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Federica Bianco: How we use astrophysics to study earthbound problems | TED Talk

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

All Words

IMPORTANT

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Session 1: Word List

astrophysics

n. the branch of physics concerned with the study of the properties and behavior of celestial objects and the physical processes that govern the behavior and evolution of the universe

(1) **astrophysics** research, (2) neutrino **astrophysics**

He was studying **astrophysics** in an attempt to understand the origins of the universe.

stellar

adj. excellent; relating to or resembling a star, especially in quality or attractiveness

synonym: starry, celestial, astral

(1) **stellar** performance, (2) a **stellar** system

She received a **stellar** review from her boss, which boosted her confidence.

explosion

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

synonym: burst, eruption, outbreak

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

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

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.

flaw

n. a fault, mistake, or weakness that causes something not to be perfect

synonym : defect, fault, imperfection

(1) a minor **flaw**, (2) the **flaw** in the legislation

Even the slightest design **flaw** in an aircraft can lead to a fatal accident.

restless

adj. unwilling or unable to stay still or relax because you are worried and uneasy

synonym : agitated, anxious, disturbed

(1) a **restless** person, (2) **restless** waves

He felt **restless** and constantly changed his postures.

incredible

adj. unbelievable; enormous

synonym : unbelievable, fantastical, inconceivable

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

Her response revealed **incredible** idiocy.

opportune

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

synonym : suitable, timely, practical

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

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

cage

n. a structure made of metal bars or wire in which birds or animals can be kept

synonym : enclosure, jail, corral

(1) an insect **cage**, (2) a bird in a **cage**

The trapped bear is running amok in its **cage**.

asset

n. something or someone that is useful or valuable quality, skill, etc.; valuable property

synonym : aid, resource, equity

(1) frozen **assets**, (2) liquid **assets** of the company

A sense of humor is an invaluable **asset** in this job.

interact

v. to communicate or react with somebody

synonym : cooperate, combine, collaborate

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

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

explode

v. to burst or break open violently and noisily; to cause something to burst or break open

synonym : detonate, blast, rupture

(1) **explode** in anger, (2) **explode** in popularity

The old building **exploded** in a fiery inferno.

lab

n. a workplace for the conduct of scientific research; a laboratory

synonym : workshop, laboratory, research chamber

(1) **lab** instrument, (2) medical **lab**

The Prime Minister will pay a courtesy visit to the Nobel laureate's **lab**.

bang

v. to hit or cause to hit something in a way that makes a loud noise

synonym : crash, hit, smash

(1) **bang** his fist on a desk, (2) **bang** a phone down

My father tried to **bang** mathematics into my head since childhood.

origin

n. the first existence or beginning of something

synonym : root, source, ancestor

(1) **origin** of information, (2) racial **origin**

There are various hypotheses concerning the **origin** of life.

evolution

n. a gradual process of transformation of living things
synonym: elaboration, expansion, transition

(1) human **evolution**, (2) **evolution** theory

They study the **evolution** of the universe.

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.

structure

n. the way of construction of something and the arrangement of its parts, or a complex thing constructed of many parts

synonym: construction, architecture, establishment

(1) the **structure** of a machine, (2) **structure** and function of the brain

The organizational **structure** of start-ups is often flat and straightforward.

complexity

n. the state or quality of being complicated or intricate and difficult to understand

synonym: intricacy, sophistication, elaboration

(1) cognitive **complexity**, (2) **complexity** theory

The project's **complexity** made it difficult for the team to complete it on time.

extract

n. a short passage taken from a book, piece of music, etc.; a substance obtained from something through a specific process; (verb) to obtain from something or to remove something by effort or force

synonym: excerpt, quote, distillation

(1) a brief **extract** from the book, (2) botanical **extract**

Anesthetize the gum before **extracting** the teeth.

urban

adj. relating to or located in a town or city

synonym: metropolitan, civic

(1) **urban** planning, (2) **urban** property owners
Only a small number of **urban** utilities offer sanitation services.

observatory

n. a building designed and equipped to observe the planets, the stars, the weather, etc.

(1) space **observatory**, (2) a meteorological **observatory**
That astronomical **observatory** stands at the top of the mountain.

astronomical

adj. relating to astronomy or the study of celestial bodies and phenomena; very large or immense in scale or magnitude

synonym: huge, vast, enormous

(1) **astronomical** observation, (2) **astronomical** numbers
The cost of the new equipment was **astronomical** and beyond the company's budget.

insight

n. the ability to gain an accurate and deep understanding of people or situations; an accurate and deep understanding of what something is like

synonym: wisdom, discernment, understanding

(1) a profound **insight**, (2) share my **insights**
We gained various **insights** by analyzing the vast amount of data owned by the company.

predict

v. to state beforehand that something will happen in the future, mainly based on knowledge or experience

synonym: forecast, anticipate, foresee

(1) **predict** the future, (2) **predict** when she will arrive
It's notoriously challenging to **predict** birth rates.

consume

v. to spend something, especially fuel, energy, or time, in a large amount

synonym: absorb, ingest, use up

(1) **consume** a large of alcohol, (2) **consume** electricity

A smaller car will **consume** less fuel.

resilient

adj. able to withstand or recover quickly from difficult conditions

synonym: robust, sturdy, tough

(1) a hard and **resilient** steel, (2) **resilient** population

She is a **resilient** person and has always bounced back from setbacks.

grid

n. a pattern of regularly spaced horizontal and vertical lines; a system of high tension cables by which electrical power is distributed throughout a region

synonym: gridiron, battery grid, power system

(1) a **grid** design, (2) a wire **grid**

Grid pattern roads often appear in urban areas.

