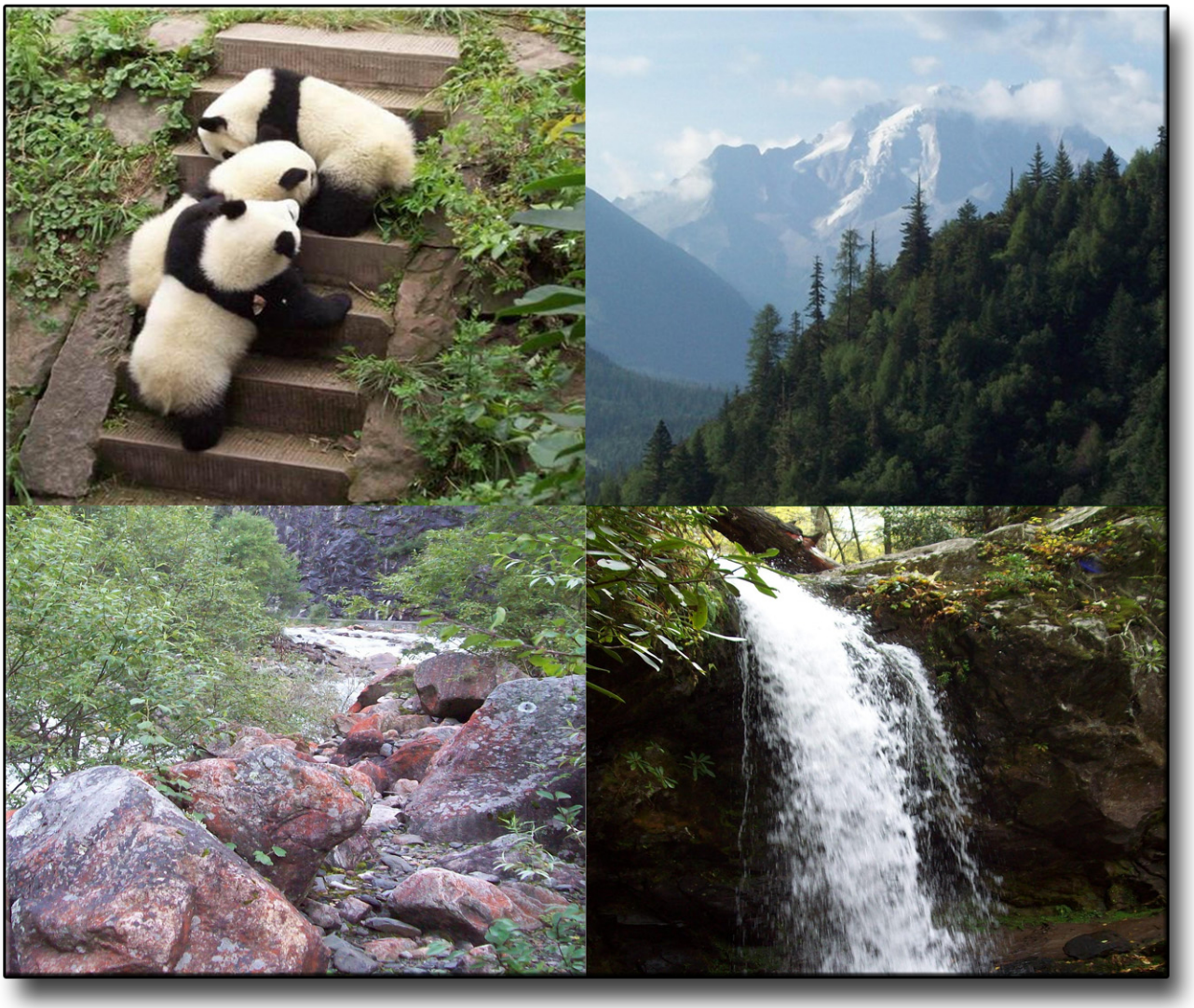
Grammar Stage Reference Guide



A vocabulary & memory work companion for the grammar stage programs of Elemental Science.

Grammar Stage Reference Guide

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What's in this Reference Guide?

This reference guide is meant to be a handy reference tool for the grammar stage programs by Elemental Science. It contains all the vocabulary terms for all four programs in one easy to use glossary. It also contains all the memory work suggested in the four grammar stage teacher's guides.

Who is this Reference Guide for?

