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Vocabulary Builder Reference from...

Fabio Pacucci: Hawking's black hole paradox explained | TED Talk

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

All Words

IMPORTANT

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Session 1: Word List

boundary

n. a real or imaginary line that marks the limit or extent of something and separates it from other things or places

synonym: border, frontier, limitation

(1) geographical **boundary**, (2) the **boundary** between reality and fantasy

He wandered the **boundary** between life and death by gunfire.

void

n. an empty space; a feeling of emptiness; (adjective) lacking any legal or binding force

synonym: emptiness, vacuity, (adjective) null

(1) **void** of expression, (2) **void** contract

The **void** in her heart was filled with the love of her family.

uncertain

adj. not being sure of something; not being able to choose

synonym: doubtful, skeptical, pending

(1) numerous **uncertain** factors, (2) take an **uncertain** attitude

She was **uncertain** about her friend's intentions.

paradox

n. a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;

synonym : incongruity, dichotomy, contradiction

(1) French **paradox**, (2) the **paradox** of the heap

There are many theories to explain this **paradox**.

threaten

v. to utter intentions of injury or punishment against someone

synonym : endanger, terrorize, intimidate

(1) **threaten** a healthy relationship, (2) **threaten** national security

Various artificially induced causes are **threatening** our ecosystem.

undermine

v. to make someone or something less powerful, less effective, weaker gradually; to make someone's fame, confidence, or authority less effective or weaker gradually

synonym : damage, subvert, weaken

(1) **undermine** a good relationship, (2) **undermine** their adversary's reputation

They tried to **undermine** her position by slandering her.

reshape

v. to change the form or structure of something

synonym : alter, adjust, modify

(1) **reshape** education policy, (2) **reshape** my thoughts

The advent of the Internet completely **reshaped** the manufacturing industry.

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.

unravel

v. undo twisted, knitted, or woven threads by separating it

synonym : separate, unknot, ravel

(1) **unravel** a knit, (2) **unravel** a plot

Detectives are still attempting to **unravel** the mystery of his death.

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**.

quantum

n. the smallest amount or unit of something, especially (electromagnetic) energy

(1) probabilistic **quantum** theory, (2) laws of **quantum** mechanics

Big techs are now eager to develop **quantum** computers.

mechanics

n. the branch of physics that deals with the study of motion, forces, and energy; (mechanic) someone whose occupation is repairing and maintaining automobiles

synonym: kinematics, dynamics

(1) **mechanics** equation, (2) **mechanics** of the game

He studied **mechanics** in college and now works as an engineer.

define

v. to state or explain precisely the nature, scope, or meaning of something

synonym: characterize, depict, express

(1) **define** a word, (2) **define** my position

To advance this discussion, we must **define** "success" rigorously.

typical

adj. having the usual characteristics or traits of a specific group of things

synonym: characteristic, usual, distinctive

(1) **typical** leader, (2) fairly **typical** symptoms

This artwork is **typical** of her work.

visible

adj. capable of being seen; or open to easy view

synonym : clear, observable, seeable

(1) **visible** stars, (2) **visible** by X-ray

My home is easily **visible** from the shore.

shiny

adj. reflecting light and having a bright and smooth surface

synonym : polished, glossy, lustrous

(1) **shiny** surface, (2) **shiny** object

The **shiny** new car drew everyone's attention as it drove by.

physicist

n. a scientist who specializes in the field of physics

(1) talented **physicist**, (2) theoretical **physicist**

Einstein was an outstanding and famous **physicist** of the 20th century.

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.

particle

n. a small piece of something; a word or piece of a term with grammatical function but little or no significance

synonym : atom, grain, bit

(1) charged **particle**, (2) **particle** energy

We can calculate the position of the **particles** statistically.

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.

spin

v. to cause something to rotate rapidly; to cause someone to feel dizzy or disoriented

synonym: rotate, twirl, swirl

(1) **spin** a top, (2) **spin** thread out of cotton

The tornado is **spinning** across the countryside, destroying everything in its path.

compose

v. to write music, poetry, or formal writing; to constitute or make up a whole, or a specified part of it

synonym: compile, constitute, build

(1) **compose** an essay, (2) **compose** my thoughts

The structure is **composed** of three main components.

evoke

v. to bring or recall a feeling, memory, or image into your mind

synonym: arouse, raise, inspire

(1) **evoke** a sense of awe, (2) **evoke** sympathy

This movie is likely to **evoke** strong emotions in the viewer.

vital

adj. necessary for the success or continued existence of something

synonym: critical, crucial, invigorating

(1) play a **vital** role, (2) **vital** for a healthy society

Perseverance and optimism are **vital** to success.

physics

n. the science of matter and energy and their interactions

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

He studied the **physics** of radiation.

conserve

v. to protect something, especially the natural environment or culture, from change, damage, or destruction

synonym: preserve, save, maintain

(1) means to **conserve** energy, (2) **conserve** coal resources

Children must be taught to **conserve** our natural environment.

destroy

v. to ruin or damage severely or completely; to eradicate or eliminate completely

synonym : demolish, ruin, obliterate

(1) **destroy** the ecosystem, (2) **destroyed** evidence

The building was **destroyed** in the fire and had to be rebuilt.

recognition

n. the action or process of recognizing or being recognized, especially by remembering; an agreement that something is true or legal

synonym : acknowledgement, identification, credit

(1) **recognition** award, (2) joint **recognition**

He was given **recognition** for his outstanding work in the field of medicine.

