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Vocabulary Builder Reference from...

Fabio Pacucci: Could we harness the power of a black hole? | TED Talk

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

Advanced Words Only

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Session 1: Word List

galactic

adj. relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope

synonym: cosmic, celestial, enormous

(1) **galactic** scale, (2) a **galactic** system

The Milky Way is a **galactic** collection of billions of stars and planets.

industrious

adj. hardworking, diligent, and persistent in effort

synonym: diligent, hardworking, assiduous

(1) **industrious** worker, (2) **industrious** student

He was known to be very **industrious** and would often work late into the night.

terraform

v. to transform the environment or land of a planet, moon, or other celestial body to make it habitable for life, typically by introducing or modifying the atmosphere, temperature, or topography

(1) **terraform** Mars, (2) **terraform** the planet

The company plans to **terraform** the barren land into a lush green park.

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.

yotta

n. a prefix used in the International System of Units to denote a factor of 10 to the power of 24

(1,000,000,000,000,000,000,000,000), often used in computer science and information technology to represent extremely large quantities of data

(1) **yottabyte**, (2) **yotta** values

The development of quantum computing may result in **yotta-scale** calculations becoming commonplace.

joule

n. the unit of measurement for energy in the International System of Units (SI), equal to the work done by a force of one newton when its point of application moves one meter in the direction of the force

synonym: calorie

(1) measure energy in **joules**, (2) **joule** heating

A 60-watt light bulb uses 60 **joules** of energy per second.

barring

adv. excepting or excluding something or someone; in the absence of something or someone

synonym: except, apart from

(1) **barring** bad weather, (2) **barring** unexpected circumstances

Barring any unforeseeable technical issues, the project should be completed by next week.

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?

counterintuitive

adj. contrary to what common sense would suggest

synonym: unreasonable, paradoxical, nonsensical

(1) **counterintuitive** results, (2) **counterintuitive** behavior

The **counterintuitive** nature of quantum physics has been a source of confusion for scientists for decades.

accretion

n. the process of gradual growth or accumulation, particularly of layers or matter building up over time; the result of such a process

synonym: accumulation, buildup, growth

(1) stellar **accretion**, (2) island **accretion**

The rock was formed by the slow **accretion** of sediments over millions of years.

plummet

v. to fall or drop suddenly and steeply; to decline rapidly or sharply

synonym: drop, plunge, fall

(1) **plummeting** sales, (2) **plummet** against other major currencies

The stock prices have **plummeted** in the last hour, causing concern for investors.

gravitational

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

synonym: weighty, heavy, earthbound

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

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

radiate

v. to spread out or emit something, such as light or heat, in all directions

synonym: give off, scatter, beam

(1) **radiate** an aura, (2) **radiate** in all directions

Roads **radiate** from the famous building in the center of the city.

astonishing

adj. surprising or shocking; difficult to believe

synonym: surprising, shocking, astounding

(1) **astonishing** achievement, (2) make **astonishing** gains
The news of her sudden death was **astonishing** to everyone who knew her.

rot

v. to decay, or cause something to decay, naturally and gradually

synonym: perish, decay, corrode

(1) begin to **rot**, (2) **rot** with age
Please refrigerate the meat, or it will **rot**.

drastic

adj. radical and extreme; likely to have a significant or far-reaching impact

synonym: extreme, fierce, radical

(1) **drastic** measures, (2) make **drastic** revision
The global community is undergoing **drastic** changes at present.

outshine

v. to be more brilliant, striking, or impressive than; to outdo or excel

synonym: surpass, excel, outdo

(1) **outshine** his teacher, (2) **outshine** expectations
The new singer **outshined** all the others on stage with her powerful voice.

fission

n. the splitting of an atomic nucleus into two or smaller nuclei, releasing a large amount of energy; the process of breaking something into smaller parts or pieces

synonym: splitting, division, separation

(1) heavy-ion **fission**, (2) atomic **fission**
Nuclear **fission** is the process of splitting an atom into two smaller ones.

devise

v. to come up with an idea, plan, theory, etc., using your intelligence or imagination

synonym: create, concoct, invent

(1) **devise** a plan, (2) **devise** a literary plot

They had to **devise** a system that did not depend on fossil fuels.

physicist

n. a scientist who specializes in the field of physics

(1) talented **physicist**, (2) theoretical **physicist**

Einstein was an outstanding and famous **physicist** of the 20th century.

