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David Lunney: Where does gold come from? | TED

Talk

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

_gold_come_from



Advanced Words Only

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Session 1: Word List

alchemy

n. a medieval chemical philosophy and speculative theory that aimed to transform base metals into gold or produce a universal elixir that could cure all diseases and grant immortality; a process of transformation or creation that appears magical or mysterious

synonym: sorcery, magic, transmutation

(1) alchemy experiment, (2) alchemy of emotions

Today, the study of **alchemy** remains an important part of the history of science and philosophy

gleam

 to reflect light in a way that creates a shining or bright and attractive appearance; to become visible or apparent

synonym: glitter, shimmer, shine

(1) gleam in eyes, (2) gleam like honey

The diamond ring **gleamed** in the sunlight, catching everyone's eye.

portray

 to depict or describe someone or something in a painting, film, book, or other artistic work

synonym: depict, describe, illustrate

(1) **portray** feelings in words, (2) accurately **portray** the condition

We often **portray** political problems as religious issues.

eccentric

adj. weird or unusual, sometimes in a funny way synonym: bizarre, abnormal, curious

(1) display **eccentric** behavior, (2) **eccentric** characters He was **eccentric**, but he was also a genius.

extraterrestrial

adj. relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth

synonym: alien, outer, otherworldly

(1) **extraterrestrial** planet, (2) **extraterrestrial** intelligence Scientists are constantly searching for signs of **extraterrestrial** life in the universe.

cataclysm

 a sudden violent event that changes the earth's environment, such as a flood or a war

synonym: disaster, catastrophe, turmoil

(1) global **cataclysm**, (2) existential **cataclysm**The earthquake was a **cataclysm** from which the local people never recovered.

supernova

 a powerful and luminous explosion that occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant

synonym: explosion, detonation, blast

(1) extragalactic **supernova**, (2) **supernova** remnant The **supernova** explosion created a bright new star in the night sky.

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.

compress

v. to press or squeeze together to make something take up less space

synonym: condense, constrict, squeeze

(1) compress the chest, (2) compress gas

She **compressed** the files into a single ZIP archive to save space on her computer.

helium

a colorless, odorless, tasteless, non-toxic, inert,
 monatomic gas, the first in the noble gas series in the periodic table

synonym: He, light gas, noble gas

(1) helium atom, (2) helium gas

The **helium-filled** balloons floated into the sky.

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.

proton

- a very small particle with a positive charge equal to the negative charge of an electron that forms part of the nucleus of all atoms
- (1) proton decay, (2) proton conductivity

The solar wind is composed almost entirely of electrons and **protons**.

repel

- v. to force an attack or attacker to withdraw or retreat synonym: turn away, fight off, force back
- (1) repel bandits, (2) repel bad luck

This material can repel moisture swiftly.

shockwave

n. a wave or series of waves produced by a sudden disturbance, such as an explosion or a supersonic flow, capable of producing significant changes in pressure, temperature, and density of the medium through which it travels synonym: blast, shock, impact

(1) the propagation of **shockwaves**, (2) **shockwave** effect The **shockwave** from the explosion shattered windows for several blocks.

propel

to move, drive or push something forward or in a particular direction, often with a lot of force

synonym: drive, push, move

(1) **propel** growth, (2) **propel** the ship

An increase in employment helps **propel** economic growth.

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.
- to move in a circular or spiral pattern synonym: spin, whirl, turn
- (1) swirl the wine, (2) swirl up dirt and dust The chef expertly **swirled** the sauce onto the plate.

condense

swirl

to reduce the volume or size of something, often by removing water or other liquid; to make something shorter, more concise, or more concentrated

synonym: compress, compact, shorten

- (1) **condense** the text, (2) **condense** water vapor I need to **condense** all of my notes into a manageable summary for my presentation.

knead

to work or press into a flexible mixture, especially bread dough, with the hands, fingers, or a device

synonym: massage, rub, manipulate

(1) **knead** clay, (2) **knead** muscles I need to **knead** the dough before I can bake the bread.

geothermal

adj. relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth

synonym: underground, thermal, subterranean

(1) **geothermal** activity, (2) **geothermal** drilling

The town is exploring using **geothermal** energy to power its homes and buildings.

rarity

the condition or trait of being unusual; something that is unusual

synonym: rareness, infrequency, uncommonness

(1) the rarity of the event, (2) book of great rarity Due to their **rarity**, diamonds are expensive.