permanent

adj. lasting for a long time without essential change

synonym : lasting, ceaseless, endless

(1) literature of **permanent** value, (2) **permanent** life insurance

She is searching for a **permanent** residence.

delete

v. to remove something, especially that has been written; to wipe out digitally or magnetically recorded information

synonym : erase, wipe out, remove

(1) **delete** a file, (2) **delete** this modification

Highlight the sentences that you want to **delete**.

theoretical

adj. relating to the concepts and principles upon which a particular topic is founded, rather than practice and experience

synonym : conceptual, conjectural, ideal

(1) **theoretical** models, (2) **theoretical** physicist

Absolute zero is the lowest **theoretical** temperature.

recreate

v. to make something that existed previously happen or appear to exist again

synonym : renovate, vivify, revive

(1) **recreate** a single country, (2) **recreate** the feeling of the

1920s

She **recreated** the atmosphere of the pre-war age with her stage setting.

component

n. one of several parts that combines with others to form something bigger

synonym: element, part, factor

(1) key **component**, (2) spare **components** for cars

The researchers try to discover a common **component** in all types of successful organizations.

conservation

n. the protection of something important, such as the natural environment or artificial structures, especially from the damaging effects of human activity

synonym: preservation, protection, saving

(1) soil **conservation**, (2) the **conservation** law of physics

The forest was recently designated a **conservation** area.

arbitrary

adj. based on chance, or individual whim rather than any reason

synonym: autocratic, dictatorial, whimsical

(1) **arbitrary** size and shape, (2) the **arbitrary** rule of a dictator

He collected data to avoid **arbitrary** decisions.

mathematics

n. the science dealing with the logic of quantities, shapes, spaces, and arrangement

synonym: arithmetic, calculation, calculus

(1) a good grounding in **mathematics**, (2) **mathematics** competition

He has a flair for **mathematics**.

necessity

n. the state or fact of being needed; anything indispensable

synonym: need, essentiality, prerequisite

(1) in great **necessity**, (2) the **necessity** of the concrete measure

He emphasized the **necessity** of immediate action.

modern

adj. of or belonging to the present time or recent times

synonym : contemporary, stylish, current

(1) **modern** poetry, (2) pre- **modern** agricultural society

Their headquarters are in a **modern** skyscraper.

irretrievable

adj. not able to be retrieved or recovered; irreparable or irreversible; not able to be rectified or undone

synonym : unrecoverable, irredeemable, hopeless

(1) an **irretrievable** mistake, (2) cause **irretrievable** damage

The damage to the computer's hard drive was **irretrievable**, and I lost all of my important files.

immediately

adv. now or without delay

synonym : directly, instantly, promptly

(1) **immediately** recall a product, (2) write him an answer **immediately**

A suspension order from the court is effective **immediately**.

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.

mysterious

adj. difficult to understand, explain, or identify; having an aura of secrecy, intrigue, or puzzlement

synonym : enigmatic, cryptic, puzzling

(1) **mysterious** object, (2) **mysterious** stranger

The **mysterious** disappearance of the ship remains unsolved.

encode

v. to convert information into a code or format suitable for storage or transmission

synonym : transcribe, convert

(1) **encode** data, (2) **encode** information

The software can **encode** and decode encrypted messages.

horizon

n. the line at which the earth's surface and the sky appear to meet; the range of interest or activity that can be anticipated

synonym: skyline, view, visible boundary

(1) the event **horizon** of a black hole, (2) business **horizon**

As the sun set, the colors of the sky merged with the **horizon**, creating a beautiful orange and pink hue.

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.

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.

hawk

n. a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations

synonym: militarist, jingo, aggressor

(1) cast off a **hawk**, (2) congressional **hawk**

That team signed a center forward who was a ball- **hawk**.

radiation

n. the energy that comes from a nuclear reaction in the form of rays, waves, or particles and that can be hazardous to health

synonym

: dissemination, emission, irradiation

(1) exposure to **radiation**, (2) electromagnetic **radiation**

He tried every possible treatment, including chemotherapy and **radiation** therapy.

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**.

phenomenon

n. something that exists and can be perceptible, especially one that is not fully understood

synonym: marvel, wonder, splendor

(1) natural **phenomenon**, (2) historical **phenomenon**

A rainbow is a natural **phenomenon**.

gradual

adj. happening slowly over a long period of time or distance; not steep or abrupt

synonym: incremental, gradational, piecemeal

(1) a **gradual** process, (2) a **gradual** change

The country experienced a **gradual** increase in population.

evaporate

v. to turn a liquid into a gas; to become less intense and disappear gradually

synonym: vaporize, disappear, vanish

(1) **evaporate** the water, (2) **evaporate** almost overnight

The sun will **evaporate** the mist.

incredibly

adv. in a way that is very difficult to believe; exceedingly or extremely

synonym: enormously, exceptionally, extraordinarily

(1) **incredibly** cheerful character, (2) get **incredibly** insecure

Several cities are experiencing **incredibly** high unemployment rates.

critic

n. someone who expresses opinions about the quality of books, music, etc.

synonym: pundit, analyst, attacker

(1) art **critic**, (2) severe **critic**

Advocates for legal reform hear less harsh words from their **critics**.

unrelated

adj. having no connection; not belonging to the kinship

synonym: irrelevant, unconnected, independent

(1) statistically **unrelated**, (2) an **unrelated** position

Excuse me if my question is **unrelated** to the topic.

erase

v. to remove something completely, especially by rubbing it

synonym: wipe out, delete, obliterate

(1) **erase** a memory, (2) **erased** the files

He attempted to **erase** the misspelled word.

