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Ariel Anbar: A needle in countless haystacks: Finding habitable worlds | TED Talk

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

All Words

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Session 1: Word List

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.

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.

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.

orbit

n. the path of an object around a celestial body, especially a planet, star, or moon, under the influence of gravity; (of medicine) the bony cavity in the skull that houses the

eyeball and its associated structures, like muscles, nerves, and blood vessels

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**.

immense

adj. extremely large or great

synonym : enormous, giant, huge

(1) **immense** amount, (2) **immense** pressure

He left his wife an **immense** fortune.

needle

n. a thin, pointed object typically used for sewing or medical purposes; a metal or plastic instrument used for administering injections or drawing blood

synonym : thorn, spike, pin

(1) **needle** prick, (2) sewing **needle**

The acupuncturist inserted **needles** into specific points on my body to alleviate my pain.

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.

haystack

n. a large mound of hay, usually stacked in a conical or cylindrical shape, used for animal feed or bedding

synonym : pile, heap, stack

(1) **haystack** fire, (2) lost in a **haystack**

The children played hide and seek in the **haystacks** in the barnyard.

watery

adj. full of or containing water; wet

synonym : liquid, wet, damp

(1) a **watery** fluid, (2) go to a **watery** grave

The soup was too **watery** and needed more flavor.

coincidence

n. an occasion when two or more similar things happen at the same time by chance, in a surprising way

synonym: co-occurrence, concurrency, accident

(1) the **coincidence** of an opinion, (2) by a strange

coincidence

It was a pure **coincidence** that we met her in the library.

quarter

n. one of four equal parts; a fourth part or portion

synonym: fourth, one-fourth

(1) a **quarter** mile, (2) end of the first **quarter**

The unemployment rate in the first **quarter** was 2.3 percentage points higher than in the previous.

chemical

adj. relating to or connected with chemistry;

synonym: chemic, synthetic

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

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

absolutely

adv. without restriction or limitation; completely or utterly

synonym: completely, utterly, definitely

(1) **absolutely** against, (2) **absolutely** obsessed with the girl

I am **absolutely** opposed to his idea because of morality.

essential

adj. indispensable; fundamental

synonym: critical, crucial, basic

(1) **essential** amino acid, (2) **essential** commodities of life

Trial and error is an **essential** part of education.

excite

v. to make someone feel suddenly enthusiastic or eager

synonym: thrill, exhilarate, animate

(1) **excite** the crowd, (2) **excite** rebellion

The news of her promotion **excited** her.

abundant

adj. present in great quantity

synonym: ample, plentiful, generative

(1) live an **abundant** life, (2) an **abundant** supply of water
The country has **abundant** oil and natural gas resources.

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.

liquid

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

synonym : fluid

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

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

vapor

n. a mass of tiny liquid drops in the air

synonym : condensation, dew, fog

(1) alcohol **vapor**, (2) water **vapor** in the atmosphere

Clouds form when water **vapor** rises to the upper atmosphere.

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**.

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.

mar

v. to damage or spoil the appearance or surface of something

synonym :

damage, deface, disfigure

(1) **mar** a proper relationship, (2) **mar** the reputation
The scratches on the car **marred** its otherwise perfect appearance.

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**.

vacuum

n. a space empty of matter; a device or tool used for cleaning or removing debris by creating suction
synonym: void, emptiness, gap

(1) **vacuum** cleaner, (2) **vacuum** packing

Please use the **vacuum** to clean up the mess on the floor.

stable

adj. firm and steady; not easily moved, disturbed, or changed
synonym: sturdy, unmoving, durable

(1) in **stable** condition, (2) have a **stable** job

Relations between the two countries have been relatively **stable** due to the summit meeting.

spill

v. to cause or allow liquid to run or flow over the edge of its container by accident
synonym: slop, drop, scatter

(1) **spill** a bit of wine, (2) **spill** my heart

He was determined to **spill** everything.

solid

adj. hard or firm; characterized by good substantial quality
synonym: stable, reliable, hard

(1) **solid** ally, (2) **solid** employment measures

The **solid-state** of water is called ice.

survive

v. to live or exist despite a dangerous event or period
synonym: endure, persist, stay

(1) **survive** a blizzard, (2) **survive** a plane crash

These birds can only **survive** in temperate climates.

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.

