

18.1 Solutions

Physical
Science

Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

In chemistry, a solution is a homogeneous mixture of two or more substances. The substances that are dissolved are called solutes. The substance the solutes are dissolved in is called the solvent.

Definition of homogeneous – homogeneous means of the same kind; alike. A solution then is a mixture that is of the same kind from two or more substances.

Definition of dissolve – dissolve means to become or cause to become incorporated into a liquid so as to form a solution.

Definition of solutions - in chemistry a solution exists when a gas, liquid, or solid is dispersed homogeneously in a gas, liquid, or solid without chemical change. Dissolved sugar or salt in solution. a homogeneous, molecular mixture of two or more substances.

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.

How do solutions differ from other mixtures?

Solutions aren't different from mixtures because they are mixtures. When you refer to a solution, you're referring to a **homogeneous mixture** in which one thing (the solvent) has dissolved another (the solute). It doesn't look much like a mixture, but it is.

Heterogeneous mixtures, on the other hand, have distinct components that are distinct from one another. Though they are different than solutions, they are also mixtures.

SO ... solutions are mixtures. BUT ... not all mixtures are solutions.

<https://socratic.org/>

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.

Solutions in Chemistry

Solution, in chemistry, is a homogenous mixture of two or more substances in relative amounts that can be varied continuously up to what is called the limit of solubility. The term solution is commonly applied to the liquid state of matter, but solutions of gases and solids are possible. Air, for example, is a solution consisting chiefly of oxygen and nitrogen with trace amounts of several other gases, and brass is a solution composed of copper and zinc.

Life processes depend in large part on solutions. Oxygen from the lungs goes into solution in the blood plasma, unites chemically with the hemoglobin in the red blood cells, and is released to the body tissues. The products of digestion also are carried in solution to the different parts of the body. The ability of liquids to dissolve other fluids or solids has many practical applications. Chemists take advantage of differences in solubility to separate and purify materials and to carry out chemical analysis. Most chemical reactions occur in solution and are influenced by the solubilities of the reagents. Materials for chemical manufacturing equipment are selected to resist the solvent action of their contents.

The liquid in a solution is customarily designated the solvent, and the substance added is called the solute. If both components are liquids, the distinction loses significance; the one present in smaller concentration is likely to be called the solute. The concentration of any component in a solution may be expressed in units of weight or volume or in moles. These may be mixed—e.g., moles per litre and moles per kilogram.

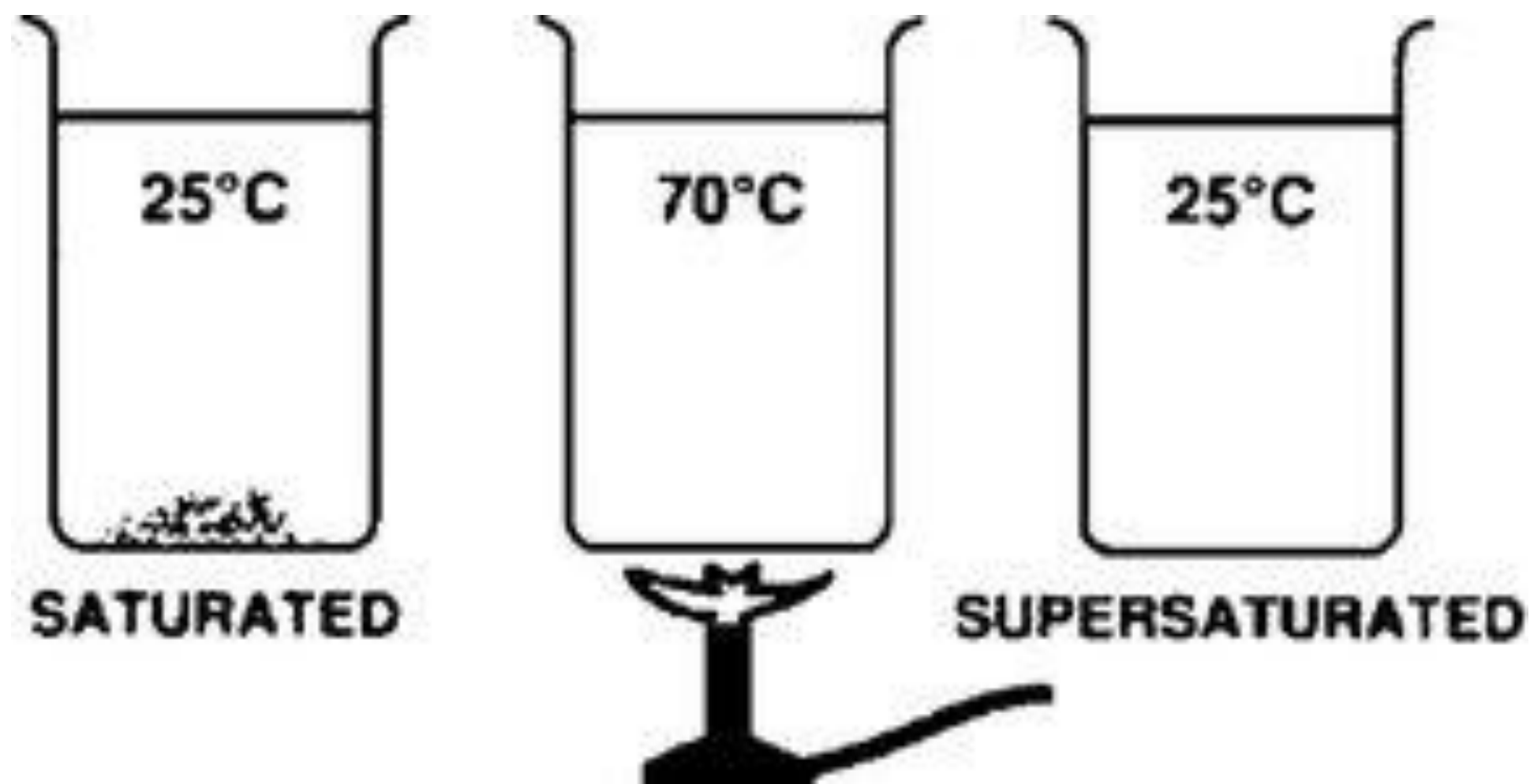
Crystals of some salts contain lattices of ions—i.e., atoms or groups of atoms with alternating positive and negative charges. When such a crystal is to be dissolved, the attraction of the oppositely charged ions, which are largely responsible for cohesion in the crystal, must be overcome by electric charges in the solvent. These may be provided by the ions of a fused salt or by electric dipoles in the molecules of the solvent. Such solvents include water, methyl alcohol, liquid ammonia, and hydrogen fluoride. The ions of the solute, surrounded by dipolar molecules of the solvent, are detached from each other and are free to migrate to charged electrodes. Such a solution can conduct electricity, and the solute is called an electrolyte.