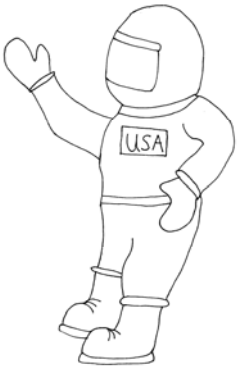
This guide is meant for your student to use as they complete their vocabulary assignments. It's also meant for the student to use as they work on memorizing the memory work selections.

Copyright

Grammar Stage Glossary

A

- **air:** a mixture of gases that form a protective layer around the Earth
- **air pressure**: the pressure exerted by the atmosphere
- **alloy:** a mixture of two or more metals or a metal and non-metal
- **alveoli:** tiny air bags found in your lungs
- **amphibian:** a cold-blooded, smooth-skinned vertebrate, such as a frog or salamander., usually their babies live in water and then grow lungs and live on land.
- **asteroid:** a rock orbiting the Sun
- **astronaut:** someone who goes into space
- **atomic mass:** the average mass number of the atoms in a sample of an element
- **atomic number:** the number of protons in the nucleus of an atom
- **atmosphere:** layers of gas that surround a planet
- **atoms**: tiny particles from which everything is made



astronaut

B

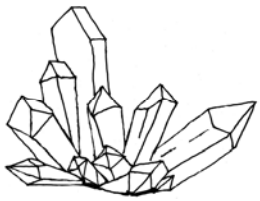

bird

- **bacteria:** a group of microscopic organisms that can cause disease
- **balancing point:** point at which an object can be supported without falling over
- **bird:** a warm-blooded, egg-laying, feathered vertebrates, it also has wings
- **blood vessel**: a tube that carries blood through the body
- **bud:** swelling on a plant stem containing tiny flower part ready to burst into a bloom

C

- **Carbon Dioxide:** a gas with one carbon atom and two oxygen atoms in each molecule
- **carnivore:** an animal that feeds on other animals
- **cave:** underground room with walls made of rock
- **cell:** your body is made up of billions of these tiny, living units
- **center of gravity:** point at which all of an object's weight is concentrated

- **centripetal force:** a force that keeps an object moving in a circle
- **chemical bond**: a force that holds together two or more atoms
- **chemical reaction:** atoms or ions combine to make molecules, metal alloys or salts
- **chemical symbol**: a short hand way of representing a specific element in formulae and equations
- **chlorophyll:** green pigment found in many plant cells
- **chromatography:** separating the substances in a mixture by the rate they move through or along a medium, such as filter paper
- **condensation:** the process of a gas cooling to form a liquid
- **conductor:** a substance through which current can flow
- **cone:** form of dry fruit produced by a conifer
- **constellation:** a group of stars that when viewed from Earth form the outline of an object or figure
- **crater:** a hole in the ground made by a meteorite or a volcanic explosion
- **crystal:** a solid substance with a definite geometrical shape, straight edges and flat surfaces; hard, glassy-looking objects made of minerals



crystals

D

digestive system

- **decibel:** (dB) the unit of loudness
- **density:** a measure of the amount of matter in a substance compared to its volume
- **desert:** driest place in the world
- **detergent:** a substance than enables water to remove dirt
- **diffusion:** the spreading out of a gas to fill the available space
- **digestion:** the process by which your food is broken down

E

- **earthquake:** shaking and vibration at the surface of the earth resulting from underground movement
- **electricity:** the effect caused by the presence or movement of electrically charged particles
- **electrolysis:** a method of splitting the elements in a compound by passing an electric current through it when it is molten or in solution
- **electromagnetism:** the effect that takes place when an electric current flows through a wire, forming a magnetic field

- **electron**: a negatively charged particle that exists around the nucleus of an atom
- **elements**: a substance made up of one type of atom, which cannot be broken down by chemical reaction to form a simpler substance
- **enzyme:** a catalyst that speeds up a chemical reaction in living things
- **evaporation:** the process by which the surface molecules of a liquid escape into a vapor

evaporation

F

- **fish:** a cold-blooded, aquatic vertebrate, having gills, commonly fins, and typically an elongated body covered with scales
- **flower:** reproductive parts of a plant
- **food web:** made up of lots of food chains and shows who eats who
- **force:** a push or pull on an object
- **fossil:** a trace of a plant or animal that lived in the past
- **fossil fuels:** a fuel, such as coal, that is formed from the fossilized remains of plants and animals
- **friction**: the force that tends to slow down moving objects that are touching

gravity

G

- **gas:** a state of matter in which a substance has no fixed shape or volume
- **glacier:** solid river of ice
- **gravity**: the force that attracts objects together