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.

exceed

v. to surpass or go beyond a limit, expectation, or requirement; to be better or greater than anticipated or desired

synonym: surpass, outdo, excel

(1) **exceed** sales targets, (2) **exceed** the speed limit

The athlete's performance **exceeded** all expectations, breaking a world record.

suffice

v. to be enough or sufficient; to meet the needs or requirements of something or someone; to satisfy or fulfill a purpose

synonym: satisfy, meet, be enough

(1) **suffice** to live, (2) **suffice** as evidence

Would one cup of flour **suffice** for this recipe?

zone

n. a specific area, region, or section that is marked off or defined in some way

synonym: area, region, territory

(1) time **zone**, (2) **zone** defense

He was reluctant to leave his comfort **zone** and try something new.

belt

v. to sing loudly and forcefully; to hit someone or something hard; (noun) a strip of leather or other material worn to tie or buckle something around the body

synonym: sing, hit hard, (noun) strap

(1) **belt** him in the face, (2) leather **belt**

The band was **belting** out old songs in response to audience requests.

definitely

adv. without any question and beyond doubt; clearly

synonym: absolutely, certainly, indeed

(1) **definitely** become a problem, (2) say **definitely**

The paper is **definitely** worth reading thoroughly.

bet

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

synonym: stake, wager, gamble

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

I **bet** that you know it.

complication

n. something that makes a situation or condition that is complex or confused

synonym: confusion, complexity, difficulty

(1) **complication** of structure, (2) resolve without **complication**

He also continued to struggle with serious long-term **complications**.

necessarily

adv. in an essential manner; in such a way as could not be otherwise

synonym: inevitable, certainly, automatically

(1) not **necessarily** a problem, (2) **necessarily** true

This accident was something that happened **necessarily**.

Venus

n. the planet second in order from the sun

(1) **Venus** orbiter, (2) surface of **Venus**

They launched a rocket toward **Venus**.

alien

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

synonym: foreigner, unfamiliar, unknown

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

Alien species have drastically altered the ecosystem in this area.

astronomer

n. a physicist who studies astronomy

synonym: stargazer, cosmologist, astrophysicist

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

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

twin

n. either of two children born at the same time from the same mother

(1) a **twin-lens** camera, (2) a **twin** room

Its **twin** brothers are difficult to tell apart except for their parents.

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.

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.

melt

v. to turn from something solid into something soft or liquid as a result of heating

synonym: disintegrate, soften, disappear

(1) **melt** the ice, (2) **melt** down gold

Her resistance **melted** under his persuasion.

makeup

n. colored substances used on someone's face to improve or change their appearance

synonym: maquillage, composition, cosmetic

(1) **makeup** artist, (2) take the **makeup** off her face

Her beauty resulted from a good night's sleep rather than **makeup**.

emerge

v. to move out of or away from something and become visible

synonym: arise, occur, appear

(1) **emerge** as a butterfly, (2) **emerge** from poverty

During colonial eras, new migratory patterns **emerged**.

discovery

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

synonym : finding, uncovering, detection

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

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

microbe

n. a tiny living thing that can only be seen with a microscope and that may cause disease

synonym : germ, microorganism, bacterium

(1) pathogenic **microbe**, (2) **microbes** sterilizer

Microbes thrive on the surface of the human skin.

extreme

adj. very great in amount or degree

synonym : farthestmost, outermost, fierce

(1) **extreme** sports, (2) **extreme** weather events

Solar gravity creates **extreme** pressures and temperatures.

environment

n. the natural world such as air, water, and land in which humans, animals, and plants live

synonym : atmosphere, surroundings, climate

(1) **environment** affairs, (2) chaotic **environment**

Every human is responsible for taking care of the Earth's **environment**.

fissure

n. a narrow opening or crack, especially in a rock or other hard substance; a division or splitting within a group or organization

synonym : crack, crevice, gap

(1) pulmonary **fissure**, (2) **fissure** in the relationship

The **fissure** in the rock was too narrow to squeeze through.

beneath

adv. in or to a lower place than someone or something

synonym : down, under, low

(1) the ground **beneath** my feet, (2) **beneath** contempt

A great stretch of the lake lay **beneath** them.

acidic

adj. having a pH lower than 7; having characteristics of an acid, such as tasting sour or corroding metal

synonym : sour, tart, acrid

(1) **acidic** solution, (2) **acidic** taste

The soil in this region is too **acidic** for most crops to grow well.

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.

droplet

n. a small drop of liquid

synonym : bead, drip, dewdrop

(1) **droplet** size, (2) **droplet** formation

A single **droplet** of water can reflect the entire world upside down.

extremophile

n. a type of organism, typically a microbe, that can survive and thrive in extreme or harsh environments that would be inhospitable to most other forms of life, such as high heat, acidity, radiation, or pressure

(1) **extremophile** adaptations, (2) **extremophile** habitat

Extremophile bacteria can survive in extreme heat, cold, and radiation.

estimate

v. to guess or calculate the cost, size, value, etc. of something

synonym : calculate, gauge, evaluate

(1) **estimate** a fair value, (2) **estimate** this chicken to weigh three pounds

We **estimated** the season's total trade deficit at \$50 billion.

