

16.1 Prokaryotic and Eukaryotic Cells

Biology

Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

Prokaryotes are unicellular organisms that lack organelles or other internal membrane-bound structures . They do not have a nucleus. Instead, they have a single chromosome.

One hypothesis is that eukaryotic cells evolved from a symbiotic association of prokaryotes—endosymbiosis. This is well supported by studies of mitochondria and chloroplasts, which are thought to have evolved from bacteria living in large cells.

Prokaryotes are found in the domains of Bacteria and Archaea. Eukaryotes make up the remaining domain. Prokaryotes tend to be much smaller in size than eukaryotic cells. Prokaryotes have no membrane-bound organelles such as a nucleus.

Autotrophic prokaryotes make organic molecules from carbon dioxide. In contrast, heterotrophic prokaryotes obtain carbon from organic compounds.

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.

From prokaryotes to eukaryotes.

Mitochondria and chloroplasts have striking similarities to bacteria cells. They have their own DNA, which is separate from the DNA found in the nucleus of the cell. And both organelles use their DNA to produce many proteins and enzymes required for their function.

Living things have evolved into three large clusters of closely related organisms, called "domains": Archaea, Bacteria, and Eukaryota. Archaea and Bacteria are small, relatively simple cells surrounded by a membrane and a cell wall, with a circular strand of DNA containing their genes.

Reference URL.

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.

Take a moment and look at yourself. How many organisms do you see? Your first thought might be that there's just one: yourself. However, if you were to look closer, at the surface of your skin or inside your digestive tract, you would see that there are actually many organisms living there. That's right! You are home to around 100 trillion bacterial cells, which outnumber your own human cells by about 10 to one¹

This means that your body is actually an ecosystem. It also means that you—for some definition of the word you—actually consist of both of the major types of cells: prokaryotic and eukaryotic.

All cells fall into one of these two broad categories. Only the single-celled organisms of the domains Bacteria and Archaea are classified as prokaryotes—pro means before and kary means nucleus. Animals, plants, fungi, and protists are all eukaryotes—eu means true—and are made up of eukaryotic cells. Often, though—as in the case of we humans—there are some prokaryotic friends hanging around.

Components of prokaryotic cells

There are some key ingredients that a cell needs in order to be a cell, regardless of whether it is prokaryotic or eukaryotic. All cells share four key components:

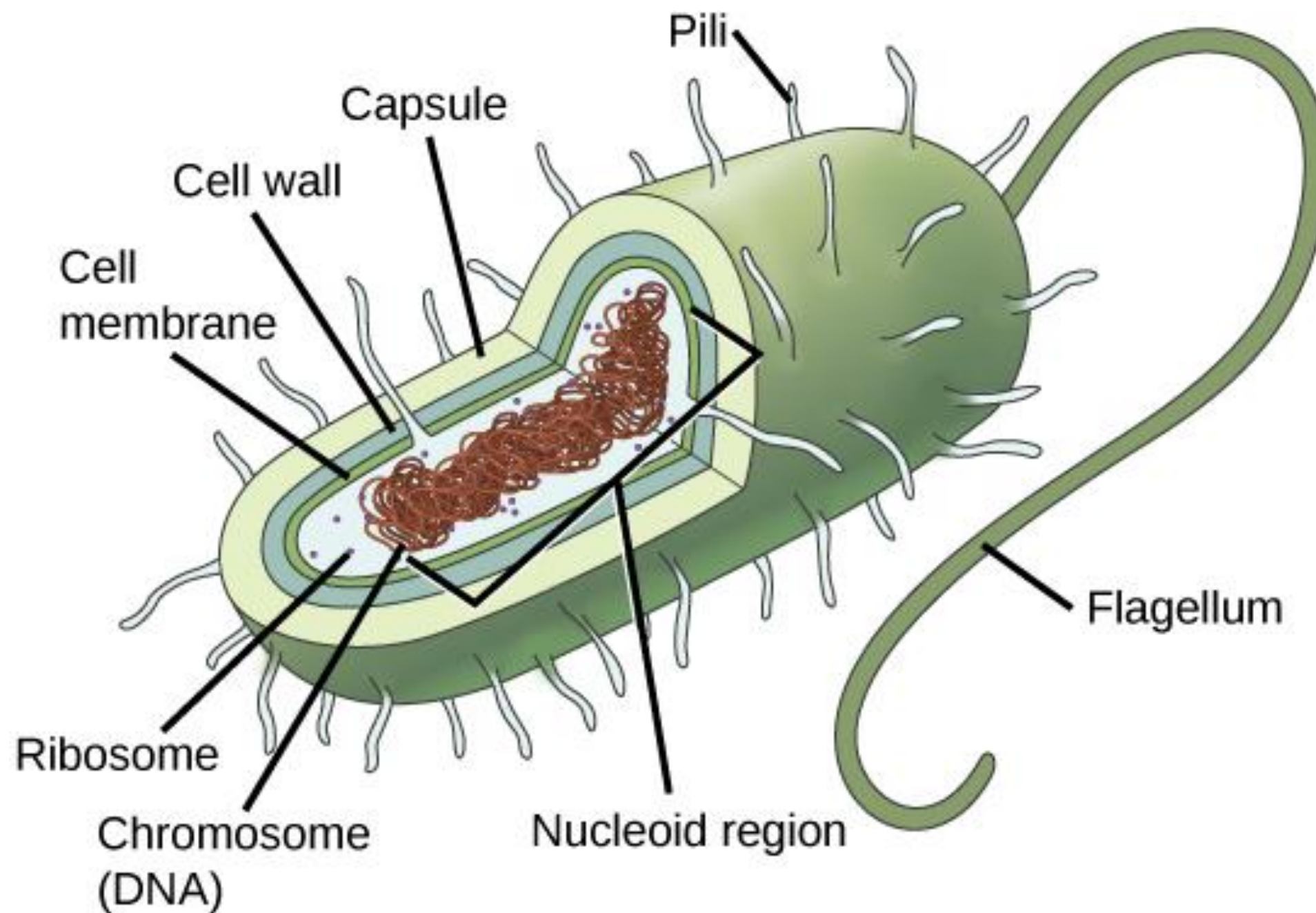
- The plasma membrane is an outer covering that separates the cell's interior from its surrounding environment.
- Cytoplasm consists of the jelly-like cytosol inside the cell, plus the cellular structures suspended in it. In eukaryotes, cytoplasm specifically means the region outside the nucleus but inside the plasma membrane.
- DNA is the genetic material of the cell.
- Ribosomes are molecular machines that synthesize proteins.

Despite these similarities, prokaryotes and eukaryotes differ in a number of important ways. A prokaryote is a simple, single-celled organism that lacks a nucleus and membrane-bound organelles.

Draw Illustration



Copy and Label the Illustration in the Space Provided



NOTE: This figure shows the generalized structure of a prokaryotic cell. All prokaryotes have chromosomal DNA localized in a nucleoid, ribosomes, a cell membrane, and a cell wall. The other structures shown are present in some, but not all, bacteria.

