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Daniel Finkel: Can you solve the alien probe riddle? |

TED Talk

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

All Words

IMPORTANT

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Session 1: Word List

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**.

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.

monolith

n. a large, single upright block of stone, especially one shaped into a pillar or monument; something that is very large, solid, and uniform in shape or appearance

synonym: monument, megalith, slab

(1) metal **monolith**, (2) towering **monolith**

The art exhibit featured a massive **monolith** sculpture made entirely of recycled materials.

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.

unlock

v. to open something, such as a door, window, etc., usually using a key

synonym : open, solve, unravel

(1) **unlock** a door with a key, (2) **unlock** value

The customs officer required the traveler to **unlock** his suitcase.

mystery

n. something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle

synonym : enigma, puzzle, secret

(1) **mystery** novel, (2) unsolved **mystery**

The **mystery** surrounding the disappearance of the traveler has yet to be solved by authorities.

engineer

n. a person whose job is designing, building, or maintaining something such as machines, structures, or software

synonym : architect, creator, builder

(1) a civil **engineer**, (2) **engineer** shortage

The **engineer** will repair my telephone tomorrow morning.

develop

v. to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created

synonym : evolve, progress, advance

(1) **develop** a strategy, (2) **develop** a skill

We must **develop** a new system to streamline our workflow

and increase efficiency.

elegant

adj. pleasing and graceful in appearance or manner, or showing good taste and refinement

synonym : refined, sophisticated, graceful

(1) **elegant** design, (2) write **elegant** sentences

She wore an **elegant** evening gown to the gala.

probe

n. a tool used for testing or examining, especially for medical or scientific purposes, or an exploratory mission to a planet or other celestial body; (verb) to investigate, examine, or search into something

synonym : investigation, inquiry, examination

(1) a lunar **probe**, (2) **probe** for inside information

NASA sent a **probe** to study the atmosphere of Jupiter.

cube

n. a three-dimensional shape with six square faces that are all equal in size; (of mathematics) the result of multiplying the number by itself three times

synonym : block, square, cell

(1) **cube** root, (2) ice **cube**

I cut the cheese into small **cubes** for the salad.

module

n. a self-contained unit or component of a larger system or structure; a standardized unit of computer hardware or software designed to perform a specific function

synonym : component, unit, segment

(1) **module** software, (2) audio **module**

I must install a new programming **module** for my computer program to function properly.

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.

assemble

v. to collect in one place as a single group

synonym : gather, congregate, collect

(1) **assemble** your colleagues, (2) **assemble** a jigsaw puzzle

The president began to **assemble** an army.

individual

n. a single person or thing, as distinct from a group

synonym : person, being, self

(1) a private **individual**, (2) **individual** freedom

As an **individual**, he had the right to make his own decisions and live his life as he saw fit.

orientation

n. a person's basic attitudes, beliefs, and preferences about particular things; a course introducing a new situation or environment

synonym : direction, introduction, frontage

(1) sexual **orientation**, (2) the school **orientation**

There will be an **orientation** lecture for new students this afternoon.

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**.

seal

v. to close or fasten an envelope, etc. securely; (noun) a large marine mammal that chiefly lives in cold regions

and comes on shore to breed

synonym : enclose, shut, close

(1) **seal** a hole, (2) a fur **seal**

He **sealed** the letter with hot wax.

purple

adj. of a color intermediate between red and blue

synonym : violet

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

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

intense

adj. (especially of a feeling) very strong; extremely sharp or severe

synonym : extreme, fierce, harsh

(1) **intense** heat, (2) develop **intense** itching

That statement by the prime minister drew **intense** international criticism.

