

15.1 Plant Cells



Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

Genetically modified food controversies are disputes over the use of foods and other goods derived from genetically modified crops. Genetically modified food is sometimes used instead of conventional crops.

The acronym “GMO” stands for “genetically modified organism.” Disputes over GMOs involve consumers, farmers, biotechnology companies, governmental regulators, non-governmental organizations, and scientists.

Specific concerns from some groups regarding GMOs the include mixing of genetically modified and non-genetically modified products in the food supply. Some are concerned with potential effects of GMOs on the environment.

As of this date (Sept. 2017), no authoritative reports of ill effects have been documented in the human population from genetically modified food. There is a scientific consensus that food derived to-date from GM crops poses no greater risk to health than conventional food.

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.

Title of Passage.

Consumer concerns about food quality first became prominent long before the advent of GM foods in the 1990s. Upton Sinclair's novel *The Jungle* led to the 1906 Pure Food and Drug Act, the first major US legislation on the subject.

This began an enduring concern over the purity and later "naturalness" of food that evolved from a focus on sanitation to include added ingredients such as preservatives and flavors and sweeteners, residues such as pesticides, the rise of organic food as a category and finally to concerns over GM food. The public came to see the latter as "unnatural."

https://en.wikipedia.org/wiki/Genetically_modified_food_controversies

Re-write words you underlined

Using a complete sentence, summarize or rephrase the passage

Read Text for Comprehension

Read this article for deeper understanding. Inserted genes can be classified into three groups based on their use. Read below, for more ...

Genes That Protect a Crop.

The major use of plant genetic engineering has been to make crops easier to grow by decreasing the impact of pests. Insect resistance has been achieved by transforming a crop using a Bt gene. Bt genes were isolated from *Bacillus thuringiensis*, a common soil bacterium. They code for proteins that severely disrupt the digestive system of insects. Thus an insect eating the leaf of a plant expressing a Bt gene stops eating and dies of starvation. There are many Bt genes, each of which targets a particular group of insects. Some Bt genes, for example, target caterpillars. Others target beetles.

Genetic engineering also has been used in the battle against weeds. Bacterial genes allow crops to either degrade herbicides or be resistant to them. The herbicides that are used are generally very effective, killing most plants. They are considered environmentally benign, degrading rapidly in the soil and having little impact on humans or other organisms. Thus a whole field of transgenic crops can be sprayed with broad-spectrum herbicides, killing all plants except the crops. Corn, soybeans, canola, and cotton that have been engineered to withstand either insects or herbicides, or both, are widely planted in some countries, including the United States. In addition, other crops, including potatoes, tomatoes, tropical fruits, and melons, have been engineered for resistance to viral diseases.

Genes That Improve Crop Quality.

An emerging major use of genetic engineering for crops is to alter the quality of the crop. Fresh fruits and vegetables begin to deteriorate immediately after being harvested. Delaying or preventing this deterioration not only preserves a produce's flavor, and appearance, but maintains the nutritional value of the produce. Genes that change the hormonal status of the harvested crops are the major targets for genetic engineering toward longer shelf-life.

Genes That Introduce New Traits.

One approach to improving the economic value of crops is to give them traits that are completely new for that plant. Some crops, including potatoes, tomatoes, and bananas, have been engineered with genes from pathogenic organisms. This is done to make animals, including humans, that eat the crops immune to the diseases caused by the pathogens.