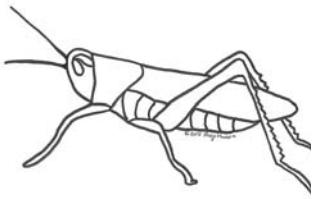
H

- **habitat:** the natural environment of an plant or animal; place that is natural for the life and growth of an animal or plant
- **hard water:** water which contains a lot of dissolved minerals
- **heat**: a form of energy that flows from one place to another because of differences in temperature

- **herbivore:** an animal that feeds on plants

I

- **indicator:** a substance that changes color in the presence of an acid or alkali (base)
- **inertia:** the tendency of objects to resist a change in their movement
- **infrared radiation**: electromagnetic waves that are given out by anything hot
- **insect:** an animal that has three body parts (head, thorax, and abdomen) and six legs
- **insulator**: a substance through which current cannot flow
- **invertebrate:** an animal without a backbone
- **ion:** an atom or group of atoms that has become charged by gaining or losing one or more electrons
- **isotopes:** an atom that has a different number of neutrons and so has a different mass number from the other atoms in an element



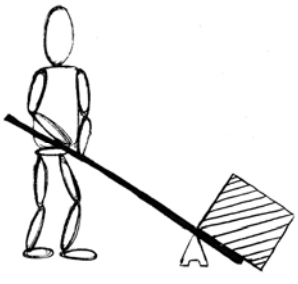
insect

J

K

- **kinetic energy:** the energy that an object has in motion

L



lever

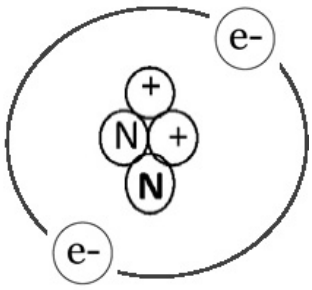
- **leaf:** plant part that makes the plant's food
- **lever:** a rod that turns at a fixed point
- **light:** the electromagnetic waves that make all things visible
- **lubricant**: a substance used to reduce friction

M

- **magnets**: an object that attracts iron or steel and other alloys
- **malleable:** used to describe metals that can be shaped by hammering
- **mammals:** any warm-blooded vertebrate having the skin more or less covered with hair; young are usually born alive and nourished with milk
- **mass**: the amount of matter contained in an object
- **metalloid**: an element which shares some of the properties of metals and non-metals
- **metamorphic rock:** a rock that changes form usually by heat or pressure
- **meteor**: a meteoroid that burns up in the planet's atmosphere, also called a shooting star
- **minerals:** natural substance in Earth's surface that makes rocks
- **molecules:** substance made up of two or more elements that are chemically bonded (also known as compounds)
- **momentum:** a measure of an object's tendency to continue moving
- **moon:** mini-planet in orbit around another planet
- **muscles:** controlled by your brain to pull and make the bones of your body move

meteor

N



nucleus in an atom

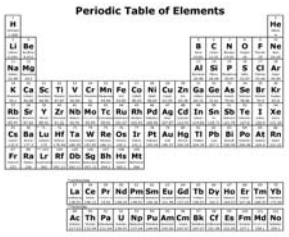
- **neuron:** nerve cell that makes up the nervous system and carries electrical messages
- **neutralization:** a reaction where one substance fully or partly cancels out another
- **neutrons:** a neutral particle that exists around the nucleus of an atom
- **nonpolar molecule**: does not have a positive or negative side
- **nucleus:** the core section of an atom that contains protons and neutrons

O

- **omnivore:** an animal that feeds on both plants and animals
- **orbit:** the path of an object in space
- **organic compounds:** a compound that contains the element carbon
- **oxidation:** a chemical reaction in which a substance combines with oxygen, or loses hydrogen or electrons

P

- **pendulum:** a weight hanging from a string
- **periodic table**: a systematic arrangement of the elements in order of increasing atomic number
- **planet:** huge ball of rock or gas that travels around a star
- **polar molecule**: has two ends like a magnet, one positive and one negative
- **pole:** either of the two points on a magnet where the force of attraction or repulsion is strongest
- **potential energy:** the energy that an object has stored
- **polymer:** a substance with long-chain molecules, each made up of many small molecules called monomers
- **protons:** a positively charged particle that exists around the nucleus of an atom
- **pulley:** a machine that lifts heavy loads with a system of ropes passing around grooved wheels



periodic table

Q

R

- **radioactive decay:** the process by which a nucleus ejects particles through radiation becoming the nucleus of a series of different elements until stability is reached
- **reactive:** tendency of a substance to react with other substances
- **recycling:** used cans, bottles and paper are collected and then made into new things