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**.

shield

n. a protective covering or structure, especially in the past, that soldiers held in front of their bodies to protect themselves

synonym : guard, protection, safeguard

(1) a heat **shield**, (2) a **shield** for protecting against a bullet
Lead is an effective **shield** against X-rays, gamma rays, and other harmful radiation.

cubic

adj. having the shape of a cube or being of three dimensions; measured in units that are the third power of a linear unit

synonym :

three-dimensional, boxlike, cubical

(1) **cubic** meter, (2) **cubic** structure

The package was a **cubic** shape, which made it easier to stack on the shelf.

pause

v. to take a short break from talking or doing something before continuing

synonym: halt, break, intermit

(1) **pause** a moment, (2) **pause** for a reaction

The man **paused** before opening the door.

regardless

adv. not paying attention or considering something or someone even if the situation is bad or there are difficulties

synonym: anyhow, nevertheless, still

(1) **regardless** of the difficulties, (2) **regardless** tread

People can pick out superior products **regardless** of the quality of the advertising.

precise

adj. sharply exact or accurate or delimited

synonym: accurate, exact, distinct

(1) **precise** analyses, (2) estimate **precise** costs

The content is **precise** and informative for me.

margin

n. the space around the edge of a page or document; (finance) the net sales minus the cost of goods and services sold

synonym: edge, border, periphery

(1) **margin** error, (2) a profit **margin**

Unfortunately, the book's **margin** was too small to make notes.

symmetrical

adj. having similarity in size, shape, and relative position of corresponding parts

synonym: harmonious, balanced, proportional

(1) **symmetrical** triangle, (2) **symmetrical** pattern

This figure is **symmetrical** about the x-axis.

blank

adj. without any writing or printing; empty or devoid of ideas, information, or meaning; unable to remember or recall information

synonym : empty, void, barren

(1) **blank** expression, (2) **blank** paper

The computer screen displayed nothing but a **blank** white screen

split

v. to divide, or to make something divide into two or more parts, especially along a particular line

synonym : break, divide, break apart

(1) **split** a bill, (2) **split** a reward equally

Companies often **split** their shares to lower the stock price and encourage investors to buy.

symmetry

n. balance or proportion in design or structure, with elements arranged evenly on either side of an axis

synonym : balance, proportion, harmoniousness

(1) bilateral **symmetry**, (2) axial **symmetry**

The building had a **symmetry** pattern that was pleasing to the eye.

pile

n. a collection of objects positioned one on top of another; a large sum of something, such as money

synonym : accumulation, heap, stack

(1) a sand **pile**, (2) the height of a **pile**

After the party, they had to clean up **piles** of dirty dishes.

rearrange

v. to change the order or position of things already made; to change the time, date, or place of an event already planned

synonym : readjust, reorganize, reconstruct

(1) **rearrange** the furniture, (2) **rearrange** his schedule

Please **rearrange** these files as we start a new project tomorrow.

incredible

adj. unbelievable; enormous

synonym : unbelievable, fantastical, inconceivable

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

Her response revealed **incredible** idiocy.

achieve

v. to successfully complete a task or goal, often through hard work, perseverance, and dedication; to attain or accomplish something that one has set out to do

synonym : accomplish, attain, reach

(1) **achieve** success, (2) **achieve** milestones

I will work hard to **achieve** my goals and realize my dreams.

eon

n. (also aeon) an indefinite long period of time; the longest division of geological time scale

synonym : aeon

(1) a geological **eon**, (2) over the **eons**

I heard that fairy tale **eons** ago.

Session 2: Spelling

1. in_____e heat *adj.* (especially of a feeling) very strong; extremely sharp or severe
2. ac_____e milestones *v.* to successfully complete a task or goal, often through hard work, perseverance, and dedication; to attain or accomplish something that one has set out to do
3. en_____er shortage *n.* a person whose job is designing, building, or maintaining something such as machines, structures, or software
4. pa__e for a reaction *v.* to take a short break from talking or doing something before continuing
5. pr_____e analyses *adj.* sharply exact or accurate or delimited
6. chaotic env_____nt *n.* the natural world such as air, water, and land in which humans, animals, and plants live
7. the school ori_____on *n.* a person's basic attitudes, beliefs, and preferences about particular things; a course introducing a new situation or environment
8. el_____t design *adj.* pleasing and graceful in appearance or manner, or showing good taste and refinement
9. reg_____ss tread *adv.* not paying attention or considering something or someone even if the situation is bad or there are difficulties
10. inc_____le amount *adj.* unbelievable; enormous

ANSWERS: 1. intense, 2. achieve, 3. engineer, 4. pause, 5. precise, 6. environment, 7. orientation, 8. elegant, 9. regardless, 10. incredible