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**.

capture

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

synonym: catch, arrest, imprison

(1) **capture** a glimpse, (2) **capture** customers' hearts

I was able to **capture** the moment on film.

plume

n. a large feather or group of feathers worn as an ornament or a symbol of achievement or distinction, especially on a hat

synonym: feather, honor, token

(1) **plume** of smoke, (2) **plume** of feathers

The bird had a beautiful **plume** on its head.

pollution

n. the introduction of harmful substances or waste into the natural environment that causes adverse change

synonym : corrosion, deterioration, corruption

(1) environmental **pollution**, (2) high levels of air **pollution**

The **pollution** is endangering the local plants and animals.

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.

monitor

v. to observe, check, and track the progress or quality of something over a period of time

synonym : proctor, check, observe

(1) **monitor** an exam, (2) **monitor** the data carefully

They used a special receiver to **monitor** police radio channels.

mathematics

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

synonym : arithmetic, calculation, calculus

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

He has a flair for **mathematics**.

neural

adj. of or relating to a nerve or the nervous system that includes the brain

synonym : sensory, neuronical, nervous

(1) **neural** stem cells, (2) **neural** networks in AI

There was a disturbance of **neural** function.

detect

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

synonym : catch, observe, notice

(1) **detect** a bad event, (2) **detect** smuggling across borders
The security camera has **detected** four intruders.

skyline

n. the outline of buildings and other structures against the sky, especially when viewed from a distance

synonym: silhouette, cityscape, horizon

(1) **skyline** view, (2) downtown **skyline**

The **skyline** of the city was dotted with tall buildings.

harmless

adj. not able or not likely to cause damage or harm

synonym: benign, innocuous, inoffensive

(1) **harmless** in most people, (2) **harmless** substances

Most people thought of him as a **harmless** eccentric.

evanescent

adj. fleeting or temporary; tending to fade or disappear quickly; of or relating to anything that has a short-lived existence or duration

synonym: fleeting, disappearing, transitory

(1) **evanescent** dream, (2) **evanescent** nature of fame

The beauty of the sunset was **evanescent** as it disappeared quickly behind the mountains.

pollute

v. to make an area or substance, such as land, air, water, etc., dirty or harmful to living things by adding waste matter or harmful chemicals

synonym: contaminate, corrupt, degrade

(1) **pollute** the air, (2) **pollute** the thread

We should do our best not to **pollute** the environment.

smokestack

n. a vertical pipe or chimney, usually of brick or metal, through which smoke or exhaust gases from a fire or engine are discharged into the air

synonym: chimney, stack, flue

(1) **smokestack** emissions, (2) industrial **smokestack**

The **smokestack** on top of the factory released thick clouds of pollution into the air.

persistent

adj. continuing firmly or obstinately in the course of action despite difficulty or opposition; lasting or enduring without fading or being lost over time

synonym : tenacious, steadfast, unrelenting

(1) **persistent** cough, (2) **persistent** data

Despite the setbacks, he remained **persistent** in his pursuit of his dreams.

policy

n. a set of rules, guidelines, principles, or procedures that govern decision-making or action, often used in the context of business or government; a course of action or plan of action adopted or followed by an organization or individual to achieve a goal or objective

synonym : strategy, plan, guideline

(1) health **policy**, (2) foreign **policy**

The company's new **policy** on remote work has made it a more inclusive workplace.

disciplinary

adj. of or relating to the punishment of people who break the rules; of or relating to a specific field of academic study

synonym : corrective, punitive, instructive

(1) **disciplinary** action, (2) take **disciplinary** measures

The school's **disciplinary** committee met to discuss the student's behavior.

transform

v. to change in outward structure or looks;

synonym : alter, convert, change

(1) **transform** an education system, (2) **transform** heat into power

My father's death **transformed** my life completely.

analyze

v. to think about in-depth and evaluate to discover essential features or meaning

synonym : explore, examine, investigate

(1) **analyze** a chemical compound, (2) **analyze** your real motives

The teacher attempted to **analyze** the root cause of our

mistake.

methodology

n. a set of ways or principles of doing, teaching, or studying something

synonym: procedure, approach, process

(1) **methodology** for optimizing, (2) research **methodology**

We are developing a new **methodology** for assessing marketing measures.

district

n. a part of a country or town, especially one with particular features

synonym: territory, dominion, zone

(1) school **districts**, (2) urban **districts**

Since 2001, the **district** has provided training programs for automotive technicians.

prosecutor

n. a lawyer or official who conducts legal proceedings against someone accused of a crime; a person who brings a criminal case to court on behalf of the state or government

synonym: district attorney, state attorney

(1) a public **prosecutor**, (2) deputy **prosecutor**

The **prosecutor's** opening statement set the tone for the entire trial.

delay

v. to cause something to happen at a later time than originally intended or expected

synonym: block, adjourn, detain

(1) **delay** a flight three hours, (2) **delay** the new project

We **delayed** the payment because of an incorrect invoice.

jurisdiction

n. the extent or range of authority, power, or control exercised by a particular entity or organization, such as a government or court; the area within which such authority or control is exercised

synonym: power, authority, control

(1) local **jurisdiction**, (2) limited **jurisdiction**

The case fell under the **jurisdiction** of the state court system.

probation

n. a period of time during which an offender is released from imprisonment on the condition that they adhere to particular rules and is supervised by an officer; a time of training and testing the character or abilities of a person who is new to a role or job

synonym : parole, supervision, conditional release

(1) **probation** period, (2) juvenile **probation** official

He was sentenced to two years of **probation** for his crime.

jail

n. a facility where criminals are kept to be punished for their crimes; a prison

synonym : prison, slammer, penitentiary

(1) county **jail**, (2) be in **jail**

The police escorted the prisoner to the **jail**.

drag

v. to pull or haul with force

synonym : haul, pull, draw

(1) **drag** a chair over, (2) **drag** a team down

He **dragged** the heavy suitcase behind him as he walked.

