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Vocabulary Builder Reference from...

Rene Laufer: How far would you have to go to escape gravity? | TED Talk

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

All Words

IMPORTANT

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Session 1: Word List

spinning

n. the act of rotating rapidly around an axis; in the context of textiles, the process of twisting fibers together to form thread or yarn

synonym : whirling, rotating, spinning wheel

(1) **spinning** machine, (2) **spinning** wheel

She took a **spinning** class at the gym to improve her cardiovascular fitness.

neutron

n. a subatomic particle with no electric charge that is present in all atomic nuclei except those of ordinary hydrogen

(1) **neutron** acceleration, (2) the antiparticle of a **neutron**

A **neutron** star is incredibly dense and has a strong gravitational pull.

widow

n. a woman whose spouse has died and who has not remarried

synonym : bereaved

(1) **widow** pension, (2) a war **widow**

She became a **widow** after her husband passed away.

pulsar

n. a highly magnetized, rotating neutron star that emits beams of electromagnetic radiation, which can be

observed as regular pulses of light

synonym : neutron star, pulsating star, radio star

(1) **pulsar** magnetosphere, (2) gamma-ray **pulsar**

The astronomers detected a **pulsar** in the center of the galaxy.

blast

n. explosion, or a strong current of air, usually caused by an explosion; a sudden, thunderous noise

synonym : blow, burst, explosion

(1) a **blast** of wind, (2) an icy **blast**

The **blast** shattered the laboratory equipment.

companion

n. a person or an animal with whom you spend a lot of time, or you travel

synonym : affiliate, fellow, mate

(1) a working **companion**, (2) drinking **companions**

Her dog is her excellent **companion**.

dwarf

n. a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star

synonym : midget, lilliputian, pygmy

(1) a potted **dwarf** tree, (2) a wise old **dwarf**

The **dwarf** planet Pluto is much smaller than earth and orbits the sun.

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.

orbit

n. the path of an object around a celestial body, especially a planet, star, or moon, under the influence of gravity.

synonym :

path, course, trajectory

(1) the **orbit** of the moon, (2) a planetary **orbit**

The rocket engine is used to put the satellite into **orbit**.

standing

adj. existing or remaining upright; having a vertical position;
(noun) social, financial, or professional status or reputation

synonym : upright, vertical, (noun) position

(1) **standing** water, (2) his social **standing**

The **standing** concert was packed with fans.

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.

observer

n. a person who watches or notices someone or something but has no active part in it

synonym : spectator, onlooker, watcher

(1) a shrewd **observer**, (2) an **observer** in the region

According to the theory of relativity, time is different for each **observer**.

violent

adj. involving or caused by physical force or aggression against someone or something

synonym : aggressive, intense, turbulent

(1) victim of a **violent** crime, (2) **violent** incident

The protesters became **violent** when the police tried to disperse them.

ballet

n. a type of performance dance that tells a dramatic story or expresses an idea with music but no talking or singing

(1) a **ballet** enthusiast, (2) **ballet** lessons

She is a leading female classical **ballet** dancer

trillion

n. the number 1,000,000,000,000; a million million
(1) **trillion** cubic feet, (2) many **trillions** of dollars
One light year is nearly 6 **trillion** miles.

gravity

n. the force that attracts a body towards the center of the earth or towards any other physical body having mass; a manner that is solemn
synonym : heaviness, attraction, weight
(1) the attraction of **gravity**, (2) preserve my **gravity**
The astronaut felt weightless in space due to the absence of **gravity**.

attractive

adj. immensely appealing in look or sound; having characteristics or qualities that make something appealing and valuable
synonym : beautiful, fetching, alluring
(1) **attractive** men, (2) **attractive** opportunity
The growth of the "sharing economy" is **attractive** for tech companies.

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.

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.

attract

v. to draw or entice someone or something towards them through the qualities they have, especially positive ones

synonym : lure, entice, draw in

(1) **attract** attention, (2) **attract** customers

The government is eager to **attract** international investment.

smartphone

n. a mobile phone that functions as a computer and connects to the Internet

(1) **smartphone** app developer, (2) **smartphone** addict

Internet traffic volumes have increased significantly with the advent of **smartphones**.

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.

constantly

adv. all the time

synonym : continuously, always, frequently

(1) a **constantly** innovative enterprise, (2) a **constantly** varying mind

The mobile application industry is **constantly** changing.

distance

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

synonym : space, gap, span

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

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

equation

n. the act of regarding as equal; (mathematics) a statement that expresses the equality of two expressions by connecting them with the equals sign

(1) the **equation** of poverty with ignorance, (2) a chemical

equation

In this class, you will learn how to solve quadratic **equations**.

gravitational

adj. relating to or caused by gravity (= the force that attracts objects towards one another)

synonym : weighty, heavy, earthbound

(1) **gravitational** energy, (2) **gravitational** waves

The **gravitational** force of the black hole was so strong that nothing, not even light, could escape.