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.

underground

adj. under the surface of the ground; a secret group organized to achieve a specific purpose, such as overthrowing the government or occupying a force

synonym : subterranean, subsurface, confidential

(1) water flowing **underground**, (2) **underground** activist

Having **underground** parking has been very beneficial throughout the winter.

subterranean

adj. under the ground

synonym : underground, belowground, subsurface

(1) **subterranean** rooms, (2) **subterranean** motives for murder

Such **subterranean** passages span kilometers in London.

sunshine

n. the direct light and heat that comes from the sun

synonym : sunlight, daylight, rays

(1) warm **sunshine**, (2) morning **sunshine**

The **sunshine** was so bright that I had to wear sunglasses to protect my eyes.

tip

n. the top or extreme point of something slender or tapering, usually a mountain or hill; a piece of advice about something practical; a small amount of money given for services

synonym : edge, advice, gratuity

(1) the **tip** of a paintbrush, (2) give the waiter a **tip** .

I will introduce some **tips** on learning English in this class.

astrobiology

n. the study of the origin, evolution, distribution, and future of life in the universe, including the search for extraterrestrial life

(1) **astrobiology** finding, (2) valuable data for **astrobiology**

The discovery of liquid water on Mars has opened up new avenues for **astrobiology** research.

iceberg

n. a large piece of ice floating in the sea, detached from a glacier

synonym: glacier, ice mass, floe

(1) hit an **iceberg**, (2) **iceberg** melting

The ship encountered a series of **icebergs** and had to change its course.

persist

v. to continue to do and refuse to stop something despite difficulties or opposition, even if it appears unreasonable

synonym: endure, continue, carry on

(1) **persist** over time, (2) **persist** in success

Consult your doctor if the symptoms **persist**.

aquifer

n. an underground layer of rock, sand, or Earth that can take in and hold water

(1) **aquifer** soil, (2) subsurface **aquifer**

Some areas melt snow by harnessing heat from underground **aquifers**.

thrive

v. to grow vigorously; to make steady progress

synonym: bloom, flourish, prosper

(1) **thrive** in a society, (2) **thrive** on pressure

Without investment, a business cannot **thrive**.

Jovian

adj. relating to Jupiter or its characteristics

synonym: Jupiter, giant planet

(1) **Jovian** satellites, (2) **Jovian** planet

The **Jovian** moon Europa is believed to have an ocean beneath its icy surface.

crust

n. a hard outer layer that forms on the surface of a liquid as it cools or on a solid as a result of exposure to air or moisture

synonym : layer, coating, shell

(1) **crust** formation, (2) the earth's **crust**

The bread's **crust** was golden brown and crispy.

geyser

n. a natural hot spring that periodically ejects a column of boiling water and steam into the air; a device that produces a similar effect for decorative or practical purposes

synonym : hot spring, fumarole

(1) erupting **geyser**, (2) Yellowstone **geyser**

The **geyser's** hot water generates electricity for nearby towns and cities.

erupt

v. (of a volcano) to become active and eject rocks, smoke, etc.; to start abruptly and violently

synonym : eject, emit, burst

(1) **erupt** in anger, (2) **erupt** into tears

Battles between whites and blacks **erupted** immediately.

crazy

adj. stupid or not sensible; very angry

synonym : insane, absurd, bizarre

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

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

creature

n. a living being, especially an animal

synonym : being, animal, organism

(1) **creature** of habit, (2) artificial **creature**

The deep sea **creature** was unlike anything the scientists had ever seen before.

scheme

n. an organized and often large-scale plan or arrangement for doing something

synonym : strategy, blueprint, plan

(1) a pilot **scheme**, (2) draw out a **scheme**

They carefully executed the well-planned **scheme** they had prepared over the years.

Session 2: Spelling

1. abs_____ly against
adv. without restriction or limitation; completely or utterly
2. ex_____e sports
adj. very great in amount or degree
3. extreme tem_____res
n. the degree of hotness or coldness of a thing or place
4. su_____e a blizzard
v. to live or exist despite a dangerous event or period
5. mi_____es sterilizer
n. a tiny living thing that can only be seen with a microscope and that may cause disease
6. z__e defense
n. a specific area, region, or section that is marked off or defined in some way
7. th_____l insulation
adj. relating to heat or temperature; designed for or capable of producing or maintaining heat
8. va_____m packing
n. a space empty of matter; a device or tool used for cleaning or removing debris by creating suction
9. toxic ch_____als
adj. relating to or connected with chemistry;
10. 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
11. alcohol va__r
n. a mass of tiny liquid drops in the air
12. hit an ic_____g
n. a large piece of ice floating in the sea, detached from a glacier

ANSWERS: 1. absolutely, 2. extreme, 3. temperature, 4. survive, 5. microbe, 6. zone, 7. thermal, 8. vacuum, 9. chemical, 10. carbon, 11. vapor, 12. iceberg