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.

explore

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

synonym : analyze, delve into, examine

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

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

instrument

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

synonym : apparatus, tool, device

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

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

colleague

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

synonym : coworker, associate, fellow

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

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

visual

adj. relating to seeing or sight

synonym : optical, graphical, visible

(1) **visual** navigation, (2) field of **visual** arts

The building makes a remarkable **visual** impact.

dashboard

n. a control panel set within the central console of a vehicle or small aircraft; a diagram that depicts critical information, typically one that provides a business overview

synonym : control panel

(1) auto **dashboard**, (2) business **dashboard**

He noticed that the oil warning light on the **dashboard** of his car had turned on.

prosecution

n. the act of bringing legal charges against someone for a crime they are accused of committing; the legal team responsible for presenting the case against the defendant in a criminal trial

synonym : trial, lawsuit, legal action

(1) criminal **prosecution**, (2) wrongful **prosecution**

The judge denied the motion to dismiss the **prosecution's** case.

process

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

synonym: procedure, method, system

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

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

duration

n. the length of time something lasts or continues

synonym: period, span, course

(1) the **duration** of insurance, (2) short **duration**

The military incarcerated him for the **duration** of the war.

suffer

v. to experience pain, distress, or hardship; to undergo or endure something painful or unpleasant

synonym: endure, undergo, tolerate

(1) **suffer** a setback, (2) **suffer** bad grades

The older man **suffers** from arthritis and finds it difficult to move around.

inequality

n. the unfairness of a society in which some people have more opportunity, money, etc. than others; (mathematics) relation between two values when they are different

synonym: imbalance, prejudice, unfairness

(1) **inequality** in salary, (2) algebraic **inequality**

There are several causes of economic **inequality** within societies.

bias

n. a strong feeling in favor of or against one group of people, an idea, or thing, often not based on fair judgment

synonym: inclination, partiality, predilection

(1) **bias** against a big company, (2) have a **bias** toward socialism

She researched gender **bias** in politics.

collaboration

n. the act or situation of working together to create or produce something

synonym: affiliation, alliance, coalition

(1) **collaboration** between companies, (2) **collaboration** platform

The partnership program requires a mutual **collaboration** between both agencies.

domain

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

synonym: territory, realm, sphere

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

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

improve

v. to make or become better

synonym: enhance, ameliorate, enrich

(1) **improve** a process, (2) **improve** the test score

We want to **improve** ties between our two countries.

background

n. the details of a person's social heritage, such as family, vocational or educational experience; past information that is essential to understanding a situation or problem

synonym: ground, experience, backdrop

(1) a **background** color, (2) a criminal **background**

The company's hiring criteria emphasize personality, not a person's **background**.

echo

n. a sound heard after being reflected off a surface, such as a wall or a cliff

synonym: reverberate, repeat, reflection

(1) the **echo** of a person's footsteps, (2) sound **echo**

A thunderous boom **echoed** throughout the valley.

interstellar

adj. relating to or located in the space between stars

synonym : galactic, cosmic, intergalactic

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

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

feat

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

synonym : achievement, accomplishment, exploit

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

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

adapt

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

synonym : adjust, acclimate, accustom

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

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

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.

perspective

n. a confident attitude toward something; a particular style of thinking about something

synonym : viewpoint, standpoint, outlook

(1) a **perspective** view, (2) the **perspective** of the battle

His father's death changed his whole **perspective** on life.

unexpected

adj. not anticipated or regarded as likely to happen

synonym : surprising, unanticipated, incredible

(1) an **unexpected** visitor, (2) some **unexpected** events

The **unexpected** rainstorm caused the collapse of the corral.

Session 2: Spelling

- | | |
|---------------------------------|--|
| 1. short du____on | <i>n.</i> the length of time something lasts or continues |
| 2. ex____e in anger | <i>v.</i> to burst or break open violently and noisily; to cause something to burst or break open |
| 3. medical l_b | <i>n.</i> a workplace for the conduct of scientific research; a laboratory |
| 4. b__s against a big company | <i>n.</i> a strong feeling in favor of or against one group of people, an idea, or thing, often not based on fair judgment |
| 5. dis_____ary action | <i>adj.</i> of or relating to the punishment of people who break the rules; of or relating to a specific field of academic study |
| 6. the per_____ve of the battle | <i>n.</i> a confident attitude toward something; a particular style of thinking about something |
| 7. int_____lar communication | <i>adj.</i> relating to or located in the space between stars |
| 8. criminal pro_____on | <i>n.</i> the act of bringing legal charges against someone for a crime they are accused of committing; the legal team responsible for presenting the case against the defendant in a criminal trial |
| 9. f__t accomplishment | <i>n.</i> a notable or impressive achievement, especially one that requires great skill or bravery |

ANSWERS: 1. duration, 2. explode, 3. lab, 4. bias, 5. disciplinary, 6. perspective, 7. interstellar, 8. prosecution, 9. feat

- | | |
|-----------------------------------|---|
| 10. or___n of information | <i>n.</i> the first existence or beginning of something |
| 11. pr_____t the future | <i>v.</i> to state beforehand that something will happen in the future, mainly based on knowledge or experience |
| 12. ha_____ss substances | <i>adj.</i> not able or not likely to cause damage or harm |
| 13. ca_____e customers' hearts | <i>v.</i> to catch a person or an animal and confine them in an area which they cannot escape |
| 14. emissions of gre_____se gases | <i>n.</i> a building with walls and roof made chiefly of transparent material, such as glass, for growing plants in |
| 15. ex_____e our options | <i>v.</i> to travel to or penetrate an area or a country to learn about it; to thoroughly examine a subject or a possibility to learn more about it |
| 16. int_____lar space | <i>adj.</i> relating to or located in the space between stars |
| 17. tr_____rm an education system | <i>v.</i> to change in outward structure or looks; |
| 18. a wire g__d | <i>n.</i> a pattern of regularly spaced horizontal and vertical lines; a system of high tension cables by which electrical power is distributed throughout a region |
| 19. op_____ne occasion | <i>adj.</i> suitable or happening at a time that is suitable or convenient for a particular purpose |
| 20. ur__n planning | <i>adj.</i> relating to or located in a town or city |