Newtonian

adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation

synonym : classical, physics, mechanics

(1) **Newtonian** physics, (2) **Newtonian** mechanics

The motion of planets can be described using **Newtonian** mechanics.

evolve

v. to develop gradually, or to cause the development of something or someone gradually

synonym : develop, mature, grow

(1) **evolve**, (2) **evolve** over the past decade

Eyeless fish **evolved** in dark caves.

universal

adj. existing or affecting everywhere or everyone

synonym : common, broad, worldwide

(1) **universal** life, (2) principles of **universal** design

The picture earned near- **universal** acclaim from critics.

gravitation

n. the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass

synonym : attraction, pull, gravity

(1) terrestrial **gravitation**, (2) universal **gravitation**

The force of **gravitation** keeps the planets in our solar system in orbit around the sun.

approximate

adj. nearly accurate or correct, but not completely so
synonym: rough, close, near

(1) linear **approximate** equation, (2) **approximate** time
The **approximate** cost of the project was estimated to be around \$500,000.

multiply

v. to add a number to itself a specified number of times; to increase or cause to increase very much in number or quantity

synonym: boost, amplify, reproduce

(1) **multiply** 5 and 6, (2) **multiply** about hundredfold
Multiply a number by itself twice.

constant

adj. happening repeatedly or all the time
synonym: ceaseless, stable, unchanging

(1) a **constant** wind, (2) a **constant** temperature
Constant dropping wears away the stone.

divide

v. to separate or cause to separate into parts or groups
synonym: separate, disconnect, split

(1) **divide** the cake into two pieces, (2) **divide** money equally
Can you **divide** 123321 by eleven?

fraction

n. a small part or item forming a piece of a whole; the quotient of two rational numbers

synonym: piece, part, fragment

(1) a **fractional** share of the vote, (2) a numerator in a **fraction**

He spent only a **fraction** of his earnings.

mount

v. to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone

synonym: climb, increase, get on

(1) **mount** a hill, (2) **mount** a counterattack

They **mounted** pictures on the paper in preparation for the birthday card.

minuscule

adj. extremely small; tiny

synonym : tiny, insignificant, microscopic

(1) **minuscule** amount, (2) **minuscule** letters

This ore emits **minuscule** quantities of radiation

dent

v. to make a depression or indentation in the surface of something; (noun) a depression scratched or carved into a surface

synonym : indent, depress, mark

(1) **dent** removal, (2) **dent** his pride

He acci **dentally** dented his car when he bumped into a tree.

influence

n. the ability to affect someone's or something's character, growth, or behavior, or the effect itself

synonym : power, leverage, effect

(1) **influence** a child's future, (2) **influence** the daily life

The former emperor had a particular **influence** even after he abdicated.

variation

n. the act or state of changing; a difference or change in the way something is done, made or said

synonym : fluctuation, change, variation

(1) **variation** of temperature, (2) gene **variation**

There is a lot of **variation** in the colors of flowers in the garden.

curvature

n. the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve

synonym : bend, arch, bow

(1) the degree of **curvature**, (2) spinal **curvature**

The **curvature** of the earth can be seen from space.

spacetime

n. a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity

(1) **spacetime** continuum, (2) quantum **spacetime**

The curvature of **spacetime** is affected by the presence of mass and energy.

dimension

n. a measurable extent of a particular kind, such as width, height, or length

synonym : extent, measurement, size

(1) new **dimension**, (2) the crosswise **dimension**

Overall **dimensions** are approximately 400x200mm.

intensify

v. to increase or make something increase in extent or strength

synonym : amplify, boost, strengthen

(1) **intensify** diplomatic efforts, (2) **intensify** a good relationship

Rebels have pledged to **intensify** the armed struggle against the dictatorship.

stationary

adj. not moving or not capable of being changed

synonym : fixed, immobile, changeless

(1) remain **stationary**, (2) **stationary** bike

Stationary vehicles in traffic jams produce a tremendous amount of pollution.

giant

adj. enormous; much bigger or more important than similar items usually are

synonym : big, gigantic, huge

(1) **giant** trees, (2) **giant** tech company

The **giant** jets gradually dominate the world's airlines.

column

n. one of the vertical blocks that split content on a page or screen from top to bottom; an upright pillar that often supports an arch, entablature, or other structure or

stands alone as a monument

synonym : line, pillar, cue

(1) the spinal **column**, (2) a **column** of water

The newspaper devoted several **columns** to the affair.

weightless

adj. having no weight or feeling as if one has no weight, often related to zero gravity or outer space

synonym : floatable, buoyant, light

(1) **weightless** flight, (2) **weightless** environment

The astronaut felt **weightless** as she floated inside the International Space Station.