Draw Illustration



Copy and Label the Illustration in the Space Provided

Illustration



Supersaturation is a state of a solution that contains more of the dissolved material than could be dissolved by the solvent under normal circumstances.

Wikipedia.com

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,

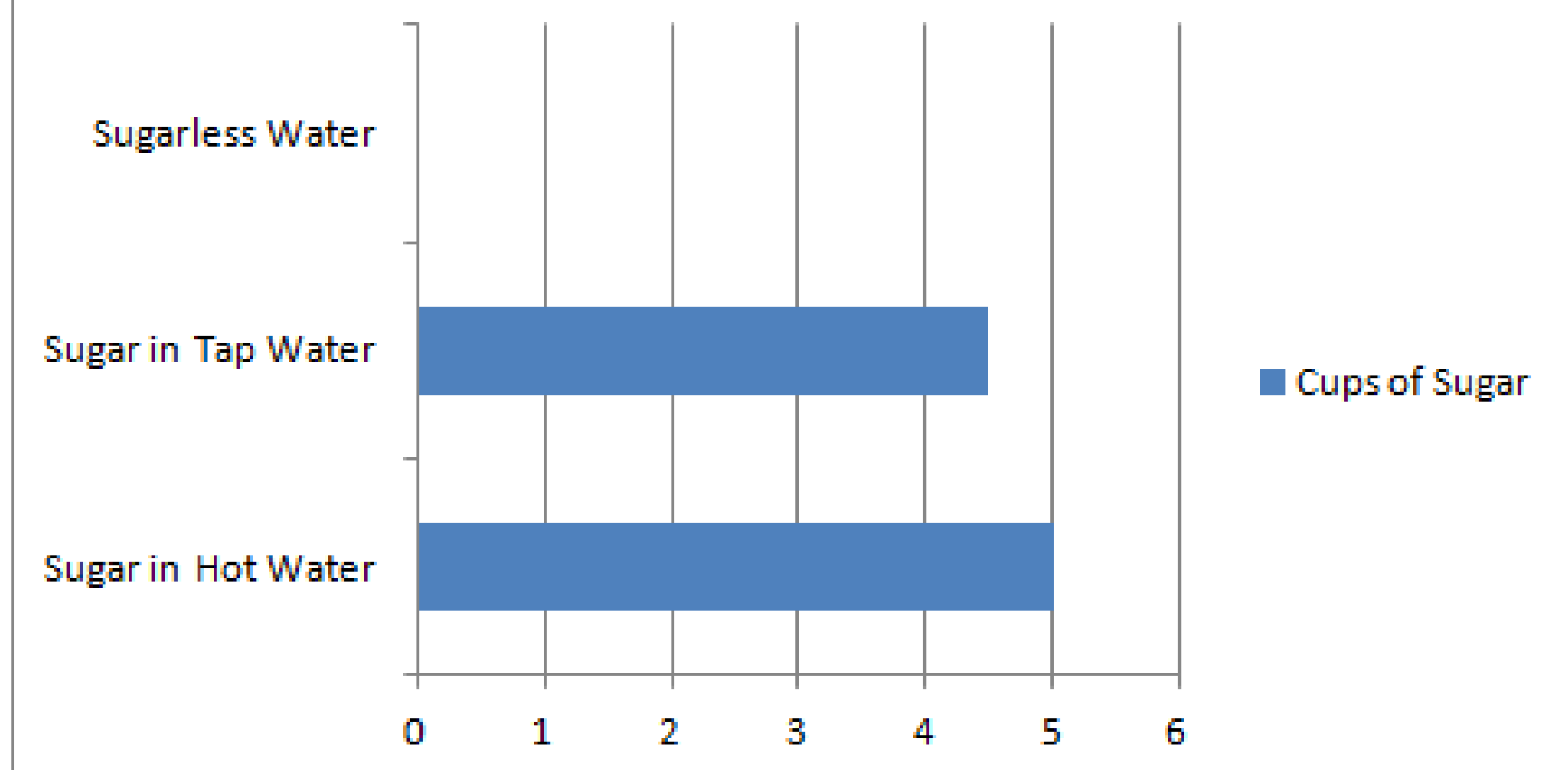
What does the X-axis represent _____

