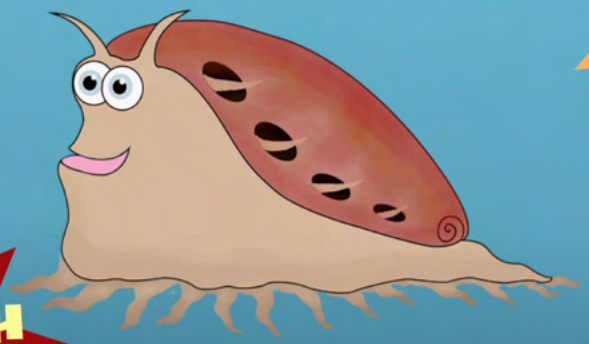
# The Ocean Chemistry ACTIVITY BOOK

WORD SEARCHES

MAZES

EXPERIMENTS TO TRY AT HOME!

COLORING BOOK PAGES



SO MUCH MORE!

MBARI

HOPKINS MARINE STATION OF STANFORD UNIVERSITY

# Ocean Chemistry Activity Book

The ocean absorbs up to one third of the greenhouse emissions caused by fossil fuel combustion. While this slows down climate change, the introduction of massive amounts of carbon dioxide in the water is changing ocean chemistry and makes seawater more acidic – a process known as ocean acidification. Science has made huge leaps forward to understand how ocean acidification affects marine organisms, especially those that make shells and skeletons of calcium carbonate in coral reefs and in upwelling ecosystems.
This activity book is aimed at helping elementary school and early middle school students, in particular 4th-6th graders, to familiarize themselves with the concept of ocean acidification, what causes it, how it occurs, how it affects marine organisms and ecosystems, and what we can do to help mitigate its impacts.
We hope you will enjoy it and have fun while learning.

- The authors

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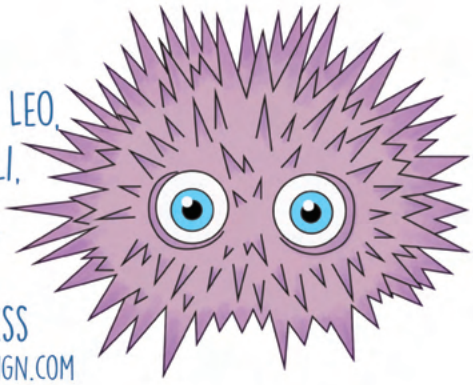

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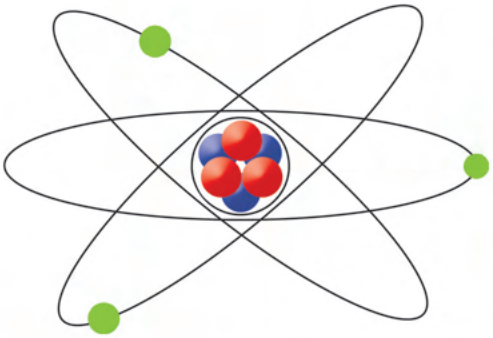
# What is Chemistry?

Chemistry is the study of MATTER and how it changes.

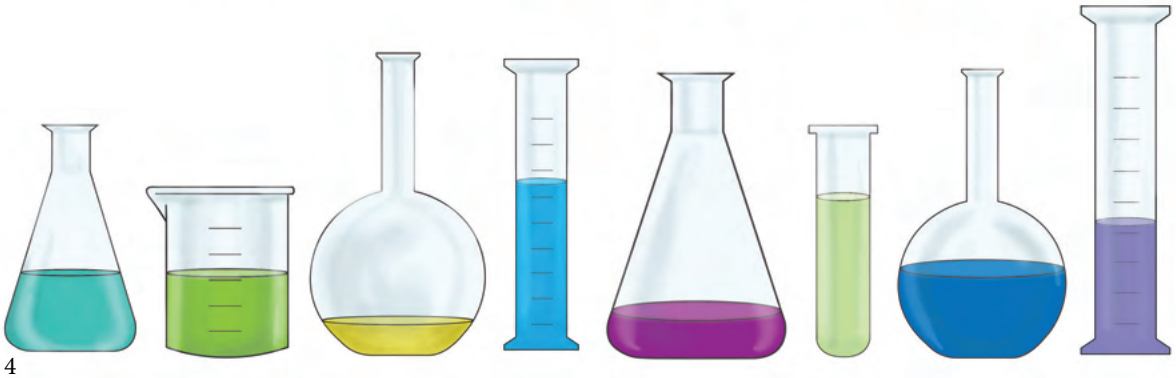


## What is Matter?

Matter is everything around you! Everything that takes up space is made of matter. Liquids! Solids! Gases!
They are all made up of matter!