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.

tether

v. to tie or secure an animal, person, or object with a rope, chain, or other similar devices to prevent it from moving too far away; (noun) a rope or chain used to tie up or restrain an animal, such as a horse or dog

synonym : tie, fasten, secure

(1) **tether** a horse, (2) **tether** strap

The hiker **tethered** their dog to a tree while they camped for the night.

faint

adj. not strong, clear, or vigorous; slight or weak

synonym : slight, vague, soft

(1) **faint** memory, (2) **faint** aroma of roses

She heard a **faint**, nearly invisible scream.

tug

v. to pull something quickly and hard, often several times

synonym : draw, jerk, pull

(1) **tug** a rope, (2) **tug** at his hand

This movie **tugs** at everyone's heartstrings.

distant

adj. far away in space, time, or where you are; far apart in relevance, relationship, or kinship

synonym : far, isolated, remote

(1) a **distant** memory, (2) **distant** ancestors

The sun set over the crest of **distant** hills.

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.

exert

v. to put forth effort; to put into action; to bring into play

synonym : exert, apply, use

(1) **exert** control, (2) **exert** influence

He **exerted** himself to lift the heavyweight.

mutual

adj. common to or shared by two or more parties

synonym : shared, common, joint

(1) share of a **mutual** fund, (2) **mutual** efforts

They cooperated for their **mutual** benefit.

galaxy

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

synonym : star cluster, nebula, star system

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

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

massive

adj. enormous amount; very heavy and solid

synonym : enormous, giant, immense

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

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

loophole

n. a gap or weakness in a legal or bureaucratic system that allows for the exploitation of unintended benefits or avoids penalties

synonym : loophole, escape clause, technicality

(1) legal **loophole**, (2) finding a **loophole**

A **loophole** in the tax code allows some people to avoid paying taxes legally.

tunnel

n. an underground or underwater passage, typically for trains or cars

synonym : passageway, underground passage

(1) **tunnel** construction work, (2) **tunnel** disease

The workers had to dig through solid rock to create the vehicular **tunnel** allowing the cars to pass through the mountain.

assume

v. to think or accept something to be true without having proof of it; to take or begin to have power; to begin to exhibit a specific quality or appearance

synonym : guess, presume, suppose

(1) **assume** a lousy attitude to his boss, (2) **assume** an important role

The following example **assumes** that the capacity of each battery is the same.

crush

v. to press it firmly, usually with your hands or a tool, so that it becomes flat or smaller

synonym : destroy, demolish, pulverize

(1) **crush** coffee beans, (2) **crush** a revolt

The car was completely **crushed** in the accident.

hollow

adj. having a hole, empty space inside, or indentation on the surface

synonym : cavity, depression, concavity

(1) have **hollow** legs, (2) **hollow** sound

The tree had a **hollow** trunk, which made it easy for animals to take shelter inside.

spherical

adj. having the shape of a sphere; round, spherical, or ball-shaped in appearance

synonym : round, orbicular, spherical

(1) **spherical** shape, (2) **spherical** object

The Earth is a nearly **spherical** planet.

identical

adj. being the exact same one

synonym : duplicate, exact, analogous

(1) pair of **identical** twins, (2) an **identical** equation

Infant formulas are nutritionally almost **identical** to a mother's breast milk.

suspend

v. to stop something from continuing or being in force or effect, either temporarily or permanently; to hang something freely

synonym : stop, postpone, adjourn

(1) **suspend** a decision, (2) **suspend** fruits from the ceiling

The University **suspended** the most recalcitrant demonstrators.

encounter

v. to face something, particularly something unpleasant or difficult, while attempting to do something else; to meet, especially unexpectedly

synonym : meet, run into, come across

(1) **encounter** a crisis, (2) **encounter** a storm

I'm prepared to **encounter** challenges throughout this adventure.

experiment

n. the scientific test conducted to observe what happens and gain new knowledge

synonym : experimentation, investigation

(1) **experiment** design, (2) series of **experiments**

His **experiments** showed highly positive results.

straight

adj. extending or moving in one direction without bending or curving; having no deviations

synonym : linear, honest, consecutive

(1) a **straight** line, (2) **straight** for two months
He was sick for five **straight** days.