- **reflection:** the change in direction of a wave due to its bouncing off a boundary between one medium and another
- **refraction:** the change in direction of a wave due to its moving into a medium in which its speed is different
- **reptile:** any of the group of cold-blooded animals that usually have rough skin. Snakes, lizards, crocodiles and turtles are reptiles.
- **resonate:** to vibrate at the same frequency as something else
- **roots:** plant part that anchors the plant firmly in the ground and absorbs water and nutrients

reptile

S

- **seed:** part of the plant that contains the beginnings of a new plant
- **semiconductor:** a type of material that acts as a conductor or as an insulator depending on it's temperature
- **shellfish:** an aquatic animal having a shell

skeleton

- **skeleton**: the framework of 206 bones that supports your body, allows you to move and protects certain organs
- **space:** the region beyond the atmosphere of Earth
- **space probe:** an unmanned spacecraft which collects information about objects in space
- **solar eclipse:** the time when the moon blocks the sun
- **solar system:** a group of planets and other objects all in orbit around the Sun
- **solar wind:** a stream of tiny particles that blow off the Sun and into space
- **sound wave**: a longitudinal mechanical wave that carries sound through a medium
- **star:** a huge ball of exploding gas
- **state of matter:** the different forms in which a substance can exist: solid, liquid and gas
- **static electricity:** electrical charge held by a material
- **stem:** part of the plant that holds it upright and supports it's leaves and flowers
- **sublimation:** a change from solid to gas without going through liquid form
- **surface tension**: a force that pulls together molecules on the surface of a liquid

T

- **tides:** the rise and fall of the ocean due to the gravitational pull of the moon
- **tornado:** spinning funnel of wind
- **torque:** the force you add to make something rotate

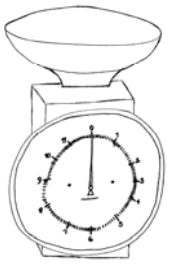
tornado

U

- **unstable:** they don't stay together as an element very long

V

W



weight

- **weight**: a measure of the strength of the pull of gravity on an object
- **work**: in physics, the distance an object moves multiplied by the force needed to move it

X

Y

Z

Biology for the Grammar Stage Memory Work

Animals Unit

Characteristics of Mammals:
A mammal loves to breathe air
A mammal has fur or hair
Their blood is warm, almost hot
Mama feeds her young milk a whole lot

Characteristics of Birds:
Birds have wings
Sometimes they like to sing
They make beautiful nests
And lay eggs in them, then rest

Characteristics of Reptiles:
Reptiles prefer to eat meat
Their blood is cold, isn't that neat
Reptiles have scaly, watertight skin
They also make nests for their eggs to lay in

Characteristics of Amphibians:
Amphibians can live on water or land
They lay eggs and have cold blood, isn't that grand

Characteristics of Fish:
Fish live in water and have skills
Like breathing through their gills
Fish have skeletons so strong
If you say they don't lay eggs, you would be wrong

Human Body Unit

My skeletal system holds me up
My digestive system takes cares of what's on my plate and cup

My nervous system sends my cells a note
My urinary system could fill a moat
My cardiovascular system keeps my blood moving
My muscular system keeps my body grooving
My respiratory system takes in air
My immune system takes care of the bad things in there

Plant Unit

Plant poem

Plants have a stem to hold them up high
Plants have leaves that reach way up to the sky
Plants have roots that go down into the ground
To take up nutrients and keep the plants from being blown around

Parts of a flower

The bud turns into a flower
It's happening this very hour
The flower has petals so bright
To attract the insect that's just right
The stamen provides the pollen it needs
To join with the pistol and make a seed

Earth Science & Astronomy for the Grammar Stage Memory Work

Earth Science Unit

Types of rocks poem

Igneous rocks are made from fire
They come from volcanoes that are sure to inspire

Sedimentary rock forms layer by layer
They are made of sand, mud and pebbles, not John Mayer

Metamorphic rock is formed by pressure and heat
They turn the rock into something really neat

Characteristics of biomes poem

A desert is a dry and dusty place
It's hot during the day, but at night it'll freeze your face

The grassland is a prairie full of grass
Some of the animals that live there are hard to pass

The forest is full of different types of trees
Some are cold, some have rain up to your knees

The arctic is a cold and icy land
The polar bear even has fur on it's hand

Astronomy Unit

Planet poem
From *In My Backyard* © calgary science centre

Close to the Sun, the Moon it is not.
This planet is Mercury, rocky and hot.