ANSWERS: 10. origin, 11. predict, 12. harmless, 13. capture, 14. greenhouse, 15. explore, 16. interstellar, 17. transform, 18. grid, 19. opportune, 20. urban

21. ne___l networks in AI *adj.* of or relating to a nerve or the nervous system that includes the brain
22. share my in_____ts *n.* the ability to gain an accurate and deep understanding of people or situations; an accurate and deep understanding of what something is like
23. at inc_____le speed *adj.* unbelievable; enormous
24. tr_____rm heat into power *v.* to change in outward structure or looks;
25. local jur_____ion *n.* the extent or range of authority, power, or control exercised by a particular entity or organization, such as a government or court; the area within which such authority or control is exercised
26. ast_____cal observation *adj.* relating to astronomy or the study of celestial bodies and phenomena; very large or immense in scale or magnitude
27. sound e__o *n.* a sound heard after being reflected off a surface, such as a wall or a cliff
28. a meteorological obs_____ry *n.* a building designed and equipped to observe the planets, the stars, the weather, etc.
29. limited jur_____ion *n.* the extent or range of authority, power, or control exercised by a particular entity or organization, such as a government or court; the area within which such authority or control is exercised
30. co_____e electricity *v.* to spend something, especially fuel, energy, or time, in a large amount

ANSWERS: 21. neural, 22. insight, 23. incredible, 24. transform, 25. jurisdiction, 26. astronomical, 27. echo, 28. observatory, 29. jurisdiction, 30. consume

31. a re_____ss person *adj.* unwilling or unable to stay still or relax because you are worried and uneasy
32. mat_____cs competition *n.* the science dealing with the logic of quantities, shapes, spaces, and arrangement
33. env_____nt affairs *n.* the natural world such as air, water, and land in which humans, animals, and plants live
34. a ga___y of famous actors *n.* an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
35. a brief ex_____t from the book *n.* a short passage taken from a book, piece of music, etc.; a substance obtained from something through a specific process; (verb) to obtain from something or to remove something by effort or force
36. neutrino ast_____ics *n.* the branch of physics concerned with the study of the properties and behavior of celestial objects and the physical processes that govern the behavior and evolution of the universe
37. industrial smo_____ck *n.* a vertical pipe or chimney, usually of brick or metal, through which smoke or exhaust gases from a fire or engine are discharged into the air
38. urban di_____cts *n.* a part of a country or town, especially one with particular features
39. ast_____cal numbers *adj.* relating to astronomy or the study of celestial bodies and phenomena; very large or immense in scale or magnitude

ANSWERS: 31. restless, 32. mathematics, 33. environment, 34. galaxy, 35. extract, 36. astrophysics, 37. smokestack, 38. district, 39. astronomical

40. ex_____e in popularity *v.* to burst or break open violently and noisily; to cause something to burst or break open
41. intellectual f__t *n.* a notable or impressive achievement, especially one that requires great skill or bravery
42. ca_____e a glimpse *v.* to catch a person or an animal and confine them in an area which they cannot escape
43. a bac_____nd color *n.* the details of a person's social heritage, such as family, vocational or educational experience; past information that is essential to understanding a situation or problem
44. liquid as__ts of the company *n.* something or someone that is useful or valuable quality, skill, etc.; valuable property
45. vi___l navigation *adj.* relating to seeing or sight
46. wrongful pro_____on *n.* the act of bringing legal charges against someone for a crime they are accused of committing; the legal team responsible for presenting the case against the defendant in a criminal trial
47. racial or___n *n.* the first existence or beginning of something
48. some une_____ed events *adj.* not anticipated or regarded as likely to happen
49. pr_____t when she will arrive *v.* to state beforehand that something will happen in the future, mainly based on knowledge or experience

ANSWERS: 40. explode, 41. feat, 42. capture, 43. background, 44. asset, 45. visual, 46. prosecution, 47. origin, 48. unexpected, 49. predict

50. juvenile pr_____on official *n.* a period of time during which an offender is released from imprisonment on the condition that they adhere to particular rules and is supervised by an officer; a time of training and testing the character or abilities of a person who is new to a role or job
51. ma_____e amounts *adj.* enormous amount; very heavy and solid
52. the st_____re of a machine *n.* the way of construction of something and the arrangement of its parts, or a complex thing constructed of many parts
53. a per_____ve view *n.* a confident attitude toward something; a particular style of thinking about something
54. ine_____ty in salary *n.* the unfairness of a society in which some people have more opportunity, money, etc. than others; (mathematics) relation between two values when they are different
55. d__g a chair over *v.* to pull or haul with force
56. a good grounding in mat_____cs *n.* the science dealing with the logic of quantities, shapes, spaces, and arrangement
57. an une_____ed visitor *adj.* not anticipated or regarded as likely to happen
58. surgical ins_____nts *n.* an object used to make musical sounds, such as a piano, guitar, or drum; a tool or device used for a specific activity, particularly in specialist or scientific work

ANSWERS: 50. probation, 51. massive, 52. structure, 53. perspective, 54. inequality, 55. drag, 56. mathematics, 57. unexpected, 58. instrument