Session 2: Spelling

1. a di____t memory
adj. far away in space, time, or where you are; far apart in relevance, relationship, or kinship
2. sp____ng wheel
n. the act of rotating rapidly around an axis; in the context of textiles, the process of twisting fibers together to form thread or yarn
3. mu____l efforts
adj. common to or shared by two or more parties
4. wi__w pension
n. a woman whose spouse has died and who has not remarried
5. have ho____w legs
adj. having a hole, empty space inside, or indentation on the surface
6. tu____l disease
n. an underground or underwater passage, typically for trains or cars
7. te____r strap
v. to tie or secure an animal, person, or object with a rope, chain, or other similar devices to prevent it from moving too far away; (noun) a rope or chain used to tie up or restrain an animal, such as a horse or dog
8. at____t customers
v. to draw or entice someone or something towards them through the qualities they have, especially positive ones
9. wei____ss flight
adj. having no weight or feeling as if one has no weight, often related to zero gravity or outer space

ANSWERS: 1. distant, 2. spinning, 3. mutual, 4. widow, 5. hollow, 6. tunnel, 7. tether, 8. attract, 9. weightless

10. 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
11. va_____on of temperature *n.* the act or state of changing; a difference or change in the way something is done, made or said
12. spinal cu_____re *n.* the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve
13. the crosswise di_____on *n.* a measurable extent of a particular kind, such as width, height, or length
14. the degree of cu_____re *n.* the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve
15. mi_____le letters *adj.* extremely small; tiny
16. victim of a vi_____t crime *adj.* involving or caused by physical force or aggression against someone or something
17. d__t his pride *v.* to make a depression or indentation in the surface of something; (noun) a depression scratched or carved into a surface
18. 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

ANSWERS: 10. universe, 11. variation, 12. curvature, 13. dimension, 14. curvature, 15. minuscule, 16. violent, 17. dent, 18. mass

19. gi__t trees *adj.* enormous; much bigger or more important than similar items usually are
20. mo__t a counterattack *v.* to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone
21. ma____e amounts *adj.* enormous amount; very heavy and solid
22. a potted dw__f tree *n.* a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star
23. wei_____ss environment *adj.* having no weight or feeling as if one has no weight, often related to zero gravity or outer space
24. d__t removal *v.* to make a depression or indentation in the surface of something; (noun) a depression scratched or carved into a surface
25. 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
26. an icy bl__t *n.* explosion, or a strong current of air, usually caused by an explosion; a sudden, thunderous noise
27. Ne_____an physics *adj.* relating to Sir Isaac Newton or his laws of motion and universal gravitation
28. series of exp_____nts *n.* the scientific test conducted to observe what happens and gain new knowledge

ANSWERS: 19. giant, 20. mount, 21. massive, 22. dwarf, 23. weightless, 24. dent, 25. radiation, 26. blast, 27. Newtonian, 28. experiment

29. cr__h coffee beans
v. to press it firmly, usually with your hands or a tool, so that it becomes flat or smaller
30. elliptic ga___y
n. an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
31. su____d a decision
v. to stop something from continuing or being in force or effect, either temporarily or permanently; to hang something freely
32. ne____n acceleration
n. a subatomic particle with no electric charge that is present in all atomic nuclei except those of ordinary hydrogen
33. ev___e
v. to develop gradually, or to cause the development of something or someone gradually
34. ma____e stars
adj. enormous amount; very heavy and solid
35. tr____on cubic feet
n. the number 1,000,000,000,000; a million million
36. a con_____ly varying mind
adv. all the time
37. finding a lo____le
n. a gap or weakness in a legal or bureaucratic system that allows for the exploitation of unintended benefits or avoids penalties
38. te___r a horse
v. to tie or secure an animal, person, or object with a rope, chain, or other similar devices to prevent it from moving too far away; (noun) a rope or chain used to tie up or restrain an animal, such as a horse or dog

ANSWERS: 29. crush, 30. galaxy, 31. suspend, 32. neutron, 33. evolve, 34. massive, 35. trillion, 36. constantly, 37. loophole, 38. tether

39. universal gra_____on *n.* the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass
40. mo__t a hill *v.* to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone
41. remain sta_____ry *adj.* not moving or not capable of being changed
42. at_____t attention *v.* to draw or entice someone or something towards them through the qualities they have, especially positive ones
43. new di_____on *n.* a measurable extent of a particular kind, such as width, height, or length
44. ce_____al bliss *adj.* relating to the sky or the heavens; of or like the sky or the heavens
45. fa__t memory *adj.* not strong, clear, or vigorous; slight or weak
46. pair of id_____al twins *adj.* being the exact same one
47. a ba__t enthusiast *n.* a type of performance dance that tells a dramatic story or expresses an idea with music but no talking or singing
48. sma_____ne app developer *n.* a mobile phone that functions as a computer and connects to the Internet
49. a planetary or__t *n.* the path of an object around a celestial body, especially a planet, star, or moon, under the influence of gravity.

