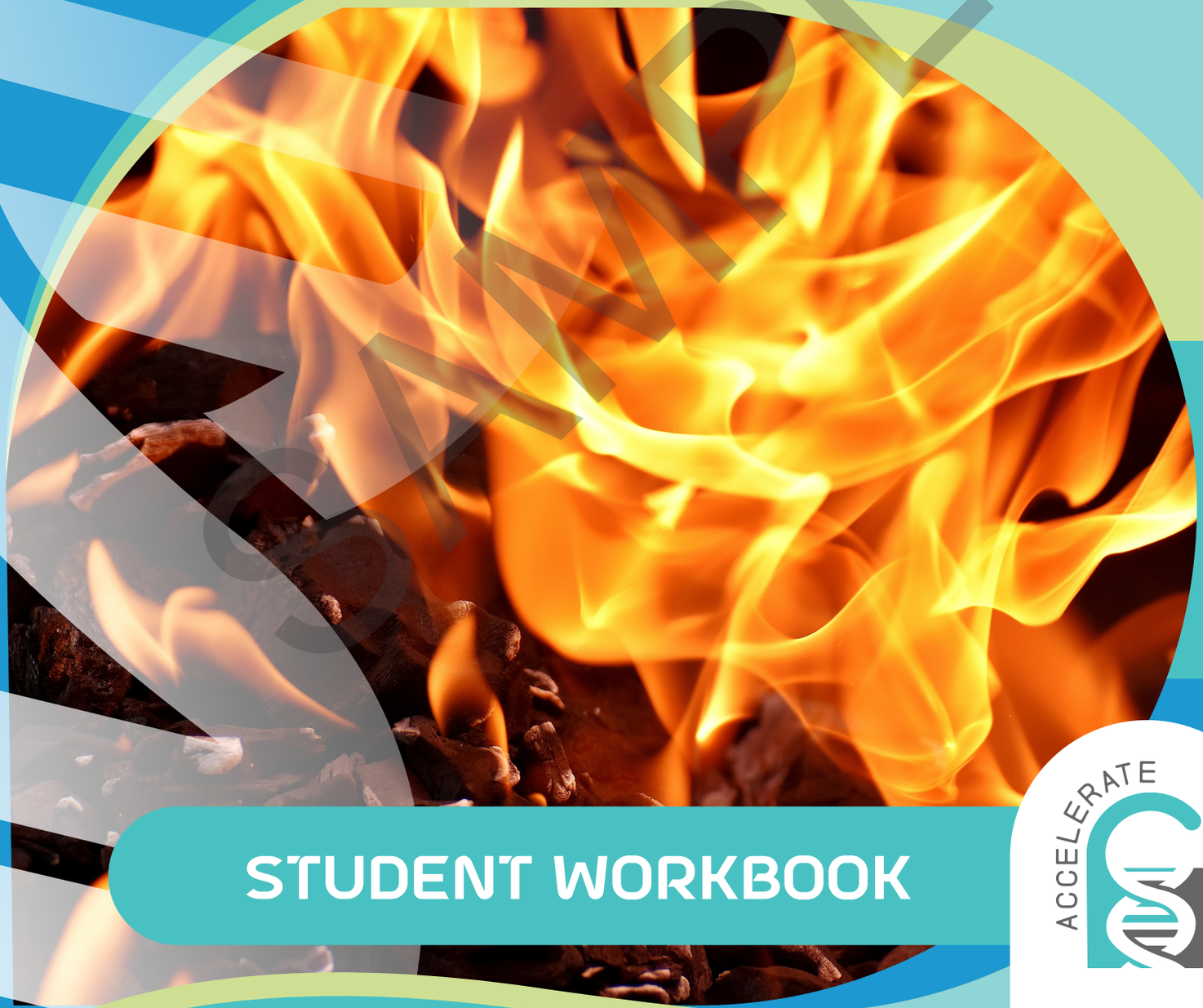
FIZZ, FOAM, FIRE!



STUDENT WORKBOOK

ACCELERATE

ACTIVITY 1

ELEPHANT TOOTHPASTE EXPLOSION!

First, you will perform a chemical reaction to make what many people call "elephant toothpaste" because it makes a lot of foam that you could imagine an elephant using to brush their teeth.

I MAKING TOOTHPASTE

WHAT YOU NEED:

FROM THE KIT:

- ☐ 2 pipets
- ☐ Beaker
- ☐ Dish soap
- ☐ Disposable gloves
- ☐ Food coloring
- ☐ Goggles
- ☐ Graduated cylinder
- ☐ Hydrogen peroxide
- ☐ Pie plate
- ☐ Stir rod
- ☐ Thermometer
- ☐ Yeast

OTHER ITEMS:

- ☐ Paper towels

WARNING:

DO NOT EAT: While this may be called elephant toothpaste, this chemical mixture should never be put in your mouth (or the mouth of any animals, including elephants!)

This can get messy! Keep some paper towels handy, and do it on a surface that can be easily cleaned.

WHAT TO DO:

STEP 1

Put on your goggles and gloves, and place the graduated cylinder in the pie plate.

To design a science experiment, you start with a question, form a hypothesis, then design a way to test your question that will either help support or reject your hypothesis. Let's get started!

Question:

First, write your experimental question in proper scientific form by filling in the blanks below.

How does _____affect _____?

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Hypothesis:

Next, you will form a hypothesis in the form of an If-Then statement. A **hypothesis** is a prediction of what will happen in a scientific experiment. It should be written in a way that can be supported or rejected by the evidence you will gather in your experiment. Complete the If-Then statement by filling in the blanks below.

If _____then _____?

Notice that the If-Then statement can be read as an answer to your experimental question. The hypothesis and question usually work together like this.

Now, you will design an experiment that will help you get the evidence to support of reject your hypothesis.

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Here's a Clue

For a clue, look at the "If" and "Then" parts of your hypothesis. The "If" part of your hypothesis is what you can control, and the "Then" part is what you will measure or observe.

Note: Remember you don't have an unlimited supply of the chemicals. You also need to save at least one scoop of citric acid for a later activity. So, keep your amounts small in your experiment, but not so small that you won't notice a temperature change. Try to use 2–3 scoops total for this part.

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WHAT YOU NEED:

FROM THE KIT:

- ■ Baking soda
- ■ Beaker
- ■ Citric acid
- ■ Stir rod
- ■ Thermometer

2. Write a chemical equation for each of the situations below. The first one has been done for you as an example.

a. Sodium chloride and fluorine react to make sodium fluoride and chlorine.
sodium chloride + fluorine $\longrightarrow$ sodium fluoride + chlorine

b. Sodium and chlorine react to make sodium chloride.

c. Aluminum oxide is made from aluminum and oxygen (careful with this one!).

d. Sodium bicarbonate breaks down to form carbon dioxide, water, and sodium carbonate.

3. Where would you write "heat" in an equation for an endothermic reaction? Why?

ACCELERATE

SCIENCE UNLOCKED

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Instructions	IN-FZFMFRS
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