11. sp__t a reward equally *v.* to divide, or to make something divide into two or more parts, especially along a particular line
12. a private ind_____al *n.* a single person or thing, as distinct from a group
13. 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
14. a sh___d for protecting against a bullet *n.* a protective covering or structure, especially in the past, that soldiers held in front of their bodies to protect themselves
15. de____p a skill *v.* to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created
16. cu__c structure *adj.* having the shape of a cube or being of three dimensions; measured in units that are the third power of a linear unit
17. ex_____e sports *adj.* very great in amount or degree
18. an_____e a chemical compound *v.* to think about in-depth and evaluate to discover essential features or meaning
19. a lunar pr__e *n.* a tool used for testing or examining, especially for medical or scientific purposes, or an exploratory mission to a planet or other celestial body; (verb) to investigate, examine, or search into something

ANSWERS: 11. split, 12. individual, 13. planet, 14. shield, 15. develop, 16. cubic, 17. extreme, 18. analyze, 19. probe

20. at inc_____le speed *adj.* unbelievable; enormous
21. over the e_ns *n.* (also aeon) an indefinite long period of time; the longest division of geological time scale
22. develop in_____e itching *adj.* (especially of a feeling) very strong; extremely sharp or severe
23. unsolved my_____y *n.* something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle
24. ice c__e *n.* a three-dimensional shape with six square faces that are all equal in size; (of mathematics) the result of multiplying the number by itself three times
25. my_____y novel *n.* something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle
26. write el_____t sentences *adj.* pleasing and graceful in appearance or manner, or showing good taste and refinement
27. as_____le a jigsaw puzzle *v.* to collect in one place as a single group
28. de_____p a strategy *v.* to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created

ANSWERS: 20. incredible, 21. eon, 22. intense, 23. mystery, 24. cube, 25. mystery, 26. elegant, 27. assemble, 28. develop

29. env_____nt affairs *n.* the natural world such as air, water, and land in which humans, animals, and plants live
30. as_____le your colleagues *v.* to collect in one place as a single group
31. metal mo_____th *n.* a large, single upright block of stone, especially one shaped into a pillar or monument; something that is very large, solid, and uniform in shape or appearance
32. ma____n error *n.* the space around the edge of a page or document; (finance) the net sales minus the cost of goods and services sold
33. 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
34. pa__e a moment *v.* to take a short break from talking or doing something before continuing
35. deep pu____e *adj.* of a color intermediate between red and blue
36. un____k value *v.* to open something, such as a door, window, etc., usually using a key
37. a profit ma____n *n.* the space around the edge of a page or document; (finance) the net sales minus the cost of goods and services sold
38. towering mo_____th *n.* a large, single upright block of stone, especially one shaped into a pillar or monument; something that is very large, solid, and uniform in shape or appearance

ANSWERS: 29. environment, 30. assemble, 31. monolith, 32. margin, 33. planet, 34. pause, 35. purple, 36. unlock, 37. margin, 38. monolith

39. a civil en_____er
n. a person whose job is designing, building, or maintaining something such as machines, structures, or software
40. estimate pr_____e costs
adj. sharply exact or accurate or delimited
41. sp__t a bill
v. to divide, or to make something divide into two or more parts, especially along a particular line
42. audio mo____e
n. a self-contained unit or component of a larger system or structure; a standardized unit of computer hardware or software designed to perform a specific function
43. 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
44. 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
45. sym_____al pattern
adj. having similarity in size, shape, and relative position of corresponding parts
46. axial sy_____ry
n. balance or proportion in design or structure, with elements arranged evenly on either side of an axis
47. bilateral sy_____ry
n. balance or proportion in design or structure, with elements arranged evenly on either side of an axis
48. the height of a p__e
n. a collection of objects positioned one on top of another; a large sum of something, such as money

ANSWERS: 39. engineer, 40. precise, 41. split, 42. module, 43. atmosphere, 44. alien, 45. symmetrical, 46. symmetry, 47. symmetry, 48. pile