ANSWERS: 39. gravitation, 40. mount, 41. stationary, 42. attract, 43. dimension, 44. celestial, 45. faint, 46. identical, 47. ballet, 48. smartphone, 49. orbit

50. 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
51. ho___w sound *adj.* having a hole, empty space inside, or indentation on the surface
52. 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
53. sta_____ry bike *adj.* not moving or not capable of being changed
54. tu___l construction work *n.* an underground or underwater passage, typically for trains or cars
55. a co_____nt temperature *adj.* happening repeatedly or all the time
56. di___e money equally *v.* to separate or cause to separate into parts or groups
57. an ob_____er in the region *n.* a person who watches or notices someone or something but has no active part in it
58. a bl__t of wind *n.* explosion, or a strong current of air, usually caused by an explosion; a sudden, thunderous noise
59. in_____ce the daily life *n.* the ability to affect someone's or something's character, growth, or behavior, or the effect itself
60. Ne_____an mechanics *adj.* relating to Sir Isaac Newton or his laws of motion and universal gravitation

ANSWERS: 50. radiation, 51. hollow, 52. planet, 53. stationary, 54. tunnel, 55. constant, 56. divide, 57. observer, 58. blast, 59. influence, 60. Newtonian

61. the attraction of gr____y *n.* the force that attracts a body towards the center of the earth or towards any other physical body having mass; a manner that is solemn
62. in_____ce a child's future *n.* the ability to affect someone's or something's character, growth, or behavior, or the effect itself
63. a co____n of water *n.* one of the vertical blocks that split content on a page or screen from top to bottom; an upright pillar that often supports an arch, entablature, or other structure or stands alone as a monument
64. as____e an important role *v.* to think or accept something to be true without having proof of it; to take or begin to have power; to begin to exhibit a specific quality or appearance
65. principles of un_____al design *adj.* existing or affecting everywhere or everyone
66. att_____ve opportunity *adj.* immensely appealing in look or sound; having characteristics or qualities that make something appealing and valuable
67. cr__h a revolt *v.* to press it firmly, usually with your hands or a tool, so that it becomes flat or smaller
68. di_____t ancestors *adj.* far away in space, time, or where you are; far apart in relevance, relationship, or kinship
69. terrestrial gra_____on *n.* the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass

ANSWERS: 61. gravity, 62. influence, 63. column, 64. assume, 65. universal, 66. attractive, 67. crush, 68. distant, 69. gravitation

70. in_____fy diplomatic efforts *v.* to increase or make something increase in extent or strength
71. sp_____al shape *adj.* having the shape of a sphere; round, spherical, or ball-shaped in appearance
72. his social st_____ng *adj.* existing or remaining upright; having a vertical position; (noun) social, financial, or professional status or reputation
73. exp_____nt design *n.* the scientific test conducted to observe what happens and gain new knowledge
74. a war wi__w *n.* a woman whose spouse has died and who has not remarried
75. share of a mu___l fund *adj.* common to or shared by two or more parties
76. gra_____nal waves *adj.* relating to or caused by gravity (= the force that attracts objects towards one another)
77. 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
78. ex__t influence *v.* to put forth effort; to put into action; to bring into play
79. vi_____t incident *adj.* involving or caused by physical force or aggression against someone or something
80. 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: 70. intensify, 71. spherical, 72. standing, 73. experiment, 74. widow, 75. mutual, 76. gravitational, 77. planet, 78. exert, 79. violent, 80. atom

81. mu_____ly about hundredfold *v.* to add a number to itself a specified number of times; to increase or cause to increase very much in number or quantity
82. the antiparticle of a ne_____n *n.* a subatomic particle with no electric charge that is present in all atomic nuclei except those of ordinary hydrogen
83. preserve my gr_____y *n.* the force that attracts a body towards the center of the earth or towards any other physical body having mass; a manner that is solemn
84. app_____te time *adj.* nearly accurate or correct, but not completely so
85. sp_____me continuum *n.* a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity
86. t_g at his hand *v.* to pull something quickly and hard, often several times
87. a chemical eq_____on *n.* the act of regarding as equal; (mathematics) a statement that expresses the equality of two expressions by connecting them with the equals sign
88. a wise old dw___f *n.* a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star

ANSWERS: 81. multiply, 82. neutron, 83. gravity, 84. approximate, 85. spacetime, 86. tug, 87. equation, 88. dwarf

89. ev___e over the past decade
v. to develop gradually, or to cause the development of something or someone gradually
90. mi_____le amount
adj. extremely small; tiny
91. a numerator in a fr_____on
n. a small part or item forming a piece of a whole; the quotient of two rational numbers
92. the spinal co___n
n. one of the vertical blocks that split content on a page or screen from top to bottom; an upright pillar that often supports an arch, entablature, or other structure or stands alone as a monument
93. drinking co_____ons
n. a person or an animal with whom you spend a lot of time, or you travel
94. social di_____ce
n. the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance
95. fo_____te situation
adj. having good luck or lucky
96. in_____fy a good relationship
v. to increase or make something increase in extent or strength
97. a fr_____onal share of the vote
n. a small part or item forming a piece of a whole; the quotient of two rational numbers
98. su_____d fruits from the ceiling
v. to stop something from continuing or being in force or effect, either temporarily or permanently; to hang something freely

