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S6E3c. Describe the composition, location, and subsurface topography of the world's oceans.

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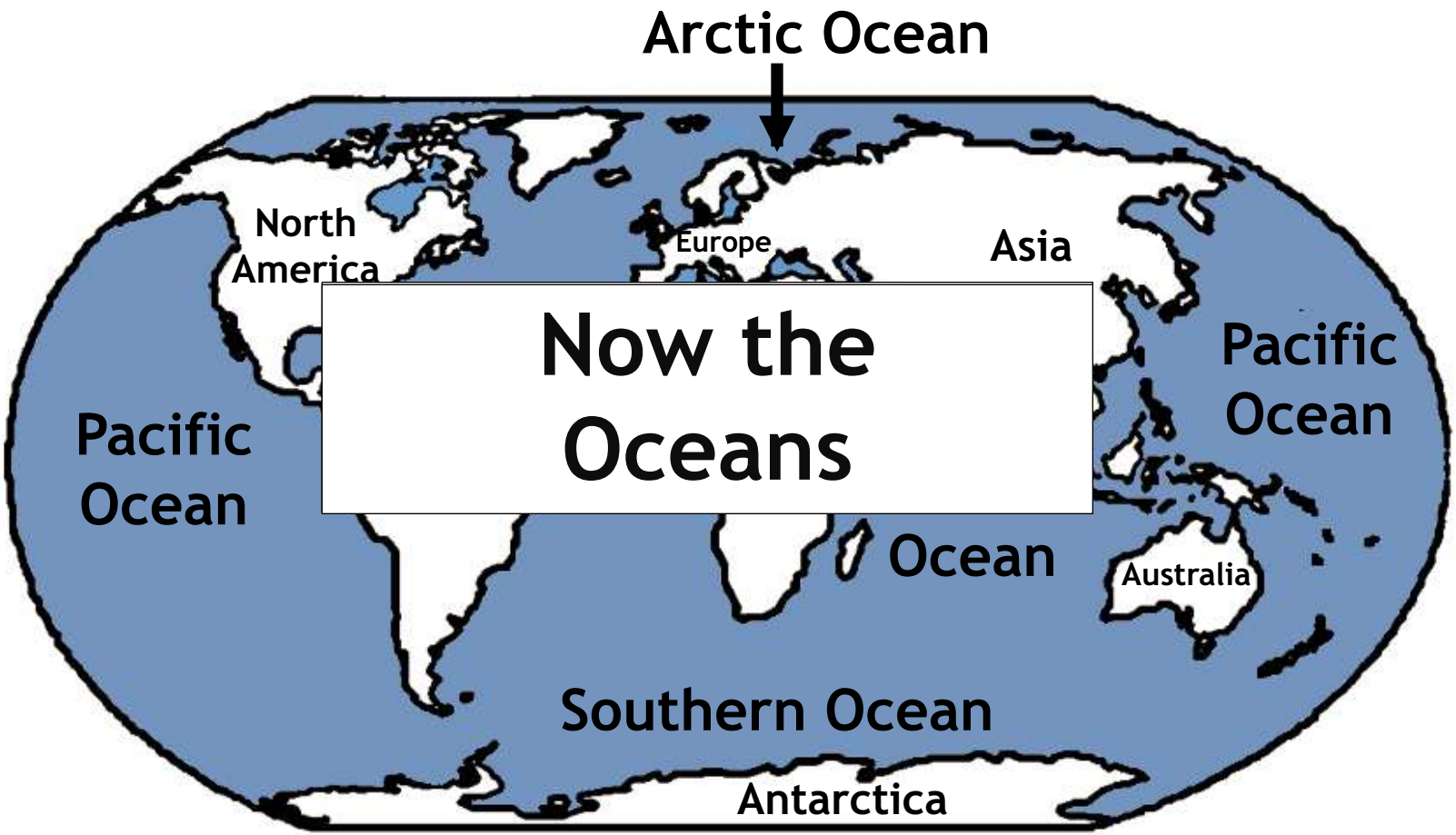
Location of the Earth's Oceans



Location of the Earth's Oceans

* Use sheet protectors with maps and either do formative assessment led by the teacher or have students work with partners to quiz each other
* Location of Oceans and Continents Worksheet
* QR Codes: Reviewing the Location of the Oceans
* Play Kahoot: https://play.kahoot.it/#/k/783b7b97-4964-41aa-ab10-2b4a91368d20 [free Web 2.0 tool where students use their cell phone to answer questions and get points]

Review Location of the Oceans

[see resources]

Chemical Composition of Ocean Water

What does the word composition mean?