59. collaborate with co_____ues *n.* one of a group of a coworker, especially in a profession or a business
60. a minor f__w *n.* a fault, mistake, or weakness that causes something not to be perfect
61. l_b instrument *n.* a workplace for the conduct of scientific research; a laboratory
62. space obs_____ry *n.* a building designed and equipped to observe the planets, the stars, the weather, etc.
63. deputy pro_____or *n.* a lawyer or official who conducts legal proceedings against someone accused of a crime; a person who brings a criminal case to court on behalf of the state or government
64. de___t smuggling across borders *v.* to find or recognize something, especially something difficult to see, hear, etc.
65. in_____ct with one another *v.* to communicate or react with somebody
66. site of the ex_____on *n.* a violent release induced by a chemical or nuclear reaction
67. high levels of air po_____on *n.* the introduction of harmful substances or waste into the natural environment that causes adverse change
68. in_____ct directly with customers *v.* to communicate or react with somebody
69. im_____e a process *v.* to make or become better
70. the f__w in the legislation *n.* a fault, mistake, or weakness that causes something not to be perfect

ANSWERS: 59. colleague, 60. flaw, 61. lab, 62. observatory, 63. prosecutor, 64. detect, 65. interact, 66. explosion, 67. pollution, 68. interact, 69. improve, 70. flaw

71. co_____e a large of alcohol *v.* to spend something, especially fuel, energy, or time, in a large amount
72. foreign po____y *n.* a set of rules, guidelines, principles, or procedures that govern decision-making or action, often used in the context of business or government; a course of action or plan of action adopted or followed by an organization or individual to achieve a goal or objective
73. 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
74. take dis_____ary measures *adj.* of or relating to the punishment of people who break the rules; of or relating to a specific field of academic study
75. b__g his fist on a desk *v.* to hit or cause to hit something in a way that makes a loud noise
76. ast_____ics research *n.* the branch of physics concerned with the study of the properties and behavior of celestial objects and the physical processes that govern the behavior and evolution of the universe
77. a hard and re_____nt steel *adj.* able to withstand or recover quickly from difficult conditions
78. ne____l stem cells *adj.* of or relating to a nerve or the nervous system that includes the brain
79. county j__l *n.* a facility where criminals are kept to be punished for their crimes; a prison

ANSWERS: 71. consume, 72. policy, 73. universe, 74. disciplinary, 75. bang, 76. astrophysics, 77. resilient, 78. neural, 79. jail

80. algebraic ine_____ty *n.* the unfairness of a society in which some people have more opportunity, money, etc. than others; (mathematics) relation between two values when they are different
81. pr_____on period *n.* a period of time during which an offender is released from imprisonment on the condition that they adhere to particular rules and is supervised by an officer; a time of training and testing the character or abilities of a person who is new to a role or job
82. former co_____ue *n.* one of a group of a coworker, especially in a profession or a business
83. 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
84. a public pro_____or *n.* a lawyer or official who conducts legal proceedings against someone accused of a crime; a person who brings a criminal case to court on behalf of the state or government
85. a lot of ex_____ons *n.* a violent release induced by a chemical or nuclear reaction
86. de__y the new project *v.* to cause something to happen at a later time than originally intended or expected
87. an_____e your real motives *v.* to think about in-depth and evaluate to discover essential features or meaning
88. inc_____le amount *adj.* unbelievable; enormous

ANSWERS: 80. inequality, 81. probation, 82. colleague, 83. greenhouse, 84. prosecutor, 85. explosion, 86. delay, 87. analyze, 88. incredible

89. field of vi___l arts	<i>adj.</i> relating to seeing or sight
90. school di____cts	<i>n.</i> a part of a country or town, especially one with particular features
91. col_____ion between companies	<i>n.</i> the act or situation of working together to create or produce something
92. downtown sk_____e	<i>n.</i> the outline of buildings and other structures against the sky, especially when viewed from a distance
93. col_____ion platform	<i>n.</i> the act or situation of working together to create or produce something
94. a criminal bac_____nd	<i>n.</i> the details of a person's social heritage, such as family, vocational or educational experience; past information that is essential to understanding a situation or problem
95. ex___e rebellion	<i>v.</i> to make someone feel suddenly enthusiastic or eager
96. be in j__l	<i>n.</i> a facility where criminals are kept to be punished for their crimes; a prison
97. an_____e a chemical compound	<i>v.</i> to think about in-depth and evaluate to discover essential features or meaning
98. a profound in_____t	<i>n.</i> the ability to gain an accurate and deep understanding of people or situations; an accurate and deep understanding of what something is like
99. re_____ss waves	<i>adj.</i> unwilling or unable to stay still or relax because you are worried and uneasy
100. an op_____ne remark	<i>adj.</i> suitable or happening at a time that is suitable or convenient for a particular purpose

ANSWERS: 89. visual, 90. district, 91. collaboration, 92. skyline, 93. collaboration, 94. background, 95. excite, 96. jail, 97. analyze, 98. insight, 99. restless, 100. opportune

101. a st____r system *adj.* excellent; relating to or resembling a star, especially in quality or attractiveness
102. business da_____rd *n.* a control panel set within the central console of a vehicle or small aircraft; a diagram that depicts critical information, typically one that provides a business overview
103. musical ins_____nts *n.* an object used to make musical sounds, such as a piano, guitar, or drum; a tool or device used for a specific activity, particularly in specialist or scientific work
104. an insect c__e *n.* a structure made of metal bars or wire in which birds or animals can be kept
105. ad__t as needed *v.* to make fit for or change to suit a new purpose or environment
106. 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
107. ex___e the crowd *v.* to make someone feel suddenly enthusiastic or eager
108. a bird in a c__e *n.* a structure made of metal bars or wire in which birds or animals can be kept
109. de__y a flight three hours *v.* to cause something to happen at a later time than originally intended or expected
110. re_____nt population *adj.* able to withstand or recover quickly from difficult conditions

