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Vocabulary Builder Reference from...

Garik Israelian: How spectroscopy could reveal alien life | TED Talk

https://www.ted.com/talks/garik_israelian_how_spectroscopy_could_reveal_alien_life

All Words

IMPORTANT

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Session 1: Word List

spectroscope

n. an optical instrument used for spectrographic analysis (= measurement of properties of light over a specific portion of the electromagnetic spectrum)

(1) infrared **spectroscope**, (2) Fourier **spectroscope**

An X-ray **spectroscope** can determine the composition of the elements in a sample.

astronomy

n. the scientific study of objects and matter outside the Earth's atmosphere, especially the positions, motions, and evolution of celestial bodies

synonym: astrophysics, stargazing, cosmology

(1) **astronomy** science, (2) a branch of **astronomy**

He had a deep passion for extragalactic **astronomy** and spent hours observing the night sky.

nebula

n. a cloud of gas and dust in space, visible in the night sky, typically as a diffuse light source

synonym: cloud, mist, stardust

(1) a spiral **nebula**, (2) emission **nebula**

The galactic **nebula** was a beautiful sight through the telescope, with its vibrant colors and swirling clouds.

galaxy

n. an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity

synonym : star cluster, nebula, star system

(1) elliptic **galaxy**, (2) a **galaxy** of famous actors

The Milky Way **galaxy** has numerous water-bearing planets.

convince

v. to persuade someone or make someone believe that something is true

synonym : persuade, win over, convert

(1) **convince** her to go with us, (2) **convince** an opponent

I am considering what I should do to **convince** him.

probable

adj. likely to happen or likely to be true

synonym : likely, possible, potential

(1) **probable** outcome, (2) **probable** cause of a fire

It seems **probable** that he has forgotten our scheduled meeting.

colleague

n. one of a group of a coworker, especially in a profession or a business

synonym : coworker, associate, fellow

(1) collaborate with **colleagues**, (2) former **colleague**

I decided to seek counseling on the advice of my **colleague**.

dedicate

v. to give all of your energy, time, etc., entirely to a specific person, activity, or cause; to set apart for a particular purpose or use

synonym : consecrate, devote, commit

(1) **dedicate** a few hours, (2) **dedicate** a chapter to the subject

He **dedicated** his life to helping others.

observe

v. to watch or notice something carefully, often to gather information or insights; to take note of something or someone; to celebrate or commemorate a special event or occasion

synonym : watch, monitor, scrutinize

(1) **observe** a tradition, (2) **observe** wildlife

It is important to **observe** safety procedures in the workplace to prevent accidents.

incredible

adj. unbelievable; enormous

synonym: unbelievable, fantastical, inconceivable

(1) **incredible** amount, (2) at **incredible** speed

Her response revealed **incredible** idiocy.

crazy

adj. stupid or not sensible; very angry

synonym: insane, absurd, bizarre

(1) **crazy** about cars and racing, (2) a **crazy** scheme

The rain and thunder are **crazy** today.

symmetry

n. balance or proportion in design or structure, with elements arranged evenly on either side of an axis

synonym: balance, proportion, harmoniousness

(1) bilateral **symmetry**, (2) axial **symmetry**

The building had a **symmetry** pattern that was pleasing to the eye.

planet

n. any of the nine large celestial bodies that circle in the solar system; any celestial body that revolves around a star

synonym: earth, world, globe

(1) **planet** like the Earth, (2) save the **planet**

Mercury is the closest **planet** to the sun.

indication

n. a sign or remark that something exists, is real, or is likely to occur

synonym: clue, hint, inkling

(1) **indication** of inflation, (2) environmental **indication**

Faces are a good **indication** of age.

swallow

v. to make food, drink, pills, etc., pass down your throat into your stomach; (noun) small long-winged songbird noted for swift, graceful flight and the regularity of its

migrations

synonym : consume, gulp, inhale

(1) **swallow** a handful of pills, (2) a **swallow** tail
I **swallowed** my anger and kept quiet.

apparently

adv. based on what you have heard or read

synonym : evidently, obviously, supposedly

(1) **apparently** simple, (2) **apparently** unrelated
The police **apparently** believed this explanation was plausible.

fragile

adj. delicate or easily broken or damaged

synonym : delicate, brittle, breakable

(1) politically **fragile** nation, (2) **fragile** ecosystem
The vase was made of **fragile** ceramic and easily broke when it was dropped.

isotope

n. a variation of an element that has the same number of protons in its nucleus but a different number of neutrons, resulting in a different atomic mass and often different physical or chemical properties

synonym : variant, nuclide, radioisotope

(1) radioactive **isotope**, (2) stable **isotope**
The **isotope** carbon-14 is commonly used in radiocarbon dating of fossils.

atmosphere

n. the mass of air that surrounds the Earth; the pervading tone or mood of a place, situation, or creative work

synonym : air, ambiance, circumstances

(1) carbon dioxide in the **atmosphere**, (2) a convivial **atmosphere**
The spaceship began to burn up as it approached the Earth's **atmosphere**.

asteroid

n. (also "planetoid") a small rocky body orbiting the sun, typically in the region between Mars and Jupiter

synonym : minor planet, planetoid, rocky planetesimal

(1) **asteroid** mining, (2) **asteroid** explorer

Scientists are studying the composition and origins of the **asteroid** belt to understand the early solar system better.

engulf

v. to swallow up; to surround and cover completely

synonym : swallow, submerge, inundate

(1) **engulf** the politician, (2) **engulf** in water

The fire quickly **engulfed** the entire building.

spectrum

n. an ordered array of colors into which a light beam can be split

synonym : range, scale, spread

(1) a broad **spectrum** of opinion, (2) infrared **spectrum**

This device displayed the speech **spectrum** spectrographically.

invest

v. to put money, effort, time, etc. into something to make a profit or achieve a result

synonym : fund, sponsor, support

(1) **invest** in stocks, (2) **invest** capital

The government should view children as national assets and actively **invest** in them.

amazing

adj. extremely surprising, especially in a way that you like or admire

synonym : exceptional, extraordinary, wonderful

(1) **amazing** advances, (2) the most **amazing** feeling

The golfer recorded an **amazing** distance.

telescope

n. a device like a tube in shape containing lenses used to magnify and observe distant objects

(1) a binocular **telescope**, (2) look through a **telescope**

This facility has the largest astronomical **telescope** in the country.

astronomer

n. a physicist who studies astronomy

synonym: stargazer, cosmologist, astrophysicist

(1) amateur **astronomer**, (2) solar **astronomer**

This question has fascinated solar **astronomers** for decades.

excuse

n. a reason or explanation, either true or invented, given to justify a fault or defend your behavior; (verb) to make someone free from blame or clear from guilt

synonym: apology, justification, reason

(1) **excuse** for inaction, (2) perfect **excuse**

He quickly fabricated an **excuse** for not attending the meeting.

bet

v. to risk money on the result of an event or a competition, such as a race or game, to get more money; to have faith or confidence in something

synonym: stake, wager, gamble

(1) **bet** on a race, (2) **bet** my future

I **bet** that you know it.

spectrograph

n. an instrument that separates light into its component wavelengths and records the distribution of intensities as a graph, used for chemical analysis or to determine the properties of stars and galaxies

synonym: spectrometer, spectroscope, instrument

(1) **spectrograph** analysis, (2) acoustic **spectrograph**

The **spectrograph** data showed that the element was composed of multiple spectral lines.

resolution

n. a firm decision or determination to do or not do something; the action of solving a problem, dispute, or conflict; the quality of being resolved or determined; the clarity and sharpness of an image or display

synonym: determination, decision, settlement

(1) **resolution** of a conflict, (2) display **resolution**

He made a New Year's **resolution** to exercise more and eat healthier.

precise

adj. sharply exact or accurate or delimited

synonym : accurate, exact, distinct

(1) **precise** analyses, (2) estimate **precise** costs

The content is **precise** and informative for me.

detect

v. to find or recognize something, especially something difficult to see, hear, etc.

synonym : catch, observe, notice

(1) **detect** a bad event, (2) **detect** smuggling across borders

The security camera has **detected** four intruders.

solar

adj. of, from, or relating to the sun

(1) the **solar** system, (2) a **solar** eclipse

Solar panels have greatly improved not only in performance but also in durability.

physics

n. the science of matter and energy and their interactions

(1) nuclear **physics**, (2) laws of **physics**

He studied the **physics** of radiation.

split

v. to divide, or to make something divide into two or more parts, especially along a particular line

synonym : break, divide, break apart

(1) **split** a bill, (2) **split** a reward equally

Companies often **split** their shares to lower the stock price and encourage investors to buy.

liquid

n. a substance, such as water or oil that flows freely and is neither a solid nor a gas

synonym : fluid

(1) colorless **liquid**, (2) hazardous **liquid**

The sponge takes up the **liquid** well.

mass

n. a large amount of a substance with no definite shape or form; a large number of people or things grouped or crowded together

synonym : abundance, crowd, mob

(1) a **mass** of molten rock, (2) critical **mass**

The **mass** of people who do not own property is politically impotent.

continuous

adj. occurring or existing without a pause or interruption

synonym: ceaseless, regular, repeated

(1) **continuous** improvement, (2) a **continuous** row of warehouses

The heavy snow has been **continuous** since last morning.

emission

n. the act of production or sending out gas, heat, light, etc.

synonym: emanation, radiation, discharge

(1) global **emissions** of greenhouse gases, (2) the **emission** of light

There are five distinct **emissions** at five unique wavelengths.

continuum

n. a series of similar items in which no part or portion is distinct or distinguishable from adjacent parts

synonym: continuation, continuity

(1) a space-time **continuum**, (2) the **continuum** of events

Our life is a **continuum** of experience in which events pass from the future through the present to the past.

absorption

n. a process in which one substance permeates another; a fluid permeates or is dissolved by a liquid or solid

synonym: consumption, digestion, soaking up

(1) the **absorption** of photons, (2) **absorption** energy

Vitamin D is essential to assist the **absorption** of calcium from food.

identify

v. to recognize someone or something and say or prove who or what they are

synonym: determine, specify, recognize

(1) **identify** handwriting, (2) **identify** gene sequences

I will introduce you to how to **identify** the leading causes of the malfunction.

chemical

adj. relating to or connected with chemistry;

synonym : chemic, synthetic

(1) toxic **chemicals**, (2) a **chemical** compound

The firm has grown into a large **chemical** manufacturing.

element

n. a fundamental or essential part of something

synonym : component, feature, essence

(1) new design **elements**, (2) nonmetallic **elements**

Natural selection is an essential **element** in Darwin's theory of evolution.

absorb

v. to take in a fluid or other substance gradually

synonym : consume, soak, ingest

(1) **absorb** energy, (2) **absorb** a shock

The sponge **absorbs** water well.

frequency

n. an ordered array of colors into which a light beam can be split

synonym : recurrence, repetition, regularity

(1) **frequency** band, (2) high **frequency**

The oscillator hunts for the correct **frequency**.

sight

n. the ability to see; anything that is seen

synonym : vision, spectacle, view

(1) an unexpected **sight**, (2) dull **sight**

Many famous **sights** are within walking distance.

velocity

n. the rate of change of an object's position with respect to time, often measured in meters per second (m/s)

synonym : speed, rapidity, swiftness

(1) initial **velocity**, (2) high **velocity**

The **velocity** of the car was too fast for the road conditions.

cosmic

adj. relating to the universe or cosmos; vast or limitless

synonym : astronomical, celestial, outer-space

(1) second **cosmic** velocity, (2) **cosmic** background

radiation

Cosmic rays are high-energy particles that originate from outside the solar system.