What does the Y-axis imply _____

Summarize what this graph represents or conveys

Reference URL.

Amount of Dissolved Sugar in Water Possible



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?

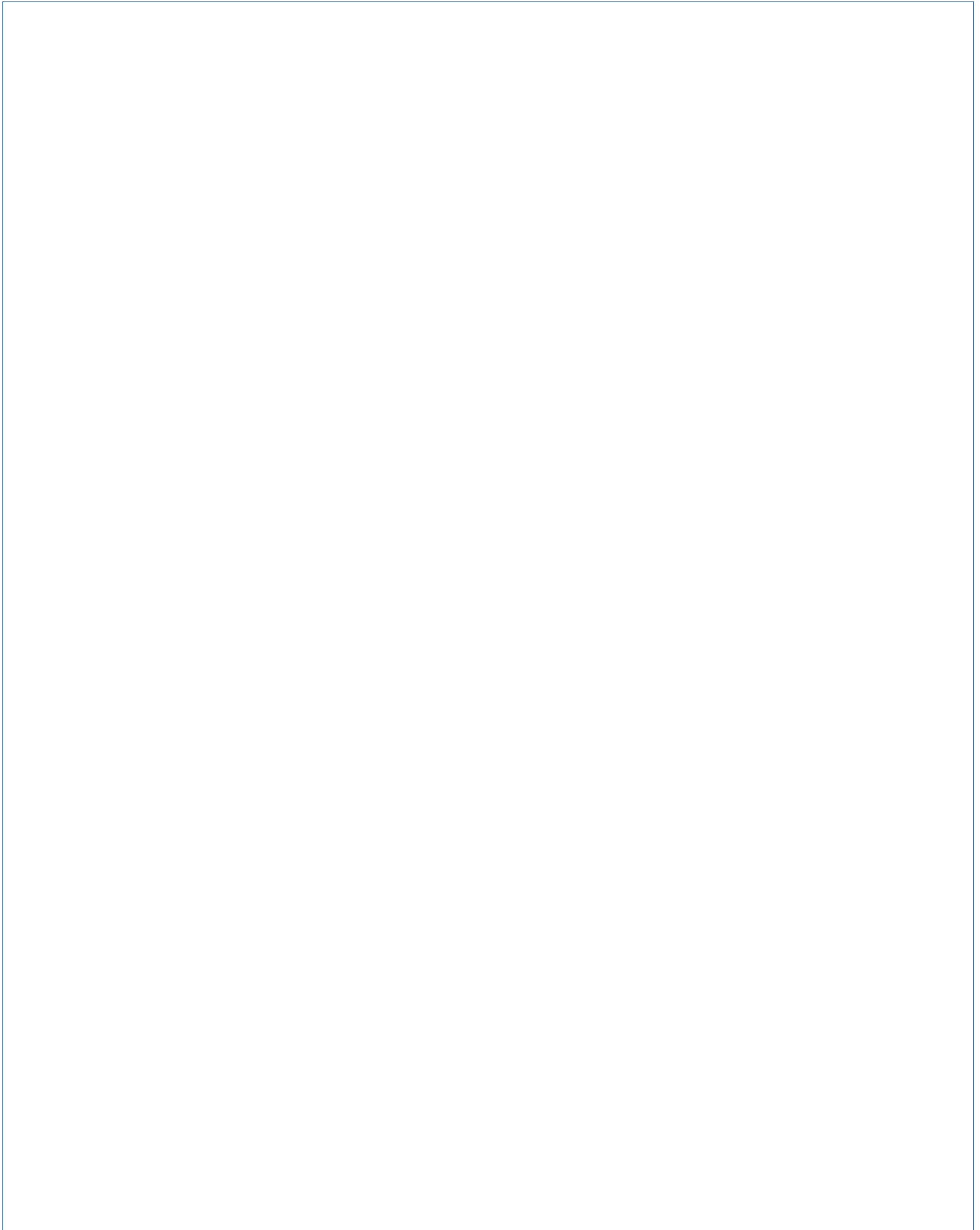
Q5. How does this topic connect to other science topics or math?

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.