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Vocabulary Builder Reference from...

Lieven Scheire: How quantum mechanics explains global warming | TED Talk

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

All Words

IMPORTANT

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Session 1: Word List

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**.

greenhouse

n. a building with walls and roof made chiefly of transparent material, such as glass, for growing plants in

synonym : conservatory

(1) exotic plants in a **greenhouse**, (2) emissions of **greenhouse** gases

The **greenhouse** effect is a phenomenon that happens naturally.

insulate

v. to protect something by interposing material that prevents heat, noise, electricity, etc.

synonym : isolate, protect, seclude

(1) **insulate** the room from sound, (2) **insulate** electricity

We had our bedroom **insulated** before winter came.

blanket

n. a large piece of soft material used to cover or wrap a person or thing to keep them warm; (adjective) broad in scope or content

synonym: cover, coverlet, bedspread

(1) **blanket** authority, (2) **blanket** scarf

The electric **blanket** keeps me warm on cold nights.

entirely

adv. completely

synonym: completely, fully, totally

(1) **entirely** satisfied with the meal, (2) he was **entirely** to blame

Later, his claim was found to be **entirely** false.

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.

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.

rainbow

n. an arch of colors in the sky caused by the refraction and dispersion of sunlight through rain

synonym : spectrum, iridescence, prism

(1) marine **rainbow**, (2) **rainbow** after a storm

She was mesmerized by the **rainbow's** colors.

sunlight

n. the light emitted by the sun; the rays of the sun

synonym : daylight, rays, sunshine

(1) a glare of **sunlight**, (2) in direct **sunlight**

Radiation from **sunlight** has a different wavelength.

separate

v. to force, take, or pull apart; mark as different

synonym : disunite, isolate, ramify

(1) **separate** video into chapter, (2) **separate** cream from milk

We need to **separate** the aspect of his personality from the part of his competence when making an investment decision.

prism

n. a three-dimensional object with a triangular base and parallel sides, which refracts (= to bend something) light that passes through it, resulting in the separation and display of the colors of the visible spectrum; a metaphorical term used to describe a situation that reveals or illuminates various aspects or perspectives of a particular phenomenon or topic

synonym : crystal, polyhedron

(1) **prism** spectrometer, (2) a **prism** of viewpoints

The scientist used an optical **prism** to analyze the dispersion of light in the laboratory experiment.

gap

n. a conspicuous disparity or difference separates something such as a figure, people, their opinions, situation, etc.

synonym : opening, lacuna, spread

(1) the **gap** between ideal and reality, (2) distance **gap**

Many people are working together to close the gender **gap**.

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.

specific

adj. clearly defined or particular to a certain thing or situation; distinct, explicit, and precise

synonym: particular, definite, distinct

(1) **specific** instructions, (2) industry- **specific** regulations

The scientist conducted a study that provided **specific** details about the species' behavior.

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.

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.

snatch

v. to take or grab something suddenly or quickly

synonym: grab, seize, capture

(1) **snatch** a hasty meal, (2) **snatch** up her purse

He **snatches** victory from the jaws of defeat in the game's final seconds.

sodium

n. a metallic element that is the most common alkali metal and is used in the production of many chemicals, including soap, glass, and paper

synonym: Na, salt, alkali

(1) reduce my **sodium** intake, (2) **sodium** bicarbonate

High levels of **sodium** in the diet can increase the risk of developing high blood pressure.

grab

v. to take hold of something or someone suddenly with a hand, especially in a violent way

synonym: clutch, snatch, grasp

(1) **grab** an audience, (2) **grab** an opportunity

Shall we **grab** a bite to eat?

realm

n. a domain of activity, interest, or knowledge

synonym: domain, empire, kingdom

(1) public **realm**, (2) beyond the **realm** of possibility

Her passions are in the **realm** of real-world political affairs.

atom

n. the smallest unit of ordinary matter that forms a chemical element, composed of a nucleus and one or more electrons bound to the nucleus

synonym: particle, element, fraction

(1) oxygen **atom**, (2) neutral hydrogen **atoms**

The outermost electron shell of an **atom** determines its chemical characteristics.

molecule

n. a group of two or more atoms held together by attractive forces known as chemical bonds

synonym: particle, element, atom

(1) small **molecules**, (2) **molecule** behavior

The shape of the DNA **molecule** is a double helix.

electron

n. a tiny particle with the negative electrical charge

synonym: negatron

(1) flow of **electrons**, (2) beam of **electrons**

The outermost **electron** shell determines the chemical properties of an atom.

shift

n. a slight transition in position, direction, or trend

synonym: transition, change, modification

(1) Doppler **shift**, (2) major paradigm **shift**
Could you help me **shift** some furniture?

consist

v. to be composed or made up of
synonym: lie in, comprise, exist

(1) **consist** mainly of cells, (2) **consist** only in knowing facts
This examination **consists** of five problems to solve.

