

The Logic
Stage
Reference
Guide for
Science

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Medieval / Early Renaissance 95

Late Renaissance / Early Modern 95

Modern 103



Experiments



Reading Plans



Notebooking



Activities

Easy-to-use

SCIENCE PLANS

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Introduction

This reference guide is meant to be a resource for you and your logic stage student as they study science, no matter what program you choose to use. However, this book does contain all of the vocabulary terms, memory work, and timeline dates that are scheduled in the four logic stage programs from Elemental Science. If you do not use one of our logic stage programs, you can certainly use this reference guide with any middle school student studying science alongside whatever program you have chosen.

How to use the glossary

This reference guide is meant for the students to use as they complete their vocabulary assignments. They can either copy the definitions found in this book or they can read the definitions and then write it down in their own words.

The following abbreviations are used in the glossary section so that you can easily identify which discipline the words apply to:

- B = Biology
- E = Earth Science and Astronomy

- C = Chemistry
- P = Physics

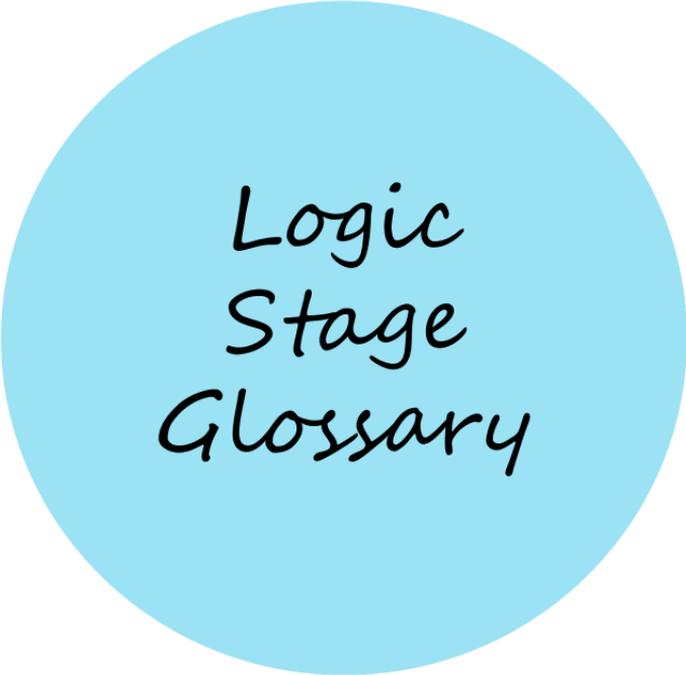
The words that apply to different more than one discipline are noted. The abbreviations are also included to give you an idea of what to cover as you study the different areas of science.

How to use the memory work

The students can also use this book as they work on memorizing the memory work selections that they are assigned. They can either read the selection daily or copy the selection down and illustrate it on another sheet of paper.

How to use the timeline dates

The students can simply read over the timeline dates or they can add the dates to their own timeline as they study a certain subject.