composition

n. the different parts of something's elements or ingredients; the way in which the different components are organized; a piece of music written by someone

synonym : creating, formatting, arrangement

(1) age **composition** of the population, (2) the piano passages in the **composition**

Their innovative concepts were consistent across their bodies of **composition**.

parameter

n. a numerical or other measurable factors that characterize a system or set of data

synonym : factor, variable, characteristic

(1) **parameter** estimation, (2) **parameter** tuning

The temperature range was one of the critical **parameters** we had to consider when designing the experiment.

core

n. the most essential or fundamental part of something

synonym : center, basis, heart

(1) the **core** of an apple, (2) **core** business activity

These gas nebulas are merely newborn galactic **cores**.

nuclear

adj. of or relating to or constituting the nucleus of an atom; deriving destructive energy from the release of atomic energy

synonym : atomic

(1) **nuclear** fusion, (2) use of **nuclear** power

Many countries have now agreed to a treaty banning the use of **nuclear** weapons.

reaction

n. a response that reveals a person's feelings or attitude; (in chemistry) a process in which one or more substances are changed into others

synonym : response, reply, answer

(1) chemical **reaction**, (2) trigger a **reaction**

There was a chemical **reaction** of the lime with the groundwater.

degree

n. a unit of measurement for angles, temperature, or level of proficiency or achievement; a rank or level of academic or professional attainment

synonym: level, qualification, diploma

(1) bachelor's **degree**, (2) **degree** centigrade

She received her **degree** in psychology from the university.

infrared

adj. relating to or denoting electromagnetic radiation with a wavelength just longer than that of red light but shorter than that of microwave radiation, used for sensing heat and for remote control

synonym: thermal, warm, radiant

(1) an **infrared** lamp, (2) **infrared** radiation

The **infrared** camera revealed a hidden image on the surface.

minus

adj. subtracting or taking away; having a value less than zero

synonym: without, lacking, negative

(1) **minus** sign, (2) **minus** temperature

The recipe calls for four cups of flour **minus** one tablespoon.

Kelvin

n. a unit of measurement for temperature in the International System of Units (SI), which starts at absolute zero, the theoretical lowest limit of temperature, and named after the British physicist William Thomson, also known as Lord Kelvin

synonym: K, degree

(1) **Kelvin** scale, (2) **Kelvin** measurement

The scientist cooled the sample to just a couple of **Kelvin** to observe quantum effects.

relative

adj. considered and evaluated through comparison with something else

synonym : comparative, proximate, congeneric

(1) a remote **relative**, (2) **relative** factors

Most countries prohibit sexual activity between certain close **relatives**.

spectral

adj. relating to or having the properties of a spectrum (= an ordered array of colors into which a light beam can be split); relating to a ghost or apparition

synonym : spiritual, ghostly, otherworldly

(1) two **spectral** bands, (2) **spectral** colors

The **spectral** analysis revealed unexpected details about the composition of the planet's atmosphere.

prop

n. a piece of wood, metal, etc., placed beneath or against something to support it or keep it in position; a system, institution, or person that gives help or support to someone or something

synonym : support, buttress, column

(1) emotional **prop**, (2) **prop** stick

We have finally lost our last **prop**.

instance

n. a particular example or single occurrence of something

synonym : example, sample, illustration

(1) for **instance**, (2) notable **instance**

These articles cite five **instances** of climate change.

feat

n. a notable or impressive achievement, especially one that requires great skill or bravery

synonym : achievement, accomplishment, exploit

(1) intellectual **feat**, (2) **feat** accomplishment

It is an incredible **feat** to climb Mount Everest, the highest mountain in the world.

progression

n. the act or process of changing to the next stage or phase or moving forward

synonym : advancement, development, evolution

(1) **progression** of civilization, (2) **progression** of disease

The company has made great strides in its **progression** toward sustainability.

similarly

adv. in almost the same way

synonym : also, likewise, ditto

(1) **similarly** situated, (2) have **similarly** great abilities

We argue that wages for temporary workers should **similarly** rise.

belong

v. to be the property of someone or something; to be a member or part of a group; to be in the proper or appropriate place

synonym : fit, be appropriate, be suitable

(1) **belong** to different species, (2) **belong** to a group

All the books in this section **belong** to the library's rare collection and must be handled carefully.

osmium

n. a hard, dense, and brittle chemical element of the platinum group with the symbol Os and atomic number 76, primarily used in alloys and as a catalyst

synonym : Os

(1) **osmium** metal, (2) **osmium** tetroxide

The scientist conducted experiments to study the catalytic properties of **osmium** compounds.

explosion

n. a violent release induced by a chemical or nuclear reaction

synonym : burst, eruption, outbreak

(1) a lot of **explosions**, (2) site of the **explosion**

A broken gas pipe triggered the **explosion**.

supernova

n. a powerful and luminous explosion that occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant

synonym : explosion, detonation, blast

(1) extragalactic **supernova**, (2) **supernova** remnant
The **supernova** explosion created a bright new star in the night sky.

trigger

v. to make something happen suddenly; to cause something such as a device, machine, etc. to function
synonym: activate, spark, drive

(1) **trigger** a biochemical response, (2) **trigger** inflation
The incident **triggered** a political controversy.

formation

n. the way something is created naturally or the way it has been arranged

synonym: establishment, organization, creation

(1) a rock **formation**, (2) **formation** flight

Character **formation** is one of the goals of education.

oxygen

n. the chemical element with the symbol O that is present in air and water and is necessary for people, animals, and plants to live

(1) the hydrogen binds the **oxygen**, (2) lack of **oxygen**

The passenger grabbed for the **oxygen** mask.

conclude

v. to come to an end or close; to reach a judgment or opinion by reasoning

synonym: complete, finish, decide

(1) **conclude** a meeting, (2) **conclude** that he is healthy

We **concluded** a cease-fire.

polluted

adj. contaminated with harmful or poisonous substances

synonym: contaminated, poisoned, unclean

(1) **polluted** air, (2) cadmium- **polluted** area

The river was **polluted** with chemicals, causing harm to the wildlife.

binary

n. a system of numbers that uses only two digits, 0 and 1

synonym: twofold, double

(1) a **binary** number, (2) trading in **binary** options

A **binary** star is a system in which two stars revolve around each other.

galactic

adj. relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope

synonym : cosmic, celestial, enormous

(1) **galactic** scale, (2) a **galactic** system

The Milky Way is a **galactic** collection of billions of stars and planets.

discovery

n. the act or process of finding information, a place, or an object, or learning about something that was previously not known

synonym : finding, uncovering, detection

(1) a scientific **discovery**, (2) the great **discovery** of the century

Her research team made an important **discovery**.

alien

n. a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere

synonym : foreigner, unfamiliar, unknown

(1) **alien** fungi, (2) resident **aliens**

Alien species have drastically altered the ecosystem in this area.

interaction

n. the act of connecting with someone, mainly when working, playing, or spending time with them

synonym : dealings, exchange, relations

(1) the **interaction** between man and his environment,

(2) **interaction** among human beings

The **interaction** of the two groups is good for brainstorming.

capture

v. to catch a person or an animal and confine them in an area which they cannot escape

synonym : catch, arrest, imprison

(1) **capture** a glimpse, (2) **capture** customers' hearts
I was able to **capture** the moment on film.

flare

v. to burn brightly with a sudden, intense burst of flame or light; (noun) a sudden and brief burst of bright flame or light; a sudden and intense burst of radiation from the Sun's surface

synonym : blaze, ignite, light up

(1) **flare** up into a major crisis, (2) the **flare** of a match
The Sun **flared** and caused a sudden brightening in the sky.

norm

n. something that is regarded as usual, typical, or standard

synonym : criterion, mean, standard

(1) **norm** of action, (2) cultural **norm**

The systems we have developed has accepted as industry **norms**.

mystery

n. something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle

synonym : enigma, puzzle, secret

(1) **mystery** novel, (2) unsolved **mystery**

The **mystery** surrounding the disappearance of the traveler has yet to be solved by authorities.

literature

n. written works, such as novels, plays, poems, or short stories that are considered to have artistic or intellectual value

synonym : writing, prose, fiction

(1) popular **literature**, (2) review of the **literature**

The **literature** of the Romantic period is known for its emotion and imagination.

evolution

n. a gradual process of transformation of living things

synonym : elaboration, expansion, transition

(1) human **evolution**, (2) **evolution** theory
They study the **evolution** of the universe.

universe

n. everything that exists, especially all physical matter, including planets, stars, galaxies, and all other forms of matter and energy

synonym: cosmos, macrocosm

(1) theory of the **universe**, (2) expansion of the **universe**
The **universe** is about 13.8 billion years old.

complicated

adj. involving a lot of different things or parts in a way that is difficult to understand or analyze

synonym: complex, convoluted, intricate

(1) a **complicated** process, (2) become increasingly **complicated**

He did **complicated** pen-and-ink drawings in just a few days.

massive

adj. enormous amount; very heavy and solid

synonym: enormous, giant, immense

(1) **massive** amounts, (2) **massive** stars

The recent economic downturn has resulted in **massive** layoffs.

recycle

v. to sort and collect things to process them and produce valuable materials that can be used again

synonym: reclaim, reuse, reprocess

(1) **recycle** the cardboard boxes, (2) **recycle** milk packaging into new paper

We largely **recycle** the circuit board of cell phones because they contain a lot of valuable metals.

graph

n. a picture consisting of a line, lines, points, etc., that shows how two or more sets of certain quantities are related to each other

synonym: chart, diagram, figure

(1) **graph** theory, (2) a **graph** sample

This bar **graph** shows sales over the past five years.

abundance

n. a significant amount of something; the situation in which there is too much of something

synonym: plenty, affluence, plentitude

(1) an age of **abundance**, (2) an **abundance** of examples

A healthy farm provides an **abundance** of food.

interstellar

adj. relating to or located in the space between stars

synonym: galactic, cosmic, intergalactic

(1) **interstellar** communication, (2) **interstellar** space

The **interstellar** medium comprises gas, dust, and cosmic rays that fill the space between stars.

medium

adj. of a size, amount, or level that is average or intermediate; (noun) a means or instrumentality for storing or communicating information

synonym: average, intermediate, (noun) channel

(1) **medium** color, (2) an advertising **medium**

The **medium** size shirt fits him perfectly.

sulfur

n. (also sulphur) a chemical element with the symbol S and atomic number 16, found in many minerals and sulfur compounds, often used in the production of fertilizers, rubber, paper, and other industrial applications

(1) **sulfur** dioxide, (2) **sulfur** mine

The **sulfur** emissions from the nearby factory caused the rotten egg smell.

silicon

n. a chemical element with the symbol Si that is a hard, brittle crystalline solid with a blue-grey metallic luster and used for the transistors and integrated circuit chips in computers

(1) **silicon** wafer, (2) crystalline **silicon**

Silicon is the second most abundant element on earth after oxygen.

calcium

n. a chemical element with the symbol Ca and atomic number 20, which is an important mineral for the human body

synonym : Ca, lime, chalk

(1) **calcium** deficiency, (2) ion of **calcium**

The patient was prescribed a **calcium** supplement to help prevent osteoporosis.

relate

v. to establish a connection or association between two or more things; to narrate or tell about an event, experience, or relationship; to empathize or feel sympathy with someone or something

synonym : connect, link, associate

(1) **relate** a story, (2) **relate** a message

He tried to **relate** his experience to the group, but they couldn't understand.

naturally

adv. as might be expected; by natural manners

synonym : by nature, inherently, intrinsically

(1) **naturally** arising, (2) **naturally** regenerated forest

He was **naturally** gifted.