ANSWERS: 89. evolve, 90. minuscule, 91. fraction, 92. column, 93. companion, 94. distance, 95. fortunate, 96. intensify, 97. fraction, 98. suspend

99. a ga___y of famous actors *n.* an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
100. 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
101. ba___t lessons *n.* a type of performance dance that tells a dramatic story or expresses an idea with music but no talking or singing
102. as___e a lousy attitude to his boss *v.* to think or accept something to be true without having proof of it; to take or begin to have power; to begin to exhibit a specific quality or appearance
103. t_g a rope *v.* to pull something quickly and hard, often several times
104. a st_____ht line *adj.* extending or moving in one direction without bending or curving; having no deviations
105. sp_____al object *adj.* having the shape of a sphere; round, spherical, or ball-shaped in appearance
106. a working co_____on *n.* a person or an animal with whom you spend a lot of time, or you travel
107. legal lo_____le *n.* a gap or weakness in a legal or bureaucratic system that allows for the exploitation of unintended benefits or avoids penalties
108. a con_____ly innovative enterprise *adv.* all the time
109. ce_____al navigation *adj.* relating to the sky or the heavens; of or like the sky or the heavens

ANSWERS: 99. galaxy, 100. universe, 101. ballet, 102. assume, 103. tug, 104. straight, 105. spherical, 106. companion, 107. loophole, 108. constantly, 109. celestial

110. gene va_____on *n.* the act or state of changing; a difference or change in the way something is done, made or said
111. un_____al life *adj.* existing or affecting everywhere or everyone
112. the eq_____on of poverty with ignorance *n.* the act of regarding as equal; (mathematics) a statement that expresses the equality of two expressions by connecting them with the equals sign
113. driving di_____ce *n.* the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance
114. the or__t of the moon *n.* the path of an object around a celestial body, especially a planet, star, or moon, under the influence of gravity.
115. ex__t control *v.* to put forth effort; to put into action; to bring into play
116. fa__t aroma of roses *adj.* not strong, clear, or vigorous; slight or weak
117. sma_____ne addict *n.* a mobile phone that functions as a computer and connects to the Internet
118. linear app_____te equation *adj.* nearly accurate or correct, but not completely so
119. en_____er a storm *v.* to face something, particularly something unpleasant or difficult, while attempting to do something else; to meet, especially unexpectedly

ANSWERS: 110. variation, 111. universal, 112. equation, 113. distance, 114. orbit, 115. exert, 116. faint, 117. smartphone, 118. approximate, 119. encounter

120. en_____er a crisis *v.* to face something, particularly something unpleasant or difficult, while attempting to do something else; to meet, especially unexpectedly
121. pu____r magnetosphere *n.* a highly magnetized, rotating neutron star that emits beams of electromagnetic radiation, which can be observed as regular pulses of light
122. a shrewd ob_____er *n.* a person who watches or notices someone or something but has no active part in it
123. di____e the cake into two pieces *v.* to separate or cause to separate into parts or groups
124. an id_____al equation *adj.* being the exact same one
125. less fo_____te person *adj.* having good luck or lucky
126. many tr_____ons of dollars *n.* the number 1,000,000,000,000; a million million
127. a co_____nt wind *adj.* happening repeatedly or all the time
128. 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
129. st_____ht for two months *adj.* extending or moving in one direction without bending or curving; having no deviations
130. gi__t tech company *adj.* enormous; much bigger or more important than similar items usually are
131. st_____ng water *adj.* existing or remaining upright; having a vertical position; (noun) social, financial, or professional status or reputation

ANSWERS: 120. encounter, 121. pulsar, 122. observer, 123. divide, 124. identical, 125. fortunate, 126. trillion, 127. constant, 128. atom, 129. straight, 130. giant, 131. standing

132. att_____ve men *adj.* immensely appealing in look or sound; having characteristics or qualities that make something appealing and valuable
133. gamma-ray pu____r *n.* a highly magnetized, rotating neutron star that emits beams of electromagnetic radiation, which can be observed as regular pulses of light
134. mu_____ly 5 and 6 *v.* to add a number to itself a specified number of times; to increase or cause to increase very much in number or quantity
135. sp_____ng machine *n.* the act of rotating rapidly around an axis; in the context of textiles, the process of twisting fibers together to form thread or yarn
136. quantum sp_____me *n.* a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity
137. gra_____nal energy *adj.* relating to or caused by gravity (= the force that attracts objects towards one another)
138. 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

ANSWERS: 132. attractive, 133. pulsar, 134. multiply, 135. spinning, 136. spacetime, 137. gravitational, 138. mass

Session 3: Fill in the Blanks

1. He spent only a _____ of his earnings.
n. a small part or item forming a piece of a whole; the quotient of two rational numbers

2. The _____ force of the black hole was so strong that nothing, not even light, could escape.
adj. relating to or caused by gravity (= the force that attracts objects towards one another)

3. Rebels have pledged to _____ the armed struggle against the dictatorship.
v. to increase or make something increase in extent or strength

4. The rocket engine is used to put the satellite into _____.
n. the path of an object around a celestial body, especially a planet, star, or moon, under the influence of gravity.

