

# 14.1 Atoms

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.**

An atom is the smallest constituent unit of ordinary matter that has the properties of a chemical element. Every solid, liquid, gas, and plasma is composed of atoms.

Every atom is composed of a nucleus and one or more electrons bound to the nucleus. The nucleus is made of one or more protons and typically a similar number of neutrons.

Protons and neutrons are called nucleons. More than 99.94% of an atom's mass is in the nucleus. The protons have a positive electric charge.

The electrons of an atom are attracted to the protons in an atomic nucleus by this electromagnetic force. The protons and neutrons in the nucleus are attracted to each other by a different force, the nuclear force.

# 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.*

## HOW CAN ATOMS BE SPLIT?

Protons and neutrons are held together in the nucleus at the center of the atom by a strong force. But this force can be overcome by striking the nucleus with a neutron, a proton, or another particle. The nucleus may split and form new atoms. Atoms are split in this way inside nuclear reactors and during nuclear explosions.

[www.factmonster.com](http://www.factmonster.com)

*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.

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## 10 Interesting Facts About Atoms

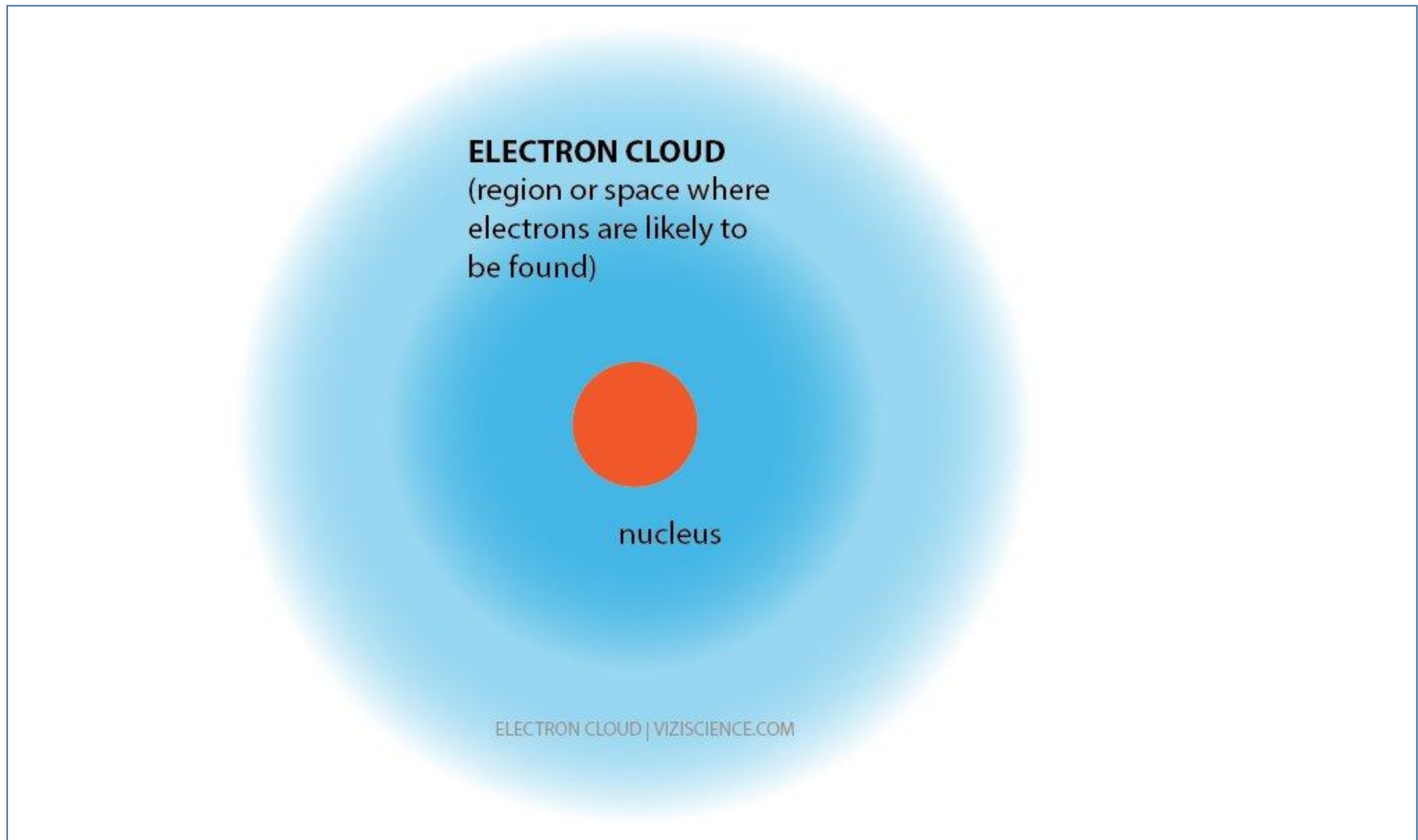
*Everything in the world consists of atoms, so it's good to know something about them. Here are 10 interesting and useful atom facts.*