ATOMS, which are the small building blocks that make up matter. can be combined to create MOLECULES.

**ATOM + ATOM = MOLECULE**

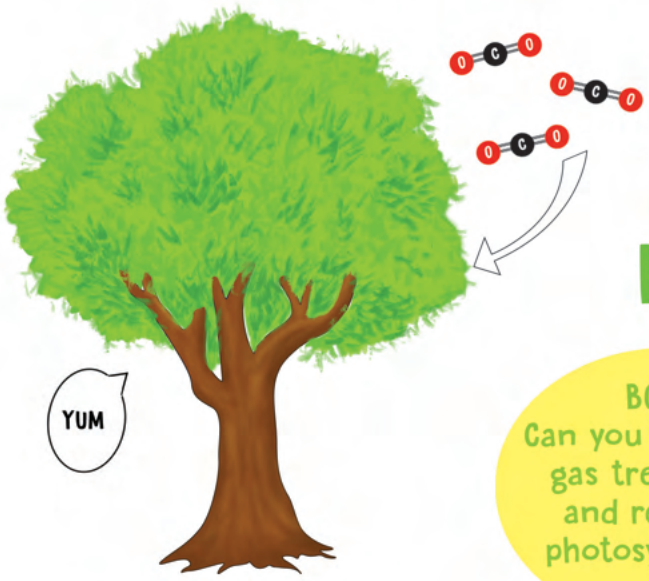


# CARBON DIOXIDE

## is a molecule.

## It is 1 carbon atom bonded to 2 oxygen atoms

Carbon dioxide, or $CO_2$, is the gas that comes out of your mouth when you exhale! You breathe in oxygen and, other gases, and breathe out $CO_2$.


It is also the gas that trees and other plants use to make food in a process called

**PHOTOSYNTHESIS.**

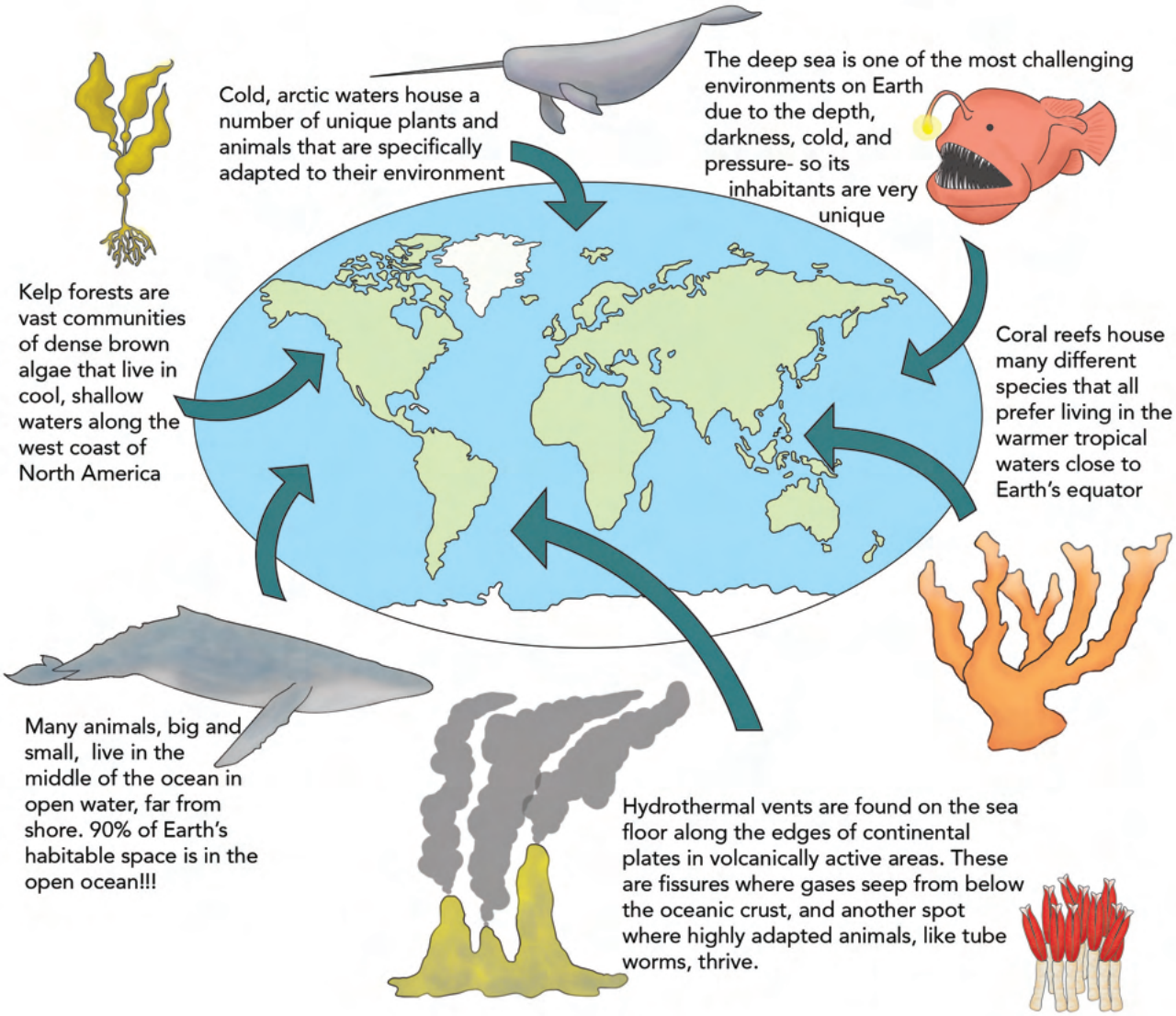
BONUS!
Can you name what gas trees create and release in photosynthesis??