doe

n. a mature female of mammals of which the male is called a buck, such as a deer or a rabbit

synonym: rabbit, bunny, hare

(1) **doe** rabbit, (2) buck and **doe**

Hunters use a whistle that makes the **doe** sound to lure stags.

disappear

v. to cease to exist or be visible

synonym: fade, evaporate, vanish

(1) **disappear** without a trace, (2) **disappear** after a week

They watched the train **disappear** into the distance.

evaporation

n. the process of a liquid changing into a gas or vapor, often as a result of high temperatures or reduced pressure; the gradual disappearance or dissipation of something, such as money or resources

synonym: vaporization, dehydration, desiccation

(1) **evaporation** cooling, (2) slow **evaporation**

The formation of clouds is facilitated by the process of **evaporation** and condensation

process

n. a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products

synonym : procedure, method, system

(1) **process** improvement, (2) decision-making **process**

The **process** for applying for a visa can be lengthy and complicated.

urgent

adj. requiring immediate attention or action; pressing

synonym : pressing, critical, immediate

(1) an **urgent** telegram, (2) **urgent** situation

It is **urgent** that we leave for the airport now to catch our flight.

destruction

n. the act of causing so much damage to something

synonym : devastation, annihilation, ruin

(1) path of **destruction**, (2) cyclonic **destruction**

The extinction of several subspecies has been linked to climate change and habitat **destruction**.

rewrite

v. to write something such as a book or speech again in a different way, usually to improve it or add new information

synonym : revise, edit, rework

(1) **rewrite** a composition, (2) **rewrite** a world record

I need to **rewrite** most of the essay with feedback from my teacher.

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.

paradigm

n. a standard or typical example of something; a pattern or model

synonym: example, standard, epitome

(1) major **paradigm** shift, (2) cultural **paradigm**

He postulated a completely different **paradigm** to explain all these phenomena.

fortunate

adj. having good luck or lucky

synonym: fortuitous, lucky, blessed

(1) **fortunate** situation, (2) less **fortunate** person

He was pretty **fortunate** to pass the exam.

opportune

adj. suitable or happening at a time that is suitable or convenient for a particular purpose

synonym: suitable, timely, practical

(1) **opportune** occasion, (2) an **opportune** remark

The phone rang at the most **opportune** time.

investigate

v. to conduct a systematic or formal inquiry to identify and evaluate the facts of a crime, problem, statement, etc. to establish the truth

synonym: examine, analyze, look into

(1) **investigate** the matter, (2) **investigate** a data leak

The committee **investigated** several apparent inconsistencies.

broad

adj. very wide; general

synonym: wide, expansive, comprehensive

(1) attract **broad** attention, (2) a **broad** mind

He accumulated wealth across a **broad** spectrum of assets.

misunderstand

v. to interpret or understand something in the wrong way

synonym: misinterpret, misperceive, misapprehend

(1) **misunderstand** each other, (2) **misunderstand** entirely about her

You should not **misunderstand** the meaning of freedom.

interact

v. to communicate or react with somebody

synonym: cooperate, combine, collaborate

(1) **interact** directly with customers, (2) **interact** with one another

He should **interact** more with his colleagues.

respectively

adv. in the order mentioned; individually

synonym: separately, individually, distinctly

(1) **respectively** assigned, (2) revise that **respectively**
The two samples had pH levels of 7 and 9, **respectively**.

combine

v. to join or merge to form a single thing or group

synonym: coalesce, cohere, blend

(1) **combine** chemically with another substance,
(2) **combine** augmented reality

Hydrogen and oxygen **combine** to form water.

argue

v. to express differing opinions or points of view, often in a heated or contentious manner; to present a case or reasoning to persuade or convince others

synonym: debate, dispute, quarrel

(1) **argue** a case, (2) **argue** passionately

The couple began to **argue** over which restaurant to go to for dinner.

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.

explore

v. to travel to or penetrate an area or a country to learn about it; to thoroughly examine a subject or a possibility

to learn more about it

synonym: analyze, delve into, examine

(1) **explore** the world, (2) **explore** our options

The management must **explore** strategies to increase office security.

holography

n. a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns

synonym: three-dimensional photography, laser holography, digital holography

(1) optical **holography**, (2) 3D **holography**

Holography technology uses light interference patterns to create a 3D image.

principle

n. a fundamental law or truth that explains or controls how something happens or works

synonym: rule, creed, code

(1) **principle** of treatment, (2) **principle** in business

Efficiency isn't an essential **principle** here; fairness is.

expand

v. to increase or to make something greater in size, number, or importance

synonym: extend, grow, boost

(1) **expand** a lineup, (2) **expand** agricultural output

They hope to **expand** their business worldwide.

observable

adj. that can be noticed or seen

synonym: visible, perceptible, detectable

(1) **observable** change, (2) experimentally **observable**

Any theorem relies on both **observable** fact and assumption.

preserve

v. to keep or maintain a particular quality, feature, etc., especially to prevent it from decaying, being damaged, or being destroyed

synonym: conserve, care for, maintain

(1) **preserve** my strength, (2) **preserve** a country's heritage

They worked hard to **preserve** the nature of their native lands.