http://cnx.org/contents/GFy_h8cu@9.87:pOpVdlwp@11/Prokaryotic-Cells

Draw (Copy) the Illustration Here

Interpret a Graph



Write the title of the graph _____

Circle the type of chart this represents

Bar Chart Line Chart Pie Chart Other

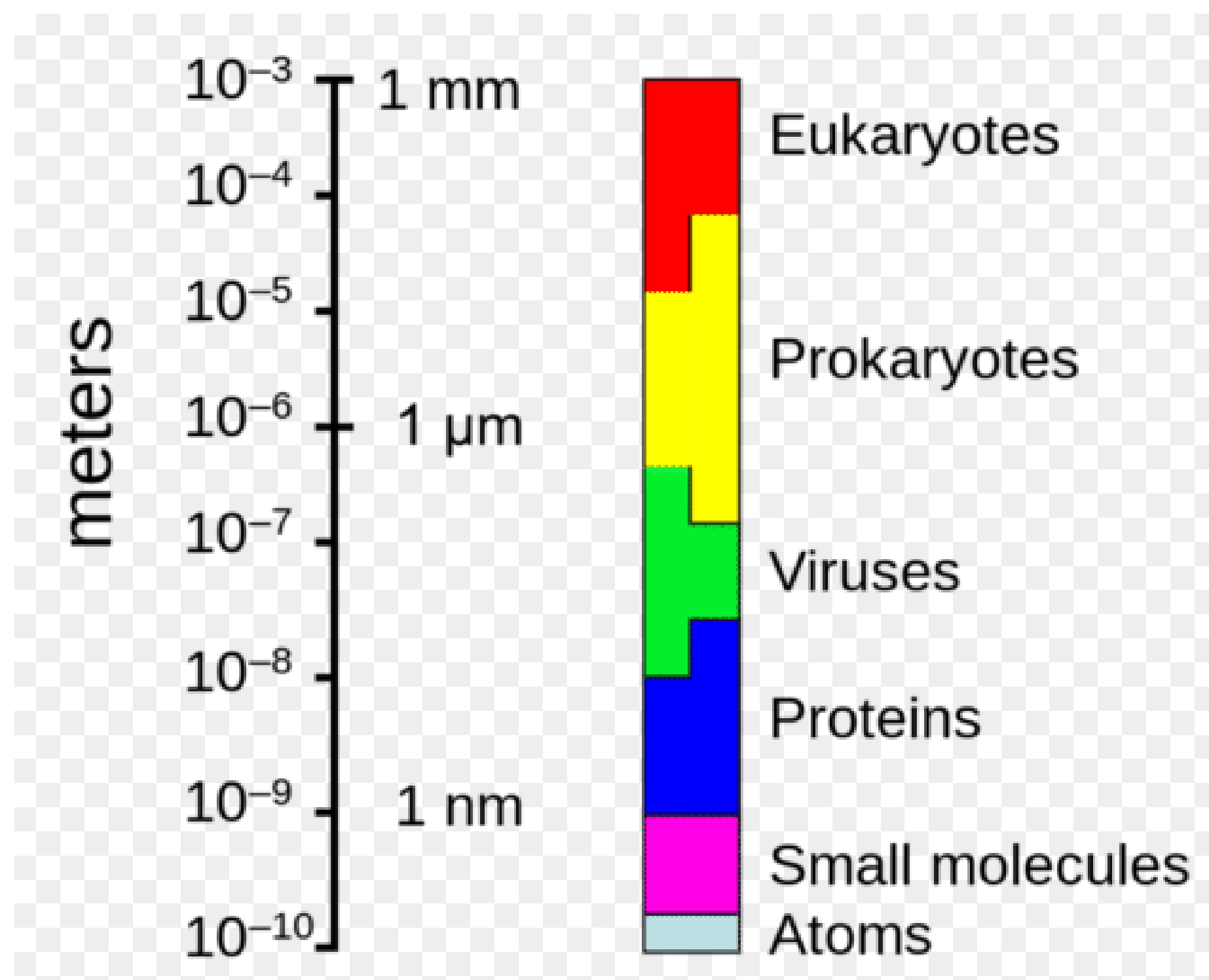
If applicable,

What does the X-axis represent _____

What does the Y-axis imply _____

Summarize what this graph represents or conveys

<https://www.ck12.org/biology/Prokaryotic-and-Eukaryotic-Cells/lesson/Two-Types-of-Cells-Advanced-BIO-ADV/>



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.

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?

