

**CHAPTER 2:  
COMMON  
REACTIONS  
IN OUR  
LIVES**

# QUESTION RESULTS

1. Like 😊 – labs, chemistry, experiments in gym, my moustache
2. Dislike 😞 – periodic table, machines, certain units, difficult questions
3. What's Ahead – very open minded



# IT'S ALL AROUND YOU!

Chemistry contributes to many parts of everyday life

Some reactions form new or different substances (CO<sub>2</sub> from video), others break down substances (cleaners with dirt)

We will continue to look at some everyday reactions and learn about what makes them useful



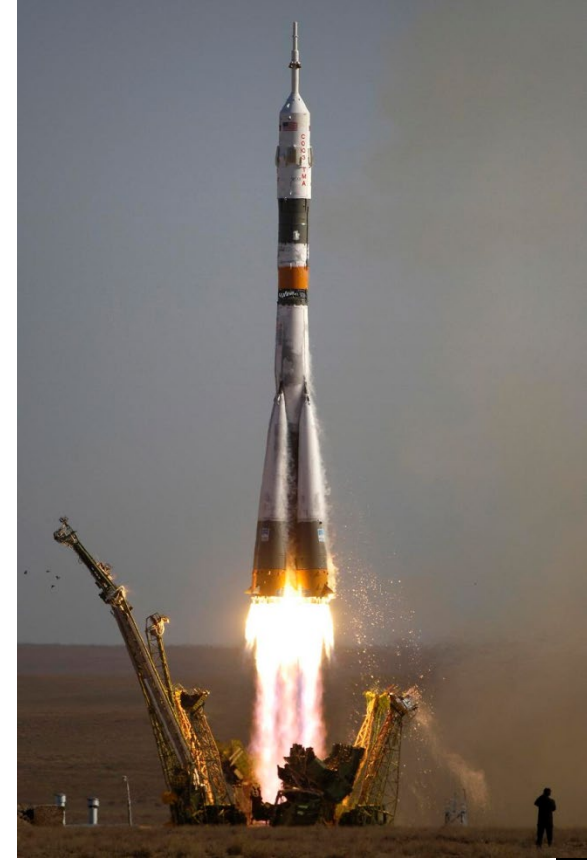
# USEFUL REACTIONS

During a chemical reaction substances react to form new substances with different properties

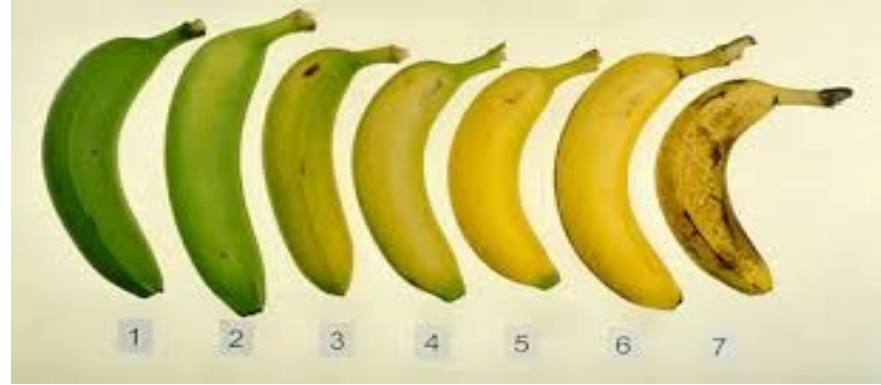
Can be simple or very complex

Such as hydrogen and oxygen reacting to power a space shuttle or simply taking an antacid

Antacids contains a basic chemical called magnesium hydroxide which reacts with your stomach acid (hydrochloric acid) to produce neutral magnesium and chloride



# BANANAS



Every notice how bananas change green → yellow → brown

Bananas give off a gas known as ethylene which triggers the release of enzymes

Enzymes – speed up chemical reactions

1. Enzyme (amylase) breaks down starches into sugar (glucose)

2. Other enzymes trigger colour change

3. Enzymes break down large molecules into smaller ones that may evaporate into the air which creates the lovely banana smell



# OTHER REACTIONS



**Bleach** – make white fabrics look white and clean. Use hydrogen peroxide or sodium hypochlorite. Both contain oxygen ( $O_2$ )

**Swimming Pool** – Have the distinct smell – caused by adding chlorine to water which produces hypochlorous acid

Hypochlorous acid kills micro-organisms that may contaminate the pool

Pure chlorine can be dangerous as it may produce chlorine gas. So protective gloves and eyewear should be worn when handling chlorine.