ANSWERS: 101. stellar, 102. dashboard, 103. instrument, 104. cage, 105. adapt, 106. universe, 107. excite, 108. cage, 109. delay, 110. resilient

111. auto da_____rd *n.* a control panel set within the central console of a vehicle or small aircraft; a diagram that depicts critical information, typically one that provides a business overview
112. d__g a team down *v.* to pull or haul with force
113. ma_____e stars *adj.* enormous amount; very heavy and solid
114. health po____y *n.* a set of rules, guidelines, principles, or procedures that govern decision-making or action, often used in the context of business or government; a course of action or plan of action adopted or followed by an organization or individual to achieve a goal or objective
115. a dependent do____n *n.* a specific sphere of influence or control; a specific field of knowledge or expertise
116. pl__e of feathers *n.* a large feather or group of feathers worn as an ornament or a symbol of achievement or distinction, especially on a hat
117. chaotic env_____nt *n.* the natural world such as air, water, and land in which humans, animals, and plants live
118. met_____gy for optimizing *n.* a set of ways or principles of doing, teaching, or studying something
119. ev_____on theory *n.* a gradual process of transformation of living things
120. environmental po_____on *n.* the introduction of harmful substances or waste into the natural environment that causes adverse change

ANSWERS: 111. dashboard, 112. drag, 113. massive, 114. policy, 115. domain, 116. plume, 117. environment, 118. methodology, 119. evolution, 120. pollution

121. do___n of use *n.* a specific sphere of influence or control; a specific field of knowledge or expertise
122. im_____e the test score *v.* to make or become better
123. frozen as__ts *n.* something or someone that is useful or valuable quality, skill, etc.; valuable property
124. eva_____nt dream *adj.* fleeting or temporary; tending to fade or disappear quickly; of or relating to anything that has a short-lived existence or duration
125. su___r bad grades *v.* to experience pain, distress, or hardship; to undergo or endure something painful or unpleasant
126. ad__t fully to the environment *v.* to make fit for or change to suit a new purpose or environment
127. cognitive com_____ty *n.* the state or quality of being complicated or intricate and difficult to understand
128. research met_____gy *n.* a set of ways or principles of doing, teaching, or studying something
129. su___r a setback *v.* to experience pain, distress, or hardship; to undergo or endure something painful or unpleasant
130. smo_____ck emissions *n.* a vertical pipe or chimney, usually of brick or metal, through which smoke or exhaust gases from a fire or engine are discharged into the air
131. botanical ex_____t *n.* a short passage taken from a book, piece of music, etc.; a substance obtained from something through a specific process; (verb) to obtain from something or to remove something by effort or force

ANSWERS: 121. domain, 122. improve, 123. asset, 124. evanescent, 125. suffer, 126. adapt, 127. complexity, 128. methodology, 129. suffer, 130. smokestack, 131. extract

132. de___t a bad event *v.* to find or recognize something, especially something difficult to see, hear, etc.
133. eva_____nt nature of fame *adj.* fleeting or temporary; tending to fade or disappear quickly; of or relating to anything that has a short-lived existence or duration
134. elliptic ga___y *n.* an independent group of stars, interstellar gas, dark matter, etc., in the universe, bound together by gravity
135. have a b___s toward socialism *n.* a strong feeling in favor of or against one group of people, an idea, or thing, often not based on fair judgment
136. decision-making pr____s *n.* a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products
137. b___g a phone down *v.* to hit or cause to hit something in a way that makes a loud noise
138. ur___n property owners *adj.* relating to or located in a town or city
139. st_____re and function of the brain *n.* the way of construction of something and the arrangement of its parts, or a complex thing constructed of many parts
140. com_____ty theory *n.* the state or quality of being complicated or intricate and difficult to understand

ANSWERS: 132. detect, 133. evanescent, 134. galaxy, 135. bias, 136. process, 137. bang, 138. urban, 139. structure, 140. complexity

141. mo_____r an exam *v.* to observe, check, and track the progress or quality of something over a period of time
142. po_____e the air *v.* to make an area or substance, such as land, air, water, etc., dirty or harmful to living things by adding waste matter or harmful chemicals
143. ha_____ss in most people *adj.* not able or not likely to cause damage or harm
144. mo_____r the data carefully *v.* to observe, check, and track the progress or quality of something over a period of time
145. sk_____e view *n.* the outline of buildings and other structures against the sky, especially when viewed from a distance
146. a g__d design *n.* a pattern of regularly spaced horizontal and vertical lines; a system of high tension cables by which electrical power is distributed throughout a region
147. the e__o of a person's footsteps *n.* a sound heard after being reflected off a surface, such as a wall or a cliff
148. the du_____on of insurance *n.* the length of time something lasts or continues
149. pr_____s improvement *n.* a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products

ANSWERS: 141. monitor, 142. pollute, 143. harmless, 144. monitor, 145. skyline, 146. grid, 147. echo, 148. duration, 149. process

150. ex_____e the world *v.* to travel to or penetrate an area or a country to learn about it; to thoroughly examine a subject or a possibility to learn more about it
151. per_____nt cough *adj.* continuing firmly or obstinately in the course of action despite difficulty or opposition; lasting or enduring without fading or being lost over time
152. st_____r performance *adj.* excellent; relating to or resembling a star, especially in quality or attractiveness
153. per_____nt data *adj.* continuing firmly or obstinately in the course of action despite difficulty or opposition; lasting or enduring without fading or being lost over time
154. pl__e of smoke *n.* a large feather or group of feathers worn as an ornament or a symbol of achievement or distinction, especially on a hat
155. po_____e the thread *v.* to make an area or substance, such as land, air, water, etc., dirty or harmful to living things by adding waste matter or harmful chemicals
156. human ev_____on *n.* a gradual process of transformation of living things