Session 2: Spelling

- | | |
|--------------------------------------|---|
| 1. means to co____ve energy | v. to protect something, especially the natural environment or culture, from change, damage, or destruction |
| 2. 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 |
| 3. ur____t situation | adj. requiring immediate attention or action; pressing |
| 4. attract br__d attention | adj. very wide; general |
| 5. in great ne____ty | n. the state or fact of being needed; anything indispensable |
| 6. pe____nt life insurance | adj. lasting for a long time without essential change |
| 7. 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 |
| 8. the pa____x of the heap | n. a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange; |
| 9. natural phe____on | n. something that exists and can be perceptible, especially one that is not fully understood |
| 10. na____ly arising | adv. as might be expected; by natural manners |

ANSWERS: 1. conserve, 2. mass, 3. urgent, 4. broad, 5. necessity, 6. permanent, 7. discovery, 8. paradox, 9. phenomenon, 10. naturally

- | | | |
|--|-------------|---|
| 11. ex_____e the world | <i>v.</i> | to travel to or penetrate an area or a country to learn about it; to thoroughly examine a subject or a possibility to learn more about it |
| 12. probabilistic qu_____m theory | <i>n.</i> | the smallest amount or unit of something, especially (electromagnetic) energy |
| 13. cast off a h__k | <i>n.</i> | a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations |
| 14. vi_____e stars | <i>adj.</i> | capable of being seen; or open to easy view |
| 15. take an un_____in attitude | <i>adj.</i> | not being sure of something; not being able to choose |
| 16. 3D hol_____hy | <i>n.</i> | a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns |
| 17. th_____en a healthy relationship | <i>v.</i> | to utter intentions of injury or punishment against someone |
| 18. v__d contract | <i>n.</i> | an empty space; a feeling of emptiness; (adjective) lacking any legal or binding force |
| 19. un_____ne their adversary's reputation | <i>v.</i> | to make someone or something less powerful, less effective, weaker gradually; to make someone's fame, confidence, or authority less effective or weaker gradually |

ANSWERS: 11. explore, 12. quantum, 13. hawk, 14. visible, 15. uncertain, 16. holography, 17. threaten, 18. void, 19. undermine

20. path of des_____on *n.* the act of causing so much damage to something
21. ex___d a lineup *v.* to increase or to make something greater in size, number, or importance
22. me_____cs of the game *n.* the branch of physics that deals with the study of motion, forces, and energy; (mechanic) someone whose occupation is repairing and maintaining automobiles
23. theoretical ph_____st *n.* a scientist who specializes in the field of physics
24. na_____ly regenerated forest *adv.* as might be expected; by natural manners
25. mat_____cs competition *n.* the science dealing with the logic of quantities, shapes, spaces, and arrangement
26. experimentally obs_____le *adj.* that can be noticed or seen
27. an un_____ed position *adj.* having no connection; not belonging to the kinship
28. er__ed the files *v.* to remove something completely, especially by rubbing it
29. an unexpected si__t *n.* the ability to see; anything that is seen
30. obs_____le change *adj.* that can be noticed or seen
31. d_e rabbit *n.* a mature female of mammals of which the male is called a buck, such as a deer or a rabbit
32. slow eva_____on *n.* the process of a liquid changing into a gas or vapor, often as a result of high temperatures or reduced pressure; the gradual disappearance or dissipation of something, such as money or resources

ANSWERS: 20. destruction, 21. expand, 22. mechanics, 23. physicist, 24. naturally, 25. mathematics, 26. observable, 27. unrelated, 28. erase, 29. sight, 30. observable, 31. doe, 32. evaporation

33. cyclonic des_____on *n.* the act of causing so much damage to something
34. re_____ve factors *adj.* considered and evaluated through comparison with something else
35. the ne_____ty of the concrete measure *n.* the state or fact of being needed; anything indispensable
36. a good grounding in mat_____cs *n.* the science dealing with the logic of quantities, shapes, spaces, and arrangement
37. an ur____t telegram *adj.* requiring immediate attention or action; pressing
38. v__d of expression *n.* an empty space; a feeling of emptiness; (adjective) lacking any legal or binding force
39. en____e information *v.* to convert information into a code or format suitable for storage or transmission
40. pa_____le energy *n.* a small piece of something; a word or piece of a term with grammatical function but little or no significance
41. write him an answer imm_____ly *adv.* now or without delay
42. s__n a top *v.* to cause something to rotate rapidly; to cause someone to feel dizzy or disoriented
43. the_____al models *adj.* relating to the concepts and principles upon which a particular topic is founded, rather than practice and experience

ANSWERS: 33. destruction, 34. relative, 35. necessity, 36. mathematics, 37. urgent, 38. void, 39. encode, 40. particle, 41. immediately, 42. spin, 43. theoretical

44. key co_____nt *n.* one of several parts that combines with others to form something bigger
45. 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
46. historical phe_____on *n.* something that exists and can be perceptible, especially one that is not fully understood
47. re_____e my thoughts *v.* to change the form or structure of something
48. 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
49. un_____l a knit *v.* undo twisted, knitted, or woven threads by separating it
50. buck and d_e *n.* a mature female of mammals of which the male is called a buck, such as a deer or a rabbit
51. mis_____and each other *v.* to interpret or understand something in the wrong way
52. res_____ely assigned *adv.* in the order mentioned; individually
53. de___e a file *v.* to remove something, especially that has been written; to wipe out digitally or magnetically recorded information
54. ev___e a sense of awe *v.* to bring or recall a feeling, memory, or image into your mind

ANSWERS: 44. component, 45. refer, 46. phenomenon, 47. reshape, 48. universe, 49. unravel, 50. doe, 51. misunderstand, 52. respectively, 53. delete, 54. evoke