freeman

n. a person who is not a serf or enslaved person and has the right to hold property and vote

synonym: citizen, individual, person

(1) **freeman** rights, (2) **freeman** status

In the colonial period, only **freeman** was allowed to vote.

smithereens

n. small fragments, pieces, or splinters resulting from the breaking or smashing of something

synonym: shreds, bits, fragments

(1) split into **smithereens**, (2) get blown to **smithereens**

The vase was shattered into **smithereens** after it fell off the table.

swarm

n. a group of many things, such as insects, fishes, etc., in the air or water or on the ground

synonym: horde, hive, throng

(1) a **swarm** of mosquitoes, (2) locust **swarm**

A **swarm** of angry bees attacked because we had approached the hive.

powerplant

n. a facility designed for generating electricity or other forms of power, typically through the use of turbines, engines, or other power-generating mechanisms

synonym: generator, power station, power center

(1) **powerplant** emissions, (2) nuclear **powerplant**

The **powerplant** operator monitors the equipment and power output to ensure everything runs smoothly.

disrupt

- v.* to prevent or stop something, especially an event, activity, or process, from continuing in the usual way by causing a problem or disturbance

synonym: interrupt, disturb, break into

(1) **disrupt** a well-ordered condition, (2) **disrupt** sleep
I'm so sorry to **disrupt** you when you're pretty busy.

hematite

- n.* a reddish or black mineral consisting of iron oxide, which is the main ore of iron

synonym: iron ore, bloodstone

(1) **hematite** deposits, (2) **hematite** mineral

The geology museum had an exhibit showcasing various specimens of **hematite**.

dismantle

- v.* to take apart or demolish (a structure, machine, system, or the like); to strip off fittings or equipment

synonym: take apart, demolish, take down

(1) **dismantle** a machine, (2) **dismantle** a system

The old building had to be **dismantled** because it was structurally unsound.

speculate

- v.* to form a theory or conjecture or guess about a subject without solid evidence

synonym: assume, conjecture, infer

(1) **speculate** about the reason, (2) **speculate** on the outcome

He **speculated** that this investment would lead to success.

conquer

- v.* to bring under control by force or authority

synonym: defeat, overpower, subdue

(1) **conquer** fatal disease, (2) **conquer** the world

You must **conquer** your anxiety about driving.

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.

superstructure

n. the part of a structure or building that is built on top of the foundation or base; a framework or system that is built on top of something else and supports or enhances it

synonym: framework, structure, infrastructure

(1) **superstructure** design, (2) wooden **superstructure**
The bridge's **superstructure** was carefully constructed to withstand high winds and heavy traffic.

ingenuity

n. the quality of inventing things or solving problems in clever new ways

synonym: creativity, invention, originality

(1) the infinite **ingenuity** of man, (2) abound in **ingenuity**
Creativity and **ingenuity** are often brought about by extreme concentration.

Session 2: Spelling

- | | |
|---|--|
| 1. pl____ting sales | <i>v.</i> to fall or drop suddenly and steeply; to decline rapidly or sharply |
| 2. locust sw__m | <i>n.</i> a group of many things, such as insects, fishes, etc., in the air or water or on the ground |
| 3. gra_____nal energy | <i>adj.</i> relating to or caused by gravity (= the force that attracts objects towards one another) |
| 4. de___e a plan | <i>v.</i> to come up with an idea, plan, theory, etc., using your intelligence or imagination |
| 5. pl____t against other major currencies | <i>v.</i> to fall or drop suddenly and steeply; to decline rapidly or sharply |
| 6. fr____n rights | <i>n.</i> a person who is not a serf or enslaved person and has the right to hold property and vote |
| 7. dr____c measures | <i>adj.</i> radical and extreme; likely to have a significant or far-reaching impact |
| 8. ast_____cal numbers | <i>adj.</i> relating to astronomy or the study of celestial bodies and phenomena; very large or immense in scale or magnitude |
| 9. begin to r_t | <i>v.</i> to decay, or cause something to decay, naturally and gradually |
| 10. ou____ne his teacher | <i>v.</i> to be more brilliant, striking, or impressive than; to outdo or excel |
| 11. pow_____nt emissions | <i>n.</i> a facility designed for generating electricity or other forms of power, typically through the use of turbines, engines, or other power-generating mechanisms |

ANSWERS: 1. plummet, 2. swarm, 3. gravitational, 4. devise, 5. plummet, 6. freeman, 7. drastic, 8. astronomical, 9. rot, 10. outshine, 11. powerplant