13. def_____ly become a problem *adv.* without any question and beyond doubt; clearly
14. es_____al amino acid *adj.* indispensable; fundamental
15. ac___c solution *adj.* having a pH lower than 7; having characteristics of an acid, such as tasting sour or corroding metal
16. 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
17. m_r a proper relationship *v.* to damage or spoil the appearance or surface of something
18. abs_____ly obsessed with the girl *adv.* without restriction or limitation; completely or utterly
19. live an ab_____nt life *adj.* present in great quantity
20. many tr_____ons of dollars *n.* the number 1,000,000,000,000; a million million
21. aq_____r soil *n.* an underground layer of rock, sand, or Earth that can take in and hold water
22. in st___e condition *adj.* firm and steady; not easily moved, disturbed, or changed
23. ex___e rebellion *v.* to make someone feel suddenly enthusiastic or eager
24. sp__l a bit of wine *v.* to cause or allow liquid to run or flow over the edge of its container by accident
25. 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

ANSWERS: 13. definitely, 14. essential, 15. acidic, 16. universe, 17. mar, 18. absolutely, 19. abundant, 20. trillion, 21. aquifer, 22. stable, 23. excite, 24. spill, 25. greenhouse

26. end of the first qu____r *n.* one of four equal parts; a fourth part or portion
27. a qu____r mile *n.* one of four equal parts; a fourth part or portion
28. sub____ean rooms *adj.* under the ground
29. ex____e weather events *adj.* very great in amount or degree
30. so__d employment measures *adj.* hard or firm; characterized by good substantial quality
31. es____te a fair value *v.* to guess or calculate the cost, size, value, etc. of something
32. im____e pressure *adj.* extremely large or great
33. env____nt affairs *n.* the natural world such as air, water, and land in which humans, animals, and plants live
34. fo____te situation *adj.* having good luck or lucky
35. 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
36. lost in a ha____ck *n.* a large mound of hay, usually stacked in a conical or cylindrical shape, used for animal feed or bedding
37. nec____ly true *adv.* in an essential manner; in such a way as could not be otherwise
38. the great di____ry of the century *n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known

ANSWERS: 26. quarter, 27. quarter, 28. subterranean, 29. extreme, 30. solid, 31. estimate, 32. immense, 33. environment, 34. fortunate, 35. planet, 36. haystack, 37. necessarily, 38. discovery

39. emissions of gre_____se gases *n.* a building with walls and roof made chiefly of transparent material, such as glass, for growing plants in
40. cr__t formation *n.* a hard outer layer that forms on the surface of a liquid as it cools or on a solid as a result of exposure to air or moisture
41. valuable data for ast_____ogy *n.* the study of the origin, evolution, distribution, and future of life in the universe, including the search for extraterrestrial life
42. Ve__s orbiter *n.* the planet second in order from the sun
43. resident al__ns *n.* a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere
44. ic_____g melting *n.* a large piece of ice floating in the sea, detached from a glacier
45. pathogenic mi_____e *n.* a tiny living thing that can only be seen with a microscope and that may cause disease
46. er__t in anger *v.* (of a volcano) to become active and eject rocks, smoke, etc.; to start abruptly and violently
47. ha_____ck fire *n.* a large mound of hay, usually stacked in a conical or cylindrical shape, used for animal feed or bedding
48. a scientific di_____ry *n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known

ANSWERS: 39. greenhouse, 40. crust, 41. astrobiology, 42. Venus, 43. alien, 44. iceberg, 45. microbe, 46. erupt, 47. haystack, 48. discovery

49. m__t down gold *v.* to turn from something solid into something soft or liquid as a result of heating
50. ma___p artist *n.* colored substances used on someone's face to improve or change their appearance
51. take the ma___p off her face *n.* colored substances used on someone's face to improve or change their appearance
52. an ab_____nt supply of water *adj.* present in great quantity
53. morning su_____ne *n.* the direct light and heat that comes from the sun
54. dr_____t formation *n.* a small drop of liquid
55. und_____nd activist *adj.* under the surface of the ground; a secret group organized to achieve a specific purpose, such as overthrowing the government or occupying a force
56. chaotic env_____nt *n.* the natural world such as air, water, and land in which humans, animals, and plants live
57. a ch_____al compound *adj.* relating to or connected with chemistry;
58. cr_____re of habit *n.* a living being, especially an animal
59. th___e in a society *v.* to grow vigorously; to make steady progress
60. water flowing und_____nd *adj.* under the surface of the ground; a secret group organized to achieve a specific purpose, such as overthrowing the government or occupying a force

ANSWERS: 49. melt, 50. makeup, 51. makeup, 52. abundant, 53. sunshine, 54. droplet, 55. underground, 56. environment, 57. chemical, 58. creature, 59. thrive, 60. underground