55. pr_____s improvement *n.* a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products
56. co_____e my thoughts *v.* to write music, poetry, or formal writing; to constitute or make up a whole, or a specified part of it
57. di_____ar after a week *v.* to cease to exist or be visible
58. the event ho_____n of a black hole *n.* the line at which the earth's surface and the sky appear to meet; the range of interest or activity that can be anticipated
59. fun_____al education *adj.* forming an essential base or core from which everything else develops or is affected
60. a br__d mind *adj.* very wide; general
61. ex_____e our options *v.* to travel to or penetrate an area or a country to learn about it; to thoroughly examine a subject or a possibility to learn more about it
62. numerous un_____in factors *adj.* not being sure of something; not being able to choose
63. th_____en national security *v.* to utter intentions of injury or punishment against someone
64. me_____cs equation *n.* the branch of physics that deals with the study of motion, forces, and energy; (mechanic) someone whose occupation is repairing and maintaining automobiles

ANSWERS: 55. process, 56. compose, 57. disappear, 58. horizon, 59. fundamental, 60. broad, 61. explore, 62. uncertain, 63. threaten, 64. mechanics

65. severe cr___c *n.* someone who expresses opinions about the quality of books, music, etc.
66. laws of qu____m mechanics *n.* the smallest amount or unit of something, especially (electromagnetic) energy
67. imm_____ly recall a product *adv.* now or without delay
68. 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
69. business ho____n *n.* the line at which the earth's surface and the sky appear to meet; the range of interest or activity that can be anticipated
70. 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
71. rec_____on award *n.* the action or process of recognizing or being recognized, especially by remembering; an agreement that something is true or legal
72. ar__e passionately *v.* to express differing opinions or points of view, often in a heated or contentious manner; to present a case or reasoning to persuade or convince others
73. literature of pe_____nt value *adj.* lasting for a long time without essential change

ANSWERS: 65. critic, 66. quantum, 67. immediately, 68. mass, 69. horizon, 70. swallow, 71. recognition, 72. argue, 73. permanent

74. the ar_____ry rule of a dictator *adj.* based on chance, or individual whim rather than any reason
75. sh__y object *adj.* reflecting light and having a bright and smooth surface
76. de_____y the ecosystem *v.* to ruin or damage severely or completely; to eradicate or eliminate completely
77. decision-making pr_____s *n.* a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products
78. 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)
79. soil con_____ion *n.* the protection of something important, such as the natural environment or artificial structures, especially from the damaging effects of human activity
80. pr_____ve a country's heritage *v.* to keep or maintain a particular quality, feature, etc., especially to prevent it from decaying, being damaged, or being destroyed
81. geographical bo_____ry *n.* a real or imaginary line that marks the limit or extent of something and separates it from other things or places
82. en_____e data *v.* to convert information into a code or format suitable for storage or transmission

ANSWERS: 74. arbitrary, 75. shiny, 76. destroy, 77. process, 78. velocity, 79. conservation, 80. preserve, 81. boundary, 82. encode

83. an irr_____ble mistake *adj.* not able to be retrieved or recovered; irreparable or irreversible; not able to be rectified or undone
84. inc_____ly cheerful character *adv.* in a way that is very difficult to believe; exceedingly or extremely
85. re_____e education policy *v.* to change the form or structure of something
86. de___e this modification *v.* to remove something, especially that has been written; to wipe out digitally or magnetically recorded information
87. de___e a word *v.* to state or explain precisely the nature, scope, or meaning of something
88. French pa_____x *n.* a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;
89. re_____te a single country *v.* to make something that existed previously happen or appear to exist again
90. fo_____te situation *adj.* having good luck or lucky
91. mys_____us stranger *adj.* difficult to understand, explain, or identify; having an aura of secrecy, intrigue, or puzzlement
92. de_____yed evidence *v.* to ruin or damage severely or completely; to eradicate or eliminate completely
93. play a vi___l role *adj.* necessary for the success or continued existence of something

ANSWERS: 83. irretrievable, 84. incredibly, 85. reshape, 86. delete, 87. define, 88. paradox, 89. recreate, 90. fortunate, 91. mysterious, 92. destroy, 93. vital

94. the con_____ion law of physics *n.* the protection of something important, such as the natural environment or artificial structures, especially from the damaging effects of human activity
95. mis_____and entirely about her *v.* to interpret or understand something in the wrong way
96. pr_____le of treatment *n.* a fundamental law or truth that explains or controls how something happens or works
97. cause irr_____ble damage *adj.* not able to be retrieved or recovered; irreparable or irreversible; not able to be rectified or undone
98. co_____e an essay *v.* to write music, poetry, or formal writing; to constitute or make up a whole, or a specified part of it
99. vi__l for a healthy society *adj.* necessary for the success or continued existence of something
100. an op_____ne remark *adj.* suitable or happening at a time that is suitable or convenient for a particular purpose
101. op_____ne occasion *adj.* suitable or happening at a time that is suitable or convenient for a particular purpose
102. s__n thread out of cotton *v.* to cause something to rotate rapidly; to cause someone to feel dizzy or disoriented
103. ty_____l leader *adj.* having the usual characteristics or traits of a specific group of things
104. un_____l a plot *v.* undo twisted, knitted, or woven threads by separating it

ANSWERS: 94. conservation, 95. misunderstand, 96. principle, 97. irretrievable, 98. compose, 99. vital, 100. opportune, 101. opportune, 102. spin, 103. typical, 104. unravel