49. a heat sh___d *n.* a protective covering or structure, especially in the past, that soldiers held in front of their bodies to protect themselves
50. 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
51. ind_____al freedom *n.* a single person or thing, as distinct from a group
52. pu___e sweet potatoes *adj.* of a color intermediate between red and blue
53. sexual ori_____on *n.* a person's basic attitudes, beliefs, and preferences about particular things; a course introducing a new situation or environment
54. a geological e_n *n.* (also aeon) an indefinite long period of time; the longest division of geological time scale
55. re_____ge the furniture *v.* to change the order or position of things already made; to change the time, date, or place of an event already planned
56. c__e root *n.* a three-dimensional shape with six square faces that are all equal in size; (of mathematics) the result of multiplying the number by itself three times
57. ac_____e success *v.* to successfully complete a task or goal, often through hard work, perseverance, and dedication; to attain or accomplish something that one has set out to do

ANSWERS: 49. shield, 50. alien, 51. individual, 52. purple, 53. orientation, 54. eon, 55. rearrange, 56. cube, 57. achieve

58. an____e your real motives *v.* to think about in-depth and evaluate to discover essential features or meaning
59. a sand p__e *n.* a collection of objects positioned one on top of another; a large sum of something, such as money
60. ex____e weather events *adj.* very great in amount or degree
61. a fur s__l *v.* to close or fasten an envelope, etc. securely; (noun) a large marine mammal that chiefly lives in cold regions and comes on shore to breed
62. reg_____ss of the difficulties *adv.* not paying attention or considering something or someone even if the situation is bad or there are difficulties
63. bl__k expression *adj.* without any writing or printing; empty or devoid of ideas, information, or meaning; unable to remember or recall information
64. sym_____al triangle *adj.* having similarity in size, shape, and relative position of corresponding parts
65. cu__c meter *adj.* having the shape of a cube or being of three dimensions; measured in units that are the third power of a linear unit
66. mo___e software *n.* a self-contained unit or component of a larger system or structure; a standardized unit of computer hardware or software designed to perform a specific function
67. s__l a hole *v.* to close or fasten an envelope, etc. securely; (noun) a large marine mammal that chiefly lives in cold regions and comes on shore to breed

ANSWERS: 58. analyze, 59. pile, 60. extreme, 61. seal, 62. regardless, 63. blank, 64. symmetrical, 65. cubic, 66. module, 67. seal

68. 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
69. un___k a door with a key *v.* to open something, such as a door, window, etc., usually using a key
70. bl__k paper *adj.* without any writing or printing; empty or devoid of ideas, information, or meaning; unable to remember or recall information
71. 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
72. 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
73. re_____ge his schedule *v.* to change the order or position of things already made; to change the time, date, or place of an event already planned
74. pr__e for inside information *n.* a tool used for testing or examining, especially for medical or scientific purposes, or an exploratory mission to a planet or other celestial body; (verb) to investigate, examine, or search into something

ANSWERS: 68. atmosphere, 69. unlock, 70. blank, 71. discovery, 72. discovery, 73. rearrange, 74. probe

Session 3: Fill in the Blanks

1. He _____ the letter with hot wax.
 - v. to close or fasten an envelope, etc. securely; (noun) a large marine mammal that chiefly lives in cold regions and comes on shore to breed

2. I must install a new programming _____ for my computer program to function properly.
 - n. a self-contained unit or component of a larger system or structure; a standardized unit of computer hardware or software designed to perform a specific function

3. After the party, they had to clean up _____ of dirty dishes.
 - n. a collection of objects positioned one on top of another; a large sum of something, such as money

4. The teacher attempted to _____ the root cause of our mistake.
 - v. to think about in-depth and evaluate to discover essential features or meaning

5. I heard that fairy tale _____ ago.
 - n. (also aeon) an indefinite long period of time; the longest division of geological time scale

6. Companies often _____ their shares to lower the stock price and encourage investors to buy.
 - v. to divide, or to make something divide into two or more parts, especially along a particular line

7. The building had a _____ pattern that was pleasing to the eye.
 - n. balance or proportion in design or structure, with elements arranged evenly on either side of an axis

ANSWERS: 1. sealed, 2. module, 3. piles, 4. analyze, 5. eons, 6. split, 7. symmetry