fundamental

adj. forming an essential base or core from which everything else develops or is affected

synonym : basic, essential, entire

(1) **fundamental** education, (2) **fundamental** rights

Human behavior has **fundamental** characteristics.

moving

adj. causing strong emotions or feelings, especially sadness or sympathy

synonym : emotional, poignant, touching

(1) **moving** experience, (2) **moving** ceremony

His **moving** speech about his struggles with addiction brought tears to the audience's eyes.

precision

n. the quality or condition of being exact and accurate

synonym : accuracy, exactness, rigor

(1) a **precision** instrument, (2) speak with **precision**
This operation requires both patience and **precision**.

meter

n. a device used to measure the amount of a particular substance or attribute, such as length, volume, or time; (prosody) the accent in a metrical foot of verse

synonym: gauge, indicator, rhythm

(1) a gas **meter**, (2) poetic **meter**

The **meter** on the wall showed that the room was three meters long.

centimeter

n. a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter

(1) **centimeter** measurement, (2) thirty **centimeters** tall

The room was only one **centimeter** wider than the piano, making it a tight fit.

involve

v. to include or affect someone or something as a necessary part of something else

synonym: implicate, include, engage

(1) **involve** a lot of paperwork, (2) **involve** a high degree of risk

The investigation **involves** several government agencies and is expected to take several months.

develop

v. to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created

synonym: evolve, progress, advance

(1) **develop** a strategy, (2) **develop** a skill

We must **develop** a new system to streamline our workflow and increase efficiency.

codex

n. a manuscript book, especially one written in the medieval period, before the invention of printing

synonym : manuscript, tome, document

(1) **codex** manuscript, (2) medieval **codex**

The archaeologists found a **codex** buried alongside a mummy in an underground tomb.

generation

n. all the people born and living at about the same time, regarded collectively; the production of heat or electricity

synonym : cohort, age group, era

(1) **generation** gap, (2) the **generation** of electricity

The younger **generation** has different values and beliefs than the older one.

instrument

n. an object used to make musical sounds, such as a piano, guitar, or drum; a tool or device used for a specific activity, particularly in specialist or scientific work

synonym : apparatus, tool, device

(1) musical **instruments**, (2) surgical **instruments**

This electronic **instrument** is required to undergo periodic inspections to ensure precision.

seismology

n. the scientific study of earthquakes and the behavior of seismic waves that occur within the Earth's crust, as well as the structure and dynamics of the Earth's interior

synonym : earthquake science, seismic study, tremor analysis

(1) **seismology** research, (2) **seismology** data

The institute invested in advanced **seismology** equipment to better monitor underground vibrations.

alpha

n. the first letter in the Greek alphabet; in social and group dynamics, the highest or most dominant member of a group or social hierarchy

synonym : first, beginning, leader

(1) **alpha** particle, (2) **alpha** radiation

The company's new CEO was known for his **alpha** personality.

infrasonic

adj. relating to sound waves below the range of human hearing, typically below 20 Hz

synonym : inaudible, subsonic

(1) **infrasonic** sensor, (2) **infrasonic** electronic waves

Infrasonic waves can be used for communication, such as in long-range submarines.

domain

n. a specific sphere of influence or control; a specific field of knowledge or expertise

synonym : territory, realm, sphere

(1) **domain** of use, (2) a dependent **domain**

The company's **domain** in the market was expanding to new territories.

tectonic

adj. relating to the structure of the Earth's crust and the large-scale processes that occur as a result of movements within it

synonym : seismic, geologic, geological

(1) **tectonic** valleys, (2) a **tectonic** earthquake

The **tectonic** plates shifted, causing an earthquake.

volcanic

adj. relating to or produced by or consisting of volcano

(1) effects of **volcanic** eruptions, (2) increase in **volcanic** activity

This study indicates **volcanic** activity affects global warming.

radioactive

adj. emitting powerful and dangerous energy when the nuclei (= central parts) of atoms are broken up

synonym : dangerous, contaminated, emanating

(1) **radioactive** decay, (2) **radioactive** isotope

The **radioactive** material was carefully stored in a lead-lined container.

nucleus

n. the central and most important part of something; (biology) a part of the cell containing DNA and RNA and responsible for growth and reproduction; (physics) the very dense central region of an atom

synonym : core, heart, middle

(1) form a **nucleus**, (2) the **nucleus** of a team
DNA is stored in the **nucleus** of a cell.

straightforward

adj. easy to do or understand, or simple; free from ambiguity

synonym : honest, candid, forthright

(1) **straightforward** manner, (2) make a **straightforward** dash

The defendant gave a **straightforward** and accurate description of the accident.

geothermal

adj. relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth

synonym : underground, thermal, subterranean

(1) **geothermal** activity, (2) **geothermal** drilling

The town is exploring using **geothermal** energy to power its homes and buildings.

decay

n. the process or state of rotting or decomposition by natural causes such as the action of bacteria and fungi;
(verb) to rot or decompose through natural causes

synonym : corrosion, decomposition, deterioration

(1) radioactive **decay**, (2) prevent tooth **decay**

The dead body was in an advanced state of **decay**.

uranium

n. a chemical element with the symbol U, atomic number 92, that is a dense, silvery-white metal that is radioactive and is used as a fuel for nuclear power plants

synonym : U

(1) **uranium** mining, (2) radioactive **uranium** isotope

The mining and processing of **uranium** can lead to releasing radioactive materials into the environment.

thorium

n. a radioactive chemical element with the symbol Th and atomic number 90 that is silvery-white in color and is used as fuel in some nuclear reactors

synonym : Th, radioactive element

(1) **thorium** deposit, (2) **thorium** reactor

Certain isotopes of **thorium** are used in medicine for treating liver cancer.

potassium

n. a chemical element with the symbol K, atomic number 19, that is essential for the functioning of living organisms

synonym : K, potash, potassa

(1) **potassium** rich, (2) **potassium** excretion

The patient's **potassium** levels were low, so they were advised to eat foods high in potassium, such as bananas and sweet potatoes.

parsec

n. a unit of measurement of astronomical distance equivalent to 3.26 light-years (= about 5.88 trillion miles or 9.46 trillion kilometers)

(1) distance of a **parsec**, (2) astronomical **parsec** distance

The nearest star to our planet is about 1.3 **parsecs** away.

tune

n. a musical composition or set of musical notes that are played or sung; (verb) to adjust or set something to a specific condition or standard

synonym : melody, harmony, (verb) adjust

(1) the **tune** of a song, (2) **tune** a piano

The band played a beautiful **tune** on their instruments.

promising

adj. having the potential to be successful, helpful, or beneficial; showing signs of future success or achievement

synonym : hopeful, optimistic, encouraging

(1) **promising** idea, (2) **promising** start

Several top teams scouted **promising** young athletes.

biomarker

n. a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic

responses to a therapeutic intervention

synonym: indicator, measure, signature

(1) diabetes **biomarker**, (2) **biomarker** discovery

The **biomarker** test showed that the patient was responding well to the treatment.

slope

n. a surface with one end or side that is higher than the other

synonym: gradient, pitch, slant

(1) an abrupt **slope**, (2) slide down a **slope** on a ski

The hut stands on the **slope** of a mountain.

detection

n. the act of discovering or identifying the presence of something

synonym: discovery, identification, recognition

(1) **detection** by the security software, (2) importance of early **detection**

This smartphone has a collision **detection** function.

vegetate

v. to lead a dull, inactive, or unproductive life; to exist in a passive or inactive state; to grow or develop without much energy, activity, or progress

synonym: laze, idle

(1) **vegetate** in a hammock, (2) **vegetate** in front of the TV

After a long day at work, I want to **vegetate** on the couch and watch TV.

vegetation

n. plants in general, particularly those indigenous to a particular region or spot

synonym: flora, leafage, foliage

(1) tropical **vegetation**, (2) dense **vegetation**

The **vegetation** in the area is quite diverse.

methane

n. a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel

(1) atmospheric **methane**, (2) reduce **methane** emissions

The ignition of **methane** gas in the plant killed five employees.

carbon

n. a chemical element that can be found in pure form as diamond or graphite, and it is also an essential part of coal and oil and is found in all plants and animals

(1) **carbon** dioxide, (2) **carbon** emission

Trees absorb **carbon** dioxide and give off oxygen.

oxide

n. a chemical compound that contains at least one oxygen atom and one other element

(1) silver **oxide**, (2) combined **oxide**

The blood's red coloring comes from iron **oxide**.

ozone

n. a poisonous gas with the chemical formula O₃, which has a strong smell

(1) **ozone** depletion, (2) atmospheric **ozone**

The **ozone** layer is vital for blocking some harmful sun rays.

miracle

n. an act or occurrence that is not explicable by natural or scientific laws and is therefore believed to be caused by God

synonym: wonder, marvel, phenomenon

(1) **miracle** person, (2) economic **miracle**

The doctors said that her recovery was a **miracle**.

refer

v. to direct someone's attention, thoughts, or questions to another source or person; to mention, cite, or allude to something as evidence or support

synonym: cite, allude, mention

(1) **refer** to a book, (2) **refer** to a map

Please **refer** to the instruction manual for further assistance.

frank

adj. honest and sincere; open and candid in expression

synonym: candid, direct, freehearted

(1) **frank** and open discussion, (2) make a **frank** apology

Full involvement means **frank** and prompt responses.

civilization

n. a complex and highly organized society that has developed over time and has a dominant culture, including features such as language, religion, government, technology, and social customs

synonym: society, culture, community

(1) **civilization** decline, (2) lost **civilization**

The rise and fall of **civilizations** can be studied through history and archaeology.

presence

n. the fact or state that someone or something exists, occurs, or is present

synonym: existence, actuality, fact

(1) the evidence of the **presence**, (2) his majestic **presence**

The path to a solid online **presence** necessitates a high technical ability.

technetium

n. a radioactive metallic element with the atomic number 43 and the symbol Tc that has no stable isotopes and is used in medical imaging procedures and as a tracer in various scientific studies

synonym: Tc

(1) **technetium** scan, (2) **technetium-99m** tracer

Due to its radioactive nature, handling **technetium** materials requires strict safety protocols.

suddenly

adv. quickly and unexpectedly

synonym: abruptly, unexpectedly, unawares

(1) **suddenly** attacked by an enemy, (2) die **suddenly**

Who answers **suddenly** knows little.

candidate

n. a person who is seeking or being considered for some kind of position, title, honor, or award; a job applicant

synonym: applicant, nominee, contender

(1) **candidate** selection, (2) PhD **candidate**

The **candidate's** platform focused on healthcare reform and reducing income inequality.

confirm

v. to support or establish the truth or certainty of something previously believed or suspected to be the case

synonym: affirm, verify, assure

(1) **confirm** the diagnosis, (2) **confirm** a transaction

Please write to **confirm** your reservation.

nitrogen

n. a chemical element with the symbol N and atomic number 7, which is a highly reactive element that forms part of many compounds, including amino acids and proteins

(1) heavy **nitrogen**, (2) **nitrogen** absorption

Nitrogen gas is used to inflate car tires because it does not react with rubber.

distance

n. the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance

synonym: space, gap, span

(1) driving **distance**, (2) social **distance**

The marathon runner covered a long **distance** in a short amount of time.