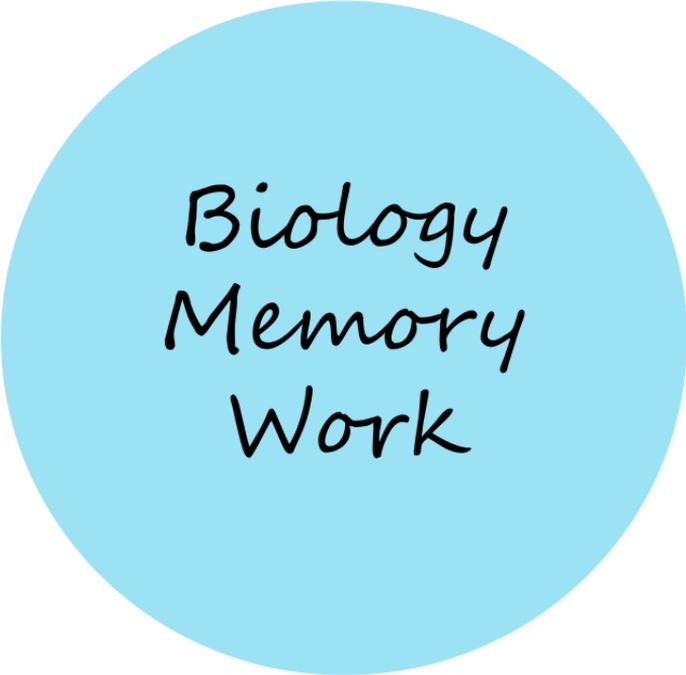


Logic
Stage
Glossary

A

- **Absolute zero** – Theoretically, the lowest possible temperature or the point at which molecular motion virtually ceases to exist. ($0\text{ }^{\circ}\text{K}$ or $-465.67\text{ }^{\circ}\text{F}$ or $-273.15\text{ }^{\circ}\text{C}$) (P)
- **Acceleration** – A change in an objects speed, direction, or both. (P)
- **Acid** – A hydrogen containing compound that splits in water to give hydrogen ions. (C)
- **Acidic Solution** – A solution that contains an acid, or a solution that has a pH less than seven. (C)
- **Acoustics** – The study of how sound travels in a given space. (P)
- **Actuator** – A piece of equipment that makes a robot move. (P)
- **Adhesive** – A sticky substance used to join two surfaces together. (C)
- **Air resistance** – The force that air exerts on an object as it falls. (P)
- **Alcohol** – A series of organic compounds in which a hydroxyl group is bound to a carbon atom; they all have the general formula $\text{C}_n\text{H}_{n+1}\text{OH}$. (C)

- **Algae** – A simple, plant-like organism that makes its food by photosynthesis. (B)
- **Alkali** – A base that dissolves in water to form a hydroxide ion. (C)
- **Alkaline solution** – A solution that contains a base, or a solution that has a pH greater than seven. (C)
- **Alloy** – A mixture of two or more metals, or a metal and a nonmetal. (C)
- **Amphibian** – A cold-blooded vertebrate that lives partly in water and partly on land. (B)
- **Amplitude** – The size of a vibration or the height of a wave. (P)
- **Anabolism** – The synthesis of complex molecules from smaller ones; occurs in living things and is known as creative metabolism. (C)
- **Angiosperm** – A plant that reproduces by bearing flowers, fruit, and seeds. (B)
- **Anode** – A positively charged diode, or electrode. (C, P)
- **Antennae** – Long sensory organs on an arthropod's head. (B)
- **Antinoise** – Produced when two sound waves overlap and cancel each other out. (P)



Biology
Memory
Work

Biological Building Blocks

Divisions of Life

1. Kingdom
2. Phylum
3. Class
4. Order
5. Family
6. Genus
7. Species

*(The following mnemonic can help you as you work on memorizing these: **King Phillip Can Only Find his Green Shoes**)*

Five Kingdoms and their Basic Characteristics

1. **Monerans** – Microscopic organisms that have a simple, single cell. (*Example: Bacteria*)
2. **Protists** – A variety of complex, but mainly single-celled organisms. (*Example: Algae*)
3. **Fungi** – Organisms that absorb food and reproduce by making spores. (*Example: Molds*)
4. **Plants** – Living things that have many cells and most carry out photosynthesis. (*Example: Trees*)
5. **Animals** – Organisms made up of many cells and live by eating food. (*Example: Humans*)

Plants

Photosynthesis Equation

Carbon Dioxide + Water + Energy from the Sun



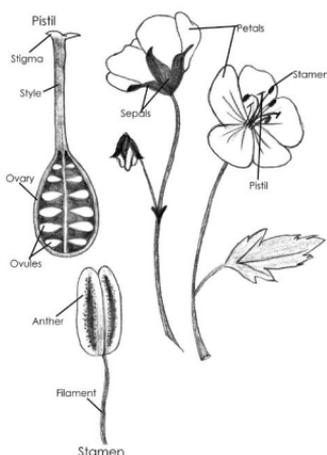
Carbohydrates + Oxygen

Parts of a Flowering Plant

1. **Root** – It helps to anchor the plant and absorb nutrients.
2. **Stem** – It holds the plant up and serves as the transport system for the plant.
3. **Leaf** – It absorbs sunlight and produces energy for the plant through chlorophyll.
4. **Flower** – It is the reproductive part of the plant.
5. **Seed** – It contains the material necessary to grow a new plant.