Draw Illustration



Copy and Label the Illustration in the Space Provided

Illustration

Gene Silencing

Applied Biosystems

Gene Sequencing

Gene Synthesis

Human Genome Sequence

GMO Crops

Genetically Altered Foods

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

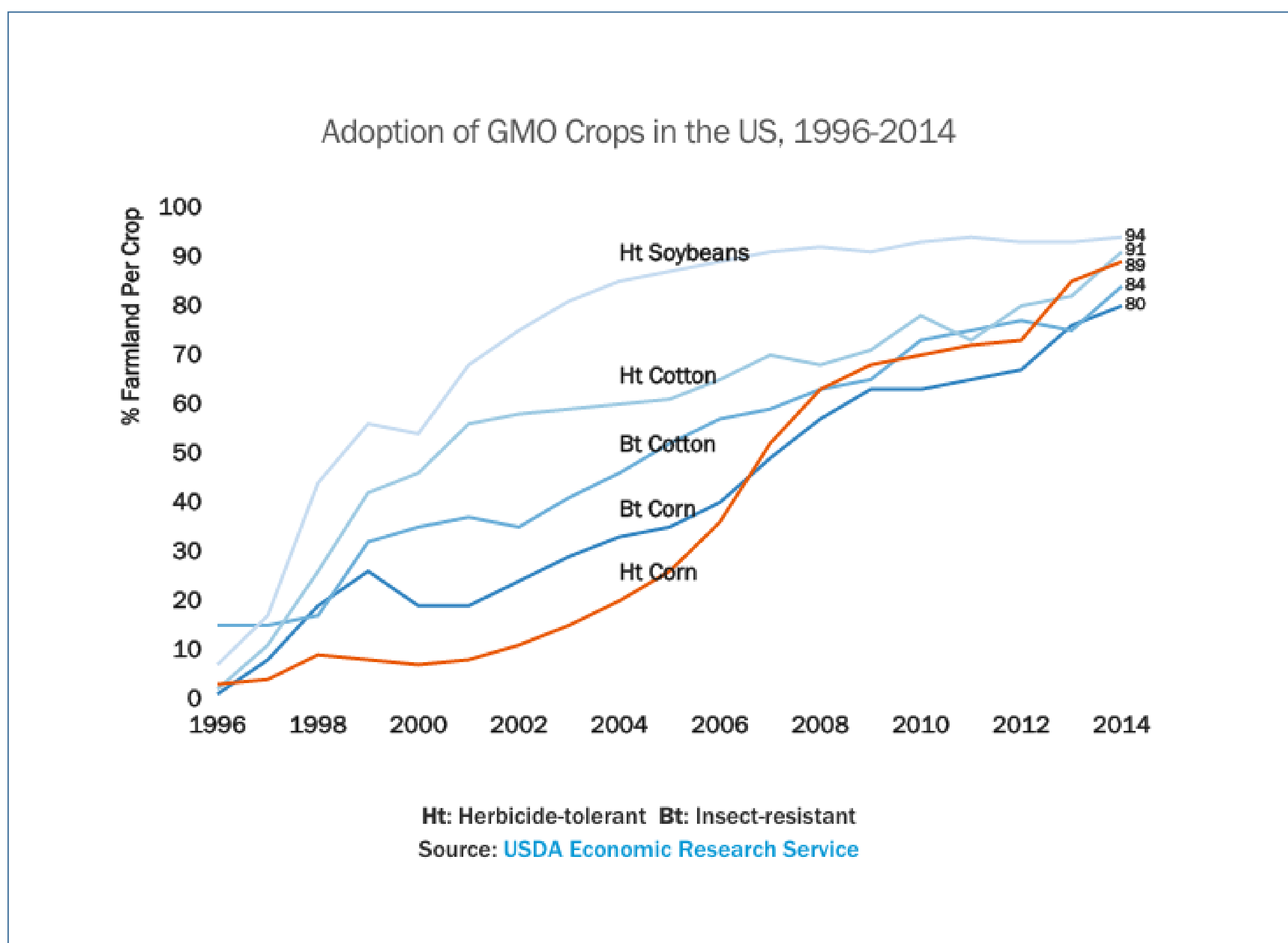
If applicable,

What does the X-axis represent _____

What does the Y-axis imply _____

Summarize what this graph represents or conveys

<http://time.com/3840073/gmo-food-charts/>



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?