61. a t__n-lens camera *n.* either of two children born at the same time from the same mother
62. give the waiter a t_p. *n.* the top or extreme point of something slender or tapering, usually a mountain or hill; a piece of advice about something practical; a small amount of money given for services
63. es_____al commodities of life *adj.* indispensable; fundamental
64. ex___d the speed limit *v.* to surpass or go beyond a limit, expectation, or requirement; to be better or greater than anticipated or desired
65. hazardous li___d *n.* a substance, such as water or oil that flows freely and is neither a solid nor a gas
66. 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
67. 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
68. im_____e amount *adj.* extremely large or great
69. by a strange coi_____ce *n.* an occasion when two or more similar things happen at the same time by chance, in a surprising way
70. not nec_____ly a problem *adv.* in an essential manner; in such a way as could not be otherwise

ANSWERS: 61. twin, 62. tip, 63. essential, 64. exceed, 65. liquid, 66. mass, 67. mass, 68. immense, 69. coincidence, 70. necessarily

71. the t_p of a paintbrush
n. the top or extreme point of something slender or tapering, usually a mountain or hill; a piece of advice about something practical; a small amount of money given for services
72. less fo_____te person
adj. having good luck or lucky
73. ext_____ile adaptations
n. a type of organism, typically a microbe, that can survive and thrive in extreme or harsh environments that would be inhospitable to most other forms of life, such as high heat, acidity, radiation, or pressure
74. 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
75. warm su_____ne
n. the direct light and heat that comes from the sun
76. silver ox__e
n. a chemical compound that contains at least one oxygen atom and one other element
77. elliptic ga____y
n. an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
78. ast_____ogy finding
n. the study of the origin, evolution, distribution, and future of life in the universe, including the search for extraterrestrial life
79. ext_____ile habitat
n. a type of organism, typically a microbe, that can survive and thrive in extreme or harsh environments that would be inhospitable to most other forms of life, such as high heat, acidity, radiation, or pressure

ANSWERS: 71. tip, 72. fortunate, 73. extremophile, 74. carbon, 75. sunshine, 76. oxide, 77. galaxy, 78. astrobiology, 79. extremophile

80. the ground be_____h my feet
adv. in or to a lower place than someone or something
81. so__d ally
adj. hard or firm; characterized by good substantial quality
82. a ga___y of famous actors
n. an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
83. be_____h contempt
adv. in or to a lower place than someone or something
84. Jo___n satellites
adj. relating to Jupiter or its characteristics
85. 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; (of medicine) the bony cavity in the skull that houses the eyeball and its associated structures, like muscles, nerves, and blood vessels
86. ne___e prick
n. a thin, pointed object typically used for sewing or medical purposes; a metal or plastic instrument used for administering injections or drawing blood
87. leather b__t
v. to sing loudly and forcefully; to hit someone or something hard; (noun) a strip of leather or other material worn to tie or buckle something around the body
88. pe_____t over time
v. to continue to do and refuse to stop something despite difficulties or opposition, even if it appears unreasonable

ANSWERS: 80. beneath, 81. solid, 82. galaxy, 83. beneath, 84. Jovian, 85. orbit, 86. needle, 87. belt, 88. persist

89. pe____t in success *v.* to continue to do and refuse to stop something despite difficulties or opposition, even if it appears unreasonable
90. time z__e *n.* a specific area, region, or section that is marked off or defined in some way
91. th___e on pressure *v.* to grow vigorously; to make steady progress
92. tr_____on cubic feet *n.* the number 1,000,000,000,000; a million million
93. m_r the reputation *v.* to damage or spoil the appearance or surface of something
94. small mo_____les *n.* a group of two or more atoms held together by attractive forces known as chemical bonds
95. ac___c taste *adj.* having a pH lower than 7; having characteristics of an acid, such as tasting sour or corroding metal
96. draw out a sc___e *n.* an organized and often large-scale plan or arrangement for doing something
97. cr__y about cars and racing *adj.* stupid or not sensible; very angry
98. sub_____ean motives for murder *adj.* under the ground
99. the atmospheric tem_____re *n.* the degree of hotness or coldness of a thing or place
100. a pilot sc___e *n.* an organized and often large-scale plan or arrangement for doing something
101. 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

ANSWERS: 89. persist, 90. zone, 91. thrive, 92. trillion, 93. mar, 94. molecule, 95. acidic, 96. scheme, 97. crazy, 98. subterranean, 99. temperature, 100. scheme, 101. atmosphere

102. al__n fungi *n.* a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere
103. subsurface aq____r *n.* an underground layer of rock, sand, or Earth that can take in and hold water
104. Yellowstone ge____r *n.* a natural hot spring that periodically ejects a column of boiling water and steam into the air; a device that produces a similar effect for decorative or practical purposes
105. Jo____n planet *adj.* relating to Jupiter or its characteristics
106. 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
107. sewing ne____e *n.* a thin, pointed object typically used for sewing or medical purposes; a metal or plastic instrument used for administering injections or drawing blood
108. em____e from poverty *v.* to move out of or away from something and become visible
109. 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
110. su____e a plane crash *v.* to live or exist despite a dangerous event or period