Session 2: Spelling

- | | |
|--------------------------------|---|
| 1. two sp____al bands | <i>adj.</i> relating to or having the properties of a spectrum (= an ordered array of colors into which a light beam can be split); relating to a ghost or apparition |
| 2. laws of ph____s | <i>n.</i> the science of matter and energy and their interactions |
| 3. re____e the cardboard boxes | <i>v.</i> to sort and collect things to process them and produce valuable materials that can be used again |
| 4. sp__t a reward equally | <i>v.</i> to divide, or to make something divide into two or more parts, especially along a particular line |
| 5. a gr__h sample | <i>n.</i> a picture consisting of a line, lines, points, etc., that shows how two or more sets of certain quantities are related to each other |
| 6. a remote re____ve | <i>adj.</i> considered and evaluated through comparison with something else |
| 7. mi____e person | <i>n.</i> an act or occurrence that is not explicable by natural or scientific laws and is therefore believed to be caused by God |
| 8. colorless li____d | <i>n.</i> a substance, such as water or oil that flows freely and is neither a solid nor a gas |
| 9. ab____b a shock | <i>v.</i> to take in a fluid or other substance gradually |

ANSWERS: 1. spectral, 2. physics, 3. recycle, 4. split, 5. graph, 6. relative, 7. miracle, 8. liquid, 9. absorb

10. tr____r inflation *v.* to make something happen suddenly; to cause something such as a device, machine, etc. to function
11. a pr_____on instrument *n.* the quality or condition of being exact and accurate
12. cultural n__m *n.* something that is regarded as usual, typical, or standard
13. de_____te a chapter to the subject *v.* to give all of your energy, time, etc., entirely to a specific person, activity, or cause; to set apart for a particular purpose or use
14. cadmium-po_____ed area *adj.* contaminated with harmful or poisonous substances
15. fun_____al education *adj.* forming an essential base or core from which everything else develops or is affected
16. dull si__t *n.* the ability to see; anything that is seen
17. hazardous li____d *n.* a substance, such as water or oil that flows freely and is neither a solid nor a gas
18. the most am_____g feeling *adj.* extremely surprising, especially in a way that you like or admire
19. silver ox__e *n.* a chemical compound that contains at least one oxygen atom and one other element
20. review of the lit_____re *n.* written works, such as novels, plays, poems, or short stories that are considered to have artistic or intellectual value

ANSWERS: 10. trigger, 11. precision, 12. norm, 13. dedicate, 14. polluted, 15. fundamental, 16. sight, 17. liquid, 18. amazing, 19. oxide, 20. literature

21. po_____um excretion *n.* a chemical element with the symbol K, atomic number 19, that is essential for the functioning of living organisms
22. re_____e milk packaging into new paper *v.* to sort and collect things to process them and produce valuable materials that can be used again
23. str_____ard manner *adj.* easy to do or understand, or simple; free from ambiguity
24. po_____um rich *n.* a chemical element with the symbol K, atomic number 19, that is essential for the functioning of living organisms
25. a convivial atm_____re *n.* the mass of air that surrounds the Earth; the pervading tone or mood of a place, situation, or creative work
26. ob_____e wildlife *v.* to watch or notice something carefully, often to gather information or insights; to take note of something or someone; to celebrate or commemorate a special event or occasion
27. a sw_____w tail *v.* to make food, drink, pills, etc., pass down your throat into your stomach; (noun) small long-winged songbird noted for swift, graceful flight and the regularity of its migrations
28. age com_____on of the population *n.* the different parts of something's elements or ingredients; the way in which the different components are organized; a piece of music written by someone
29. increase in vo_____ic activity *adj.* relating to or produced by or consisting of volcano

ANSWERS: 21. potassium, 22. recycle, 23. straightforward, 24. potassium, 25. atmosphere, 26. observe, 27. swallow, 28. composition, 29. volcanic

30. elliptic ga___y *n.* an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
31. be___g to different species *v.* to be the property of someone or something; to be a member or part of a group; to be in the proper or appropriate place
32. re___r to a book *v.* to direct someone's attention, thoughts, or questions to another source or person; to mention, cite, or allude to something as evidence or support
33. pro_____on of disease *n.* the act or process of changing to the next stage or phase or moving forward
34. importance of early de_____on *n.* the act of discovering or identifying the presence of something
35. a branch of as_____my *n.* the scientific study of objects and matter outside the Earth's atmosphere, especially the positions, motions, and evolution of celestial bodies
36. popular lit_____re *n.* written works, such as novels, plays, poems, or short stories that are considered to have artistic or intellectual value
37. ma_____e stars *adj.* enormous amount; very heavy and solid
38. ur_____m mining *n.* a chemical element with the symbol U, atomic number 92, that is a dense, silvery-white metal that is radioactive and is used as a fuel for nuclear power plants

ANSWERS: 30. galaxy, 31. belong, 32. refer, 33. progression, 34. detection, 35. astronomy, 36. literature, 37. massive, 38. uranium

39. as____id mining *n.* (also "planetoid") a small rocky body orbiting the sun, typically in the region between Mars and Jupiter
40. economic mi____e *n.* an act or occurrence that is not explicable by natural or scientific laws and is therefore believed to be caused by God
41. na_____ly arising *adv.* as might be expected; by natural manners
42. a binocular te_____pe *n.* a device like a tube in shape containing lenses used to magnify and observe distant objects
43. a dependent do____n *n.* a specific sphere of influence or control; a specific field of knowledge or expertise
44. ca_____te selection *n.* a person who is seeking or being considered for some kind of position, title, honor, or award; a job applicant
45. crystalline si____n *n.* a chemical element with the symbol Si that is a hard, brittle crystalline solid with a blue-grey metallic luster and used for the transistors and integrated circuit chips in computers
46. am____g advances *adj.* extremely surprising, especially in a way that you like or admire
47. Fourier spe_____ope *n.* an optical instrument used for spectrographic analysis (= measurement of properties of light over a specific portion of the electromagnetic spectrum)

ANSWERS: 39. asteroid, 40. miracle, 41. naturally, 42. telescope, 43. domain, 44. candidate, 45. silicon, 46. amazing, 47. spectroscope

48. the nu____s of a team *n.* the central and most important part of something; (biology) a part of the cell containing DNA and RNA and responsible for growth and reproduction; (physics) the very dense central region of an atom
49. the piano passages in the com_____on *n.* the different parts of something's elements or ingredients; the way in which the different components are organized; a piece of music written by someone
50. a spiral ne____a *n.* a cloud of gas and dust in space, visible in the night sky, typically as a diffuse light source
51. mi__s temperature *adj.* subtracting or taking away; having a value less than zero
52. id____fy gene sequences *v.* to recognize someone or something and say or prove who or what they are
53. reduce me_____e emissions *n.* a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel
54. his majestic pr_____ce *n.* the fact or state that someone or something exists, occurs, or is present
55. make a fr__k apology *adj.* honest and sincere; open and candid in expression
56. p__p stick *n.* a piece of wood, metal, etc., placed beneath or against something to support it or keep it in position; a system, institution, or person that gives help or support to someone or something

ANSWERS: 48. nucleus, 49. composition, 50. nebula, 51. minus, 52. identify, 53. methane, 54. presence, 55. frank, 56. prop

57. a te____ic earthquake *adj.* relating to the structure of the Earth's crust and the large-scale processes that occur as a result of movements within it
58. en____f in water *v.* to swallow up; to surround and cover completely
59. in____ed radiation *adj.* relating to or denoting electromagnetic radiation with a wavelength just longer than that of red light but shorter than that of microwave radiation, used for sensing heat and for remote control
60. social di____ce *n.* the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance
61. sw____w a handful of pills *v.* to make food, drink, pills, etc., pass down your throat into your stomach; (noun) small long-winged songbird noted for swift, graceful flight and the regularity of its migrations
62. PhD ca____te *n.* a person who is seeking or being considered for some kind of position, title, honor, or award; a job applicant
63. the c__e of an apple *n.* the most essential or fundamental part of something
64. app____ly unrelated *adv.* based on what you have heard or read
65. de____t a bad event *v.* to find or recognize something, especially something difficult to see, hear, etc.

ANSWERS: 57. tectonic, 58. engulf, 59. infrared, 60. distance, 61. swallow, 62. candidate, 63. core, 64. apparently, 65. detect

66. a ch____al compound *adj.* relating to or connected with chemistry;
67. collaborate with co_____ues *n.* one of a group of a coworker, especially in a profession or a business
68. atmospheric oz__e *n.* a poisonous gas with the chemical formula O₃, which has a strong smell
69. nu____r fusion *adj.* of or relating to or constituting the nucleus of an atom; deriving destructive energy from the release of atomic energy
70. notable in_____ce *n.* a particular example or single occurrence of something
71. ob_____e a tradition *v.* to watch or notice something carefully, often to gather information or insights; to take note of something or someone; to celebrate or commemorate a special event or occasion
72. mo____g ceremony *adj.* causing strong emotions or feelings, especially sadness or sympathy
73. fo_____on flight *n.* the way something is created naturally or the way it has been arranged
74. use of nu____r power *adj.* of or relating to or constituting the nucleus of an atom; deriving destructive energy from the release of atomic energy
75. fr__k and open discussion *adj.* honest and sincere; open and candid in expression
76. n__m of action *n.* something that is regarded as usual, typical, or standard

ANSWERS: 66. chemical, 67. colleague, 68. ozone, 69. nuclear, 70. instance, 71. observe, 72. moving, 73. formation, 74. nuclear, 75. frank, 76. norm

77. su___r mine *n.* (also sulphur) a chemical element with the symbol S and atomic number 16, found in many minerals and sulfur compounds, often used in the production of fertilizers, rubber, paper, and other industrial applications
78. ca_____m deficiency *n.* a chemical element with the symbol Ca and atomic number 20, which is an important mineral for the human body
79. die su_____ly *adv.* quickly and unexpectedly
80. re__r to a map *v.* to direct someone's attention, thoughts, or questions to another source or person; to mention, cite, or allude to something as evidence or support
81. carbon dioxide in the atm_____re *n.* the mass of air that surrounds the Earth; the pervading tone or mood of a place, situation, or creative work
82. co_____de that he is healthy *v.* to come to an end or close; to reach a judgment or opinion by reasoning
83. for in_____ce *n.* a particular example or single occurrence of something
84. inc_____le amount *adj.* unbelievable; enormous
85. re___e a story *v.* to establish a connection or association between two or more things; to narrate or tell about an event, experience, or relationship; to empathize or feel sympathy with someone or something
86. bi_____er discovery *n.* a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention

ANSWERS: 77. sulfur, 78. calcium, 79. suddenly, 80. refer, 81. atmosphere, 82. conclude, 83. instance, 84. incredible, 85. relate, 86. biomarker

87. bilateral sy____ry *n.* balance or proportion in design or structure, with elements arranged evenly on either side of an axis
88. al__n fungi *n.* a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere
89. the em____on of light *n.* the act of production or sending out gas, heat, light, etc.
90. b_t my future *v.* to risk money on the result of an event or a competition, such as a race or game, to get more money; to have faith or confidence in something
91. in____e a lot of paperwork *v.* to include or affect someone or something as a necessary part of something else
92. de____p a strategy *v.* to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created
93. de____p a skill *v.* to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created
94. trading in bi____y options *n.* a system of numbers that uses only two digits, 0 and 1

ANSWERS: 87. symmetry, 88. alien, 89. emission, 90. bet, 91. involve, 92. develop, 93. develop, 94. binary