ANSWERS: 150. explore, 151. persistent, 152. stellar, 153. persistent, 154. plume, 155. pollute, 156. evolution

Session 3: Fill in the Blanks

1. The news of her promotion _____ her.
v. to make someone feel suddenly enthusiastic or eager
2. I advised him to _____ to his new surroundings.
v. to make fit for or change to suit a new purpose or environment
3. We should do our best not to _____ the environment.
v. to make an area or substance, such as land, air, water, etc., dirty or harmful to living things by adding waste matter or harmful chemicals
4. The _____ on top of the factory released thick clouds of pollution into the air.
n. a vertical pipe or chimney, usually of brick or metal, through which smoke or exhaust gases from a fire or engine are discharged into the air
5. The _____ rainstorm caused the collapse of the corral.
adj. not anticipated or regarded as likely to happen
6. The recent economic downturn has resulted in _____ layoffs.
adj. enormous amount; very heavy and solid
7. Most people thought of him as a _____ eccentric.
adj. not able or not likely to cause damage or harm
8. He was sentenced to two years of _____ for his crime.
n. a period of time during which an offender is released from imprisonment on the condition that they adhere to particular rules and is supervised by an officer; a time of training and testing the character or abilities of a person who is new to a role or job

ANSWERS: 1. excited, 2. adapt, 3. pollute, 4. smokestack, 5. unexpected, 6. massive, 7. harmless, 8. probation

9. We are developing a new _____ for assessing marketing measures.
n. a set of ways or principles of doing, teaching, or studying something
10. That astronomical _____ stands at the top of the mountain.
n. a building designed and equipped to observe the planets, the stars, the weather, etc.
11. The organizational _____ of start-ups is often flat and straightforward.
n. the way of construction of something and the arrangement of its parts, or a complex thing constructed of many parts
12. Despite the setbacks, he remained _____ in his pursuit of his dreams.
adj. continuing firmly or obstinately in the course of action despite difficulty or opposition; lasting or enduring without fading or being lost over time
13. _____ pattern roads often appear in urban areas.
n. a pattern of regularly spaced horizontal and vertical lines; a system of high tension cables by which electrical power is distributed throughout a region
14. There was a disturbance of _____ function.
adj. of or relating to a nerve or the nervous system that includes the brain
15. The company's new _____ on remote work has made it a more inclusive workplace.
n. a set of rules, guidelines, principles, or procedures that govern decision-making or action, often used in the context of business or government; a course of action or plan of action adopted or followed by an organization or individual to achieve a goal or objective
16. The military incarcerated him for the _____ of the war.
n. the length of time something lasts or continues

ANSWERS: 9. methodology, 10. observatory, 11. structure, 12. persistent, 13. Grid, 14. neural, 15. policy, 16. duration

17. She received a _____ review from her boss, which boosted her confidence.
adj. excellent; relating to or resembling a star, especially in quality or attractiveness
18. 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
19. The security camera has _____ four intruders.
v. to find or recognize something, especially something difficult to see, hear, etc.
20. They used a special receiver to _____ police radio channels.
v. to observe, check, and track the progress or quality of something over a period of time
21. He noticed that the oil warning light on the _____ of his car had turned on.
n. a control panel set within the central console of a vehicle or small aircraft; a diagram that depicts critical information, typically one that provides a business overview
22. The case fell under the _____ of the state court system.
n. the extent or range of authority, power, or control exercised by a particular entity or organization, such as a government or court; the area within which such authority or control is exercised
23. My father's death _____ my life completely.
v. to change in outward structure or looks;
24. The Prime Minister will pay a courtesy visit to the Nobel laureate's _____.
n. a workplace for the conduct of scientific research; a laboratory

ANSWERS: 17. stellar, 18. galaxy, 19. detected, 20. monitor, 21. dashboard, 22. jurisdiction, 23. transformed, 24. lab

25. He has a flair for _____.

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

26. The school's _____ committee met to discuss the student's behavior.

- adj.* of or relating to the punishment of people who break the rules; of or relating to a specific field of academic study

27. A smaller car will _____ less fuel.

- v.* to spend something, especially fuel, energy, or time, in a large amount

28. He should _____ more with his colleagues.

- v.* to communicate or react with somebody

29. It's notoriously challenging to _____ birth rates.

- v.* to state beforehand that something will happen in the future, mainly based on knowledge or experience

30. 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

31. The trapped bear is running amok in its _____.

- n.* a structure made of metal bars or wire in which birds or animals can be kept

32. The judge denied the motion to dismiss the _____ case.

- n.* the act of bringing legal charges against someone for a crime they are accused of committing; the legal team responsible for presenting the case against the defendant in a criminal trial

ANSWERS: 25. mathematics, 26. disciplinary, 27. consume, 28. interact, 29. predict, 30. universe, 31. cage, 32. prosecution's

33. She is a _____ person and has always bounced back from setbacks.

adj. able to withstand or recover quickly from difficult conditions

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

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

35. They study the _____ of the universe.

n. a gradual process of transformation of living things

36. Since 2001, the _____ has provided training programs for automotive technicians.

n. a part of a country or town, especially one with particular features

37. He felt _____ and constantly changed his postures.

adj. unwilling or unable to stay still or relax because you are worried and uneasy

38. The company's _____ in the market was expanding to new territories.

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

39. The bird had a beautiful _____ on its head.

n. a large feather or group of feathers worn as an ornament or a symbol of achievement or distinction, especially on a hat