ANSWERS: 102. alien, 103. aquifer, 104. geyser, 105. Jovian, 106. gravity, 107. needle, 108. emerge, 109. distance, 110. survive

111. 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
112. su_____e as evidence *v.* to be enough or sufficient; to meet the needs or requirements of something or someone; to satisfy or fulfill a purpose
113. com_____ion of structure *n.* something that makes a situation or condition that is complex or confused
114. en_____ly satisfied with the meal *adv.* completely
115. 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
116. a wa___y fluid *adj.* full of or containing water; wet
117. say def_____ly *adv.* without any question and beyond doubt; clearly
118. have a st___e job *adj.* firm and steady; not easily moved, disturbed, or changed
119. ex___d sales targets *v.* to surpass or go beyond a limit, expectation, or requirement; to be better or greater than anticipated or desired
120. dr_____t size *n.* a small drop of liquid
121. he was en_____ly to blame *adv.* completely
122. th_____l energy *adj.* relating to heat or temperature; designed for or capable of producing or maintaining heat

ANSWERS: 111. distance, 112. suffice, 113. complication, 114. entirely, 115. atmosphere, 116. watery, 117. definitely, 118. stable, 119. exceed, 120. droplet, 121. entirely, 122. thermal

123. the coi_____ce of an opinion *n.* an occasion when two or more similar things happen at the same time by chance, in a surprising way
124. colorless li____d *n.* a substance, such as water or oil that flows freely and is neither a solid nor a gas
125. combined ox__e *n.* a chemical compound that contains at least one oxygen atom and one other element
126. b__t him in the face *v.* to sing loudly and forcefully; to hit someone or something hard; (noun) a strip of leather or other material worn to tie or buckle something around the body
127. 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
128. m__t the ice *v.* to turn from something solid into something soft or liquid as a result of heating
129. artificial cr____re *n.* a living being, especially an animal
130. 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; (of medicine) the bony cavity in the skull that houses the eyeball and its associated structures, like muscles, nerves, and blood vessels
131. er__t into tears *v.* (of a volcano) to become active and eject rocks, smoke, etc.; to start abruptly and violently

ANSWERS: 123. coincidence, 124. liquid, 125. oxide, 126. belt, 127. gravity, 128. melt, 129. creature, 130. orbit, 131. erupt

132. a cr__y scheme *adj.* stupid or not sensible; very angry
133. solar ast_____er *n.* a physicist who studies astronomy
134. ex___e the crowd *v.* to make someone feel suddenly enthusiastic or eager
135. mo_____le behavior *n.* a group of two or more atoms held together by attractive forces known as chemical bonds
136. a t__n room *n.* either of two children born at the same time from the same mother
137. su_____e to live *v.* to be enough or sufficient; to meet the needs or requirements of something or someone; to satisfy or fulfill a purpose
138. b_t on a race *v.* to risk money on the result of an event or a competition, such as a race or game, to get more money; to have faith or confidence in something
139. es_____te this chicken to weigh three pounds *v.* to guess or calculate the cost, size, value, etc. of something
140. em___e as a butterfly *v.* to move out of or away from something and become visible
141. pulmonary fi_____e *n.* a narrow opening or crack, especially in a rock or other hard substance; a division or splitting within a group or organization
142. b_t my future *v.* to risk money on the result of an event or a competition, such as a race or game, to get more money; to have faith or confidence in something

ANSWERS: 132. crazy, 133. astronomer, 134. excite, 135. molecule, 136. twin, 137. suffice, 138. bet, 139. estimate, 140. emerge, 141. fissure, 142. bet

143. va___m cleaner *n.* a space empty of matter; a device or tool used for cleaning or removing debris by creating suction
144. amateur ast_____er *n.* a physicist who studies astronomy
145. fi_____e in the relationship *n.* a narrow opening or crack, especially in a rock or other hard substance; a division or splitting within a group or organization
146. erupting ge___r *n.* a natural hot spring that periodically ejects a column of boiling water and steam into the air; a device that produces a similar effect for decorative or practical purposes
147. surface of Ve___s *n.* the planet second in order from the sun
148. resolve without com_____ion *n.* something that makes a situation or condition that is complex or confused
149. the earth's cr___t *n.* a hard outer layer that forms on the surface of a liquid as it cools or on a solid as a result of exposure to air or moisture
150. 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
151. water va___r in the atmosphere *n.* a mass of tiny liquid drops in the air
152. 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