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.

photon

n. a unit or quantum of electromagnetic energy, typically regarded as a particle that is the basic constituent of all light and other forms of electromagnetic radiation
synonym: particle, quantum, light

(1) **photon** emission, (2) **photon** energy
Infrared cameras detect **photons** in the infrared range of the electromagnetic spectrum.

correspond

v. to match or be similar to something else almost exactly; to exchange messages
synonym: match, equate, communicate

(1) **correspond** to a standard, (2) **correspond** with a foreign student
The numbers on the sign **correspond** to points on the map.

wavelength

n. the distance between two points in the same phase in consecutive cycles of a wave

(1) **wavelength** of light, (2) long- **wavelength** laser
White color is made up of many different **wavelengths** of light.

purple

adj. of a color intermediate between red and blue

synonym : violet

(1) deep **purple**, (2) **purple** sweet potatoes

The plant has a stunning **purple** blossom.

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.

transparent

adj. easy to perceive, detect, or understand; (of a material or article) permitting light to pass through freely

synonym : translucent, evident, diaphanous

(1) a **transparent** lie, (2) **transparent** crystal

The focus of these initiatives is to make the financial system more **transparent**.

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.

prefer

v. to like, choose, or want one thing or person better than another

synonym : choose, like, favor

(1) **prefer** physics to chemistry, (2) **prefer** a window seat

The birds **prefer** open water areas with reeds around them.

celestial

adj. relating to the sky or the heavens; of or like the sky or the heavens

synonym : heavenly, divine, ethereal

(1) **celestial** bliss, (2) **celestial** navigation

The **celestial** bodies in the night sky were beautiful to behold.

emit

v. to give off or send out something such as light, heat, sound, gas, etc.

synonym :

give off, radiate, expel

(1) **emit** a gamma ray, (2) **emit** air pollution

During the unloading, the container box **emits** a clicking sound.

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.

glowing

adj. highly enthusiastic; greatly praised

synonym : burning, bright, flaming

(1) **glowing** reviews, (2) **glowing** cheeks

The western sky was **glowing** pink.

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.

electromagnetic

adj. of or relating to the magnetism produced by electric charge in motion

(1) **electromagnetic** radiation, (2) **electromagnetic** properties

His hypothesis concerns the role of an **electromagnetic** field in human health.

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.

microwave

n. a form of electromagnetic radiation with wavelengths ranging from about one millimeter to one meter and frequencies between 300 MHz (0.3 GHz) and 300 GHz; an electric oven that cooks food by exposing it to high-frequency electromagnetic radiation, which causes the food molecules to vibrate and heat up quickly

synonym : oven, waveguide, radar range

(1) **microwave** radiation, (2) **microwave** popcorn

I heated my leftover food in the **microwave** oven, which tasted just as good as freshly cooked.

ultraviolet

adj. relating to or occupying the part of the spectrum beyond the violet end, especially radiation

synonym : black light, UV light, invisible light

(1) **ultraviolet** protection, (2) **ultraviolet** light

Ultraviolet radiation can cause skin damage if one is exposed for too long.

X-ray

n. a type of electromagnetic radiation that has a wavelength shorter than visible light allowing hidden objects such as bones and organs inside the body to be photographed

synonym : roentgenogram, photon radiography

(1) **X-ray** scan, (2) an **X-ray** of arteries

The doctor ordered an **X-ray** to see if there was any damage to the bones.

gamma

n. the third letter of the Greek alphabet; a type of radiation having the shortest wavelength and highest energy of electromagnetic waves

synonym : ray, radiation, emission

(1) **gamma** radiation, (2) **gamma** particles

Gamma rays are a type of high-energy radiation that can be

harmful to living organisms.

ray *n.* a narrow line of light, heat, or another form of energy
synonym : beam, light, glimmer

(1) opaque to X- **rays**, (2) effect of cosmic **rays**

Gamma **rays** penetrate body tissues and cause cell damage.

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.

presumptuous *adj.* excessively bold or forward; taking liberties beyond what is appropriate or socially acceptable

synonym : arrogant, overconfident, presuming

(1) **presumptuous** behavior, (2) **presumptuous** attitude

It was **presumptuous** of him to assume he would be hired for the job without submitting a resume.