# OTHER REACTIONS



**Baking Bread – combination of flour, yeast, liquid, salt, and other flavourings → dough**

**When the flour is mixed with water and yeast, enzymes from the yeast break down the starches into sugar/glucose. Other enzymes then react and create carbon dioxide (CO<sub>2</sub>) and ethanol (type of alcohol)**

**The CO<sub>2</sub> bubbles up and makes the dough rise. Heat then causes these of gas to expand and give bread it's air texture**

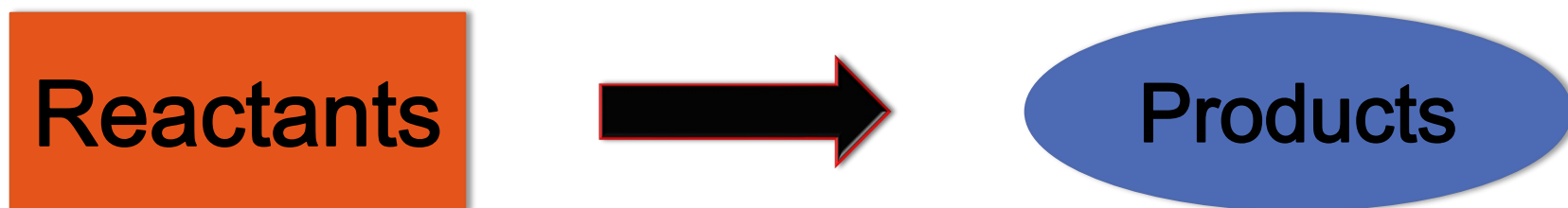
**The ethanol burns away and gives bread it's taste**



# THE CHANGES THAT OCCUR

Some reactions require energy, while others release energy

In a reaction the substances you begin with will be different from the substances you end with



**Reactants** – substances before the reaction

**Products** – substances after the reaction

**Arrow** – indicates a reaction is happening and the direction



# PHOTOSYNTHESIS AND CELLULAR RESPIRATION

Photosynthesis – used in plants only

Reactants

Products

Cellular Respiration  
– used by both plants and animals

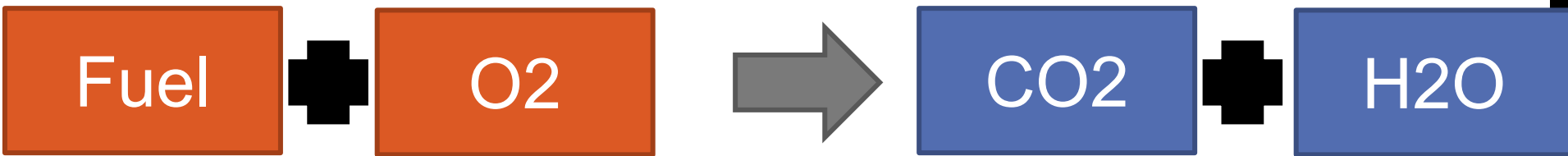
Reactants

Products

# COMBUSTION

A reaction where a fuel burns in oxygen and produces carbon dioxide and water

Much of Alberta's industry depends upon combustion reactions with fossil fuels such as oil and natural gas