ANSWERS: 143. vacuum, 144. astronomer, 145. fissure, 146. geyser, 147. Venus, 148. complication, 149. crust, 150. planet, 151. vapor, 152. universe

153. sp__l my heart

v. to cause or allow liquid to run or flow over the edge of its container by accident

154. go to a wa___y grave

adj. full of or containing water; wet

ANSWERS: 153. spill, 154. watery

Session 3: Fill in the Blanks

1. I will introduce some _____ on learning English in this class.
n. the top or extreme point of something slender or tapering, usually a mountain or hill; a piece of advice about something practical; a small amount of money given for services
2. The scratches on the car _____ its otherwise perfect appearance.
v. to damage or spoil the appearance or surface of something
3. Battles between whites and blacks _____ immediately.
v. (of a volcano) to become active and eject rocks, smoke, etc.; to start abruptly and violently
4. I am _____ opposed to his idea because of morality.
adv. without restriction or limitation; completely or utterly
5. Every human is responsible for taking care of the Earth's _____.
n. the natural world such as air, water, and land in which humans, animals, and plants live
6. Some areas melt snow by harnessing heat from underground _____.
n. an underground layer of rock, sand, or Earth that can take in and hold water
7. Relations between the two countries have been relatively _____ due to the summit meeting.
adj. firm and steady; not easily moved, disturbed, or changed
8. During colonial eras, new migratory patterns _____.
v. to move out of or away from something and become visible

ANSWERS: 1. tips, 2. marred, 3. erupted, 4. absolutely, 5. environment, 6. aquifers, 7. stable, 8. emerged

9. The _____ of water is called ice.

adj. hard or firm; characterized by good substantial quality

10. 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

11. The sponge takes up the _____ well.

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

12. 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; (of medicine) the bony cavity in the skull that houses the eyeball and its associated structures, like muscles, nerves, and blood vessels

13. The band was _____ out old songs in response to audience requests.

v. to sing loudly and forcefully; to hit someone or something hard; (noun) a strip of leather or other material worn to tie or buckle something around the body

14. Her research team made an important _____.

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

15. 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

16. We _____ the season's total trade deficit at \$50 billion.

v. to guess or calculate the cost, size, value, etc. of something

ANSWERS: 9. solid-state, 10. universe, 11. liquid, 12. orbit, 13. belting, 14. discovery, 15. thermal, 16. estimated

17. Please use the _____ to clean up the mess on the floor.
n. a space empty of matter; a device or tool used for cleaning or removing debris by creating suction
18. 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
19. Trial and error is an _____ part of education.
adj. indispensable; fundamental
20. The soup was too _____ and needed more flavor.
adj. full of or containing water; wet
21. The country has _____ oil and natural gas resources.
adj. present in great quantity
22. He was reluctant to leave his comfort _____ and try something new.
n. a specific area, region, or section that is marked off or defined in some way
23. Having _____ parking has been very beneficial throughout the winter.
adj. under the surface of the ground; a secret group organized to achieve a specific purpose, such as overthrowing the government or occupying a force
24. He also continued to struggle with serious long-term _____.
n. something that makes a situation or condition that is complex or confused
25. 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

ANSWERS: 17. vacuum, 18. distance, 19. essential, 20. watery, 21. abundant, 22. zone, 23. underground, 24. complications, 25. planet

26. Her resistance _____ under his persuasion.

v. to turn from something solid into something soft or liquid as a result of heating

27. The children played hide and seek in the _____ in the barnyard.

n. a large mound of hay, usually stacked in a conical or cylindrical shape, used for animal feed or bedding

28. This accident was something that happened _____.

adv. in an essential manner; in such a way as could not be otherwise

29. A single _____ of water can reflect the entire world upside down.

n. a small drop of liquid

30. The _____ in the rock was too narrow to squeeze through.

n. a narrow opening or crack, especially in a rock or other hard substance; a division or splitting within a group or organization

31. The discovery of liquid water on Mars has opened up new avenues for _____ research.

n. the study of the origin, evolution, distribution, and future of life in the universe, including the search for extraterrestrial life

32. The acupuncturist inserted _____ into specific points on my body to alleviate my pain.

n. a thin, pointed object typically used for sewing or medical purposes; a metal or plastic instrument used for administering injections or drawing blood

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

adv. completely

ANSWERS: 26. melted, 27. haystacks, 28. necessarily, 29. droplet, 30. fissure, 31. astrobiology, 32. needles, 33. entirely