8. She wore an _____ evening gown to the gala.
adj. pleasing and graceful in appearance or manner, or showing good taste and refinement
9. The computer screen displayed nothing but a _____ white screen
adj. without any writing or printing; empty or devoid of ideas, information, or meaning; unable to remember or recall information
10. Solar gravity creates _____ pressures and temperatures.
adj. very great in amount or degree
11. The content is _____ and informative for me.
adj. sharply exact or accurate or delimited
12. Unfortunately, the book's _____ was too small to make notes.
n. the space around the edge of a page or document; (finance) the net sales minus the cost of goods and services sold
13. The art exhibit featured a massive _____ sculpture made entirely of recycled materials.
n. a large, single upright block of stone, especially one shaped into a pillar or monument; something that is very large, solid, and uniform in shape or appearance
14. Please _____ these files as we start a new project tomorrow.
v. to change the order or position of things already made; to change the time, date, or place of an event already planned
15. NASA sent a _____ to study the atmosphere of Jupiter.
n. a tool used for testing or examining, especially for medical or scientific purposes, or an exploratory mission to a planet or other celestial body; (verb) to investigate, examine, or search into something

ANSWERS: 8. elegant, 9. blank, 10. extreme, 11. precise, 12. margin, 13. monolith, 14. rearrange, 15. probe

16. The customs officer required the traveler to _____ his suitcase.

v. to open something, such as a door, window, etc., usually using a key

17. People can pick out superior products _____ of the quality of the advertising.

adv. not paying attention or considering something or someone even if the situation is bad or there are difficulties

18. The president began to _____ an army.

v. to collect in one place as a single group

19. We must _____ a new system to streamline our workflow and increase efficiency.

v. to grow or expand; to improve or refine through a process of progress and refinement, often to achieve greater sophistication or complexity; to elaborate or add detail to something that is in the process of being created

20. I will work hard to _____ my goals and realize my dreams.

v. to successfully complete a task or goal, often through hard work, perseverance, and dedication; to attain or accomplish something that one has set out to do

21. _____ 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

22. The package was a _____ shape, which made it easier to stack on the shelf.

adj. having the shape of a cube or being of three dimensions; measured in units that are the third power of a linear unit

23. The _____ will repair my telephone tomorrow morning.

n. a person whose job is designing, building, or maintaining something such as machines, structures, or software

ANSWERS: 16. unlock, 17. regardless, 18. assemble, 19. develop, 20. achieve, 21. Alien, 22. cubic, 23. engineer

24. This figure is _____ about the x-axis.

adj. having similarity in size, shape, and relative position of corresponding parts

25. The plant has a stunning _____ blossom.

adj. of a color intermediate between red and blue

26. There will be an _____ lecture for new students this afternoon.

n. a person's basic attitudes, beliefs, and preferences about particular things; a course introducing a new situation or environment

27. I cut the cheese into small _____ for the salad.

n. a three-dimensional shape with six square faces that are all equal in size; (of mathematics) the result of multiplying the number by itself three times

28. As an _____ he had the right to make his own decisions and live his life as he saw fit.

n. a single person or thing, as distinct from a group

29. 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

30. The man _____ before opening the door.

v. to take a short break from talking or doing something before continuing

31. 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: 24. symmetrical, 25. purple, 26. orientation, 27. cubes, 28. individual, 29. environment, 30. paused, 31. planet

32. Her response revealed _____ idiocy.

adj. unbelievable; enormous

33. Lead is an effective _____ against X-rays, gamma rays, and other harmful radiation.

n. a protective covering or structure, especially in the past, that soldiers held in front of their bodies to protect themselves

34. 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

35. The _____ surrounding the disappearance of the traveler has yet to be solved by authorities.

n. something difficult to understand or explain; a secret or enigmatic quality that adds to the fascination or interest of something; a genre of fiction that involves the solution of a crime or a puzzle

36. 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

37. That statement by the prime minister drew _____ international criticism.

adj. (especially of a feeling) very strong; extremely sharp or severe

ANSWERS: 32. incredible, 33. shield, 34. discovery, 35. mystery, 36. atmosphere, 37. intense