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.

adapt *v.* to make fit for or change to suit a new purpose or environment

synonym : adjust, acclimate, accustom

(1) **adapt** fully to the environment, (2) **adapt** as needed

I advised him to **adapt** to his new surroundings.

hertz *n.* the unit of frequency, equal to one cycle per second, often used to describe the frequency of electromagnetic waves or electronic signals

synonym : frequency, cycles per second

(1) audio **hertz**, (2) tera- **hertz** radiation

The human ear can detect sounds with frequencies ranging from 20 to 20,000 **hertz**.

flashlight

n. a portable electric light with a handle and a switch that can be turned on and off

synonym: torch, lamp, beacon

(1) **flashlight** beam, (2) **flashlight** batteries

He used a backup **flashlight** to find his way through the dark cave.

tower

n. a structure that is exceptionally high in proportion to its width and either forms part of a building or stands alone

synonym: building, belfry, edifice

(1) a bell **tower**, (2) the **tower** on a cliff

She is a **tower** of strength for our team in trouble.

lantern

n. a portable source of lighting, typically featuring a protective enclosure for the light source

synonym: lamp, beacon, flashlight

(1) candle **lantern**, (2) a **lantern** in the dark

The paper-covered **lantern** glowed softly in the darkness.

temperature

n. the degree of hotness or coldness of a thing or place

synonym: climate, warmth, degree

(1) extreme **temperatures**, (2) the atmospheric **temperature**

Cities around the world set records for highest **temperatures** this summer.

absolute

adj. perfect or complete or to the most considerable degree possible

synonym: complete, infrangible, indisputable

(1) **absolute** loyalty, (2) an **absolute** must

Gandhi had an **absolute** zeal for nonviolence.

thermal

adj. relating to heat or temperature; designed for or capable of producing or maintaining heat

synonym : heat-related, warm, hot

(1) **thermal** insulation, (2) **thermal** energy

The **thermal** imaging camera was used to detect heat signatures in the dark.

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**.

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.

glow

v. to give out a steady, strong light

synonym : shine, radiate, beam

(1) **glow** a pale orange, (2) **glow** gold in the light

The sun was setting, and the sky **glowed** with beautiful colors.

tradition

n. a belief, custom, or way of doing something that has been passed down from generation to generation within a group or society

synonym : custom, practice, ritual

(1) a **tradition** of a culture, (2) against **tradition**

It is a **tradition** in many families to have a big Thanksgiving dinner with all their relatives.

bulb

n. a rounded underground storage organ of some plants from which the plant grows; the rounded part of a cylindrical structure; electric lamp consisting of a glass

ball

(1) wet- **bulb** thermometer, (2) a lily **bulb**

The light **bulb** has burned out.

wasteful

adj. characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense

synonym: uneconomical, extravagant, profligate

(1) **wasteful** practices, (2) **wasteful** habits

Buying new clothes every week is a **wasteful** use of money and resources.

invisible

adj. impossible or nearly impossible to see

synonym: hidden, imperceptible, unseen

(1) an **invisible** asset, (2) **invisible** stars

The phenomenon is **invisible** at optical wavelengths.

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**.

spit

v. to eject saliva or other liquid from the mouth

synonym: expectorate, saliva, spew

(1) **spit** a bullet, (2) **spit** a mouthful of saliva

She tried to **spit** out the gum that she had been chewing.

random

adj. made, done, or happening without method, conscious decision, or any regular pattern

synonym: incidental, arbitrary, unanticipated

(1) a **random** choice, (2) bombs fell at **random**

To find drunk drivers, police conduct **random** tests.

climate

n. the weather in a particular location averaged over some long period

synonym: atmosphere, weather, environment

(1) a cold **climate**, (2) effects of **climate** change

Climate and weather have an impact on every part of our lifestyles.

Session 2: Spelling

1. a pr__m of viewpoints *n.* a three-dimensional object with a triangular base and parallel sides, which refracts (= to bend something) light that passes through it, resulting in the separation and display of the colors of the visible spectrum; a metaphorical term used to describe a situation that reveals or illuminates various aspects or perspectives of a particular phenomenon or topic

2. co_____t mainly of cells *v.* to be composed or made up of
3. cor_____nd to a standard *v.* to match or be similar to something else almost exactly; to exchange messages
4. in direct su_____ht *n.* the light emitted by the sun; the rays of the sun
5. vi_____e by X-ray *adj.* capable of being seen; or open to easy view
6. in_____te electricity *v.* to protect something by interposing material that prevents heat, noise, electricity, etc.
7. a tr_____on of a culture *n.* a belief, custom, or way of doing something that has been passed down from generation to generation within a group or society
8. 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

ANSWERS: 1. prism, 2. consist, 3. correspond, 4. sunlight, 5. visible, 6. insulate, 7. tradition, 8. infrared