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|--------------------------------------|---|
| 12. he____te mineral | <i>n.</i> a reddish or black mineral consisting of iron oxide, which is the main ore of iron |
| 13. yo__abyte | <i>n.</i> a prefix used in the International System of Units to denote a factor of 10 to the power of 24 (1,000,000,000,000,000,000,000,000), often used in computer science and information technology to represent extremely large quantities of data |
| 14. measure energy in jo__es | <i>n.</i> the unit of measurement for energy in the International System of Units (SI), equal to the work done by a force of one newton when its point of application moves one meter in the direction of the force |
| 15. ou____ne expectations | <i>v.</i> to be more brilliant, striking, or impressive than; to outdo or excel |
| 16. wooden sup_____ure | <i>n.</i> the part of a structure or building that is built on top of the foundation or base; a framework or system that is built on top of something else and supports or enhances it |
| 17. cou_____ive behavior | <i>adj.</i> contrary to what common sense would suggest |
| 18. ba____g unexpected circumstances | <i>adv.</i> excepting or excluding something or someone; in the absence of something or someone |
| 19. di_____le a machine | <i>v.</i> to take apart or demolish (a structure, machine, system, or the like); to strip off fittings or equipment |

ANSWERS: 12. hematite, 13. yotta, 14. joule, 15. outshine, 16. superstructure, 17. counterintuitive, 18. barring, 19. dismantle

20. theoretical ph_____st	<i>n.</i> a scientist who specializes in the field of physics
21. de___e a literary plot	<i>v.</i> to come up with an idea, plan, theory, etc., using your intelligence or imagination
22. a ga____ic system	<i>adj.</i> relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope
23. jo___e heating	<i>n.</i> the unit of measurement for energy in the International System of Units (SI), equal to the work done by a force of one newton when its point of application moves one meter in the direction of the force
24. he____te deposits	<i>n.</i> a reddish or black mineral consisting of iron oxide, which is the main ore of iron
25. di_____le a system	<i>v.</i> to take apart or demolish (a structure, machine, system, or the like); to strip off fittings or equipment
26. co____r fatal disease	<i>v.</i> to bring under control by force or authority
27. abound in in_____ty	<i>n.</i> the quality of inventing things or solving problems in clever new ways
28. sp_____te about the reason	<i>v.</i> to form a theory or conjecture or guess about a subject without solid evidence
29. make dr____c revision	<i>adj.</i> radical and extreme; likely to have a significant or far-reaching impact
30. ga____ic scale	<i>adj.</i> relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope

ANSWERS: 20. physicist, 21. devise, 22. galactic, 23. joule, 24. hematite, 25. dismantle, 26. conquer, 27. ingenuity, 28. speculate, 29. drastic, 30. galactic

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|-----------------------------------|---|
| 31. the infinite in_____ty of man | <i>n.</i> the quality of inventing things or solving problems in clever new ways |
| 32. stellar ac_____on | <i>n.</i> the process of gradual growth or accumulation, particularly of layers or matter building up over time; the result of such a process |
| 33. a sw__m of mosquitoes | <i>n.</i> a group of many things, such as insects, fishes, etc., in the air or water or on the ground |
| 34. split into smi_____ns | <i>n.</i> small fragments, pieces, or splinters resulting from the breaking or smashing of something |
| 35. solar ast_____er | <i>n.</i> a physicist who studies astronomy |
| 36. di_____t sleep | <i>v.</i> to prevent or stop something, especially an event, activity, or process, from continuing in the usual way by causing a problem or disturbance |
| 37. te_____rm the planet | <i>v.</i> to transform the environment or land of a planet, moon, or other celestial body to make it habitable for life, typically by introducing or modifying the atmosphere, temperature, or topography |
| 38. make ast_____ng gains | <i>adj.</i> surprising or shocking; difficult to believe |
| 39. heavy-ion fi_____n | <i>n.</i> the splitting of an atomic nucleus into two or smaller nuclei, releasing a large amount of energy; the process of breaking something into smaller parts or pieces |

ANSWERS: 31. ingenuity, 32. accretion, 33. swarm, 34. smithereens, 35. astronomer, 36. disrupt, 37. terraform, 38. astonishing, 39. fission