105. 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
106. major pa_____gm shift *n.* a standard or typical example of something; a pattern or model
107. de___e my position *v.* to state or explain precisely the nature, scope, or meaning of something
108. eva_____on cooling *n.* the process of a liquid changing into a gas or vapor, often as a result of high temperatures or reduced pressure; the gradual disappearance or dissipation of something, such as money or resources
109. talented ph_____st *n.* a scientist who specializes in the field of physics
110. congressional h__k *n.* a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations
111. the _____al physicist *adj.* relating to the concepts and principles upon which a particular topic is founded, rather than practice and experience
112. pre-mo___n agricultural society *adj.* of or belonging to the present time or recent times
113. a gr_____l process *adj.* happening slowly over a long period of time or distance; not steep or abrupt
114. a remote re_____ve *adj.* considered and evaluated through comparison with something else

ANSWERS: 105. discovery, 106. paradigm, 107. define, 108. evaporation, 109. physicist, 110. hawk, 111. theoretical, 112. modern, 113. gradual, 114. relative

115. di_____ar without a trace *v.* to cease to exist or be visible
116. electromagnetic ra_____on *n.* the energy that comes from a nuclear reaction in the form of rays, waves, or particles and that can be hazardous to health
117. in_____ct directly with customers *v.* to communicate or react with somebody
118. 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
119. co_____ve coal resources *v.* to protect something, especially the natural environment or culture, from change, damage, or destruction
120. nuclear ph_____s *n.* the science of matter and energy and their interactions
121. sh__y surface *adj.* reflecting light and having a bright and smooth surface
122. fairly ty_____l symptoms *adj.* having the usual characteristics or traits of a specific group of things
123. re_____e a composition *v.* to write something such as a book or speech again in a different way, usually to improve it or add new information
124. ar_____ry size and shape *adj.* based on chance, or individual whim rather than any reason
125. get inc_____ly insecure *adv.* in a way that is very difficult to believe; exceedingly or extremely
126. inv_____te the matter *v.* to conduct a systematic or formal inquiry to identify and evaluate the facts of a crime, problem, statement, etc. to establish the truth

ANSWERS: 115. disappear, 116. radiation, 117. interact, 118. refer, 119. conserve, 120. physics, 121. shiny, 122. typical, 123. rewrite, 124. arbitrary, 125. incredibly, 126. investigate

127. pr____ve my strength *v.* to keep or maintain a particular quality, feature, etc., especially to prevent it from decaying, being damaged, or being destroyed
128. mo____n poetry *adj.* of or belonging to the present time or recent times
129. er__e a memory *v.* to remove something completely, especially by rubbing it
130. in____ct with one another *v.* to communicate or react with somebody
131. mys_____us object *adj.* difficult to understand, explain, or identify; having an aura of secrecy, intrigue, or puzzlement
132. the bo____ry between reality and fantasy *n.* a real or imaginary line that marks the limit or extent of something and separates it from other things or places
133. pr_____le in business *n.* a fundamental law or truth that explains or controls how something happens or works
134. ar__e a case *v.* to express differing opinions or points of view, often in a heated or contentious manner; to present a case or reasoning to persuade or convince others
135. less fo_____te person *adj.* having good luck or lucky
136. laws of ph____s *n.* the science of matter and energy and their interactions
137. un_____ne a good relationship *v.* to make someone or something less powerful, less effective, weaker gradually; to make someone's fame, confidence, or authority less effective or weaker gradually

ANSWERS: 127. preserve, 128. modern, 129. erase, 130. interact, 131. mysterious, 132. boundary, 133. principle, 134. argue, 135. fortunate, 136. physics, 137. undermine

138. co_____e augmented reality *v.* to join or merge to form a single thing or group
139. ev_____te the water *v.* to turn a liquid into a gas; to become less intense and disappear gradually
140. cultural pa_____gm *n.* a standard or typical example of something; a pattern or model
141. 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
142. spare co_____nts for cars *n.* one of several parts that combines with others to form something bigger
143. art cr____c *n.* someone who expresses opinions about the quality of books, music, etc.
144. re_____e a world record *v.* to write something such as a book or speech again in a different way, usually to improve it or add new information
145. charged pa_____le *n.* a small piece of something; a word or piece of a term with grammatical function but little or no significance
146. exposure to ra_____on *n.* the energy that comes from a nuclear reaction in the form of rays, waves, or particles and that can be hazardous to health
147. joint rec_____on *n.* the action or process of recognizing or being recognized, especially by remembering; an agreement that something is true or legal
148. re_____te the feeling of the 1920s *v.* to make something that existed previously happen or appear to exist again

ANSWERS: 138. combine, 139. evaporate, 140. paradigm, 141. universe, 142. component, 143. critic, 144. rewrite, 145. particle, 146. radiation, 147. recognition, 148. recreate

149. vi____e by X-ray *adj.* capable of being seen; or open to easy view
150. a gr____l change *adj.* happening slowly over a long period of time or distance; not steep or abrupt
151. optical hol____hy *n.* a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns
152. ex____d agricultural output *v.* to increase or to make something greater in size, number, or importance
153. ev__e sympathy *v.* to bring or recall a feeling, memory, or image into your mind
154. fun____al rights *adj.* forming an essential base or core from which everything else develops or is affected
155. co____e chemically with another substance *v.* to join or merge to form a single thing or group
156. 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
157. dull si__t *n.* the ability to see; anything that is seen
158. revise that res____ely *adv.* in the order mentioned; individually
159. inv____te a data leak *v.* to conduct a systematic or formal inquiry to identify and evaluate the facts of a crime, problem, statement, etc. to establish the truth