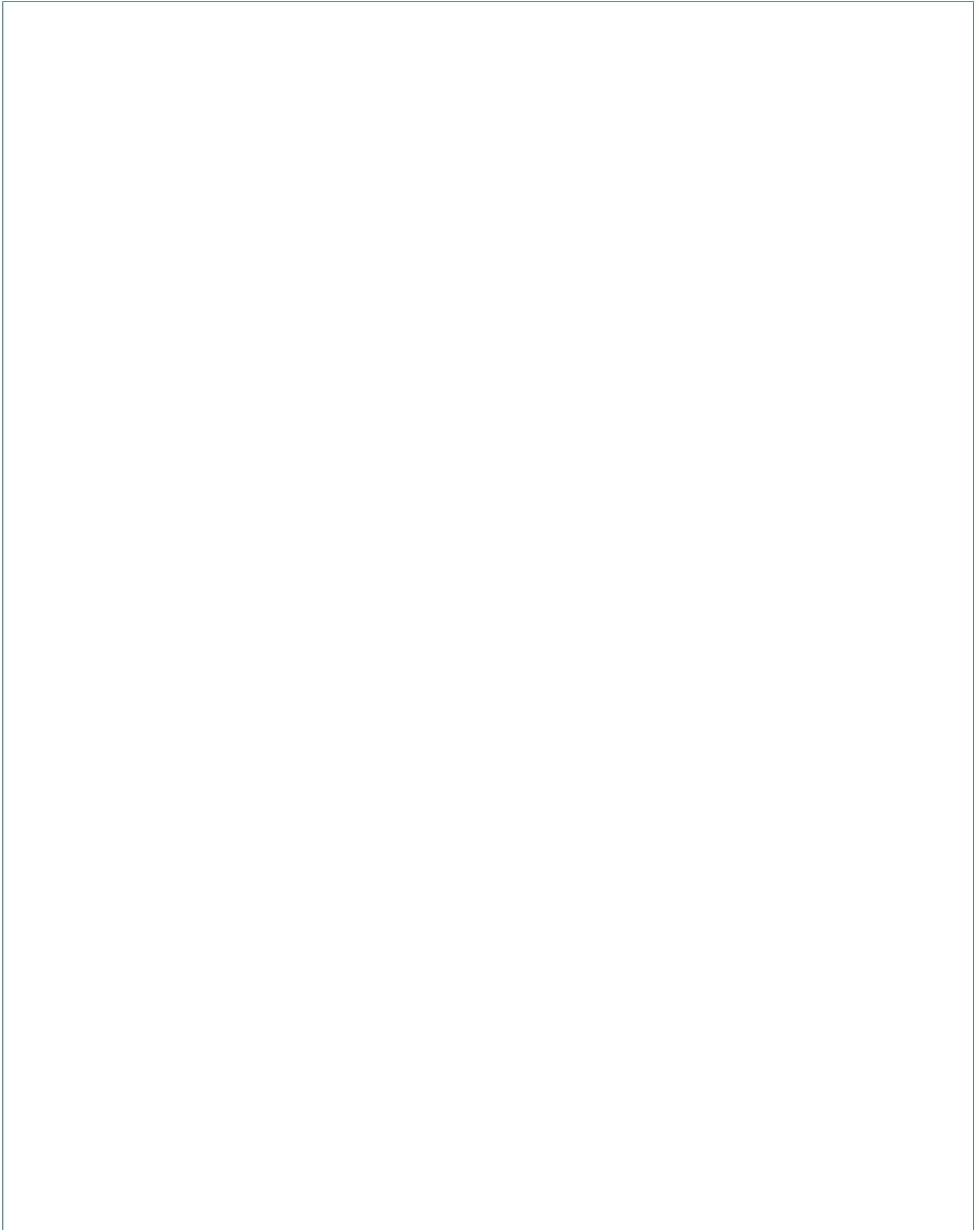
Q5. How does this topic connect to other science topics or math?

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 the student to create a poster. The box occupies most of the page below the instructions.