However, people put a lot of extra carbon dioxide in the air every day. It is one of the gases released when people drive cars and burn certain fuels like coal and oil.

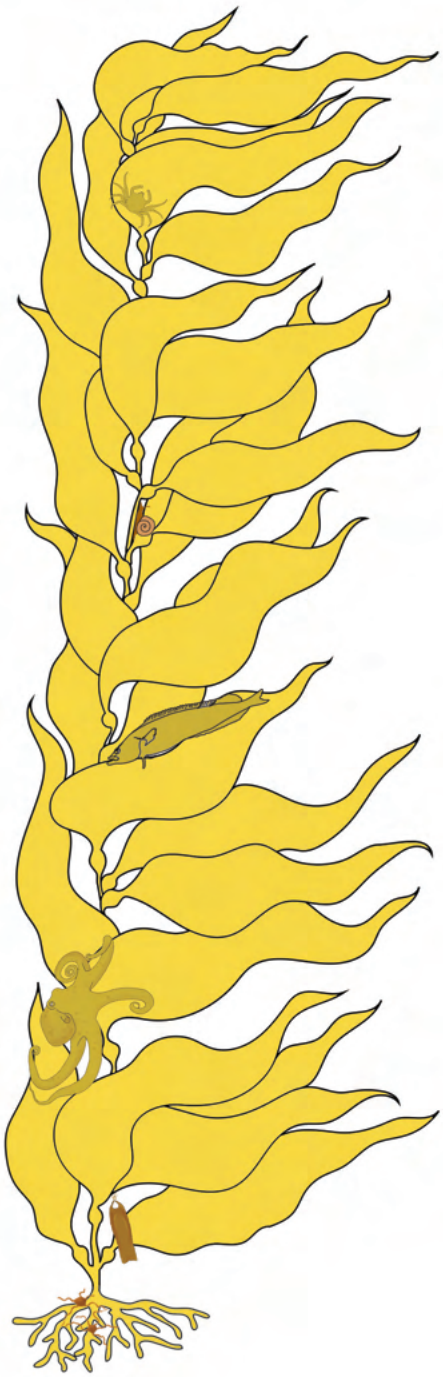
When too much CO2 gets absorbed into the ocean, it makes the sea water more **ACIDIC**

# One Big Ocean

The ocean houses many different types of habitats all over the world. Each one experiences different temperatures, currents, and conditions, just like how we experience different weather patterns on land.



# KELP FORESTS



**KELP** is a brown algae, or seaweed, that grows in colder waters. Kelp can form large underwater forests, which are home to many different species and a complex food web.

**Unscramble the names of these kelp forest critters and see if you can find them using camouflage to hide in the kelp!**

TUCSOPO

_____

PKLE BCAR

_____

INLSA

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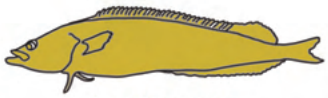

LKEP SFHI

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RHAKS GEG

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TREBLIT RSTA

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