95. acoustic spe_____aph *n.* an instrument that separates light into its component wavelengths and records the distribution of intensities as a graph, used for chemical analysis or to determine the properties of stars and galaxies
96. a m__s of molten rock *n.* a large amount of a substance with no definite shape or form; a large number of people or things grouped or crowded together
97. tec_____um scan *n.* a radioactive metallic element with the atomic number 43 and the symbol Tc that has no stable isotopes and is used in medical imaging procedures and as a tracer in various scientific studies
98. astronomical pa___c distance *n.* a unit of measurement of astronomical distance equivalent to 3.26 light-years (= about 5.88 trillion miles or 9.46 trillion kilometers)
99. environmental ind_____on *n.* a sign or remark that something exists, is real, or is likely to occur
100. su_____va remnant *n.* a powerful and luminous explosion that occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant
101. look through a te_____pe *n.* a device like a tube in shape containing lenses used to magnify and observe distant objects
102. spe_____aph analysis *n.* an instrument that separates light into its component wavelengths and records the distribution of intensities as a graph, used for chemical analysis or to determine the properties of stars and galaxies

ANSWERS: 95. spectrograph, 96. mass, 97. technetium, 98. parsec, 99. indication, 100. supernova, 101. telescope, 102. spectrograph

103. toxic ch____als *adj.* relating to or connected with chemistry;
104. pro_____on of civilization *n.* the act or process of changing to the next stage or phase or moving forward
105. fr_____cy band *n.* an ordered array of colors into which a light beam can be split
106. re___e a message *v.* to establish a connection or association between two or more things; to narrate or tell about an event, experience, or relationship; to empathize or feel sympathy with someone or something
107. display res_____on *n.* a firm decision or determination to do or not do something; the action of solving a problem, dispute, or conflict; the quality of being resolved or determined; the clarity and sharpness of an image or display
108. rad_____ve isotope *adj.* emitting powerful and dangerous energy when the nuclei (= central parts) of atoms are broken up
109. the t__e of a song *n.* a musical composition or set of musical notes that are played or sung; (verb) to adjust or set something to a specific condition or standard
110. resident al__ns *n.* a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere
111. the evidence of the pr_____ce *n.* the fact or state that someone or something exists, occurs, or is present

ANSWERS: 103. chemical, 104. progression, 105. frequency, 106. relate, 107. resolution, 108. radioactive, 109. tune, 110. alien, 111. presence

112. res_____on of a conflict *n.* a firm decision or determination to do or not do something; the action of solving a problem, dispute, or conflict; the quality of being resolved or determined; the clarity and sharpness of an image or display
113. co_____ce her to go with us *v.* to persuade someone or make someone believe that something is true
114. ve_____te in front of the TV *v.* to lead a dull, inactive, or unproductive life; to exist in a passive or inactive state; to grow or develop without much energy, activity, or progress
115. heavy ni_____en *n.* a chemical element with the symbol N and atomic number 7, which is a highly reactive element that forms part of many compounds, including amino acids and proteins
116. t__e a piano *n.* a musical composition or set of musical notes that are played or sung; (verb) to adjust or set something to a specific condition or standard
117. Ke____n scale *n.* a unit of measurement for temperature in the International System of Units (SI), which starts at absolute zero, the theoretical lowest limit of temperature, and named after the British physicist William Thomson, also known as Lord Kelvin
118. civ_____ion decline *n.* a complex and highly organized society that has developed over time and has a dominant culture, including features such as language, religion, government, technology, and social customs

ANSWERS: 112. resolution, 113. convince, 114. vegetate, 115. nitrogen, 116. tune, 117. Kelvin, 118. civilization

119. become increasingly com_____ed *adj.* involving a lot of different things or parts in a way that is difficult to understand or analyze
120. tec_____um-99m tracer *n.* a radioactive metallic element with the atomic number 43 and the symbol Tc that has no stable isotopes and is used in medical imaging procedures and as a tracer in various scientific studies
121. thirty cen_____ers tall *n.* a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter
122. con_____us improvement *adj.* occurring or existing without a pause or interruption
123. inf_____ic electronic waves *adj.* relating to sound waves below the range of human hearing, typically below 20 Hz
124. te_____ic valleys *adj.* relating to the structure of the Earth's crust and the large-scale processes that occur as a result of movements within it
125. a com_____ed process *adj.* involving a lot of different things or parts in a way that is difficult to understand or analyze
126. al__a particle *n.* the first letter in the Greek alphabet; in social and group dynamics, the highest or most dominant member of a group or social hierarchy
127. as_____id explorer *n.* (also "planetoid") a small rocky body orbiting the sun, typically in the region between Mars and Jupiter

ANSWERS: 119. complicated, 120. technetium, 121. centimeter, 122. continuous, 123. infrasonic, 124. tectonic, 125. complicated, 126. alpha, 127. asteroid

128. ve_____te in a hammock *v.* to lead a dull, inactive, or unproductive life; to exist in a passive or inactive state; to grow or develop without much energy, activity, or progress
129. tropical veg_____on *n.* plants in general, particularly those indigenous to a particular region or spot
130. na_____ly regenerated forest *adv.* as might be expected; by natural manners
131. co_____m a transaction *v.* to support or establish the truth or certainty of something previously believed or suspected to be the case
132. expansion of the un_____se *n.* everything that exists, especially all physical matter, including planets, stars, galaxies, and all other forms of matter and energy
133. the co_____um of events *n.* a series of similar items in which no part or portion is distinct or distinguishable from adjacent parts
134. de_____te a few hours *v.* to give all of your energy, time, etc., entirely to a specific person, activity, or cause; to set apart for a particular purpose or use
135. an in_____ed lamp *adj.* relating to or denoting electromagnetic radiation with a wavelength just longer than that of red light but shorter than that of microwave radiation, used for sensing heat and for remote control
136. the abs_____on of photons *n.* a process in which one substance permeates another; a fluid permeates or is dissolved by a liquid or solid

ANSWERS: 128. vegetate, 129. vegetation, 130. naturally, 131. confirm, 132. universe, 133. continuum, 134. dedicate, 135. infrared, 136. absorption

137. ca____e customers' hearts *v.* to catch a person or an animal and confine them in an area which they cannot escape
138. musical ins_____nts *n.* an object used to make musical sounds, such as a piano, guitar, or drum; a tool or device used for a specific activity, particularly in specialist or scientific work
139. in_____e a high degree of risk *v.* to include or affect someone or something as a necessary part of something else
140. c__e business activity *n.* the most essential or fundamental part of something
141. pr_____e analyses *adj.* sharply exact or accurate or delimited
142. make a str_____ard dash *adj.* easy to do or understand, or simple; free from ambiguity
143. a so__r eclipse *adj.* of, from, or relating to the sun
144. surgical ins_____nts *n.* an object used to make musical sounds, such as a piano, guitar, or drum; a tool or device used for a specific activity, particularly in specialist or scientific work
145. the hydrogen binds the ox___n *n.* the chemical element with the symbol O that is present in air and water and is necessary for people, animals, and plants to live
146. abs_____on energy *n.* a process in which one substance permeates another; a fluid permeates or is dissolved by a liquid or solid

ANSWERS: 137. capture, 138. instrument, 139. involve, 140. core, 141. precise, 142. straightforward, 143. solar, 144. instrument, 145. oxygen, 146. absorption

147. stable is____e *n.* a variation of an element that has the same number of protons in its nucleus but a different number of neutrons, resulting in a different atomic mass and often different physical or chemical properties
148. de____t smuggling across borders *v.* to find or recognize something, especially something difficult to see, hear, etc.
149. dense veg_____on *n.* plants in general, particularly those indigenous to a particular region or spot
150. ca____n emission *n.* a chemical element that can be found in pure form as diamond or graphite, and it is also an essential part of coal and oil and is found in all plants and animals
151. combined ox____e *n.* a chemical compound that contains at least one oxygen atom and one other element
152. ind_____on of inflation *n.* a sign or remark that something exists, is real, or is likely to occur
153. b_t on a race *v.* to risk money on the result of an event or a competition, such as a race or game, to get more money; to have faith or confidence in something
154. gen_____on gap *n.* all the people born and living at about the same time, regarded collectively; the production of heat or electricity
155. intellectual f__t *n.* a notable or impressive achievement, especially one that requires great skill or bravery

ANSWERS: 147. isotope, 148. detect, 149. vegetation, 150. carbon, 151. oxide, 152. indication, 153. bet, 154. generation, 155. feat

156. critical m__s *n.* a large amount of a substance with no definite shape or form; a large number of people or things grouped or crowded together
157. sp__t a bill *v.* to divide, or to make something divide into two or more parts, especially along a particular line
158. si_____n wafer *n.* a chemical element with the symbol Si that is a hard, brittle crystalline solid with a blue-grey metallic luster and used for the transistors and integrated circuit chips in computers
159. si_____ly situated *adv.* in almost the same way
160. su___r dioxide *n.* (also sulphur) a chemical element with the symbol S and atomic number 16, found in many minerals and sulfur compounds, often used in the production of fertilizers, rubber, paper, and other industrial applications
161. be___g to a group *v.* to be the property of someone or something; to be a member or part of a group; to be in the proper or appropriate place
162. inf_____ic sensor *adj.* relating to sound waves below the range of human hearing, typically below 20 Hz
163. geo_____al activity *adj.* relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth

ANSWERS: 156. mass, 157. split, 158. silicon, 159. similarly, 160. sulfur, 161. belong, 162. infrasonic, 163. geothermal

164. ev_____on theory *n.* a gradual process of transformation of living things
165. effects of vo_____ic eruptions *adj.* relating to or produced by or consisting of volcano
166. en____f the politician *v.* to swallow up; to surround and cover completely
167. po_____ed air *adj.* contaminated with harmful or poisonous substances
168. a ga____y of famous actors *n.* an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
169. de_____on by the security software *n.* the act of discovering or identifying the presence of something
170. a bi____y number *n.* a system of numbers that uses only two digits, 0 and 1
171. the great di_____ry of the century *n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known
172. speak with pr_____on *n.* the quality or condition of being exact and accurate
173. infrared spe_____ope *n.* an optical instrument used for spectrographic analysis (= measurement of properties of light over a specific portion of the electromagnetic spectrum)
174. emission ne____a *n.* a cloud of gas and dust in space, visible in the night sky, typically as a diffuse light source

ANSWERS: 164. evolution, 165. volcanic, 166. engulf, 167. polluted, 168. galaxy, 169. detection, 170. binary, 171. discovery, 172. precision, 173. spectroscope, 174. nebula

175. ca___n dioxide *n.* a chemical element that can be found in pure form as diamond or graphite, and it is also an essential part of coal and oil and is found in all plants and animals
176. pr_____ng idea *adj.* having the potential to be successful, helpful, or beneficial; showing signs of future success or achievement
177. tr_____r a biochemical response *v.* to make something happen suddenly; to cause something such as a device, machine, etc. to function
178. the fl__e of a match *v.* to burn brightly with a sudden, intense burst of flame or light; (noun) a sudden and brief burst of bright flame or light; a sudden and intense burst of radiation from the Sun's surface
179. emotional p__p *n.* a piece of wood, metal, etc., placed beneath or against something to support it or keep it in position; a system, institution, or person that gives help or support to someone or something
180. app_____ly simple *adv.* based on what you have heard or read
181. lack of ox___n *n.* the chemical element with the symbol O that is present in air and water and is necessary for people, animals, and plants to live
182. amateur ast_____er *n.* a physicist who studies astronomy
183. co_____de a meeting *v.* to come to an end or close; to reach a judgment or opinion by reasoning

ANSWERS: 175. carbon, 176. promising, 177. trigger, 178. flare, 179. prop, 180. apparently, 181. oxygen, 182. astronomer, 183. conclude