ANSWERS: 149. visible, 150. gradual, 151. holography, 152. expand, 153. evoke, 154. fundamental, 155. combine, 156. swallow, 157. sight, 158. respectively, 159. investigate

160. ev_____te almost overnight

v. to turn a liquid into a gas; to become less intense and disappear gradually

161. 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)

162. statistically un_____ed

adj. having no connection; not belonging to the kinship

ANSWERS: 160. evaporate, 161. velocity, 162. unrelated

Session 3: Fill in the Blanks

1. 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
2. Most countries prohibit sexual activity between certain close _____.
adj. considered and evaluated through comparison with something else
3. He attempted to _____ the misspelled word.
v. to remove something completely, especially by rubbing it
4. My home is easily _____ from the shore.
adj. capable of being seen; or open to easy view
5. A rainbow is a natural _____.
n. something that exists and can be perceptible, especially one that is not fully understood
6. He accumulated wealth across a _____ spectrum of assets.
adj. very wide; general
7. The country experienced a _____ increase in population.
adj. happening slowly over a long period of time or distance; not steep or abrupt
8. He tried every possible treatment, including chemotherapy and _____ therapy.
n. the energy that comes from a nuclear reaction in the form of rays, waves, or particles and that can be hazardous to health

ANSWERS: 1. mass, 2. relatives, 3. erase, 4. visible, 5. phenomenon, 6. broad, 7. gradual, 8. radiation

9. I need to _____ most of the essay with feedback from my teacher.
- v.* to write something such as a book or speech again in a different way, usually to improve it or add new information
10. He studied _____ in college and now works as an engineer.
- n.* the branch of physics that deals with the study of motion, forces, and energy; (mechanic) someone whose occupation is repairing and maintaining automobiles
11. The damage to the computer's hard drive was _____ and I lost all of my important files.
- adj.* not able to be retrieved or recovered; irreparable or irreversible; not able to be rectified or undone
12. 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
13. He was _____ gifted.
- adv.* as might be expected; by natural manners
14. Highlight the sentences that you want to _____.
- v.* to remove something, especially that has been written; to wipe out digitally or magnetically recorded information
15. You should not _____ the meaning of freedom.
- v.* to interpret or understand something in the wrong way
16. We can calculate the position of the _____ statistically.
- n.* a small piece of something; a word or piece of a term with grammatical function but little or no significance

ANSWERS: 9. rewrite, 10. mechanics, 11. irretrievable, 12. universe, 13. naturally, 14. delete, 15. misunderstand, 16. particles

17. Human behavior has _____ characteristics.

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

18. This artwork is _____ of her work.

adj. having the usual characteristics or traits of a specific group of things

19. That team signed a center forward who was a ball-_____.

n. a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations

20. The _____ disappearance of the ship remains unsolved.

adj. difficult to understand, explain, or identify; having an aura of secrecy, intrigue, or puzzlement

21. This movie is likely to _____ strong emotions in the viewer.

v. to bring or recall a feeling, memory, or image into your mind

22. The phone rang at the most _____ time.

adj. suitable or happening at a time that is suitable or convenient for a particular purpose

23. Hydrogen and oxygen _____ to form water.

v. to join or merge to form a single thing or group

24. To advance this discussion, we must _____ "success" rigorously.

v. to state or explain precisely the nature, scope, or meaning of something

25. The building was _____ in the fire and had to be rebuilt.

v. to ruin or damage severely or completely; to eradicate or eliminate completely

ANSWERS: 17. fundamental, 18. typical, 19. hawk, 20. mysterious, 21. evoke, 22. opportune, 23. combine, 24. define, 25. destroyed

26. The forest was recently designated a _____ area.
n. the protection of something important, such as the natural environment or artificial structures, especially from the damaging effects of human activity
27. Any theorem relies on both _____ fact and assumption.
adj. that can be noticed or seen
28. They hope to _____ their business worldwide.
v. to increase or to make something greater in size, number, or importance
29. Various artificially induced causes are _____ our ecosystem.
v. to utter intentions of injury or punishment against someone
30. She _____ the atmosphere of the pre-war age with her stage setting.
v. to make something that existed previously happen or appear to exist again
31. The tornado is _____ across the countryside, destroying everything in its path.
v. to cause something to rotate rapidly; to cause someone to feel dizzy or disoriented
32. 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
33. He was given _____ for his outstanding work in the field of medicine.
n. the action or process of recognizing or being recognized, especially by remembering; an agreement that something is true or legal

ANSWERS: 26. conservation, 27. observable, 28. expand, 29. threatening, 30. recreated, 31. spinning, 32. swallowed, 33. recognition

34. Perseverance and optimism are _____ to success.

adj. necessary for the success or continued existence of something

35. As the sun set, the colors of the sky merged with the _____ creating a beautiful orange and pink hue.

n. the line at which the earth's surface and the sky appear to meet; the range of interest or activity that can be anticipated

36. _____ technology uses light interference patterns to create a 3D image.

n. a technique for creating three-dimensional images using lasers to record and reconstruct interference patterns

37. The management must _____ strategies to increase office security.

v. to travel to or penetrate an area or a country to learn about it; to thoroughly examine a subject or a possibility to learn more about it