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|------------------------------|---|
| 40. ra_____e an aura | <i>v.</i> to spread out or emit something, such as light or heat, in all directions |
| 41. ast_____cal observation | <i>adj.</i> relating to astronomy or the study of celestial bodies and phenomena; very large or immense in scale or magnitude |
| 42. fr_____n status | <i>n.</i> a person who is not a serf or enslaved person and has the right to hold property and vote |
| 43. sp_____te on the outcome | <i>v.</i> to form a theory or conjecture or guess about a subject without solid evidence |
| 44. co_____r the world | <i>v.</i> to bring under control by force or authority |
| 45. amateur ast_____er | <i>n.</i> a physicist who studies astronomy |
| 46. te_____rm Mars | <i>v.</i> to transform the environment or land of a planet, moon, or other celestial body to make it habitable for life, typically by introducing or modifying the atmosphere, temperature, or topography |
| 47. ast_____ng achievement | <i>adj.</i> surprising or shocking; difficult to believe |
| 48. su_____e as evidence | <i>v.</i> to be enough or sufficient; to meet the needs or requirements of something or someone; to satisfy or fulfill a purpose |
| 49. gra_____nal waves | <i>adj.</i> relating to or caused by gravity (= the force that attracts objects towards one another) |
| 50. ind_____us student | <i>adj.</i> hardworking, diligent, and persistent in effort |

ANSWERS: 40. radiate, 41. astronomical, 42. freeman, 43. speculate, 44. conquer, 45. astronomer, 46. terraform, 47. astonishing, 48. suffice, 49. gravitational, 50. industrious

- | | |
|-----------------------------|---|
| 51. yo__a values | <i>n.</i> a prefix used in the International System of Units to denote a factor of 10 to the power of 24 (1,000,000,000,000,000,000,000,000), often used in computer science and information technology to represent extremely large quantities of data |
| 52. get blown to smi_____ns | <i>n.</i> small fragments, pieces, or splinters resulting from the breaking or smashing of something |
| 53. cou_____ive results | <i>adj.</i> contrary to what common sense would suggest |
| 54. nuclear pow_____nt | <i>n.</i> a facility designed for generating electricity or other forms of power, typically through the use of turbines, engines, or other power-generating mechanisms |
| 55. su_____e to live | <i>v.</i> to be enough or sufficient; to meet the needs or requirements of something or someone; to satisfy or fulfill a purpose |
| 56. atomic fi_____n | <i>n.</i> the splitting of an atomic nucleus into two or smaller nuclei, releasing a large amount of energy; the process of breaking something into smaller parts or pieces |
| 57. r_t with age | <i>v.</i> to decay, or cause something to decay, naturally and gradually |
| 58. island ac_____on | <i>n.</i> the process of gradual growth or accumulation, particularly of layers or matter building up over time; the result of such a process |

ANSWERS: 51. yotta, 52. smithereens, 53. counterintuitive, 54. powerplant, 55. suffice, 56. fission, 57. rot, 58. accretion

- | | |
|---------------------------------------|--|
| 59. sup_____ure design | <i>n.</i> the part of a structure or building that is built on top of the foundation or base; a framework or system that is built on top of something else and supports or enhances it |
| 60. di_____t a well-ordered condition | <i>v.</i> to prevent or stop something, especially an event, activity, or process, from continuing in the usual way by causing a problem or disturbance |
| 61. talented ph_____st | <i>n.</i> a scientist who specializes in the field of physics |
| 62. ind_____us worker | <i>adj.</i> hardworking, diligent, and persistent in effort |
| 63. ba_____g bad weather | <i>adv.</i> excepting or excluding something or someone; in the absence of something or someone |
| 64. ra_____e in all directions | <i>v.</i> to spread out or emit something, such as light or heat, in all directions |

ANSWERS: 59. superstructure, 60. disrupt, 61. physicist, 62. industrious, 63. barring, 64. radiate

Session 3: Fill in the Blanks

1. He _____ that this investment would lead to success.
v. to form a theory or conjecture or guess about a subject without solid evidence
2. The vase was shattered into _____ after it fell off the table.
n. small fragments, pieces, or splinters resulting from the breaking or smashing of something
3. 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
4. The company plans to _____ the barren land into a lush green park.
v. to transform the environment or land of a planet, moon, or other celestial body to make it habitable for life, typically by introducing or modifying the atmosphere, temperature, or topography
5. The global community is undergoing _____ changes at present.
adj. radical and extreme; likely to have a significant or far-reaching impact
6. They had to _____ a system that did not depend on fossil fuels.
v. to come up with an idea, plan, theory, etc., using your intelligence or imagination
7. A 60-watt light bulb uses 60 _____ of energy per second.
n. the unit of measurement for energy in the International System of Units (SI), equal to the work done by a force of one newton when its point of application moves one meter in the direction of the force