34. _____ species have drastically altered the ecosystem in this area.
n. a person who comes from a different country, race, or group; a form of life assumed to exist outside the Earth or its atmosphere
35. Such _____ passages span kilometers in London.
adj. under the ground
36. _____ thrive on the surface of the human skin.
n. a tiny living thing that can only be seen with a microscope and that may cause disease
37. 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
38. The rain and thunder are _____ today.
adj. stupid or not sensible; very angry
39. The _____ was so bright that I had to wear sunglasses to protect my eyes.
n. the direct light and heat that comes from the sun
40. Clouds form when water _____ rises to the upper atmosphere.
n. a mass of tiny liquid drops in the air
41. Cities around the world set records for highest _____ this summer.
n. the degree of hotness or coldness of a thing or place
42. He left his wife an _____ fortune.
adj. extremely large or great

ANSWERS: 34. Alien, 35. subterranean, 36. Microbes, 37. greenhouse, 38. crazy, 39. sunshine, 40. vapor, 41. temperatures, 42. immense

43. 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
44. The firm has grown into a large _____ manufacturing.
adj. relating to or connected with chemistry;
45. They carefully executed the well-planned _____ they had prepared over the years.
n. an organized and often large-scale plan or arrangement for doing something
46. They launched a rocket toward _____.
n. the planet second in order from the sun
47. _____ bacteria can survive in extreme heat, cold, and radiation.
n. a type of organism, typically a microbe, that can survive and thrive in extreme or harsh environments that would be inhospitable to most other forms of life, such as high heat, acidity, radiation, or pressure
48. Without investment, a business cannot _____.
v. to grow vigorously; to make steady progress
49. Her beauty resulted from a good night's sleep rather than _____.
n. colored substances used on someone's face to improve or change their appearance
50. He was determined to _____ everything.
v. to cause or allow liquid to run or flow over the edge of its container by accident

ANSWERS: 43. carbon, 44. chemical, 45. scheme, 46. Venus, 47. Extremophile, 48. thrive, 49. makeup, 50. spill

51. 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
52. The _____ moon Europa is believed to have an ocean beneath its icy surface.
- adj.* relating to Jupiter or its characteristics
53. The blood's red coloring comes from iron _____.
- n.* a chemical compound that contains at least one oxygen atom and one other element
54. The ship encountered a series of _____ and had to change its course.
- n.* a large piece of ice floating in the sea, detached from a glacier
55. The athlete's performance _____ all expectations, breaking a world record.
- v.* to surpass or go beyond a limit, expectation, or requirement; to be better or greater than anticipated or desired
56. The paper is _____ worth reading thoroughly.
- adv.* without any question and beyond doubt; clearly
57. The unemployment rate in the first _____ was 2.3 percentage points higher than in the previous.
- n.* one of four equal parts; a fourth part or portion
58. 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

ANSWERS: 51. gravity, 52. Jovian, 53. oxide, 54. icebergs, 55. exceeded, 56. definitely, 57. quarter, 58. atmosphere

59. 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

60. It was a pure _____ that we met her in the library.

n. an occasion when two or more similar things happen at the same time by chance, in a surprising way

61. One light year is nearly 6 _____ miles.

n. the number 1,000,000,000,000; a million million

62. The news of her promotion _____ her.

v. to make someone feel suddenly enthusiastic or eager

63. He was pretty _____ to pass the exam.

adj. having good luck or lucky

64. A great stretch of the lake lay _____ them.

adv. in or to a lower place than someone or something

65. I _____ that you know it.

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

66. The _____ hot water generates electricity for nearby towns and cities.

n. a natural hot spring that periodically ejects a column of boiling water and steam into the air; a device that produces a similar effect for decorative or practical purposes

ANSWERS: 59. galaxy, 60. coincidence, 61. trillion, 62. excited, 63. fortunate, 64. beneath, 65. bet, 66. geyser's

67. The bread's _____ was golden brown and crispy.

- n.* a hard outer layer that forms on the surface of a liquid as it cools or on a solid as a result of exposure to air or moisture

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. These birds can only _____ in temperate climates.

- v.* to live or exist despite a dangerous event or period

70. Consult your doctor if the symptoms _____.

- v.* to continue to do and refuse to stop something despite difficulties or opposition, even if it appears unreasonable

71. The deep sea _____ was unlike anything the scientists had ever seen before.

- n.* a living being, especially an animal

72. Would one cup of flour _____ for this recipe?

- v.* to be enough or sufficient; to meet the needs or requirements of something or someone; to satisfy or fulfill a purpose

73. This question has fascinated solar _____ for decades.

- n.* a physicist who studies astronomy

74. 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: 67. crust, 68. mass, 69. survive, 70. persist, 71. creature, 72. suffice, 73. astronomers, 74. molecule

75. The soil in this region is too _____ for most crops to grow well.

adj. having a pH lower than 7; having characteristics of an acid, such as tasting sour or corroding metal

76. Solar gravity creates _____ pressures and temperatures.

adj. very great in amount or degree

77. Its _____ brothers are difficult to tell apart except for their parents.

n. either of two children born at the same time from the same mother

ANSWERS: 75. acidic, 76. extreme, 77. twin