covet

to strongly desire or crave something, particularly something that belongs to someone else; to have an excessive or envious desire for

synonym: desire, yearn, crave

(1) **covet** wealth, (2) **covet** fame

She couldn't help but **covet** her friend's designer handbag.

to imitate someone's speech, movement, or behavior, especially to make others laugh

synonym: mirror, imitate, ape

(1) **mimic** a human voice, (2) **mimic** numerous instruments He is very popular at school because he can **mimic** all the teachers' accents.

bury

- to place a dead body in the ground, grave, or tomb synonym: entomb, sink, forget
- (1) **bury** in the earth, (2) **bury** emotion There is plenty of space to **bury** everyone.

dissolve

to be or cause to be absorbed by a liquid to form a part of the solution; to close down or dismiss

synonym: disband, disappear, liquefy

(1) **dissolve** the sugar, (2) officially **dissolved** the marriage

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mimic

The political party **dissolved** after much internal fighting.

minuscule

adj. extremely small; tiny

synonym: tiny, insignificant, microscopic

(1) minuscule amount, (2) minuscule letters

This ore emits minuscule quantities of radiation

eradicate

v. to get rid of or destroy something completely, especially something bad

synonym: destroy, eliminate, exterminate

(1) **eradicate** the deficit, (2) **eradicate** racial discrimination We are trying to **eradicate** this disease from the world.

Session 2: Spelling

1. pr___l growth

2. su____va remnant

3. mi____le letters

4. pr n conductivity

5. he___m atom

6. gl__m in eyes

7. pr___I the ship

8. book of great ra y

9. sh____ve effect

- v. to move, drive or push something forward or in a particular direction, often with a lot of force
- a powerful and luminous explosion that occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant

adj. extremely small; tiny

- a very small particle with a positive charge equal to the negative charge of an electron that forms part of the nucleus of all atoms
- a colorless, odorless, tasteless, non-toxic, inert, monatomic gas, the first in the noble gas series in the periodic table
- v. to reflect light in a way that creates a shining or bright and attractive appearance; to become visible or apparent
- to move, drive or push something forward or in a particular direction, often with a lot of force
- *n*. the condition or trait of being unusual; something that is unusual
- n. a wave or series of waves produced by a sudden disturbance, such as an explosion or a supersonic flow, capable of producing significant changes in pressure, temperature, and density of the medium through which it travels

ANSWERS: 1. propel, 2. supernova, 3. minuscule, 4. proton, 5. helium, 6. gleam, 7. propel, 8. rarity, 9. shockwave

10. the ray of the event	n.	the condition or trait of being unusual; something that is unusual
11. knd muscles	v.	to work or press into a flexible mixture, especially bread dough, with the hands, fingers, or a device
12. knd clay	v.	to work or press into a flexible mixture, especially bread dough, with the hands, fingers, or a device
13. coss gas	v.	to press or squeeze together to make something take up less space
14. display ecic behavior	adj.	weird or unusual, sometimes in a funny way
15. mic a human voice	v.	to imitate someone's speech, movement, or behavior, especially to make others laugh
16. prn decay	n.	a very small particle with a positive charge equal to the negative charge of an electron that forms part of the nucleus of all atoms
17. aly of emotions	n.	a medieval chemical philosophy and speculative theory that aimed to transform base metals into gold or produce a universal elixir that could cure all diseases and grant immortality; a process of transformation or creation that appears magical or mysterious
18. hem gas	n.	a colorless, odorless, tasteless, non-toxic, inert, monatomic gas, the first in the noble gas series in the periodic table

ANSWERS: 10. rarity, 11. knead, 12. knead, 13. compress, 14. eccentric, 15. mimic, 16. proton, 17. alchemy, 18. helium

19.	coss the chest	<i>v</i> .	to press or squeeze together to make something take up less space
20.	existential casm	n.	a sudden violent event that changes the earth's environment, such as a flood or a war
21.	by emotion	<i>v</i> .	to place a dead body in the ground, grave, or tomb
22.	extial planet	adj.	relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth
23.	the propagation of shves	n.	a wave or series of waves produced by a sudden disturbance, such as an explosion or a supersonic flow, capable of producing significant changes in pressure, temperature, and density of the medium through which it travels
24.	global casm	n.	a sudden violent event that changes the earth's environment, such as a flood or a war
25.	dive the sugar	<i>v</i> .	to be or cause to be absorbed by a liquid to form a part of the solution; to close down or dismiss
26.	reI bad luck	<i>v</i> .	to force an attack or attacker to withdraw or retreat
27.	ecic characters	adj.	weird or unusual, sometimes in a funny way
28.	granal energy	adj.	relating to or caused by gravity (= the force that attracts objects towards one another)