- 1. There are three parts to an atom.** Protons have a positive electrical charge and are found together with neutrons (no electrical charge) in the nucleus of each atom. Negatively charged electrons orbit the nucleus.
- 2. Atoms are the smallest particles that make up elements.** Each element contains a different number of protons.
- 3. Atoms are mostly empty space.**
- 4. There are over 100 different kinds of atoms.** About 92 of them occur naturally, while the remainder are made in labs.
- 5. The components of an atom are held together by three forces.** Protons and neutrons are held together by the strong and weak nuclear forces. Electrical attraction holds electrons and protons.
- 6. The word "atom" comes from the Greek word for "uncuttable" or "undivided".** For a long time, people believed atoms were the fundamental "uncuttable" unit of matter. While atoms are the building blocks of elements, that can be divided into still smaller particles. Also, nuclear fission and nuclear decay can break atoms into smaller atoms.
- 7. Atoms are very small.** The average atom is about one tenth of a billionth of a meter across.
- 8. Although atoms are the smallest unit of an element, they consist of even tinier particles called quarks and leptons.** An electron is a lepton. Protons and neutrons consist of three quarks each.
- 9. The most abundant type of atom in the universe is the hydrogen atom.** Nearly 74% of the atoms in the Milky Way galaxy are hydrogen atoms.
- 10. You have around 7 billion-billion-billion atoms in your body.** You replace about 98% of them every year!

# Draw Illustration



Copy and Label the Illustration in the Space Provided



<https://viziscience.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 \_\_\_\_\_

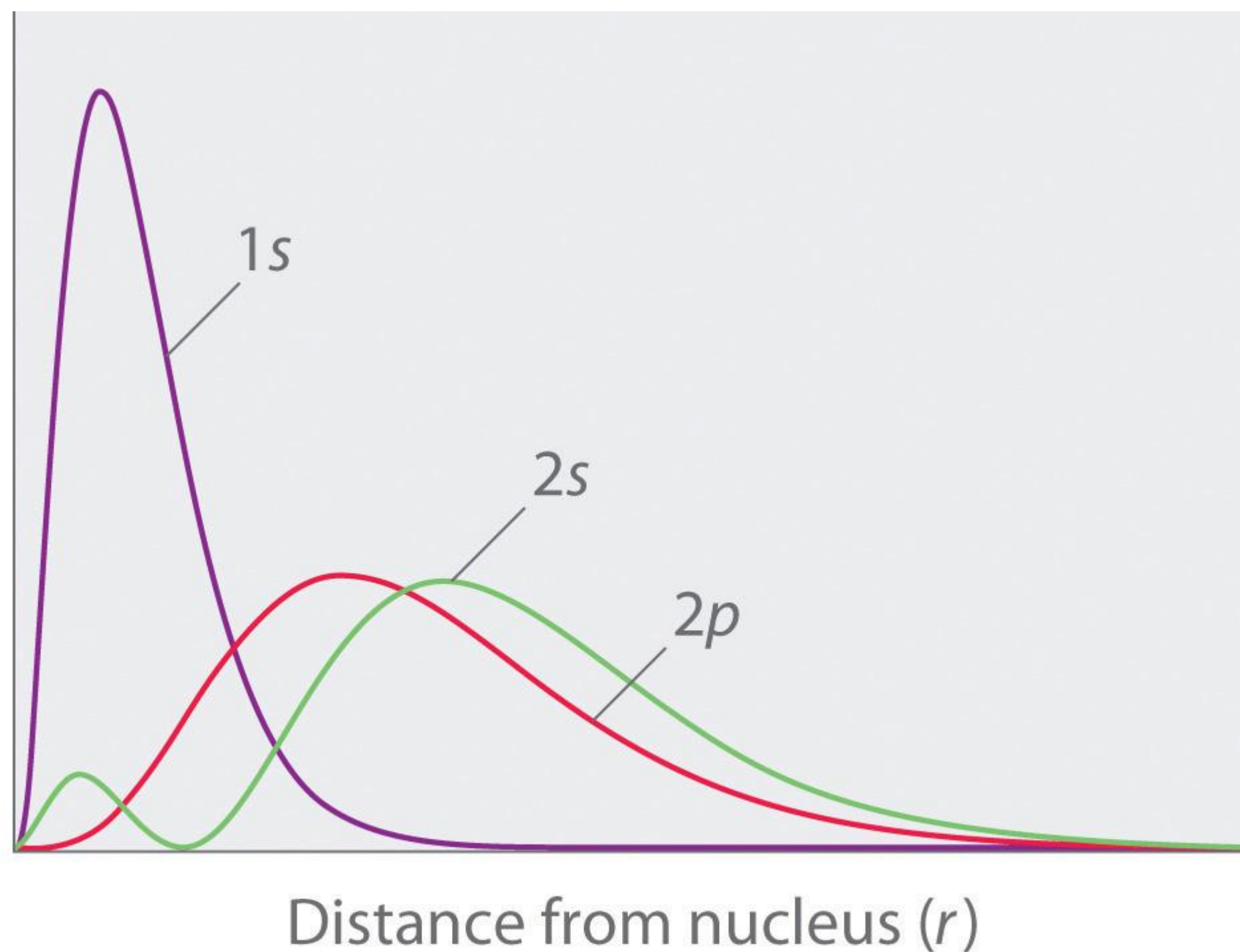
Summarize what this graph represents or conveys