ANSWERS: 1. speculated, 2. smithereens, 3. suffice, 4. terraform, 5. drastic, 6. devise, 7. joules

8. 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

9. The Milky Way is a _____ collection of billions of stars and planets.

adj. relating to or concerning the galaxy or galaxies; having characteristics or qualities that are vast, extensive, or cosmic in scope

10. Nuclear _____ is the process of splitting an atom into two smaller ones.

n. the splitting of an atomic nucleus into two or smaller nuclei, releasing a large amount of energy; the process of breaking something into smaller parts or pieces

11. The _____ nature of quantum physics has been a source of confusion for scientists for decades.

adj. contrary to what common sense would suggest

12. The geology museum had an exhibit showcasing various specimens of _____.

n. a reddish or black mineral consisting of iron oxide, which is the main ore of iron

13. Creativity and _____ are often brought about by extreme concentration.

n. the quality of inventing things or solving problems in clever new ways

14. The rock was formed by the slow _____ of sediments over millions of years.

n. the process of gradual growth or accumulation, particularly of layers or matter building up over time; the result of such a process

15. I'm so sorry to _____ you when you're pretty busy.

v. to prevent or stop something, especially an event, activity, or process, from continuing in the usual way by causing a problem or disturbance

ANSWERS: 8. astronomical, 9. galactic, 10. fission, 11. counterintuitive, 12. hematite, 13. ingenuity, 14. accretion, 15. disrupt

16. You must _____ your anxiety about driving.

v. to bring under control by force or authority

17. Please refrigerate the meat, or it will _____.

v. to decay, or cause something to decay, naturally and gradually

18. A _____ of angry bees attacked because we had approached the hive.

n. a group of many things, such as insects, fishes, etc., in the air or water or on the ground

19. The news of her sudden death was _____ to everyone who knew her.

adj. surprising or shocking; difficult to believe

20. _____ any unforeseeable technical issues, the project should be completed by next week.

adv. excepting or excluding something or someone; in the absence of something or someone

21. The bridge's _____ was carefully constructed to withstand high winds and heavy traffic.

n. the part of a structure or building that is built on top of the foundation or base; a framework or system that is built on top of something else and supports or enhances it

22. The stock prices have _____ in the last hour, causing concern for investors.

v. to fall or drop suddenly and steeply; to decline rapidly or sharply

23. In the colonial period, only _____ was allowed to vote.

n. a person who is not a serf or enslaved person and has the right to hold property and vote

ANSWERS: 16. conquer, 17. rot, 18. swarm, 19. astonishing, 20. Barring, 21. superstructure, 22. plummeted, 23. freeman

24. The old building had to be _____ because it was structurally unsound.
- v.* to take apart or demolish (a structure, machine, system, or the like); to strip off fittings or equipment
25. The _____ operator monitors the equipment and power output to ensure everything runs smoothly.
- n.* a facility designed for generating electricity or other forms of power, typically through the use of turbines, engines, or other power-generating mechanisms
26. The _____ force of the black hole was so strong that nothing, not even light, could escape.
- adj.* relating to or caused by gravity (= the force that attracts objects towards one another)
27. Roads _____ from the famous building in the center of the city.
- v.* to spread out or emit something, such as light or heat, in all directions
28. Einstein was an outstanding and famous _____ of the 20th century.
- n.* a scientist who specializes in the field of physics
29. This question has fascinated solar _____ for decades.
- n.* a physicist who studies astronomy
30. The new singer _____ all the others on stage with her powerful voice.
- v.* to be more brilliant, striking, or impressive than; to outdo or excel
31. The development of quantum computing may result in _____ calculations becoming commonplace.
- n.* a prefix used in the International System of Units to denote a factor of 10 to the power of 24 (1,000,000,000,000,000,000,000,000), often used in computer science and information technology to represent extremely large quantities of data

ANSWERS: 24. dismantled, 25. powerplant, 26. gravitational, 27. radiate, 28. physicist, 29. astronomers, 30. outshined, 31. yotta-scale

32. He was known to be very _____ and would often work late into the night.
adj. hardworking, diligent, and persistent in effort

ANSWERS: 32. industrious