40. The _____ is endangering the local plants and animals.

n. the introduction of harmful substances or waste into the natural environment that causes adverse change

ANSWERS: 33. resilient, 34. explore, 35. evolution, 36. district, 37. restless, 38. domain, 39. plume, 40. pollution

41. I decided to seek counseling on the advice of my _____.
- n.* one of a group of a coworker, especially in a profession or a business
42. I was able to _____ the moment on film.
- v.* to catch a person or an animal and confine them in an area which they cannot escape
43. The _____ opening statement set the tone for the entire trial.
- n.* a lawyer or official who conducts legal proceedings against someone accused of a crime; a person who brings a criminal case to court on behalf of the state or government
44. The police escorted the prisoner to the _____.
- n.* a facility where criminals are kept to be punished for their crimes; a prison
45. The _____ for applying for a visa can be lengthy and complicated.
- n.* a series of actions or operations performed to achieve a particular outcome or goal; a systematic procedure or approach used to accomplish a specific task or objective; a method of treating milk to make it suitable for consumption or use in other dairy products
46. He _____ the heavy suitcase behind him as he walked.
- v.* to pull or haul with force
47. We want to _____ ties between our two countries.
- v.* to make or become better
48. The company's hiring criteria emphasize personality, not a person's _____.
- n.* the details of a person's social heritage, such as family, vocational or educational experience; past information that is essential to understanding a situation or problem

ANSWERS: 41. colleague, 42. capture, 43. prosecutor's, 44. jail, 45. process, 46. dragged, 47. improve, 48. background

49. He was studying _____ in an attempt to understand the origins of the universe.
- n.* the branch of physics concerned with the study of the properties and behavior of celestial objects and the physical processes that govern the behavior and evolution of the universe
50. We gained various _____ by analyzing the vast amount of data owned by the company.
- n.* the ability to gain an accurate and deep understanding of people or situations; an accurate and deep understanding of what something is like
51. The beauty of the sunset was _____ as it disappeared quickly behind the mountains.
- adj.* fleeting or temporary; tending to fade or disappear quickly; of or relating to anything that has a short-lived existence or duration
52. She researched gender _____ in politics.
- n.* a strong feeling in favor of or against one group of people, an idea, or thing, often not based on fair judgment
53. 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
54. My father tried to _____ mathematics into my head since childhood.
- v.* to hit or cause to hit something in a way that makes a loud noise
55. His father's death changed his whole _____ on life.
- n.* a confident attitude toward something; a particular style of thinking about something

ANSWERS: 49. astrophysics, 50. insights, 51. evanescent, 52. bias, 53. environment, 54. bang, 55. perspective

56. 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
57. The phone rang at the most _____ time.
- adj.* suitable or happening at a time that is suitable or convenient for a particular purpose
58. The older man _____ from arthritis and finds it difficult to move around.
- v.* to experience pain, distress, or hardship; to undergo or endure something painful or unpleasant
59. There are several causes of economic _____ within societies.
- n.* the unfairness of a society in which some people have more opportunity, money, etc. than others; (mathematics) relation between two values when they are different
60. It is an incredible _____ to climb Mount Everest, the highest mountain in the world.
- n.* a notable or impressive achievement, especially one that requires great skill or bravery
61. Anesthetize the gum before _____ the teeth.
- n.* a short passage taken from a book, piece of music, etc.; a substance obtained from something through a specific process; (verb) to obtain from something or to remove something by effort or force
62. A broken gas pipe triggered the _____.
- n.* a violent release induced by a chemical or nuclear reaction

ANSWERS: 56. greenhouse, 57. opportune, 58. suffers, 59. inequality, 60. feat, 61. extracting, 62. explosion

63. This electronic _____ is required to undergo periodic inspections to ensure precision.

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

64. There are various hypotheses concerning the _____ of life.

n. the first existence or beginning of something

65. Her response revealed _____ idiocy.

adj. unbelievable; enormous

66. The cost of the new equipment was _____ and beyond the company's budget.

adj. relating to astronomy or the study of celestial bodies and phenomena; very large or immense in scale or magnitude

67. We _____ the payment because of an incorrect invoice.

v. to cause something to happen at a later time than originally intended or expected

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

adj. relating to or located in the space between stars

69. The _____ of the city was dotted with tall buildings.

n. the outline of buildings and other structures against the sky, especially when viewed from a distance

70. A sense of humor is an invaluable _____ in this job.

n. something or someone that is useful or valuable quality, skill, etc.; valuable property

ANSWERS: 63. instrument, 64. origin, 65. incredible, 66. astronomical, 67. delayed, 68. interstellar, 69. skyline, 70. asset

71. The building makes a remarkable _____ impact.

adj. relating to seeing or sight

72. A thunderous boom _____ throughout the valley.

n. a sound heard after being reflected off a surface, such as a wall or a cliff

73. The teacher attempted to _____ the root cause of our mistake.

v. to think about in-depth and evaluate to discover essential features or meaning

74. The project's _____ made it difficult for the team to complete it on time.

n. the state or quality of being complicated or intricate and difficult to understand

75. The old building _____ in a fiery inferno.

v. to burst or break open violently and noisily; to cause something to burst or break open

76. Only a small number of _____ utilities offer sanitation services.

adj. relating to or located in a town or city

77. Even the slightest design _____ in an aircraft can lead to a fatal accident.

n. a fault, mistake, or weakness that causes something not to be perfect

78. The partnership program requires a mutual _____ between both agencies.

n. the act or situation of working together to create or produce something

ANSWERS: 71. visual, 72. echoed, 73. analyze, 74. complexity, 75. exploded, 76. urban, 77. flaw, 78. collaboration