\_\_\_\_\_

[saylordotorg.github.io](https://saylordotorg.github.io)

Probability of Electron at a specific Distance

## The Structure of Atoms



# 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?**

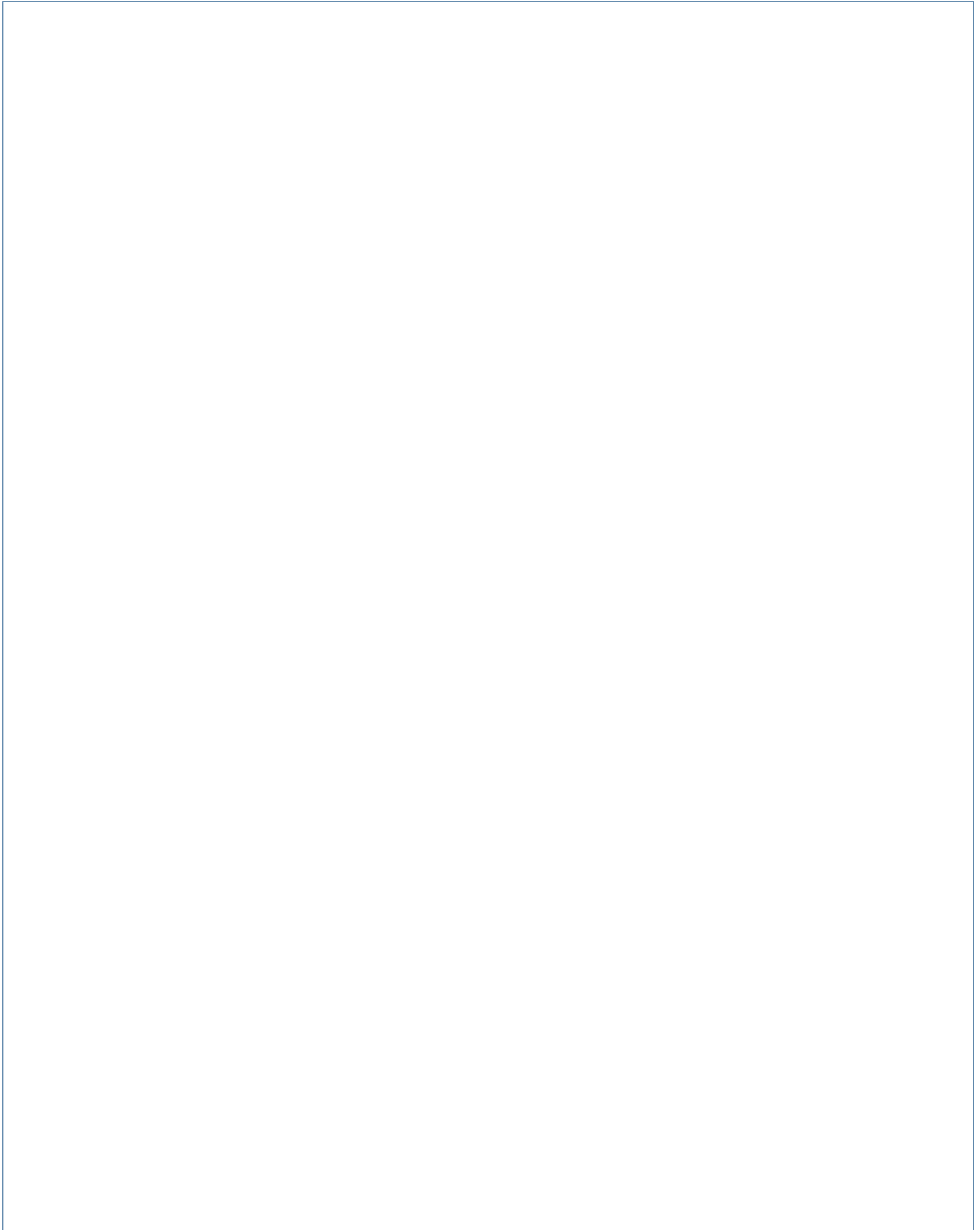
**Q5. How does this topic connect to other science topics or math?**

*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.