9. a cold cl_____e *n.* the weather in a particular location averaged over some long period
10. ph____n emission *n.* a unit or quantum of electromagnetic energy, typically regarded as a particle that is the basic constituent of all light and other forms of electromagnetic radiation
11. effect of cosmic r_ys *n.* a narrow line of light, heat, or another form of energy
12. high fr_____cy *n.* an ordered array of colors into which a light beam can be split
13. ult_____et light *adj.* relating to or occupying the part of the spectrum beyond the violet end, especially radiation
14. sp_____ic instructions *adj.* clearly defined or particular to a certain thing or situation; distinct, explicit, and precise
15. pr____r physics to chemistry *v.* to like, choose, or want one thing or person better than another
16. a broad sp_____um of opinion *n.* an ordered array of colors into which a light beam can be split
17. fla_____ht batteries *n.* a portable electric light with a handle and a switch that can be turned on and off
18. ab_____te loyalty *adj.* perfect or complete or to the most considerable degree possible
19. se_____te cream from milk *v.* to force, take, or pull apart; mark as different
20. ad__t fully to the environment *v.* to make fit for or change to suit a new purpose or environment

ANSWERS: 9. climate, 10. photon, 11. ray, 12. frequency, 13. ultraviolet, 14. specific, 15. prefer, 16. spectrum, 17. flashlight, 18. absolute, 19. separate, 20. adapt

21. de___e a word *v.* to state or explain precisely the nature, scope, or meaning of something
22. flow of el_____ons *n.* a tiny particle with the negative electrical charge
23. a la_____n in the dark *n.* a portable source of lighting, typically featuring a protective enclosure for the light source
24. an X-__y of arteries *n.* a type of electromagnetic radiation that has a wavelength shorter than visible light allowing hidden objects such as bones and organs inside the body to be photographed
25. 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
26. cor_____nd with a foreign student *v.* to match or be similar to something else almost exactly; to exchange messages
27. candle la_____n *n.* a portable source of lighting, typically featuring a protective enclosure for the light source
28. the g_p between ideal and reality *n.* a conspicuous disparity or difference separates something such as a figure, people, their opinions, situation, etc.
29. en_____ly satisfied with the meal *adv.* completely
30. ab___b energy *v.* to take in a fluid or other substance gradually
31. in_____te the room from sound *v.* to protect something by interposing material that prevents heat, noise, electricity, etc.

ANSWERS: 21. define, 22. electron, 23. lantern, 24. X-ray, 25. degree, 26. correspond, 27. lantern, 28. gap, 29. entirely, 30. absorb, 31. insulate

32. 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
33. beam of el_____ons *n.* a tiny particle with the negative electrical charge
34. ga__a particles *n.* the third letter of the Greek alphabet; a type of radiation having the shortest wavelength and highest energy of electromagnetic waves
35. vi_____e stars *adj.* capable of being seen; or open to easy view
36. fun_____al education *adj.* forming an essential base or core from which everything else develops or is affected
37. tra_____nt crystal *adj.* easy to perceive, detect, or understand; (of a material or article) permitting light to pass through freely
38. extreme tem_____res *n.* the degree of hotness or coldness of a thing or place
39. the to__r on a cliff *n.* a structure that is exceptionally high in proportion to its width and either forms part of a building or stands alone
40. bl_____t scarf *n.* a large piece of soft material used to cover or wrap a person or thing to keep them warm; (adjective) broad in scope or content
41. ce_____al navigation *adj.* relating to the sky or the heavens; of or like the sky or the heavens
42. an ab_____te must *adj.* perfect or complete or to the most considerable degree possible

ANSWERS: 32. atmosphere, 33. electron, 34. gamma, 35. visible, 36. fundamental, 37. transparent, 38. temperature, 39. tower, 40. blanket, 41. celestial, 42. absolute

43. 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
44. combined ox__e *n.* a chemical compound that contains at least one oxygen atom and one other element
45. 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
46. probabilistic qu_____m theory *n.* the smallest amount or unit of something, especially (electromagnetic) energy
47. 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
48. small mo_____les *n.* a group of two or more atoms held together by attractive forces known as chemical bonds
49. bombs fell at ra___m *adj.* made, done, or happening without method, conscious decision, or any regular pattern
50. distance g_p *n.* a conspicuous disparity or difference separates something such as a figure, people, their opinions, situation, etc.
51. marine ra_____w *n.* an arch of colors in the sky caused by the refraction and dispersion of sunlight through rain

ANSWERS: 43. oxygen, 44. oxide, 45. mechanics, 46. quantum, 47. mechanics, 48. molecule, 49. random, 50. gap, 51. rainbow

52. se____te video into chapter *v.* to force, take, or pull apart; mark as different
53. charged pa____le *n.* a small piece of something; a word or piece of a term with grammatical function but little or no significance
54. ele_____tic radiation *adj.* of or relating to the magnetism produced by electric charge in motion
55. exotic plants in a gre_____se *n.* a building with walls and roof made chiefly of transparent material, such as glass, for growing plants in
56. wav_____th of light *n.* the distance between two points in the same phase in consecutive cycles of a wave
57. 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
58. public re__m *n.* a domain of activity, interest, or knowledge
59. g__b an opportunity *v.* to take hold of something or someone suddenly with a hand, especially in a violent way
60. di_____ar without a trace *v.* to cease to exist or be visible
61. 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
62. an in_____le asset *adj.* impossible or nearly impossible to see