Hotter than Mercury, second from the Sun.
To live on cloudy Venus wouldn't be fun.

We live on this planet with grass that needs mowing.
On Earth we drive cars to get where we're going.

This planet is red and it has no cars.
Fourth from the Sun, this planet is Mars.

This world is huge, the opposite of small.
Jupiter's fifth, and the largest of all.

This planet's big too but you'll notice its rings.
Saturn's very pretty, fit for a king.

Far beyond Saturn, it spins on its side.
With thin rocky rings, Uranus is wide.

The second last planet, an icy cool blue.
Neptune is special and it has rings too.

The most distant planet, so far out in space.
Lonely small Pluto is a frozen, dark place.

Chemistry for the Grammar Stage Memory Work

Periodic Poem

(Author: unknown, also found in Fizz, Bubble, Flash on pg. 11)

Each element has a spot on the Periodic Table,
Whether metal or gas, radioactive or stable.
You can find out its number, its symbol, its weight,
And from its position, its physical state.

Elements lined up in columns and rows,
The reason for this order, as each chemist knows,
Is that atoms are made up of still smaller bits,
(Figuring this out tested scientists' wits!)

In the nucleus, protons and neutrons are found,
And a cloud of electrons is buzzing around.
First take one proton, put in its place;
Now you have hydrogen, the simplest case.

Add two neutrons and one more proton,
And suddenly, the hydrogen's gone!
Now you have helium, quite different stuff…
You get the picture; I've said enough.

These tiny particles: they're like building blocks
That make people and buildings, flowers and rocks.
They create all of the elements we find
In everyday things of every kind!

Physics for the Grammar Stage Memory Work

Matter Unit Memory Work:

There are three states of matter
Solid, liquid, gas
We'll begin with the latter
This test you can pass

A gas has no shape
It's molecules bounce all over the place
Gas tries to escape
Far out into space

A liquid moves freely
It's molecules can to flow
They fill your glass easily
From place to place they go

A solid is firm
It's molecules locked in tight
There's no room to squirm
Try as a solid might

Motion Unit Memory Work:

Newton's 3 Laws of Motion

1. An object will not move, unless a force like a push or pull moves it. Once it's moving an object will not stop moving in a straight line unless it's forced to change.
2. The greater the force on an object, the greater the change in it's motion. The greater the mass of an object, the greater the force needed to change it's motion.
3. For every reaction, there is an equal but opposite reaction.

Simple Machines Unit

Types of Simple Machines:

- Gears
- Levers
- Pulleys
- Ramps
- Wedges
- Wheels

Heat Unit

Heat comes from the Sun
To warm everyone
It's energy that works
But it has its quirk

Friction Unit

Friction helps us
Get a grip
This force slows us down
So that we don't slip

Gravity Unit

The heavier the object, the faster it will go
Galileo said, "Are you sure that is so?"

He dropped two cannonballs, one heavy, one light
He peered over the edge holding on tight

What happened below was almost a crime
The objects hit the ground at the very same time

What Galileo discovered, we call gravity today
All objects fall the same distance & time, no matter what they weigh

Light Unit

Colors of the Rainbow (Roy G. Biv):

Red		**B**lue
Orange	**G**reen	**I**ndigo
Yellow		**V**iolet

Sound Unit

Some sound is loud
Some sound is soft
All sounds are waves
That travel aloft

Sound waves begin
When an object vibrates
The object's size and shape
Determines the rate

Balance Unit

An object is in balance when all the forces that push or pull on it have caused it to remain still.

Spin Unit

Spinning seems simple, nothing at all like science
But really it's a delicate mixture of friction and balance

You twist a top and set it spinning
It is torque you apply and of its whirling

The harder you twist your top
The more centripetal force prevents a stop

Magnets & Electricity Unit

Magnets
(Author Unknown)
I am a mighty magnet,
I can be very strong.

But if you use me exactly right
Nothing can go wrong.

I can pick up many objects
But not everything you see,
I only pick up objects
That are attracted to me.

So take me now and try me out
And you will quickly see,
What different kinds of things
Are pushed and pulled by me.

Energy Unit

Types of Energy
(students do not have to memorize the definitions)

- Heat
- Light
- Sound
- Chemical energy (energy released in a chemical reaction)
- Potential energy (energy that an object has stored)
- Kinetic energy (energy of an object in motion)