184. trigger a re_____on *n.* a response that reveals a person's feelings or attitude; (in chemistry) a process in which one or more substances are changed into others
185. my_____y novel *n.* something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle
186. high ve_____ty *n.* the rate of change of an object's position with respect to time, often measured in meters per second (m/s)
187. gr__h theory *n.* a picture consisting of a line, lines, points, etc., that shows how two or more sets of certain quantities are related to each other
188. poetic me__r *n.* a device used to measure the amount of a particular substance or attribute, such as length, volume, or time; (prosody) the accent in a metrical foot of verse
189. an advertising me____m *adj.* of a size, amount, or level that is average or intermediate; (noun) a means or instrumentality for storing or communicating information
190. diabetes bi_____er *n.* a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention

ANSWERS: 184. reaction, 185. mystery, 186. velocity, 187. graph, 188. meter, 189. medium, 190. biomarker

191. a scientific di_____ry *n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known
192. driving di_____ce *n.* the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance
193. fr_____e ecosystem *adj.* delicate or easily broken or damaged
194. site of the ex_____on *n.* a violent release induced by a chemical or nuclear reaction
195. a ga_____ic system *adj.* relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope
196. Ke____n measurement *n.* a unit of measurement for temperature in the International System of Units (SI), which starts at absolute zero, the theoretical lowest limit of temperature, and named after the British physicist William Thomson, also known as Lord Kelvin
197. int_____lar communication *adj.* relating to or located in the space between stars
198. distance of a pa____c *n.* a unit of measurement of astronomical distance equivalent to 3.26 light-years (= about 5.88 trillion miles or 9.46 trillion kilometers)

ANSWERS: 191. discovery, 192. distance, 193. fragile, 194. explosion, 195. galactic, 196. Kelvin, 197. interstellar, 198. parsec

199. initial ve____ty *n.* the rate of change of an object's position with respect to time, often measured in meters per second (m/s)
200. nonmetallic el____ts *n.* a fundamental or essential part of something
201. pr____le cause of a fire *adj.* likely to happen or likely to be true
202. a con____us row of warehouses *adj.* occurring or existing without a pause or interruption
203. an age of ab____ce *n.* a significant amount of something; the situation in which there is too much of something
204. sei____gy research *n.* the scientific study of earthquakes and the behavior of seismic waves that occur within the Earth's crust, as well as the structure and dynamics of the Earth's interior
205. id____fy handwriting *v.* to recognize someone or something and say or prove who or what they are
206. mi__s sign *adj.* subtracting or taking away; having a value less than zero
207. medieval co__x *n.* a manuscript book, especially one written in the medieval period, before the invention of printing
208. th____m reactor *n.* a radioactive chemical element with the symbol Th and atomic number 90 that is silvery-white in color and is used as fuel in some nuclear reactors
209. f__t accomplishment *n.* a notable or impressive achievement, especially one that requires great skill or bravery

ANSWERS: 199. velocity, 200. element, 201. probable, 202. continuous, 203. abundance, 204. seismology, 205. identify, 206. minus, 207. codex, 208. thorium, 209. feat

210. chemical re_____on *n.* a response that reveals a person's feelings or attitude; (in chemistry) a process in which one or more substances are changed into others
211. global em_____ons of greenhouse gases *n.* the act of production or sending out gas, heat, light, etc.
212. lost civ_____ion *n.* a complex and highly organized society that has developed over time and has a dominant culture, including features such as language, religion, government, technology, and social customs
213. os____m metal *n.* a hard, dense, and brittle chemical element of the platinum group with the symbol Os and atomic number 76, primarily used in alloys and as a catalyst
214. prevent tooth de____y *n.* the process or state of rotting or decomposition by natural causes such as the action of bacteria and fungi; (verb) to rot or decompose through natural causes
215. new design el_____ts *n.* a fundamental or essential part of something
216. the gen_____on of electricity *n.* all the people born and living at about the same time, regarded collectively; the production of heat or electricity
217. extragalactic su_____va *n.* a powerful and luminous explosion that occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant

ANSWERS: 210. reaction, 211. emission, 212. civilization, 213. osmium, 214. decay, 215. element, 216. generation, 217. supernova

218. former co_____ue *n.* one of a group of a coworker, especially in a profession or a business
219. su_____ly attacked by an enemy *adv.* quickly and unexpectedly
220. as_____my science *n.* the scientific study of objects and matter outside the Earth's atmosphere, especially the positions, motions, and evolution of celestial bodies
221. cr__y about cars and racing *adj.* stupid or not sensible; very angry
222. high fr_____cy *n.* an ordered array of colors into which a light beam can be split
223. radioactive ur_____m isotope *n.* a chemical element with the symbol U, atomic number 92, that is a dense, silvery-white metal that is radioactive and is used as a fuel for nuclear power plants
224. human ev_____on *n.* a gradual process of transformation of living things
225. co_____ce an opponent *v.* to persuade someone or make someone believe that something is true
226. pa_____er tuning *n.* a numerical or other measurable factors that characterize a system or set of data
227. solar ast_____er *n.* a physicist who studies astronomy
228. pa_____er estimation *n.* a numerical or other measurable factors that characterize a system or set of data
229. int_____lar space *adj.* relating to or located in the space between stars
230. cen_____er measurement *n.* a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter

ANSWERS: 218. colleague, 219. suddenly, 220. astronomy, 221. crazy, 222. frequency, 223. uranium, 224. evolution, 225. convince, 226. parameter, 227. astronomer, 228. parameter, 229. interstellar, 230. centimeter

231. perfect ex___e *n.* a reason or explanation, either true or invented, given to justify a fault or defend your behavior; (verb) to make someone free from blame or clear from guilt
232. atmospheric me_____e *n.* a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel
233. re_____ve factors *adj.* considered and evaluated through comparison with something else
234. estimate pr_____e costs *adj.* sharply exact or accurate or delimited
235. pr_____le outcome *adj.* likely to happen or likely to be true
236. me___m color *adj.* of a size, amount, or level that is average or intermediate; (noun) a means or instrumentality for storing or communicating information
237. ga_____ic scale *adj.* relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope
238. ma_____e amounts *adj.* enormous amount; very heavy and solid
239. an unexpected si__t *n.* the ability to see; anything that is seen
240. a cr__y scheme *adj.* stupid or not sensible; very angry
241. unsolved my_____y *n.* something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle

ANSWERS: 231. excuse, 232. methane, 233. relative, 234. precise, 235. probable, 236. medium, 237. galactic, 238. massive, 239. sight, 240. crazy, 241. mystery

242. ion of ca_____m *n.* a chemical element with the symbol Ca and atomic number 20, which is an important mineral for the human body
243. an ab_____ce of examples *n.* a significant amount of something; the situation in which there is too much of something
244. a space-time co_____um *n.* a series of similar items in which no part or portion is distinct or distinguishable from adjacent parts
245. fun_____al rights *adj.* forming an essential base or core from which everything else develops or is affected
246. ca_____e a glimpse *v.* to catch a person or an animal and confine them in an area which they cannot escape
247. have si_____ly great abilities *adv.* in almost the same way
248. mo_____g experience *adj.* causing strong emotions or feelings, especially sadness or sympathy
249. oz__e depletion *n.* a poisonous gas with the chemical formula O₃, which has a strong smell
250. the so__r system *adj.* of, from, or relating to the sun
251. ex___e for inaction *n.* a reason or explanation, either true or invented, given to justify a fault or defend your behavior; (verb) to make someone free from blame or clear from guilt
252. nuclear ph_____s *n.* the science of matter and energy and their interactions

ANSWERS: 242. calcium, 243. abundance, 244. continuum, 245. fundamental, 246. capture, 247. similarly, 248. moving, 249. ozone, 250. solar, 251. excuse, 252. physics

253. at inc_____le speed *adj.* unbelievable; enormous
254. radioactive is_____e *n.* a variation of an element that has the same number of protons in its nucleus but a different number of neutrons, resulting in a different atomic mass and often different physical or chemical properties
255. politically fr_____e nation *adj.* delicate or easily broken or damaged
256. radioactive de____y *n.* the process or state of rotting or decomposition by natural causes such as the action of bacteria and fungi; (verb) to rot or decompose through natural causes
257. in____t capital *v.* to put money, effort, time, etc. into something to make a profit or achieve a result
258. pl____t like the Earth *n.* any of the nine large celestial bodies that circle in the solar system; any celestial body that revolves around a star
259. form a nu_____s *n.* the central and most important part of something; (biology) a part of the cell containing DNA and RNA and responsible for growth and reproduction; (physics) the very dense central region of an atom
260. in____t in stocks *v.* to put money, effort, time, etc. into something to make a profit or achieve a result

ANSWERS: 253. incredible, 254. isotope, 255. fragile, 256. decay, 257. invest, 258. planet, 259. nucleus, 260. invest

261. sei_____gy data *n.* the scientific study of earthquakes and the behavior of seismic waves that occur within the Earth's crust, as well as the structure and dynamics of the Earth's interior
262. a broad sp_____um of opinion *n.* an ordered array of colors into which a light beam can be split
263. co_____m the diagnosis *v.* to support or establish the truth or certainty of something previously believed or suspected to be the case
264. th_____m deposit *n.* a radioactive chemical element with the symbol Th and atomic number 90 that is silvery-white in color and is used as fuel in some nuclear reactors
265. a gas me__r *n.* a device used to measure the amount of a particular substance or attribute, such as length, volume, or time; (prosody) the accent in a metrical foot of verse
266. a lot of ex_____ons *n.* a violent release induced by a chemical or nuclear reaction
267. save the pl____t *n.* any of the nine large celestial bodies that circle in the solar system; any celestial body that revolves around a star
268. do____n of use *n.* a specific sphere of influence or control; a specific field of knowledge or expertise
269. a rock fo_____on *n.* the way something is created naturally or the way it has been arranged

ANSWERS: 261. seismology, 262. spectrum, 263. confirm, 264. thorium, 265. meter, 266. explosion, 267. planet, 268. domain, 269. formation

270. co__x manuscript *n.* a manuscript book, especially one written in the medieval period, before the invention of printing
271. int_____on among human beings *n.* the act of connecting with someone, mainly when working, playing, or spending time with them
272. rad_____ve decay *adj.* emitting powerful and dangerous energy when the nuclei (= central parts) of atoms are broken up
273. bachelor's de___e *n.* a unit of measurement for angles, temperature, or level of proficiency or achievement; a rank or level of academic or professional attainment
274. theory of the un_____se *n.* everything that exists, especially all physical matter, including planets, stars, galaxies, and all other forms of matter and energy
275. al__a radiation *n.* the first letter in the Greek alphabet; in social and group dynamics, the highest or most dominant member of a group or social hierarchy
276. sp_____al colors *adj.* relating to or having the properties of a spectrum (= an ordered array of colors into which a light beam can be split); relating to a ghost or apparition
277. the int_____on between man and his environment *n.* the act of connecting with someone, mainly when working, playing, or spending time with them
278. os___m tetroxide *n.* a hard, dense, and brittle chemical element of the platinum group with the symbol Os and atomic number 76, primarily used in alloys and as a catalyst

ANSWERS: 270. codex, 271. interaction, 272. radioactive, 273. degree, 274. universe, 275. alpha, 276. spectral, 277. interaction, 278. osmium

279. ab___b energy *v.* to take in a fluid or other substance gradually
280. second co___c velocity *adj.* relating to the universe or cosmos; vast or limitless
281. pr_____ng start *adj.* having the potential to be successful, helpful, or beneficial; showing signs of future success or achievement
282. ni_____en absorption *n.* a chemical element with the symbol N and atomic number 7, which is a highly reactive element that forms part of many compounds, including amino acids and proteins
283. infrared sp_____um *n.* an ordered array of colors into which a light beam can be split
284. geo_____al drilling *adj.* relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth
285. de___e centigrade *n.* a unit of measurement for angles, temperature, or level of proficiency or achievement; a rank or level of academic or professional attainment
286. axial sy_____ry *n.* balance or proportion in design or structure, with elements arranged evenly on either side of an axis
287. slide down a sl___e on a ski *n.* a surface with one end or side that is higher than the other
288. co___c background radiation *adj.* relating to the universe or cosmos; vast or limitless