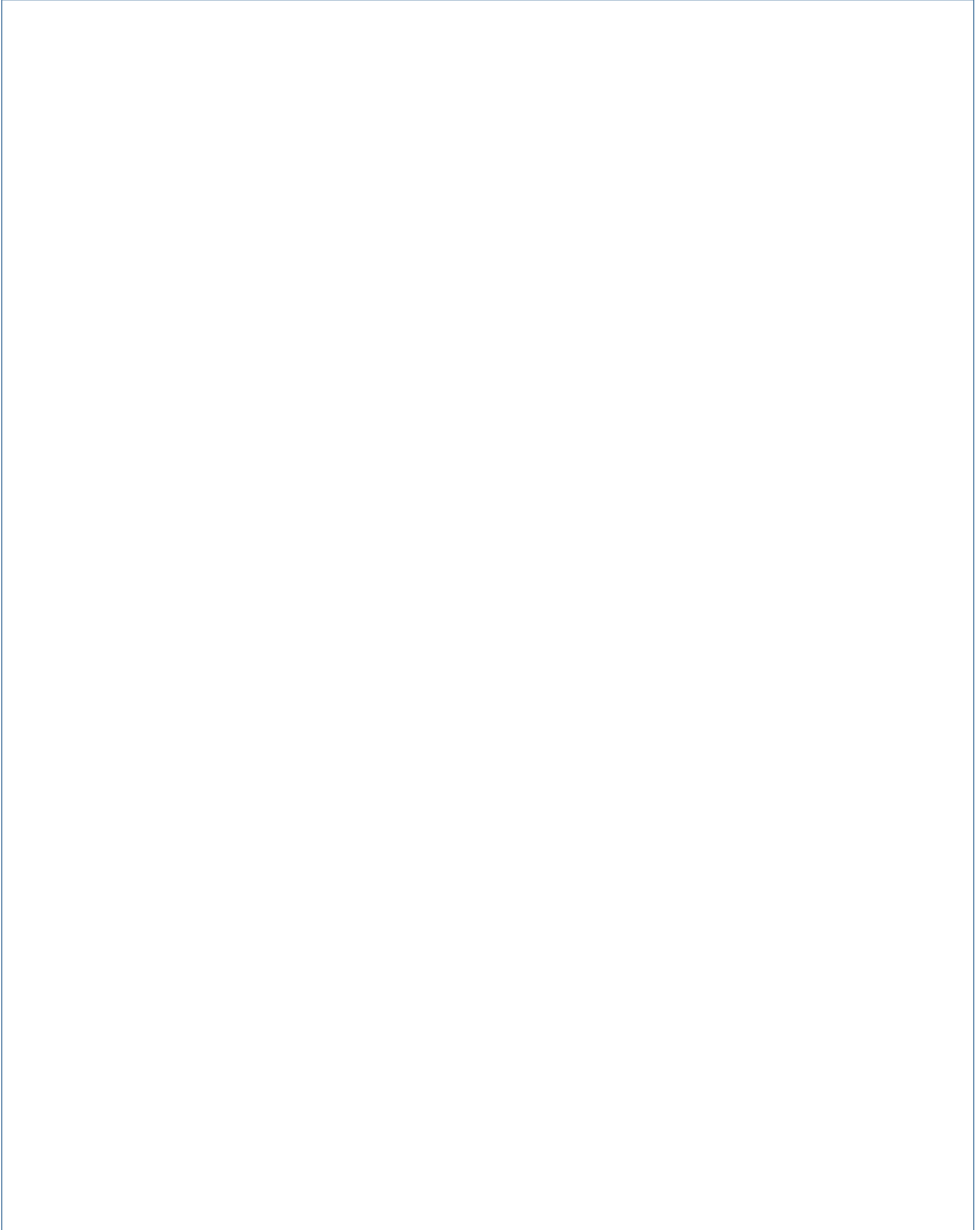
Q5. How does this topic connect to other science topics or math?

Write down at least three words introduced or covered by this topic.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

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 creating a poster. It occupies the majority of the page below the instructions.