5. The _____ of the earth can be seen from space.
n. the degree to which a line or surface deviates from being straight or flat; a measure of the amount of bending of a curve

6. The astronomers detected a _____ in the center of the galaxy.
n. a highly magnetized, rotating neutron star that emits beams of electromagnetic radiation, which can be observed as regular pulses of light

7. A _____ star is incredibly dense and has a strong gravitational pull.
n. a subatomic particle with no electric charge that is present in all atomic nuclei except those of ordinary hydrogen

ANSWERS: 1. fraction, 2. gravitational, 3. intensify, 4. orbit, 5. curvature, 6. pulsar, 7. neutron

8. The sun set over the crest of _____ hills.

adj. far away in space, time, or where you are; far apart in relevance, relationship, or kinship

9. The motion of planets can be described using _____ mechanics.

adj. relating to Sir Isaac Newton or his laws of motion and universal gravitation

10. They _____ pictures on the paper in preparation for the birthday card.

v. to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone

11. She is a leading female classical _____ dancer

n. a type of performance dance that tells a dramatic story or expresses an idea with music but no talking or singing

12. Can you _____ 123321 by eleven?

v. to separate or cause to separate into parts or groups

13. He was pretty _____ to pass the exam.

adj. having good luck or lucky

14. According to the theory of relativity, time is different for each _____.

n. a person who watches or notices someone or something but has no active part in it

15. The _____ shattered the laboratory equipment.

n. explosion, or a strong current of air, usually caused by an explosion; a sudden, thunderous noise

ANSWERS: 8. distant, 9. Newtonian, 10. mounted, 11. ballet, 12. divide, 13. fortunate, 14. observer, 15. blast

16. The following example _____ that the capacity of each battery is the same.
v. to think or accept something to be true without having proof of it; to take or begin to have power; to begin to exhibit a specific quality or appearance
17. A _____ in the tax code allows some people to avoid paying taxes legally.
n. a gap or weakness in a legal or bureaucratic system that allows for the exploitation of unintended benefits or avoids penalties
18. The curvature of _____ is affected by the presence of mass and energy.
n. a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity
19. The workers had to dig through solid rock to create the vehicular _____ allowing the cars to pass through the mountain.
n. an underground or underwater passage, typically for trains or cars
20. Infant formulas are nutritionally almost _____ to a mother's breast milk.
adj. being the exact same one
21. The picture earned near-_____ acclaim from critics.
adj. existing or affecting everywhere or everyone
22. She heard a _____ nearly invisible scream.
adj. not strong, clear, or vigorous; slight or weak
23. I'm prepared to _____ challenges throughout this adventure.
v. to face something, particularly something unpleasant or difficult, while attempting to do something else; to meet, especially unexpectedly

ANSWERS: 16. assumes, 17. loophole, 18. spacetime, 19. tunnel, 20. identical, 21. universal, 22. faint, 23. encounter

24. 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
25. The _____ jets gradually dominate the world's airlines.
adj. enormous; much bigger or more important than similar items usually are
26. The force of _____ keeps the planets in our solar system in orbit around the sun.
n. the force by which a celestial body, such as the Earth, pulls objects toward its center; the attraction between two or more objects due to their mass
27. 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
28. The _____ concert was packed with fans.
adj. existing or remaining upright; having a vertical position; (noun) social, financial, or professional status or reputation
29. The marathon runner covered a long _____ in a short amount of time.
n. the amount of space between two points, measured in units such as miles, meters, or kilometers; the extent, scope, or range between two things, such as distance or emotional distance
30. One light year is nearly 6 _____ miles.
n. the number 1,000,000,000,000; a million million
31. This ore emits _____ quantities of radiation
adj. extremely small; tiny

ANSWERS: 24. atom, 25. giant, 26. gravitation, 27. planet, 28. standing, 29. distance, 30. trillion, 31. minuscule