Parts of a Flower

1. Petals
2. Sepals
3. Pistil
4. Stigma
5. Style
6. Ovary
7. Ovules
8. Stamen
9. Anther
10. Pollen
11. Filament





Timeline Dates

Ancients 5000 BC-400 AD

Biology

- ⊕ 3000 BC – Scarab beetles held religious and cultural symbolism in Old Egypt.
- ⊕ 2600 BC-2000 BC – Ancient Egyptians used different colors of algae as eye makeup.
- ⊕ c.1500BC – The earliest known medical text *Ebers Papyrus* is written in Egypt.
- ⊕ c.460 BC-c.370 BC – Hippocrates lived, he was a Greek physician and is known as the father of western medicine.
- ⊕ 384-322 BC – Aristotle writes several books, one of which describes the urinary system and how it works.
- ⊕ 30-200 – Accounts of the use of leeches for the medically dubious practice of blood-letting came from China around 30 AD, India around 200 AD, ancient Rome around 50 AD, and later throughout Europe.
- ⊕ 77 – Roman naturalist, Pliny the Elder, completes *Historia Naturalis*, which is the first encyclopedia of nature.
- ⊕ 200 – Galen describes the workings of the human body, which remains unchallenged until 1500.

Earth Science & Astronomy

- ⊕ 3300 BC – The Indus Valley Civilization used rivers for navigation.
- ⊕ 7th century BC – Babylonian astronomers use a coordinate system resembling the Zodiac.
- ⊕ c.50 BC – A relief called the Dendera zodiac is the first known depiction of the classical zodiac of

twelve signs.

- ⌚ c.5 BC – Strabo, a Greek geographer, proposes the idea of frigid, temperate and tropical climate zones.
- ⌚ 79 AD – Mount Vesuvius, in Italy, erupted and destroyed Pompeii.
- ⌚ c.30 AD – Prominent geographer, Strabo, suggests that there might be continents that are not yet known to the Greeks.
- ⌚ 2nd century – Ptolemy names forty-eight different constellations in his book *Almagest*.
- ⌚ 132 – Chinese invent the first seismograph, in which precisely balanced metal balls fall if the ground shakes.

Chemistry

- ⌚ 5000 BC – Egyptians use pottery (ceramics) and glazes.
- ⌚ 5000 BC – The Egyptians begin to use cosmetics to alter their looks.
- ⌚ Metals like lead and silver have been melted down from ores and used since 4000 BC.
- ⌚ c.3000 BC – The first alloy is created during the Bronze Age.
- ⌚ 3000 BC – The first glass is thought to be made during the Bronze Age.
- ⌚ 3000 BC – Yeast is used to make alcoholic drinks, such as beer or wine through fermentation.
- ⌚ 2600 BC – The earliest known written record of the use of dyes in China.
- ⌚ 340 BC – Aristotle proposes that all substances are made up of combinations of four elements: earth, air, water and fire.



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Are you hesitant about teaching classical science in your homeschool? Have you struggled to find a science curriculum that fits the classical model to use in your school?

Rest easy! Our straightforward, easy to use plans and customized student workbooks deliver the tools you need move forward with confidence.

At Elemental Science, we have made teaching science easy for classical educators!

“The best part of this curriculum to me is how easy it is to use, which means it actually gets done!”

- Review by One Magnificent Obsession

Key Features

Each of our classical science programs focuses on an area of science that is studied through:

- ★ Weekly coordinating scientific demonstrations or experiments;
- ★ Visually appealing children’s encyclopedias;
- ★ Notebooking with customized student workbooks.

Learn more at elementalscience.com

The Logic Stage Reference Guide for Science

The Science Fair Project

In *Success in Science: A Manual for Excellence in Science Education* we recommend that every middle school student completes a science fair style project, but the prospect of spending a month or two on a science project can be daunting to homeschoolers. Bradley and Paige have written a follow-up guide that will give the teacher the tools he or she needs to advise the students as they develop their science fair project.

This Step by Step guide:

- Thoroughly explains the eight steps for executing a science fair project;
- Provides you with keys for completing each step;
- Details a sample project to give you a clear picture of what a science fair project can look like;
- Includes sheets for the teacher to give to the students as he or she leads them through the process;
- Explains how a science fair project can differ for a high school student.