ANSWERS: 279. absorb, 280. cosmic, 281. promising, 282. nitrogen, 283. spectrum, 284. geothermal, 285. degree, 286. symmetry, 287. slope, 288. cosmic

289. fl__e up into a major crisis

v. to burn brightly with a sudden, intense burst of flame or light; (noun) a sudden and brief burst of bright flame or light; a sudden and intense burst of radiation from the Sun's surface

290. an abrupt sl__e

n. a surface with one end or side that is higher than the other

ANSWERS: 289. flare, 290. slope

Session 3: Fill in the Blanks

1. The _____ material was carefully stored in a lead-lined container.
adj. emitting powerful and dangerous energy when the nuclei (= central parts) of atoms are broken up
2. _____ rays are high-energy particles that originate from outside the solar system.
adj. relating to the universe or cosmos; vast or limitless
3. The _____ analysis revealed unexpected details about the composition of the planet's atmosphere.
adj. relating to or having the properties of a spectrum (= an ordered array of colors into which a light beam can be split); relating to a ghost or apparition
4. The Sun _____ and caused a sudden brightening in the sky.
v. to burn brightly with a sudden, intense burst of flame or light; (noun) a sudden and brief burst of bright flame or light; a sudden and intense burst of radiation from the Sun's surface
5. He made a New Year's _____ to exercise more and eat healthier.
n. a firm decision or determination to do or not do something; the action of solving a problem, dispute, or conflict; the quality of being resolved or determined; the clarity and sharpness of an image or display
6. The _____ medium comprises gas, dust, and cosmic rays that fill the space between stars.
adj. relating to or located in the space between stars
7. The ignition of _____ gas in the plant killed five employees.
n. a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel

ANSWERS: 1. radioactive, 2. Cosmic, 3. spectral, 4. flared, 5. resolution, 6. interstellar, 7. methane

8. The _____ surrounding the disappearance of the traveler has yet to be solved by authorities.
- n.* something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle
9. The institute invested in advanced _____ equipment to better monitor underground vibrations.
- n.* the scientific study of earthquakes and the behavior of seismic waves that occur within the Earth's crust, as well as the structure and dynamics of the Earth's interior
10. We must _____ a new system to streamline our workflow and increase efficiency.
- v.* to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created
11. Several top teams scouted _____ young athletes.
- adj.* having the potential to be successful, helpful, or beneficial; showing signs of future success or achievement
12. This bar _____ shows sales over the past five years.
- n.* a picture consisting of a line, lines, points, etc., that shows how two or more sets of certain quantities are related to each other
13. The _____ data showed that the element was composed of multiple spectral lines.
- n.* an instrument that separates light into its component wavelengths and records the distribution of intensities as a graph, used for chemical analysis or to determine the properties of stars and galaxies

ANSWERS: 8. mystery, 9. seismology, 10. develop, 11. promising, 12. graph, 13. spectrograph

14. The content is _____ and informative for me.

adj. sharply exact or accurate or delimited

15. The passenger grabbed for the _____ mask.

n. the chemical element with the symbol O that is present in air and water and is necessary for people, animals, and plants to live

16. He did _____ pen-and-ink drawings in just a few days.

adj. involving a lot of different things or parts in a way that is difficult to understand or analyze

17. The vase was made of _____ ceramic and easily broke when it was dropped.

adj. delicate or easily broken or damaged

18. The _____ is about 13.8 billion years old.

n. everything that exists, especially all physical matter, including planets, stars, galaxies, and all other forms of matter and energy

19. _____ is the second most abundant element on earth after oxygen.

n. a chemical element with the symbol Si that is a hard, brittle crystalline solid with a blue-grey metallic luster and used for the transistors and integrated circuit chips in computers

20. Trees absorb _____ dioxide and give off oxygen.

n. a chemical element that can be found in pure form as diamond or graphite, and it is also an essential part of coal and oil and is found in all plants and animals

21. The systems we have developed has accepted as industry _____.

n. something that is regarded as usual, typical, or standard

ANSWERS: 14. precise, 15. oxygen, 16. complicated, 17. fragile, 18. universe, 19. Silicon, 20. carbon, 21. norms

22. The security camera has _____ four intruders.
v. to find or recognize something, especially something difficult to see, hear, etc.
23. The _____ platform focused on healthcare reform and reducing income inequality.
n. a person who is seeking or being considered for some kind of position, title, honor, or award; a job applicant
24. Most countries prohibit sexual activity between certain close _____.
adj. considered and evaluated through comparison with something else
25. The scientist cooled the sample to just a couple of _____ to observe quantum effects.
n. a unit of measurement for temperature in the International System of Units (SI), which starts at absolute zero, the theoretical lowest limit of temperature, and named after the British physicist William Thomson, also known as Lord Kelvin
26. The band played a beautiful _____ on their instruments.
n. a musical composition or set of musical notes that are played or sung; (verb) to adjust or set something to a specific condition or standard
27. Her response revealed _____ idiocy.
adj. unbelievable; enormous
28. The rise and fall of _____ can be studied through history and archaeology.
n. a complex and highly organized society that has developed over time and has a dominant culture, including features such as language, religion, government, technology, and social customs

ANSWERS: 22. detected, 23. candidate's, 24. relatives, 25. Kelvin, 26. tune, 27. incredible, 28. civilizations

29. The blood's red coloring comes from iron _____.
- n.* a chemical compound that contains at least one oxygen atom and one other element
30. The golfer recorded an _____ distance.
- adj.* extremely surprising, especially in a way that you like or admire
31. These articles cite five _____ of climate change.
- n.* a particular example or single occurrence of something
32. The _____ plates shifted, causing an earthquake.
- adj.* relating to the structure of the Earth's crust and the large-scale processes that occur as a result of movements within it
33. I ____ that you know it.
- v.* to risk money on the result of an event or a competition, such as a race or game, to get more money; to have faith or confidence in something
34. He had a deep passion for extragalactic _____ and spent hours observing the night sky.
- n.* the scientific study of objects and matter outside the Earth's atmosphere, especially the positions, motions, and evolution of celestial bodies
35. Please _____ to the instruction manual for further assistance.
- v.* to direct someone's attention, thoughts, or questions to another source or person; to mention, cite, or allude to something as evidence or support
36. Her research team made an important _____.
- n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known

ANSWERS: 29. oxide, 30. amazing, 31. instances, 32. tectonic, 33. bet, 34. astronomy, 35. refer, 36. discovery

37. The archaeologists found a _____ buried alongside a mummy in an underground tomb.
- n.* a manuscript book, especially one written in the medieval period, before the invention of printing
38. The _____ carbon-14 is commonly used in radiocarbon dating of fossils.
- n.* a variation of an element that has the same number of protons in its nucleus but a different number of neutrons, resulting in a different atomic mass and often different physical or chemical properties
39. The firm has grown into a large _____ manufacturing.
- adj.* relating to or connected with chemistry;
40. The _____ of the Romantic period is known for its emotion and imagination.
- n.* written works, such as novels, plays, poems, or short stories that are considered to have artistic or intellectual value
41. I am considering what I should do to _____ him.
- v.* to persuade someone or make someone believe that something is true
42. The _____ of the two groups is good for brainstorming.
- n.* the act of connecting with someone, mainly when working, playing, or spending time with them
43. Natural selection is an essential _____ in Darwin's theory of evolution.
- n.* a fundamental or essential part of something
44. The patient was prescribed a _____ supplement to help prevent osteoporosis.
- n.* a chemical element with the symbol Ca and atomic number 20, which is an important mineral for the human body

ANSWERS: 37. codex, 38. isotope, 39. chemical, 40. literature, 41. convince, 42. interaction, 43. element, 44. calcium

45. Mercury is the closest _____ to the sun.

n. any of the nine large celestial bodies that circle in the solar system; any celestial body that revolves around a star

46. The defendant gave a _____ and accurate description of the accident.

adj. easy to do or understand, or simple; free from ambiguity

47. He was _____ gifted.

adv. as might be expected; by natural manners

48. This question has fascinated solar _____ for decades.

n. a physicist who studies astronomy

49. There are five distinct _____ at five unique wavelengths.

n. the act of production or sending out gas, heat, light, etc.

50. A broken gas pipe triggered the _____.

n. a violent release induced by a chemical or nuclear reaction

51. Their innovative concepts were consistent across their bodies of _____.

n. the different parts of something's elements or ingredients; the way in which the different components are organized; a piece of music written by someone

52. The building had a _____ pattern that was pleasing to the eye.

n. balance or proportion in design or structure, with elements arranged evenly on either side of an axis

53. _____ gas is used to inflate car tires because it does not react with rubber.

n. a chemical element with the symbol N and atomic number 7, which is a highly reactive element that forms part of many compounds, including amino acids and proteins

ANSWERS: 45. planet, 46. straightforward, 47. naturally, 48. astronomers, 49. emissions, 50. explosion, 51. composition, 52. symmetry, 53. Nitrogen

54. This device displayed the speech _____ spectrographically.
n. an ordered array of colors into which a light beam can be split
55. The Milky Way is a _____ collection of billions of stars and planets.
adj. relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope
56. Vitamin D is essential to assist the _____ of calcium from food.
n. a process in which one substance permeates another; a fluid permeates or is dissolved by a liquid or solid
57. The Milky Way _____ has numerous water-bearing planets.
n. an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
58. The sponge takes up the _____ well.
n. a substance, such as water or oil that flows freely and is neither a solid nor a gas
59. Please write to _____ your reservation.
v. to support or establish the truth or certainty of something previously believed or suspected to be the case
60. He _____ his life to helping others.
v. to give all of your energy, time, etc., entirely to a specific person, activity, or cause; to set apart for a particular purpose or use
61. The _____ of people who do not own property is politically impotent.
n. a large amount of a substance with no definite shape or form; a large number of people or things grouped or crowded together

ANSWERS: 54. spectrum, 55. galactic, 56. absorption, 57. galaxy, 58. liquid, 59. confirm, 60. dedicated, 61. mass

62. These gas nebulas are merely newborn galactic _____.
- n.* the most essential or fundamental part of something
63. Scientists are studying the composition and origins of the _____ belt to understand the early solar system better.
- n.* (also "planetoid") a small rocky body orbiting the sun, typically in the region between Mars and Jupiter
64. The incident _____ a political controversy.
- v.* to make something happen suddenly; to cause something such as a device, machine, etc. to function
65. All the books in this section _____ to the library's rare collection and must be handled carefully.
- v.* to be the property of someone or something; to be a member or part of a group; to be in the proper or appropriate place
66. I will introduce you to how to _____ the leading causes of the malfunction.
- v.* to recognize someone or something and say or prove who or what they are
67. It seems _____ that he has forgotten our scheduled meeting.
- adj.* likely to happen or likely to be true
68. They study the _____ of the universe.
- n.* a gradual process of transformation of living things
69. The temperature range was one of the critical _____ we had to consider when designing the experiment.
- n.* a numerical or other measurable factors that characterize a system or set of data

ANSWERS: 62. cores, 63. asteroid, 64. triggered, 65. belong, 66. identify, 67. probable, 68. evolution, 69. parameters