32. 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
33. They cooperated for their _____ benefit.
- adj.* common to or shared by two or more parties
34. Overall _____ are approximately 400x200mm.
- n.* a measurable extent of a particular kind, such as width, height, or length
35. His _____ showed highly positive results.
- n.* the scientific test conducted to observe what happens and gain new knowledge
36. She became a _____ after her husband passed away.
- n.* a woman whose spouse has died and who has not remarried
37. The former emperor had a particular _____ even after he abdicated.
- n.* the ability to affect someone's or something's character, growth, or behavior, or the effect itself
38. The government is eager to _____ international investment.
- v.* to draw or entice someone or something towards them through the qualities they have, especially positive ones
39. The University _____ the most recalcitrant demonstrators.
- v.* to stop something from continuing or being in force or effect, either temporarily or permanently; to hang something freely

ANSWERS: 32. radiation, 33. mutual, 34. dimensions, 35. experiments, 36. widow, 37. influence, 38. attract, 39. suspended

40. There is a lot of _____ in the colors of flowers in the garden.

n. the act or state of changing; a difference or change in the way something is done, made or said

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

adj. enormous amount; very heavy and solid

42. The mobile application industry is _____ changing.

adv. all the time

43. The _____ cost of the project was estimated to be around \$500,000.

adj. nearly accurate or correct, but not completely so

44. The Earth is a nearly _____ planet.

adj. having the shape of a sphere; round, spherical, or ball-shaped in appearance

45. The protesters became _____ when the police tried to disperse them.

adj. involving or caused by physical force or aggression against someone or something

46. 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

47. He was sick for five _____ days.

adj. extending or moving in one direction without bending or curving; having no deviations

48. Eyeless fish _____ in dark caves.

v. to develop gradually, or to cause the development of something or someone gradually

ANSWERS: 40. variation, 41. massive, 42. constantly, 43. approximate, 44. spherical, 45. violent, 46. universe, 47. straight, 48. evolved

49. The tree had a _____ trunk, which made it easy for animals to take shelter inside.

adj. having a hole, empty space inside, or indentation on the surface

50. The growth of the "sharing economy" is _____ for tech companies.

adj. immensely appealing in look or sound; having characteristics or qualities that make something appealing and valuable

51. He acci_____dented his car when he bumped into a tree.

v. to make a depression or indentation in the surface of something; (noun) a depression scratched or carved into a surface

52. This movie _____ at everyone's heartstrings.

v. to pull something quickly and hard, often several times

53. The astronaut felt weightless in space due to the absence of _____.

n. the force that attracts a body towards the center of the earth or towards any other physical body having mass; a manner that is solemn

54. The car was completely _____ in the accident.

v. to press it firmly, usually with your hands or a tool, so that it becomes flat or smaller

55. In this class, you will learn how to solve quadratic _____.

n. the act of regarding as equal; (mathematics) a statement that expresses the equality of two expressions by connecting them with the equals sign

56. He _____ himself to lift the heavyweight.

v. to put forth effort; to put into action; to bring into play

ANSWERS: 49. hollow, 50. attractive, 51. dentally, 52. tugs, 53. gravity, 54. crushed, 55. equations, 56. exerted

57. The hiker _____ their dog to a tree while they camped for the night.
- v.* to tie or secure an animal, person, or object with a rope, chain, or other similar devices to prevent it from moving too far away; (noun) a rope or chain used to tie up or restrain an animal, such as a horse or dog
58. Internet traffic volumes have increased significantly with the advent of _____.
- n.* a mobile phone that functions as a computer and connects to the Internet
59. 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
60. _____ dropping wears away the stone.
- adj.* happening repeatedly or all the time
61. The astronaut felt _____ as she floated inside the International Space Station.
- adj.* having no weight or feeling as if one has no weight, often related to zero gravity or outer space
62. _____ vehicles in traffic jams produce a tremendous amount of pollution.
- adj.* not moving or not capable of being changed
63. She took a _____ class at the gym to improve her cardiovascular fitness.
- n.* the act of rotating rapidly around an axis; in the context of textiles, the process of twisting fibers together to form thread or yarn
64. Her dog is her excellent _____.
- n.* a person or an animal with whom you spend a lot of time, or you travel

ANSWERS: 57. tethered, 58. smartphones, 59. celestial, 60. Constant, 61. weightless, 62. Stationary, 63. spinning, 64. companion

65. The _____ planet Pluto is much smaller than earth and orbits the sun.
- n.* a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star
66. The newspaper devoted several _____ to the affair.
- n.* one of the vertical blocks that split content on a page or screen from top to bottom; an upright pillar that often supports an arch, entablature, or other structure or stands alone as a monument
67. _____ a number by itself twice.
- v.* to add a number to itself a specified number of times; to increase or cause to increase very much in number or quantity
68. 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
69. The Milky Way _____ has numerous water-bearing planets.
- n.* an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity

ANSWERS: 65. dwarf, 66. columns, 67. Multiply, 68. mass, 69. galaxy