38. Excuse me if my question is _____ to the topic.

adj. having no connection; not belonging to the kinship

39. Several cities are experiencing _____ high unemployment rates.

adv. in a way that is very difficult to believe; exceedingly or extremely

40. She was _____ about her friend's intentions.

adj. not being sure of something; not being able to choose

41. It is _____ that we leave for the airport now to catch our flight.

adj. requiring immediate attention or action; pressing

42. He postulated a completely different _____ to explain all these phenomena.

n. a standard or typical example of something; a pattern or model

ANSWERS: 34. vital, 35. horizon, 36. Holography, 37. explore, 38. unrelated, 39. incredibly, 40. uncertain, 41. urgent, 42. paradigm

43. The _____ for applying for a visa can be lengthy and complicated.
- n.* a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products
44. The advent of the Internet completely _____ the manufacturing industry.
- v.* to change the form or structure of something
45. The committee _____ several apparent inconsistencies.
- v.* to conduct a systematic or formal inquiry to identify and evaluate the facts of a crime, problem, statement, etc. to establish the truth
46. Many famous _____ are within walking distance.
- n.* the ability to see; anything that is seen
47. Detectives are still attempting to _____ the mystery of his death.
- v.* undo twisted, knitted, or woven threads by separating it
48. He was pretty _____ to pass the exam.
- adj.* having good luck or lucky
49. They worked hard to _____ the nature of their native lands.
- v.* to keep or maintain a particular quality, feature, etc., especially to prevent it from decaying, being damaged, or being destroyed
50. Efficiency isn't an essential _____ here; fairness is.
- n.* a fundamental law or truth that explains or controls how something happens or works

ANSWERS: 43. process, 44. reshaped, 45. investigated, 46. sights, 47. unravel, 48. fortunate, 49. preserve, 50. principle

51. The couple began to _____ over which restaurant to go to for dinner.
v. to express differing opinions or points of view, often in a heated or contentious manner; to present a case or reasoning to persuade or convince others
52. Children must be taught to _____ our natural environment.
v. to protect something, especially the natural environment or culture, from change, damage, or destruction
53. 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)
54. The two samples had pH levels of 7 and 9, _____.
adv. in the order mentioned; individually
55. 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
56. He studied the _____ of radiation.
n. the science of matter and energy and their interactions
57. He should _____ more with his colleagues.
v. to communicate or react with somebody
58. The structure is _____ of three main components.
v. to write music, poetry, or formal writing; to constitute or make up a whole, or a specified part of it

ANSWERS: 51. argue, 52. conserve, 53. velocity, 54. respectively, 55. refer, 56. physics, 57. interact, 58. composed

59. Einstein was an outstanding and famous _____ of the 20th century.
n. a scientist who specializes in the field of physics
60. The sun will _____ the mist.
v. to turn a liquid into a gas; to become less intense and disappear gradually
61. He emphasized the _____ of immediate action.
n. the state or fact of being needed; anything indispensable
62. They tried to _____ her position by slandering her.
v. to make someone or something less powerful, less effective, weaker gradually; to make someone's fame, confidence, or authority less effective or weaker gradually
63. He has a flair for _____.
n. the science dealing with the logic of quantities, shapes, spaces, and arrangement
64. Big techs are now eager to develop _____ computers.
n. the smallest amount or unit of something, especially (electromagnetic) energy
65. Advocates for legal reform hear less harsh words from their _____.
n. someone who expresses opinions about the quality of books, music, etc.
66. They watched the train _____ into the distance.
v. to cease to exist or be visible
67. He collected data to avoid _____ decisions.
adj. based on chance, or individual whim rather than any reason

ANSWERS: 59. physicist, 60. evaporate, 61. necessity, 62. undermine, 63. mathematics, 64. quantum, 65. critics, 66. disappear, 67. arbitrary

68. The _____ new car drew everyone's attention as it drove by.

adj. reflecting light and having a bright and smooth surface

69. A suspension order from the court is effective _____.

adv. now or without delay

70. 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

71. The extinction of several subspecies has been linked to climate change and habitat _____.

n. the act of causing so much damage to something

72. Their headquarters are in a _____ skyscraper.

adj. of or belonging to the present time or recent times

73. The _____ in her heart was filled with the love of her family.

n. an empty space; a feeling of emptiness; (adjective) lacking any legal or binding force

74. She is searching for a _____ residence.

adj. lasting for a long time without essential change

75. There are many theories to explain this _____.

n. a statement, situation, or person that has two opposite facts or features and therefore seems impossible, is difficult to understand, or is strange;

76. The formation of clouds is facilitated by the process of _____ and condensation

n. the process of a liquid changing into a gas or vapor, often as a result of high temperatures or reduced pressure; the gradual disappearance or dissipation of something, such as money or resources

ANSWERS: 68. shiny, 69. immediately, 70. discovery, 71. destruction, 72. modern, 73. void, 74. permanent, 75. paradox, 76. evaporation

77. Absolute zero is the lowest _____ temperature.

adj. relating to the concepts and principles upon which a particular topic is founded, rather than practice and experience

78. The researchers try to discover a common _____ in all types of successful organizations.

n. one of several parts that combines with others to form something bigger

79. He wandered the _____ between life and death by gunfire.

n. a real or imaginary line that marks the limit or extent of something and separates it from other things or places

80. The software can _____ and decode encrypted messages.

v. to convert information into a code or format suitable for storage or transmission

81. Hunters use a whistle that makes the ____ sound to lure stags.

n. a mature female of mammals of which the male is called a buck, such as a deer or a rabbit

ANSWERS: 77. theoretical, 78. component, 79. boundary, 80. encode, 81. doe