ANSWERS: 52. separate, 53. particle, 54. electromagnetic, 55. greenhouse, 56. wavelength, 57. planet, 58. realm, 59. grab, 60. disappear, 61. radiation, 62. invisible

63. 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
64. th_____l insulation *adj.* relating to heat or temperature; designed for or capable of producing or maintaining heat
65. mi_____ve radiation *n.* a form of electromagnetic radiation with wavelengths ranging from about one millimeter to one meter and frequencies between 300 MHz (0.3 GHz) and 300 GHz; an electric oven that cooks food by exposing it to high-frequency electromagnetic radiation, which causes the food molecules to vibrate and heat up quickly
66. a lily b__b *n.* a rounded underground storage organ of some plants from which the plant grows; the rounded part of a cylindrical structure; electric lamp consisting of a glass ball
67. 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
68. gl_____g reviews *adj.* highly enthusiastic; greatly praised
69. 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
70. ra_____w after a storm *n.* an arch of colors in the sky caused by the refraction and dispersion of sunlight through rain

ANSWERS: 63. carbon, 64. thermal, 65. microwave, 66. bulb, 67. carbon, 68. glowing, 69. atmosphere, 70. rainbow

71. 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
72. 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
73. laws of qu_____m mechanics *n.* the smallest amount or unit of something, especially (electromagnetic) energy
74. X-__y scan *n.* a type of electromagnetic radiation that has a wavelength shorter than visible light allowing hidden objects such as bones and organs inside the body to be photographed
75. pu___e sweet potatoes *adj.* of a color intermediate between red and blue
76. long-wav_____th laser *n.* the distance between two points in the same phase in consecutive cycles of a wave
77. pr___r a window seat *v.* to like, choose, or want one thing or person better than another
78. emissions of gre_____se gases *n.* a building with walls and roof made chiefly of transparent material, such as glass, for growing plants in
79. ce_____al bliss *adj.* relating to the sky or the heavens; of or like the sky or the heavens
80. neutral hydrogen a__ms *n.* the smallest unit of ordinary matter that forms a chemical element, composed of a nucleus and one or more electrons bound to the nucleus

ANSWERS: 71. oxygen, 72. radiation, 73. quantum, 74. X-ray, 75. purple, 76. wavelength, 77. prefer, 78. greenhouse, 79. celestial, 80. atom

81. ph___n energy *n.* a unit or quantum of electromagnetic energy, typically regarded as a particle that is the basic constituent of all light and other forms of electromagnetic radiation
82. deep pu___e *adj.* of a color intermediate between red and blue
83. silver ox___e *n.* a chemical compound that contains at least one oxygen atom and one other element
84. a bell to___r *n.* a structure that is exceptionally high in proportion to its width and either forms part of a building or stands alone
85. fr____cy band *n.* an ordered array of colors into which a light beam can be split
86. ult____et protection *adj.* relating to or occupying the part of the spectrum beyond the violet end, especially radiation
87. 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
88. g___b an audience *v.* to take hold of something or someone suddenly with a hand, especially in a violent way
89. oxygen a___m *n.* the smallest unit of ordinary matter that forms a chemical element, composed of a nucleus and one or more electrons bound to the nucleus

ANSWERS: 81. photon, 82. purple, 83. oxide, 84. tower, 85. frequency, 86. ultraviolet, 87. planet, 88. grab, 89. atom

90. pa____le energy *n.* a small piece of something; a word or piece of a term with grammatical function but little or no significance
91. wet-b__b thermometer *n.* a rounded underground storage organ of some plants from which the plant grows; the rounded part of a cylindrical structure; electric lamp consisting of a glass ball
92. pre____ous behavior *adj.* excessively bold or forward; taking liberties beyond what is appropriate or socially acceptable
93. g__w gold in the light *v.* to give out a steady, strong light
94. a glare of su____ht *n.* the light emitted by the sun; the rays of the sun
95. ab__b a shock *v.* to take in a fluid or other substance gradually
96. e__t air pollution *v.* to give off or send out something such as light, heat, sound, gas, etc.
97. mo____le behavior *n.* a group of two or more atoms held together by attractive forces known as chemical bonds
98. infrared sp____um *n.* an ordered array of colors into which a light beam can be split
99. s__t a bullet *v.* to eject saliva or other liquid from the mouth
100. pr__m spectrometer *n.* a three-dimensional object with a triangular base and parallel sides, which refracts (= to bend something) light that passes through it, resulting in the separation and display of the colors of the visible spectrum; a metaphorical term used to describe a situation that reveals or illuminates various aspects or perspectives of a particular phenomenon or topic

ANSWERS: 90. particle, 91. bulb, 92. presumptuous, 93. glow, 94. sunlight, 95.

absorb, 96. emit, 97. molecule, 98. spectrum, 99. spit, 100. prism

101. in_____le stars *adj.* impossible or nearly impossible to see
102. ad__t as needed *v.* to make fit for or change to suit a new purpose or environment
103. sn___h a hasty meal *v.* to take or grab something suddenly or quickly
104. sn___h up her purse *v.* to take or grab something suddenly or quickly
105. pre_____ous attitude *adj.* excessively bold or forward; taking liberties beyond what is appropriate or socially acceptable
106. s__t a mouthful of saliva *v.* to eject saliva or other liquid from the mouth
107. he was en_____ly to blame *adv.* completely
108. g__w a pale orange *v.* to give out a steady, strong light
109. a tra_____nt lie *adj.* easy to perceive, detect, or understand; (of a material or article) permitting light to pass through freely
110. major paradigm sh__t *n.* a slight transition in position, direction, or trend
111. fla_____ht beam *n.* a portable electric light with a handle and a switch that can be turned on and off
112. bl_____t authority *n.* a large piece of soft material used to cover or wrap a person or thing to keep them warm; (adjective) broad in scope or content
113. the atmospheric tem_____re *n.* the degree of hotness or coldness of a thing or place

ANSWERS: 101. invisible, 102. adapt, 103. snatch, 104. snatch, 105. presumptuous, 106. spit, 107. entirely, 108. glow, 109. transparent, 110. shift, 111. flashlight, 112. blanket, 113. temperature

114. Doppler sh__t *n.* a slight transition in position, direction, or trend
115. in_____e a high degree of risk *v.* to include or affect someone or something as a necessary part of something else
116. ele_____tic properties *adj.* of or relating to the magnetism produced by electric charge in motion
117. a ra___m choice *adj.* made, done, or happening without method, conscious decision, or any regular pattern
118. fun_____al rights *adj.* forming an essential base or core from which everything else develops or is affected
119. mi_____ve popcorn *n.* a form of electromagnetic radiation with wavelengths ranging from about one millimeter to one meter and frequencies between 300 MHz (0.3 GHz) and 300 GHz; an electric oven that cooks food by exposing it to high-frequency electromagnetic radiation, which causes the food molecules to vibrate and heat up quickly
120. in_____e a lot of paperwork *v.* to include or affect someone or something as a necessary part of something else
121. wa_____ul practices *adj.* characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense

ANSWERS: 114. shift, 115. involve, 116. electromagnetic, 117. random, 118. fundamental, 119. microwave, 120. involve, 121. wasteful

122. effects of cl____e change *n.* the weather in a particular location averaged over some long period
123. audio he__z *n.* the unit of frequency, equal to one cycle per second, often used to describe the frequency of electromagnetic waves or electronic signals
124. e__t a gamma ray *v.* to give off or send out something such as light, heat, sound, gas, etc.
125. tera-he__z radiation *n.* the unit of frequency, equal to one cycle per second, often used to describe the frequency of electromagnetic waves or electronic signals
126. reduce my so____m intake *n.* a metallic element that is the most common alkali metal and is used in the production of many chemicals, including soap, glass, and paper
127. th____l energy *adj.* relating to heat or temperature; designed for or capable of producing or maintaining heat
128. ga__a radiation *n.* the third letter of the Greek alphabet; a type of radiation having the shortest wavelength and highest energy of electromagnetic waves
129. beyond the re__m of possibility *n.* a domain of activity, interest, or knowledge
130. de___e my position *v.* to state or explain precisely the nature, scope, or meaning of something
131. industry-sp____ic regulations *adj.* clearly defined or particular to a certain thing or situation; distinct, explicit, and precise

ANSWERS: 122. climate, 123. hertz, 124. emit, 125. hertz, 126. sodium, 127. thermal, 128. gamma, 129. realm, 130. define, 131. specific

132. di_____ar after a week *v.* to cease to exist or be visible
133. 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
134. against tr_____on *n.* a belief, custom, or way of doing something that has been passed down from generation to generation within a group or society
135. so___m bicarbonate *n.* a metallic element that is the most common alkali metal and is used in the production of many chemicals, including soap, glass, and paper
136. opaque to X-r_ys *n.* a narrow line of light, heat, or another form of energy
137. 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
138. wa_____ul habits *adj.* characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense
139. co_____t only in knowing facts *v.* to be composed or made up of
140. gl_____g cheeks *adj.* highly enthusiastic; greatly praised

ANSWERS: 132. disappear, 133. degree, 134. tradition, 135. sodium, 136. ray, 137. infrared, 138. wasteful, 139. consist, 140. glowing

Session 3: Fill in the Blanks

1. The plant has a stunning _____ blossom.
adj. of a color intermediate between red and blue
2. Buying new clothes every week is a _____ use of money and resources.
adj. characterized by excessive or unnecessary use or consumption; using resources or materials inefficiently or inappropriately, resulting in unnecessary waste or expense
3. The human ear can detect sounds with frequencies ranging from 20 to 20,000 _____.
n. the unit of frequency, equal to one cycle per second, often used to describe the frequency of electromagnetic waves or electronic signals
4. The outermost _____ shell determines the chemical properties of an atom.
n. a tiny particle with the negative electrical charge
5. He _____ victory from the jaws of defeat in the game's final seconds.
v. to take or grab something suddenly or quickly
6. 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
7. Big techs are now eager to develop _____ computers.
n. the smallest amount or unit of something, especially (electromagnetic) energy
8. The scientist conducted a study that provided _____ details about the species' behavior.
adj. clearly defined or particular to a certain thing or situation; distinct, explicit, and precise

ANSWERS: 1. purple, 2. wasteful, 3. hertz, 4. electron, 5. snatches, 6. particles, 7. quantum, 8. specific

9. Could you help me _____ some furniture?
n. a slight transition in position, direction, or trend
10. 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
11. Cities around the world set records for highest _____ this summer.
n. the degree of hotness or coldness of a thing or place
12. The sun was setting, and the sky _____ with beautiful colors.
v. to give out a steady, strong light
13. To find drunk drivers, police conduct _____ tests.
adj. made, done, or happening without method, conscious decision, or any regular pattern
14. 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
15. The paper-covered _____ glowed softly in the darkness.
n. a portable source of lighting, typically featuring a protective enclosure for the light source
16. The shape of the DNA _____ is a double helix.
n. a group of two or more atoms held together by attractive forces known as chemical bonds

ANSWERS: 9. shift, 10. degree, 11. temperatures, 12. glowed, 13. random, 14. atmosphere, 15. lantern, 16. molecule

17. She was mesmerized by the _____ colors.

n. an arch of colors in the sky caused by the refraction and dispersion of sunlight through rain

18. He used a backup _____ to find his way through the dark cave.

n. a portable electric light with a handle and a switch that can be turned on and off

19. 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

20. During the unloading, the container box _____ a clicking sound.

v. to give off or send out something such as light, heat, sound, gas, etc.

21. The numbers on the sign _____ to points on the map.

v. to match or be similar to something else almost exactly; to exchange messages

22. The focus of these initiatives is to make the financial system more _____.

adj. easy to perceive, detect, or understand; (of a material or article) permitting light to pass through freely

23. 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

24. Later, his claim was found to be _____ false.

adv. completely

ANSWERS: 17. rainbow's, 18. flashlight, 19. carbon, 20. emits, 21. correspond, 22. transparent, 23. involves, 24. entirely

25. We need to _____ the aspect of his personality from the part of his competence when making an investment decision.
- v.* to force, take, or pull apart; mark as different
26. This device displayed the speech _____ spectrographically.
- n.* an ordered array of colors into which a light beam can be split
27. It is a _____ in many families to have a big Thanksgiving dinner with all their relatives.
- n.* a belief, custom, or way of doing something that has been passed down from generation to generation within a group or society
28. Shall we _____ a bite to eat?
- v.* to take hold of something or someone suddenly with a hand, especially in a violent way
29. The oscillator hunts for the correct _____.
- n.* an ordered array of colors into which a light beam can be split
30. It was _____ of him to assume he would be hired for the job without submitting a resume.
- adj.* excessively bold or forward; taking liberties beyond what is appropriate or socially acceptable
31. I advised him to _____ to his new surroundings.
- v.* to make fit for or change to suit a new purpose or environment
32. She tried to _____ out the gum that she had been chewing.
- v.* to eject saliva or other liquid from the mouth

ANSWERS: 25. separate, 26. spectrum, 27. tradition, 28. grab, 29. frequency, 30. presumptuous, 31. adapt, 32. spit

33. _____ and weather have an impact on every part of our lifestyles.
n. the weather in a particular location averaged over some long period
34. The outermost electron shell of an _____ determines its chemical characteristics.
n. the smallest unit of ordinary matter that forms a chemical element, composed of a nucleus and one or more electrons bound to the nucleus
35. My home is easily _____ from the shore.
adj. capable of being seen; or open to easy view
36. This examination _____ of five problems to solve.
v. to be composed or made up of
37. Her passions are in the _____ of real-world political affairs.
n. a domain of activity, interest, or knowledge
38. Gamma _____ penetrate body tissues and cause cell damage.
n. a narrow line of light, heat, or another form of energy
39. High levels of _____ in the diet can increase the risk of developing high blood pressure.
n. a metallic element that is the most common alkali metal and is used in the production of many chemicals, including soap, glass, and paper
40. Infrared cameras detect _____ in the infrared range of the electromagnetic spectrum.
n. a unit or quantum of electromagnetic energy, typically regarded as a particle that is the basic constituent of all light and other forms of electromagnetic radiation