What are some synonyms?

Structure

Make-up

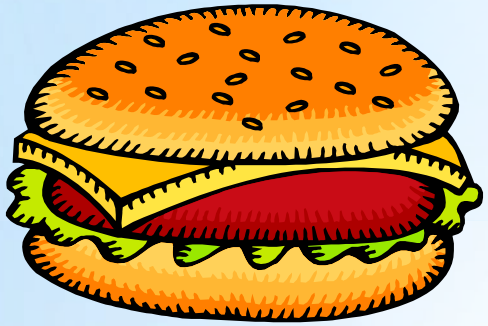
PIECES

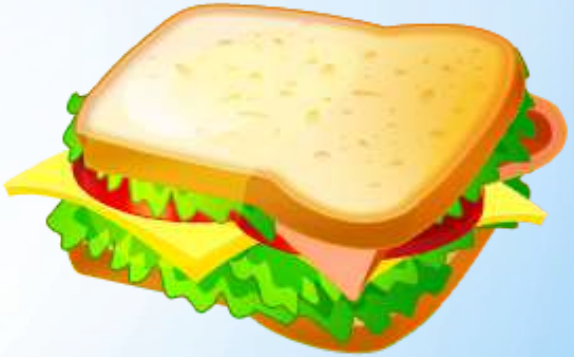
Parts

Content

Components

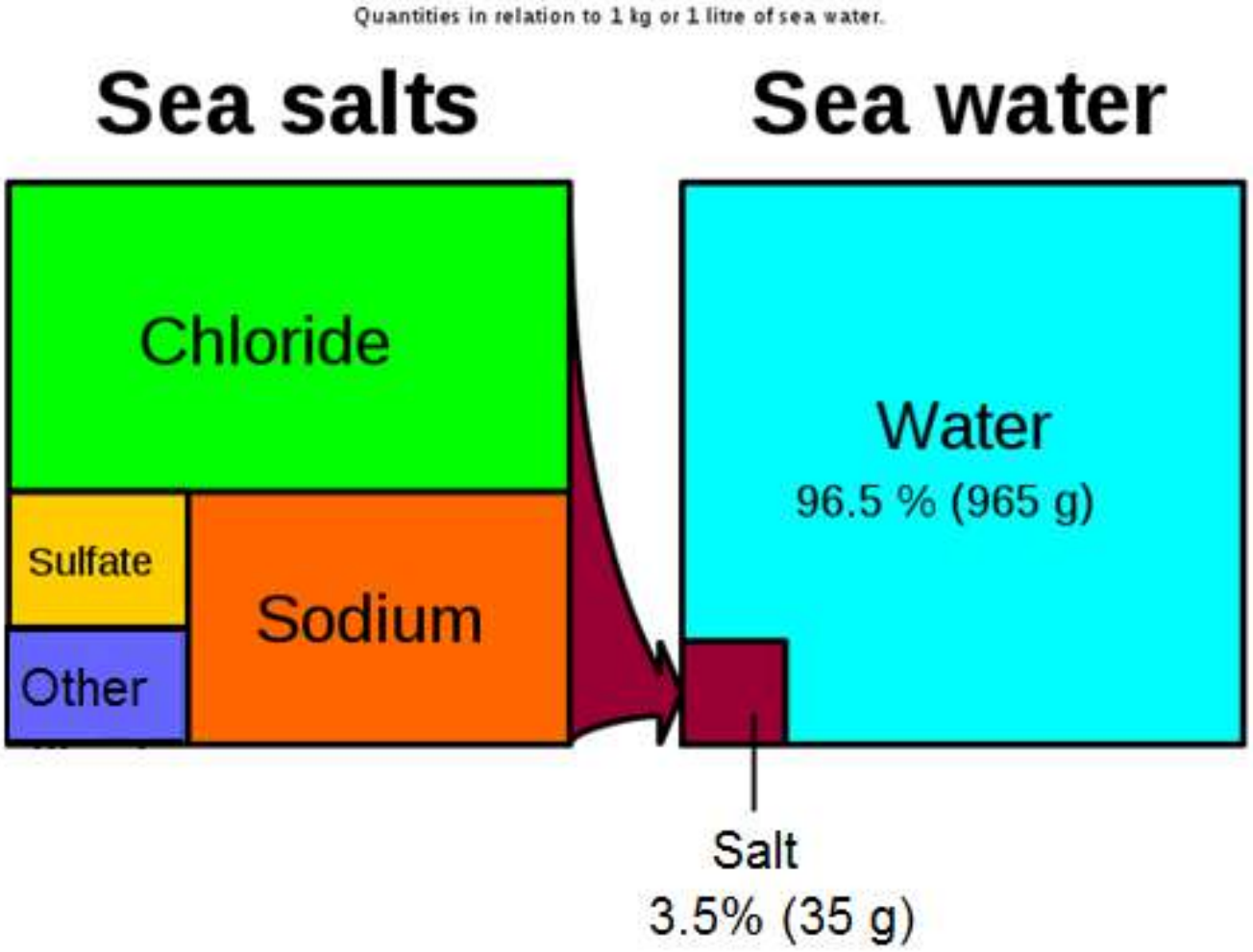
With a partner, select one of the following foods and describe its composition:





What percent of ocean water is salt?

Chemical Composition of Ocean Water



By some estimates, if the salt in the ocean could be removed and spread evenly over the Earth's land surface it would form a layer more than 500 feet (166 meters) thick, about the height of a 40-story office building (NOAA).

But, where did all this salt come from?

- **Salinity**-is the measure of all the salts dissolved in water.
- **Density**- the degree of compactness of a substance

From precipitation to the land to the rivers to the sea…

The rain that falls on the land contains some dissolved carbon dioxide from the surrounding air. This causes the rainwater to be slightly acidic.

The rain physically breaks down the rock and the acids chemically break down the rocks. Rain then carries the dissolved salts and minerals along as it flows. The salts in the runoff are carried to the streams and rivers and then to the ocean.
http://www.classzone.com/books/earth_science/terc/content/visualizations/es1303/es1303page01.cfm?chapter_no=visualization

Many of the dissolved salts are used by organisms in the ocean and are removed from the water. Others are not used up and are left for long periods of time where their concentrations increase over time.

- Did you ever wonder why the oceans are filled with salt water instead of fresh?
- Just where did the salt come from? And is it the same salt you find on a dining room table?
- Most of the salt in the oceans came from land. Over millions of years, rain, rivers, and streams have washed over rocks containing the compound sodium chloride (NaCl), and carried it into the sea.
- You may know sodium chloride by its common name: table salt! Some of the salt in the oceans comes from undersea volcanoes and hydrothermal vents.
- When water **evaporates** from the surface of the ocean, the salt is left behind.

Salt from below…

Hydrothermal vents are recently-discovered features on the ocean seafloor that contribute dissolved minerals to the oceans.

These vents are the “exit points” on the ocean floor from which sea water that has seeped into the rocks of the oceanic crust has become hotter, has dissolved some of the minerals from the crust, and then flows back into the ocean.

http://www.youtube.com/watch?v=D69hGvCsWgA&list=PL88CB33C02CCF3D39&index=1

Eruption of Volcanoes Underwater…

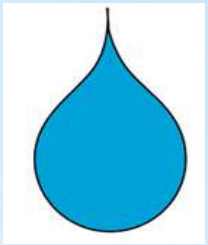
Similar to the previous process, during an underwater volcano eruption, seawater reacts with hot rock and some minerals are dissolved into the sea water.

http://www.youtube.com/watch?v=U51cY6iod3U&index=5&list=PL88CB33C02CCF3D39

Journey to the Ocean Activity

Summarizing Strategy:

Drop of Ocean Water Recipe



Ingredients:

Steps: