

23.1 Plate Tectonics – Today's Earth



Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

Plate tectonics is a scientific theory describing the large-scale motion of seven large plates and the movements of a larger number of smaller plates of the Earth's lithosphere.

The lithosphere is the rigid outermost shell of a planet (the crust and upper mantle). The lithosphere is broken into tectonic plates. The Earth's lithosphere is composed of seven major plates and many minor (smaller) plates.

Tectonic plates are composed of oceanic lithosphere and thicker continental lithosphere, each topped by its own kind of crust.

Where the plates meet, their relative motion determines the type of boundary: convergent, divergent, or transform. Earthquakes, volcanic activity, mountain-building, and oceanic trench formation occur along these plate boundaries (or faults).

Read/Summarize Text



1. Read the passage.
2. Underline key expressions in each sentence.
3. Re-write each word (or expression) you underlined.
4. Summarize the passage.

Historical development of the Theory of Plate Tectonics

In line with other previous and contemporaneous proposals, in 1912 the meteorologist Alfred Wegener amply described what he called continental drift, expanded in his 1915 book *The Origin of Continents and Oceans* and the scientific debate started that would end up fifty years later in the theory of plate tectonics.

History of Ocean Basins was published in 1962 and explained the mechanism behind Alfred Wegener's continental drift theory. In the paper Hess described how hot magma would rise from under the crust at the Great Global Rift. When the magma cooled, it would expand and push the tectonic plates apart.

Adaptations for wikipedia and psu.edu.

Re-write words you underlined

Using a complete sentence, summarize or rephrase the passage

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

DEFINITION - Plate tectonics is the theory explaining the movement of the earth's plates and the processes that occur at their boundaries.

PLATES - Plates are variously-sized (approximately 60 miles thick) areas of the earth's crust and mantle (also called the lithosphere) that move slowly around the mantle's asthenosphere and are predominantly responsible for the earth's volcanoes and earthquakes. The asthenosphere is a portion of the mantle that consists of extremely hot, plastic-like rock that is partially melted.

DIVERGENT PLATE BOUNDARY - The lithosphere, the Earth's crust and upper mantle, includes three plate boundaries, the first of which is a divergent plate boundary. On a divergent plate boundary, the plates move apart in opposite directions.

CONVERGENT PLATE BOUNDARY - A mountain can be formed by convergent boundaries. On the second type of boundary, a convergent boundary, the plates are pushed together. Convergent plate boundaries help create mountains and volcanoes.

TRANSFORM FAULT - The third type of plate boundary is a transform fault. On a transform fault, the plates move in opposite but parallel directions along a fracture. In other words, the plates slide past one another.

THE EARTH'S CORE - The innermost part of the Earth is called the core. The core is extremely hot (4,300 degrees Celsius) and is made mostly of iron. The core is mostly solid but is surrounded by a liquid molten material.

THE EARTH'S MANTLE - The thickest of the Earth's three zones, the mantle surrounds the core and is mostly solid rock. A small portion of the mantle, the asthenosphere, is very hot (approximately 3,700 degrees Celsius), partially melted rock.

THE EARTH'S CRUST - The oceanic crust extends below the ocean floor. The Earth's crust is the outermost and thinnest layer of the Earth's three zones. It consists of the continental and oceanic crusts .

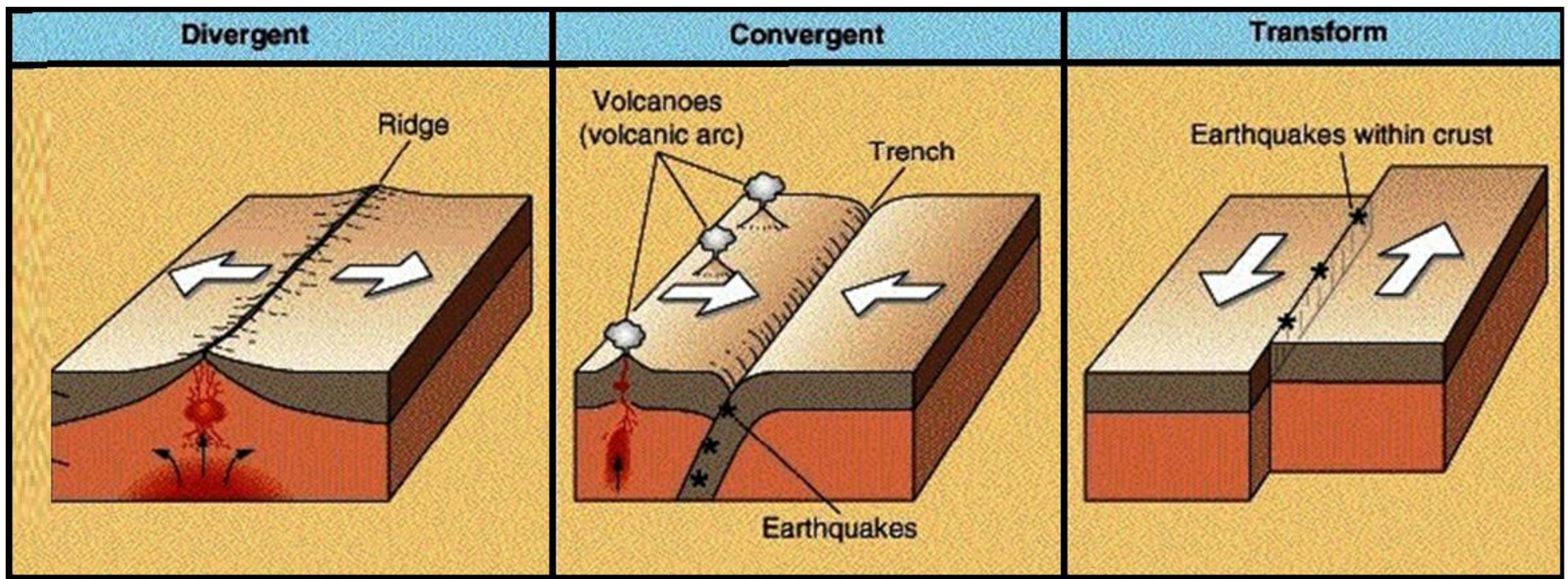
CONVECTION CELLS - Convection cells are believed to be what helps keep the plates moving. The plates rest on the constantly moving, plastic-like rock of the lower mantle (asthenosphere) and move in a similar fashion to convection in the atmosphere.

CONTINENTAL DRIFT - The theory of plate tectonics developed in the 1960s from an earlier theory called continental drift. Continental drift was introduced by Alfred Lothar Wegener in 1912, and it claims that the continents were once connected and that they gradually drifted apart over millions of years. Plate tectonics is significant because it explains how continental drift can occur.

Draw Illustration



Copy and Label the Illustration in the Space Provided



Adapted from: <https://www.geologyin.com/2016/05/12-facts-you-should-know-about-plate.html>

Draw (Copy) the Illustration Here

Interpret a Graphic

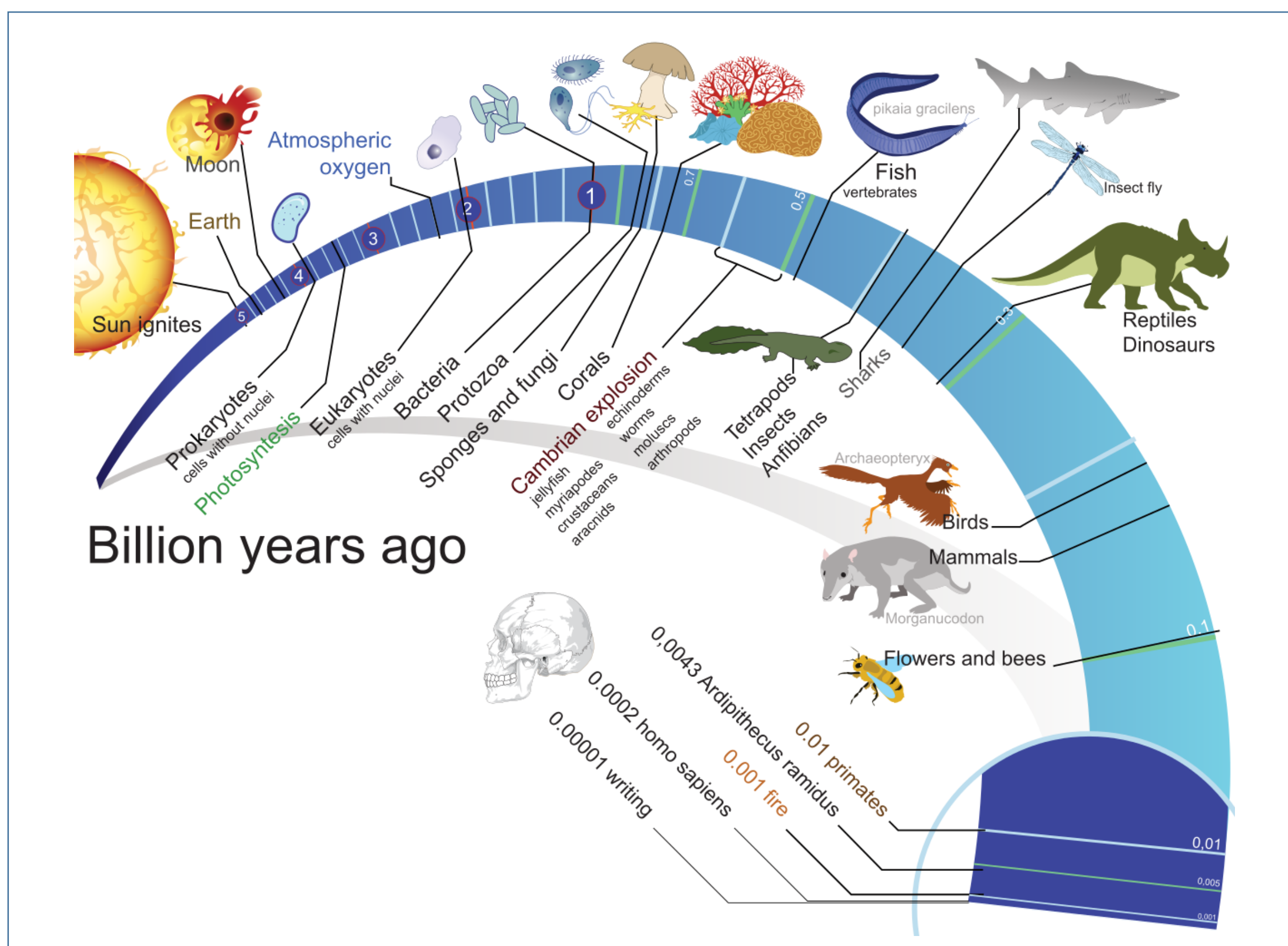


Write the title of the graphic

Summarize what this graph represents or conveys

In what way does this “Life Science” graphic correspond to the information presented in this Student Handout?

<http://mayakg.blogspot.com/2016/03/geologic-timeline-reflection.html>



Show-Off Your Smarts!



Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

Write down three words introduced or covered by this topic.

- 1.
- 2.
- 3.

Q1. How can this information be applied to a young-person's life?

Q2. How does this information apply to (or impact) communities?

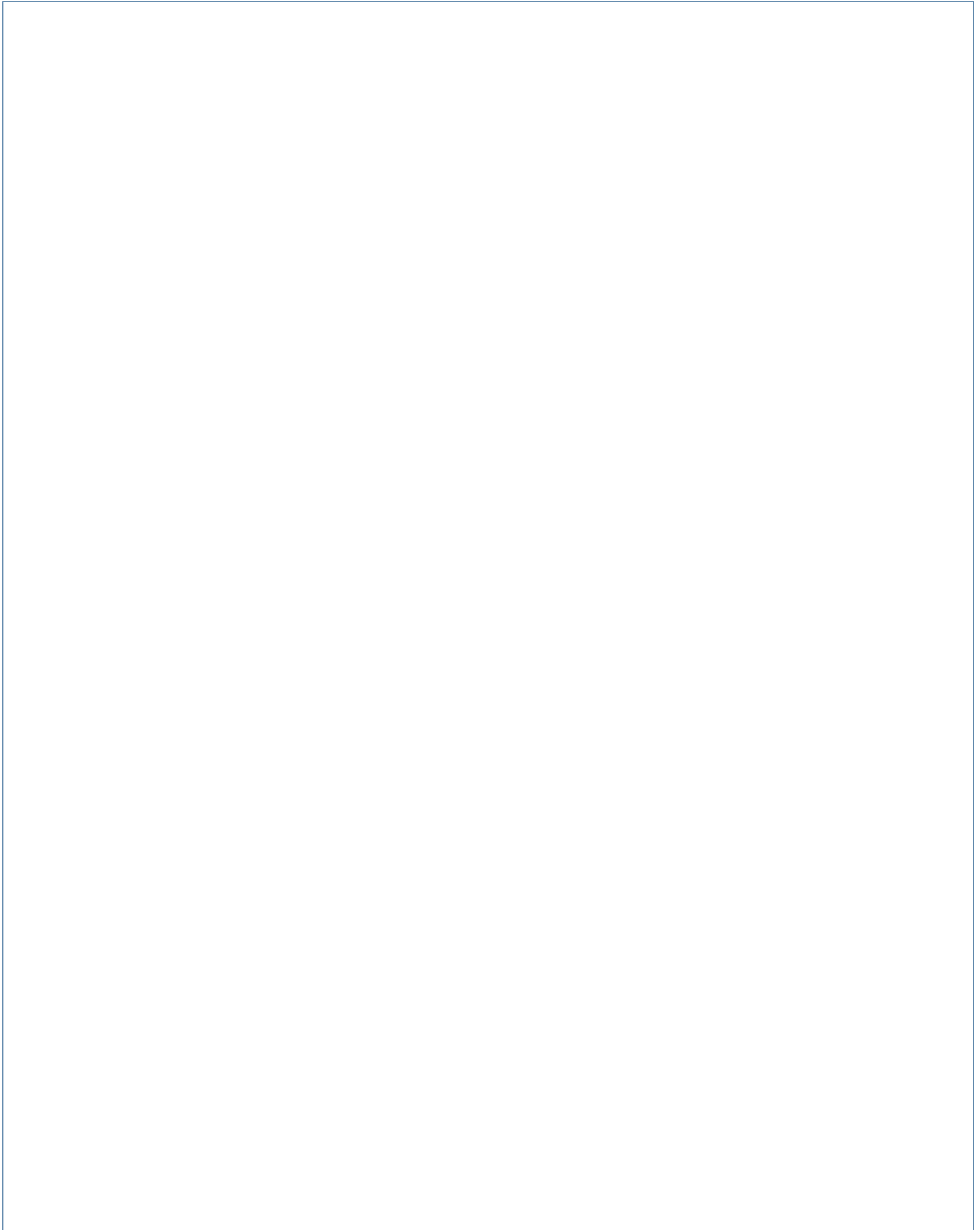
Q3. When do scientists need to apply this information? How?

Q4. How would a person from 100 years ago view this information?

Q5. How does this topic connect to other science topics or math?

Make a Poster

In the space provided here, create/draw a poster which conveys the concepts you have learned on this topic.

A large, empty rectangular box with a thin blue border, intended for the student to create a poster. The box occupies most of the page below the instructions.