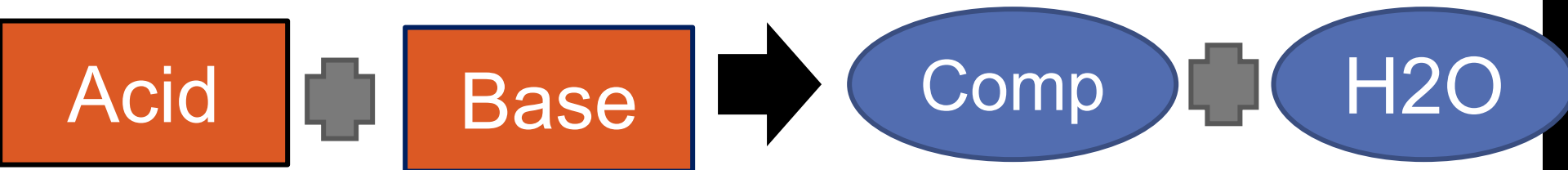


# NEUTRALIZATION

During these reactions an acid is added to a base to a new compound and water

The ph of the product will be closer to 7 than either of the reactants

Often involved in cooking



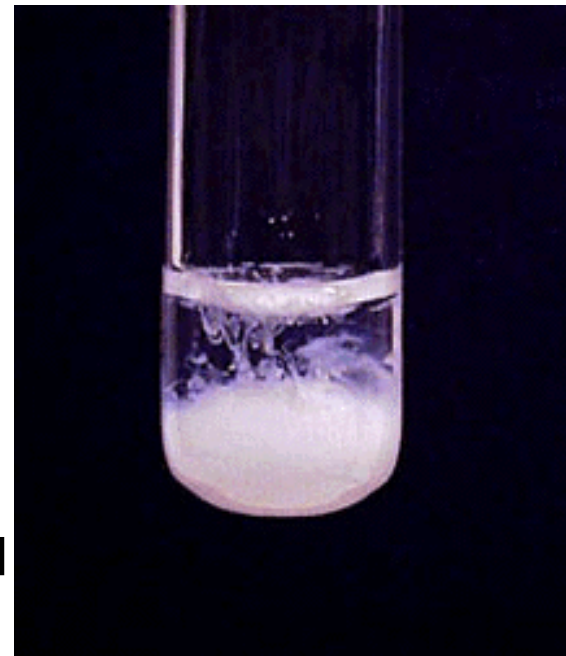
# CHANGE HAS OCCURRED



In most situations we've looked at our contribution causes the change, but sometimes chemicals change all on their own

## Evidence of Chemical Change

- A different **colour** is produced
- An odour can be detected
- Bubbles appear or gas forms
- A solid forms – called a precipitate
- Energy is given off (exothermic) or absorbed (endothermic) – fire or icepacks



# ENERGY AND CHEMICAL REACTIONS

Chemical changes always involve energy changes

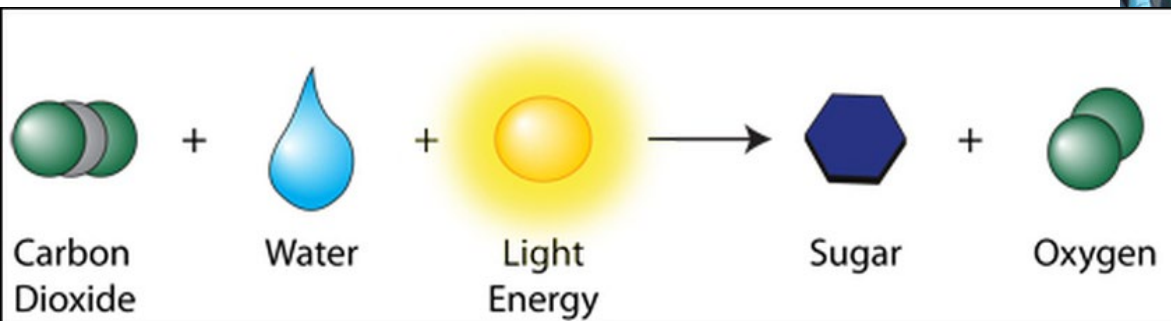
They can be obvious or very hard to notice

Knowing how much energy is being released allows us to plan for it – radiators in cars

Gasoline is used in an exothermic reaction

Digestion and metabolism are exothermic

Photosynthesis needs suns energy to begin and is endothermic



# NON-NEWTONIAN LIQUID

Cornstarch and water  
Is it a solid or a liquid?



**THE END**