70. The investigation _____ several government agencies and is expected to take several months.
- v.* to include or affect someone or something as a necessary part of something else
71. The scientist conducted experiments to study the catalytic properties of _____ compounds.
- n.* a hard, dense, and brittle chemical element of the platinum group with the symbol Os and atomic number 76, primarily used in alloys and as a catalyst
72. The company's new CEO was known for his _____ personality.
- n.* the first letter in the Greek alphabet; in social and group dynamics, the highest or most dominant member of a group or social hierarchy
73. The heavy snow has been _____ since last morning.
- adj.* occurring or existing without a pause or interruption
74. The path to a solid online _____ necessitates a high technical ability.
- n.* the fact or state that someone or something exists, occurs, or is present
75. The _____ size shirt fits him perfectly.
- adj.* of a size, amount, or level that is average or intermediate; (noun) a means or instrumentality for storing or communicating information
76. The recipe calls for four cups of flour _____ one tablespoon.
- adj.* subtracting or taking away; having a value less than zero
77. Faces are a good _____ of age.
- n.* a sign or remark that something exists, is real, or is likely to occur

ANSWERS: 70. involves, 71. osmium, 72. alpha, 73. continuous, 74. presence, 75. medium, 76. minus, 77. indication

78. I decided to seek counseling on the advice of my _____.
- n.* one of a group of a coworker, especially in a profession or a business
79. Character _____ is one of the goals of education.
- n.* the way something is created naturally or the way it has been arranged
80. She received her _____ in psychology from the university.
- n.* a unit of measurement for angles, temperature, or level of proficiency or achievement; a rank or level of academic or professional attainment
81. The _____ explosion created a bright new star in the night sky.
- n.* a powerful and luminous explosion that occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant
82. The hut stands on the _____ of a mountain.
- n.* a surface with one end or side that is higher than the other
83. The _____ test showed that the patient was responding well to the treatment.
- n.* a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention
84. The mining and processing of _____ can lead to releasing radioactive materials into the environment.
- n.* a chemical element with the symbol U, atomic number 92, that is a dense, silvery-white metal that is radioactive and is used as a fuel for nuclear power plants
85. The company's _____ in the market was expanding to new territories.
- n.* a specific sphere of influence or control; a specific field of knowledge or expertise

ANSWERS: 78. colleague, 79. formation, 80. degree, 81. supernova, 82. slope, 83. biomarker, 84. uranium, 85. domain

86. Who answers _____ knows little.

adv. quickly and unexpectedly

87. The rain and thunder are _____ today.

adj. stupid or not sensible; very angry

88. The nearest star to our planet is about 1.3 _____ away.

n. a unit of measurement of astronomical distance equivalent to 3.26 light-years
(= about 5.88 trillion miles or 9.46 trillion kilometers)

89. The oscillator hunts for the correct _____.

n. an ordered array of colors into which a light beam can be split

90. The galactic _____ was a beautiful sight through the telescope, with its vibrant colors and swirling clouds.

n. a cloud of gas and dust in space, visible in the night sky, typically as a diffuse light source

91. The _____ emissions from the nearby factory caused the rotten egg smell.

n. (also sulphur) a chemical element with the symbol S and atomic number 16, found in many minerals and sulfur compounds, often used in the production of fertilizers, rubber, paper, and other industrial applications

92. There was a chemical _____ of the lime with the groundwater.

n. a response that reveals a person's feelings or attitude; (in chemistry) a process in which one or more substances are changed into others

93. The recent economic downturn has resulted in _____ layoffs.

adj. enormous amount; very heavy and solid

ANSWERS: 86. suddenly, 87. crazy, 88. parsecs, 89. frequency, 90. nebula, 91. sulfur, 92. reaction, 93. massive

94. _____ waves can be used for communication, such as in long-range submarines.
adj. relating to sound waves below the range of human hearing, typically below 20 Hz
95. We largely _____ the circuit board of cell phones because they contain a lot of valuable metals.
v. to sort and collect things to process them and produce valuable materials that can be used again
96. Full involvement means _____ and prompt responses.
adj. honest and sincere; open and candid in expression
97. The company has made great strides in its _____ toward sustainability.
n. the act or process of changing to the next stage or phase or moving forward
98. Certain isotopes of _____ are used in medicine for treating liver cancer.
n. a radioactive chemical element with the symbol Th and atomic number 90 that is silvery-white in color and is used as fuel in some nuclear reactors
99. This electronic _____ is required to undergo periodic inspections to ensure precision.
n. an object used to make musical sounds, such as a piano, guitar, or drum; a tool or device used for a specific activity, particularly in specialist or scientific work
100. Due to its radioactive nature, handling _____ materials requires strict safety protocols.
n. a radioactive metallic element with the atomic number 43 and the symbol Tc that has no stable isotopes and is used in medical imaging procedures and as a tracer in various scientific studies

ANSWERS: 94. Infrasonic, 95. recycle, 96. frank, 97. progression, 98. thorium, 99. instrument, 100. technetium

101. This facility has the largest astronomical _____ in the country.
- n.* a device like a tube in shape containing lenses used to magnify and observe distant objects
102. The town is exploring using _____ energy to power its homes and buildings.
- adj.* relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth
103. A healthy farm provides an _____ of food.
- n.* a significant amount of something; the situation in which there is too much of something
104. His _____ speech about his struggles with addiction brought tears to the audience's eyes.
- adj.* causing strong emotions or feelings, especially sadness or sympathy
105. An X-ray _____ can determine the composition of the elements in a sample.
- n.* an optical instrument used for spectrographic analysis (= measurement of properties of light over a specific portion of the electromagnetic spectrum)
106. The room was only one _____ wider than the piano, making it a tight fit.
- n.* a unit of measurement of length in the metric system, equivalent to one-hundredth of a meter
107. I _____ my anger and kept quiet.
- v.* to make food, drink, pills, etc., pass down your throat into your stomach; (noun) small long-winged songbird noted for swift, graceful flight and the regularity of its migrations

ANSWERS: 101. telescope, 102. geothermal, 103. abundance, 104. moving, 105. spectroscopy, 106. centimeter, 107. swallowed

108. After a long day at work, I want to _____ on the couch and watch TV.
- v.* to lead a dull, inactive, or unproductive life; to exist in a passive or inactive state; to grow or develop without much energy, activity, or progress
109. It is important to _____ safety procedures in the workplace to prevent accidents.
- v.* to watch or notice something carefully, often to gather information or insights; to take note of something or someone; to celebrate or commemorate a special event or occasion
110. The spaceship began to burn up as it approached the Earth's _____.
- n.* the mass of air that surrounds the Earth; the pervading tone or mood of a place, situation, or creative work
111. The _____ of the car was too fast for the road conditions.
- n.* the rate of change of an object's position with respect to time, often measured in meters per second (m/s)
112. Many countries have now agreed to a treaty banning the use of _____ weapons.
- adj.* of or relating to or constituting the nucleus of an atom; deriving destructive energy from the release of atomic energy
113. He quickly fabricated an _____ for not attending the meeting.
- n.* a reason or explanation, either true or invented, given to justify a fault or defend your behavior; (verb) to make someone free from blame or clear from guilt
114. The dead body was in an advanced state of _____.
- n.* the process or state of rotting or decomposition by natural causes such as the action of bacteria and fungi; (verb) to rot or decompose through natural causes

ANSWERS: 108. vegetate, 109. observe, 110. atmosphere, 111. velocity, 112. nuclear, 113. excuse, 114. decay

115. It is an incredible _____ to climb Mount Everest, the highest mountain in the world.
- n.* a notable or impressive achievement, especially one that requires great skill or bravery
116. A _____ star is a system in which two stars revolve around each other.
- n.* a system of numbers that uses only two digits, 0 and 1
117. The _____ in the area is quite diverse.
- n.* plants in general, particularly those indigenous to a particular region or spot
118. This operation requires both patience and _____.
- n.* the quality or condition of being exact and accurate
119. DNA is stored in the _____ of a cell.
- n.* the central and most important part of something; (biology) a part of the cell containing DNA and RNA and responsible for growth and reproduction; (physics) the very dense central region of an atom
120. He tried to _____ his experience to the group, but they couldn't understand.
- v.* to establish a connection or association between two or more things; to narrate or tell about an event, experience, or relationship; to empathize or feel sympathy with someone or something
121. The patient's _____ levels were low, so they were advised to eat foods high in potassium, such as bananas and sweet potatoes.
- n.* a chemical element with the symbol K, atomic number 19, that is essential for the functioning of living organisms
122. The river was _____ with chemicals, causing harm to the wildlife.
- adj.* contaminated with harmful or poisonous substances

ANSWERS: 115. feat, 116. binary, 117. vegetation, 118. precision, 119. nucleus, 120. relate, 121. potassium, 122. polluted

123. We argue that wages for temporary workers should _____ rise.

adv. in almost the same way

124. Our life is a _____ of experience in which events pass from the future through the present to the past.

n. a series of similar items in which no part or portion is distinct or distinguishable from adjacent parts

125. The _____ on the wall showed that the room was three meters long.

n. a device used to measure the amount of a particular substance or attribute, such as length, volume, or time; (prosody) the accent in a metrical foot of verse

126. The sponge _____ water well.

v. to take in a fluid or other substance gradually

127. The _____ layer is vital for blocking some harmful sun rays.

n. a poisonous gas with the chemical formula O₃, which has a strong smell

128. _____ panels have greatly improved not only in performance but also in durability.

adj. of, from, or relating to the sun

129. The government should view children as national assets and actively _____ in them.

v. to put money, effort, time, etc. into something to make a profit or achieve a result

130. We _____ a cease-fire.

v. to come to an end or close; to reach a judgment or opinion by reasoning

ANSWERS: 123. similarly, 124. continuum, 125. meter, 126. absorbs, 127. ozone, 128. Solar, 129. invest, 130. concluded

131. _____ species have drastically altered the ecosystem in this area.
- n.* a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere
132. Human behavior has _____ characteristics.
- adj.* forming an essential base or core from which everything else develops or is affected
133. This smartphone has a collision _____ function.
- n.* the act of discovering or identifying the presence of something
134. The marathon runner covered a long _____ in a short amount of time.
- n.* the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance
135. Companies often _____ their shares to lower the stock price and encourage investors to buy.
- v.* to divide, or to make something divide into two or more parts, especially along a particular line
136. The fire quickly _____ the entire building.
- v.* to swallow up; to surround and cover completely
137. He studied the _____ of radiation.
- n.* the science of matter and energy and their interactions
138. I was able to _____ the moment on film.
- v.* to catch a person or an animal and confine them in an area which they cannot escape

ANSWERS: 131. Alien, 132. fundamental, 133. detection, 134. distance, 135. split, 136. engulfed, 137. physics, 138. capture

139. The police _____ believed this explanation was plausible.

adv. based on what you have heard or read

140. Many famous _____ are within walking distance.

n. the ability to see; anything that is seen

141. The doctors said that her recovery was a _____.

n. an act or occurrence that is not explicable by natural or scientific laws and is therefore believed to be caused by God

142. We have finally lost our last _____.

n. a piece of wood, metal, etc., placed beneath or against something to support it or keep it in position; a system, institution, or person that gives help or support to someone or something

143. This study indicates _____ activity affects global warming.

adj. relating to or produced by or consisting of volcano

144. The _____ camera revealed a hidden image on the surface.

adj. relating to or denoting electromagnetic radiation with a wavelength just longer than that of red light but shorter than that of microwave radiation, used for sensing heat and for remote control

145. The younger _____ has different values and beliefs than the older one.

n. all the people born and living at about the same time, regarded collectively; the production of heat or electricity

ANSWERS: 139. apparently, 140. sights, 141. miracle, 142. prop, 143. volcanic, 144. infrared, 145. generation