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Fabio Pacucci: Can a black hole be destroyed? | TED Talk

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

Advanced Words Only

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Session 1: Word List

asteroid

n. a small rocky body orbiting the sun, typically in the region between Mars and Jupiter

synonym: minor planet, planetoid, rocky planetesimal

(1) **asteroid** mining, (2) **asteroid** explorer

Scientists are studying the composition and origins of the **asteroid** belt to understand the early solar system better.

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.

evaporate

v. to turn a liquid into a gas; to become less intense and disappear gradually

synonym: vaporize, disappear, vanish

(1) **evaporate** the water, (2) **evaporate** almost overnight

The sun will **evaporate** the mist.

hawk

n. a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations

synonym : militarist, jingo, aggressor

(1) cast off a **hawk**, (2) congressional **hawk**

That team signed a center forward who was a ball- **hawk**.

fluctuation

n. a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes

synonym : change, instability, flux

(1) price **fluctuations**, (2) **fluctuation** of water level

Temperature **fluctuations** are often milder in oceanfront areas.

spacetime

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

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

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

fluctuate

v. to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably

synonym : vary, oscillate, sway

(1) **fluctuate** prices, (2) **fluctuate** rapidly

Stock prices **fluctuate** daily based on market demand and supply.

antiparticle

n. a subatomic particle that has the same mass and opposite charge as its corresponding particle (e.g., a positron is the antiparticle of an electron)

synonym : opposite, antimatter, anti-substance

(1) **antiparticle** physics, (2) **antiparticle** collisions

When an **antiparticle** meets its corresponding particle, the two annihilate.

collide

v. to hit something violently when moving

synonym : clash, slam, contradict

(1) **collide** head-on, (2) **collide** in midair
The interests of the two countries **collide**.

annihilate

v. to destroy completely; to cause something to cease to exist

synonym: destroy, obliterate, eradicate

(1) **annihilate** the enemy, (2) **annihilate** all doubts

The virus had the potential to **annihilate** entire populations if left unchecked.

emit

v. to give off or send out something such as light, heat, sound, gas, etc.

synonym: give off, radiate, expel

(1) **emit** a gamma ray, (2) **emit** air pollution

During the unloading, the container box **emits** a clicking sound.

excruciating

adj. extremely painful, intense, or distressing; causing great physical or emotional suffering

synonym: agonizing, unbearable, torturous

(1) **excruciating** ordeal, (2) **excruciating** embarrassment

The **excruciating** pain in his ankle made it difficult to walk.

thermodynamics

n. the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation

(1) applied **thermodynamics**, (2) the laws of **thermodynamics**

The second law of **thermodynamics** denies the existence of a perpetual motion engine.

celestial

adj. relating to the sky or the heavens; of or like the sky or the heavens

synonym: heavenly, divine, ethereal

(1) **celestial** bliss, (2) **celestial** navigation

The **celestial** bodies in the night sky were beautiful to behold.

accrete

v. to accumulate or grow by gradual addition or accumulation; to form into a larger mass or body over time; to increase or expand naturally or organically

synonym: accumulate, grow, build up

(1) **accrete** material, (2) **accrete** into a larger entity

Over the years, the layers of sediment gradually **accrete** and form new rock formations.

primordial

adj. existing from the beginning of time or the start of a particular process; relating to the earliest stage of the universe

synonym: ancient, original, primary

(1) **primordial** forms of life, (2) **primordial** gas

The discovery of the **primordial** soup was a crucial step in understanding the origins of life on Earth.

inconceivable

adj. hard to imagine or believe

synonym: unimaginable, impossible, unthinkable

(1) **inconceivable** pain, (2) **inconceivable** ideas

It would be **inconceivable** for him to alter his behavior.

terrifying

adj. very frightening or intimidating

synonym: frightening, intimidating, alarming

(1) **terrifying** experience, (2) **terrifying** events

Large earthquakes often generate **terrifying** tsunamis.

impervious

adj. unable to be affected by something; not allowing something to pass through, especially fluid; unresponsive or indifferent to criticism or persuasion

synonym: impregnable, invulnerable, indestructible

(1) **impervious** to criticism, (2) **impervious** material

The jacket is **impervious** to water and will keep you dry in the rain.

blaze

v. to burst into flame or light up intensely; to move in a trailblazing manner; to shine brightly or conspicuously

synonym: burn, flame, ignite

(1) **blaze** a trail, (2) **blaze** with fury

The forest fire continued to **blaze** out of control, threatening nearby homes.

Session 2: Spelling

1. exc_____ing ordeal *adj.* extremely painful, intense, or distressing; causing great physical or emotional suffering
2. bl__e a trail *v.* to burst into flame or light up intensely; to move in a trailblazing manner; to shine brightly or conspicuously
3. e__t a gamma ray *v.* to give off or send out something such as light, heat, sound, gas, etc.
4. quantum sp_____me *n.* a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity
5. ant_____cle collisions *n.* a subatomic particle that has the same mass and opposite charge as its corresponding particle (e.g., a positron is the antiparticle of an electron)
6. ac_____e material *v.* to accumulate or grow by gradual addition or accumulation; to form into a larger mass or body over time; to increase or expand naturally or organically
7. imp_____us to criticism *adj.* unable to be affected by something; not allowing something to pass through, especially fluid; unresponsive or indifferent to criticism or persuasion

ANSWERS: 1. excruciating, 2. blaze, 3. emit, 4. spacetime, 5. antiparticle, 6. accrete, 7. impervious

8. applied the _____ ics *n.* the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation
9. ann _____ te the enemy *v.* to destroy completely; to cause something to cease to exist
10. co _____ e in midair *v.* to hit something violently when moving
11. ter _____ ng events *adj.* very frightening or intimidating
12. e __ t air pollution *v.* to give off or send out something such as light, heat, sound, gas, etc.
13. ev _____ te almost overnight *v.* to turn a liquid into a gas; to become less intense and disappear gradually
14. flu _____ on of water level *n.* a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes
15. exc _____ ing embarrassment *adj.* extremely painful, intense, or distressing; causing great physical or emotional suffering
16. ac _____ e into a larger entity *v.* to accumulate or grow by gradual addition or accumulation; to form into a larger mass or body over time; to increase or expand naturally or organically
17. ann _____ te all doubts *v.* to destroy completely; to cause something to cease to exist
18. ce _____ al bliss *adj.* relating to the sky or the heavens; of or like the sky or the heavens

ANSWERS: 8. thermodynamics, 9. annihilate, 10. collide, 11. terrifying, 12. emit, 13. evaporate, 14. fluctuation, 15. excruciating, 16. accrete, 17. annihilate, 18. celestial

19. cast off a h__k *n.* a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations
20. ce_____al navigation *adj.* relating to the sky or the heavens; of or like the sky or the heavens
21. co_____e head-on *v.* to hit something violently when moving
22. pri_____al gas *adj.* existing from the beginning of time or the start of a particular process; relating to the earliest stage of the universe
23. bl__e with fury *v.* to burst into flame or light up intensely; to move in a trailblazing manner; to shine brightly or conspicuously
24. ter_____ng experience *adj.* very frightening or intimidating
25. ant_____cle physics *n.* a subatomic particle that has the same mass and opposite charge as its corresponding particle (e.g., a positron is the antiparticle of an electron)
26. ev_____te the water *v.* to turn a liquid into a gas; to become less intense and disappear gradually
27. as_____id explorer *n.* a small rocky body orbiting the sun, typically in the region between Mars and Jupiter
28. the laws of the _____ics *n.* the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation
29. fl_____te prices *v.* to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably

ANSWERS: 19. hawk, 20. celestial, 21. collide, 22. primordial, 23. blaze, 24. terrifying, 25. antiparticle, 26. evaporate, 27. asteroid, 28. thermodynamics, 29. fluctuate

30. fl_____te rapidly
v. to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably
31. imp_____us material
adj. unable to be affected by something; not allowing something to pass through, especially fluid; unresponsive or indifferent to criticism or persuasion
32. gra_____nal energy
adj. relating to or caused by gravity (= the force that attracts objects towards one another)
33. price flu_____ons
n. a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes
34. gra_____nal waves
adj. relating to or caused by gravity (= the force that attracts objects towards one another)
35. pri_____al forms of life
adj. existing from the beginning of time or the start of a particular process; relating to the earliest stage of the universe
36. inc_____ble ideas
adj. hard to imagine or believe
37. as_____id mining
n. a small rocky body orbiting the sun, typically in the region between Mars and Jupiter
38. inc_____ble pain
adj. hard to imagine or believe
39. sp_____me continuum
n. a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity

ANSWERS: 30. fluctuate, 31. impervious, 32. gravitational, 33. fluctuation, 34. gravitational, 35. primordial, 36. inconceivable, 37. asteroid, 38. inconceivable, 39. spacetime

40. congressional h__k

n. a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations

ANSWERS: 40. hawk

Session 3: Fill in the Blanks

1. The jacket is _____ to water and will keep you dry in the rain.
adj. unable to be affected by something; not allowing something to pass through, especially fluid; unresponsive or indifferent to criticism or persuasion
2. Over the years, the layers of sediment gradually _____ and form new rock formations.
v. to accumulate or grow by gradual addition or accumulation; to form into a larger mass or body over time; to increase or expand naturally or organically
3. During the unloading, the container box _____ a clicking sound.
v. to give off or send out something such as light, heat, sound, gas, etc.
4. The _____ bodies in the night sky were beautiful to behold.
adj. relating to the sky or the heavens; of or like the sky or the heavens
5. Large earthquakes often generate _____ tsunamis.
adj. very frightening or intimidating
6. The forest fire continued to _____ out of control, threatening nearby homes.
v. to burst into flame or light up intensely; to move in a trailblazing manner; to shine brightly or conspicuously
7. Temperature _____ are often milder in oceanfront areas.
n. a change, or the process of changing, that frequently happens, especially from one extreme to another; the quality of being unsteady and subject to changes
8. The sun will _____ the mist.
v. to turn a liquid into a gas; to become less intense and disappear gradually

ANSWERS: 1. impervious, 2. accrete, 3. emits, 4. celestial, 5. terrifying, 6. blaze, 7. fluctuations, 8. evaporate

9. The virus had the potential to _____ entire populations if left unchecked.
v. to destroy completely; to cause something to cease to exist
10. The curvature of _____ is affected by the presence of mass and energy.
n. a four-dimensional continuum consisting of three dimensions of space and one dimension of time, used to describe the physical universe according to Einstein's theory of general relativity
11. That team signed a center forward who was a ball-_____.
n. a bird of prey typically having short rounded wings and a long tail; an advocate of an aggressive policy on foreign relations
12. The second law of _____ denies the existence of a perpetual motion engine.
n. the area of physics that deals with heat, work, and temperature and their relation to energy, entropy, and the physical properties of matter and radiation
13. The _____ pain in his ankle made it difficult to walk.
adj. extremely painful, intense, or distressing; causing great physical or emotional suffering
14. Scientists are studying the composition and origins of the _____ belt to understand the early solar system better.
n. a small rocky body orbiting the sun, typically in the region between Mars and Jupiter
15. The discovery of the _____ soup was a crucial step in understanding the origins of life on Earth.
adj. existing from the beginning of time or the start of a particular process; relating to the earliest stage of the universe

ANSWERS: 9. annihilate, 10. spacetime, 11. hawk, 12. thermodynamics, 13. excruciating, 14. asteroid, 15. primordial

16. When an _____ meets its corresponding particle, the two annihilate.
n. a subatomic particle that has the same mass and opposite charge as its corresponding particle (e.g., a positron is the antiparticle of an electron)
17. The interests of the two countries _____.
v. to hit something violently when moving
18. 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)
19. It would be _____ for him to alter his behavior.
adj. hard to imagine or believe
20. Stock prices _____ daily based on market demand and supply.
v. to rise and fall irregularly or unexpectedly; to vary or change often and unpredictably

ANSWERS: 16. antiparticle, 17. collide, 18. gravitational, 19. inconceivable, 20. fluctuate