
baking powder, baking soda, citric powder, tartaric acid powder, lemon juice, vinegar
clear jars, glasses, beakers

Alternatives to red cabbage

Turmeric – used for years as a pH indicator. Just add powdered turmeric to water.
Blueberry or Elderberry juice – juice the berries and add a drop of water to dilute.
Radish – similar to red cabbage and reacts in a similar way. Just peel the red skin off the radish and immerse in water. You can use alcohol to take the dye out the skins as well.