ANSWERS: 33. Climate, 34. atom, 35. visible, 36. consists, 37. realm, 38. rays, 39. sodium, 40. photons

41. The scientist used an optical _____ to analyze the dispersion of light in the laboratory experiment.
- n.* a three-dimensional object with a triangular base and parallel sides, which refracts (= to bend something) light that passes through it, resulting in the separation and display of the colors of the visible spectrum; a metaphorical term used to describe a situation that reveals or illuminates various aspects or perspectives of a particular phenomenon or topic
42. The _____ bodies in the night sky were beautiful to behold.
- adj.* relating to the sky or the heavens; of or like the sky or the heavens
43. I heated my leftover food in the _____ oven, which tasted just as good as freshly cooked.
- n.* a form of electromagnetic radiation with wavelengths ranging from about one millimeter to one meter and frequencies between 300 MHz (0.3 GHz) and 300 GHz; an electric oven that cooks food by exposing it to high-frequency electromagnetic radiation, which causes the food molecules to vibrate and heat up quickly
44. 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
45. They watched the train _____ into the distance.
- v.* to cease to exist or be visible
46. Many people are working together to close the gender ____.
- n.* a conspicuous disparity or difference separates something such as a figure, people, their opinions, situation, etc.

ANSWERS: 41. prism, 42. celestial, 43. microwave, 44. mechanics, 45. disappear, 46. gap

47. The electric _____ keeps me warm on cold nights.

n. a large piece of soft material used to cover or wrap a person or thing to keep them warm; (adjective) broad in scope or content

48. Radiation from _____ has a different wavelength.

n. the light emitted by the sun; the rays of the sun

49. _____ radiation can cause skin damage if one is exposed for too long.

adj. relating to or occupying the part of the spectrum beyond the violet end, especially radiation

50. 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

51. Human behavior has _____ characteristics.

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

52. 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

53. Gandhi had an _____ zeal for nonviolence.

adj. perfect or complete or to the most considerable degree possible

54. The _____ imaging camera was used to detect heat signatures in the dark.

adj. relating to heat or temperature; designed for or capable of producing or maintaining heat

ANSWERS: 47. blanket, 48. sunlight, 49. Ultraviolet, 50. planet, 51. fundamental, 52. infrared, 53. absolute, 54. thermal

55. The blood's red coloring comes from iron _____.
- n.* a chemical compound that contains at least one oxygen atom and one other element
56. 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
57. 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
58. White color is made up of many different _____ of light.
- n.* the distance between two points in the same phase in consecutive cycles of a wave
59. The _____ effect is a phenomenon that happens naturally.
- n.* a building with walls and roof made chiefly of transparent material, such as glass, for growing plants in
60. To advance this discussion, we must _____ "success" rigorously.
- v.* to state or explain precisely the nature, scope, or meaning of something
61. The doctor ordered an _____ to see if there was any damage to the bones.
- n.* a type of electromagnetic radiation that has a wavelength shorter than visible light allowing hidden objects such as bones and organs inside the body to be photographed
62. _____ rays are a type of high-energy radiation that can be harmful to living organisms.
- n.* the third letter of the Greek alphabet; a type of radiation having the shortest wavelength and highest energy of electromagnetic waves

ANSWERS: 55. oxide, 56. oxygen, 57. radiation, 58. wavelengths, 59. greenhouse, 60. define, 61. X-ray, 62. Gamma

63. The western sky was _____ pink.

adj. highly enthusiastic; greatly praised

64. We had our bedroom _____ before winter came.

v. to protect something by interposing material that prevents heat, noise, electricity, etc.

65. The sponge _____ water well.

v. to take in a fluid or other substance gradually

66. She is a _____ of strength for our team in trouble.

n. a structure that is exceptionally high in proportion to its width and either forms part of a building or stands alone

67. His hypothesis concerns the role of an _____ field in human health.

adj. of or relating to the magnetism produced by electric charge in motion

68. The birds _____ open water areas with reeds around them.

v. to like, choose, or want one thing or person better than another

69. The light _____ has burned out.

n. a rounded underground storage organ of some plants from which the plant grows; the rounded part of a cylindrical structure; electric lamp consisting of a glass ball

70. The phenomenon is _____ at optical wavelengths.

adj. impossible or nearly impossible to see

ANSWERS: 63. glowing, 64. insulated, 65. absorbs, 66. tower, 67. electromagnetic, 68. prefer, 69. bulb, 70. invisible