ANSWERS: 19. compress, 20. cataclysm, 21. bury, 22. extraterrestrial, 23. shockwave, 24. cataclysm, 25. dissolve, 26. repel, 27. eccentric, 28. gravitational

29.	swl up dirt and dust	<i>v</i> .	to move in a circular or spiral pattern
30.	erte racial discrimination	<i>v</i> .	to get rid of or destroy something completely, especially something bad
31.	extial intelligence	adj.	relating to or existing outside of the Earth's atmosphere or planetary boundaries; pertaining to beings or phenomena that originate from beyond the Earth
32.	erte the deficit	<i>v</i> .	to get rid of or destroy something completely, especially something bad
33.	intlar space	adj.	relating to or located in the space between stars
34.	intlar communication	adj.	relating to or located in the space between stars
35.	cose the text	ν.	to reduce the volume or size of something, often by removing water or other liquid; to make something shorter, more concise, or more concentrated
36.	poy feelings in words	<i>v</i> .	to depict or describe someone or something in a painting, film, book, or other artistic work
37.	cot fame	ν.	to strongly desire or crave something, particularly something that belongs to someone else; to have an excessive or envious desire for
38.	geoal activity	adj.	relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth

ANSWERS: 29. swirl, 30. eradicate, 31. extraterrestrial, 32. eradicate, 33. interstellar, 34. interstellar, 35. condense, 36. portray, 37. covet, 38. geothermal

39.	cose water vapor	v.	to reduce the volume or size of something, often by removing water or other liquid; to make something shorter, more concise, or more concentrated
40.	exe in popularity	<i>v</i> .	to burst or break open violently and noisily; to cause something to burst or break open
41.	glm like honey	ν.	to reflect light in a way that creates a shining or bright and attractive appearance; to become visible or apparent
42.	granal waves	adj.	relating to or caused by gravity (= the force that attracts objects towards one another)
43.	reI bandits	<i>v</i> .	to force an attack or attacker to withdraw or retreat
44.	cot wealth	<i>v</i> .	to strongly desire or crave something, particularly something that belongs to someone else; to have an excessive or envious desire for
45.	geoal drilling	adj.	relating to or produced by the internal heat of the earth; often used to refer to energy produced by tapping into the natural heat of the earth
46.	by in the earth	<i>v</i> .	to place a dead body in the ground, grave, or tomb
47.	exe in anger	<i>v</i> .	to burst or break open violently and noisily; to cause something to burst or break open

ANSWERS: 39. condense, 40. explode, 41. gleam, 42. gravitational, 43. repel, 44. covet, 45. geothermal, 46. bury, 47. explode

48. officially di ved the marriage to be or cause to be absorbed by a ν. liquid to form a part of the solution; to close down or dismiss 49. extragalactic su____va a powerful and luminous explosion that n. occurs in some stars, resulting in an extremely bright, short-lived object that later fades into a supernova remnant to imitate someone's speech, 50. mi c numerous instruments movement, or behavior, especially to make others laugh 51. al y experiment a medieval chemical philosophy and n. speculative theory that aimed to transform base metals into gold or produce a universal elixir that could cure all diseases and grant immortality; a process of transformation or creation that appears magical or mysterious 52. sw I the wine to move in a circular or spiral pattern ν. 53. mi le amount adj. extremely small; tiny 54. accurately po____y the condition to depict or describe someone or ν . something in a painting, film, book, or other artistic work

ANSWERS: 48. dissolve, 49. supernova, 50. mimic, 51. alchemy, 52. swirl, 53. minuscule, 54. portray

Session 3: Fill in the Blanks

1.	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)
2. adj	This ore emits quantities of radiation i. extremely small; tiny
3.	The from the explosion shattered windows for several blocks.
n.	a wave or series of waves produced by a sudden disturbance, such as an explosion or a supersonic flow, capable of producing significant changes in pressure, temperature, and density of the medium through which it travels
4.	An increase in employment helps economic growth.
<i>v</i> .	to move, drive or push something forward or in a particular direction, often with a lot of force
5.	Due to their diamonds are expensive.
n.	the condition or trait of being unusual; something that is unusual
6.	The balloons floated into the sky.
n.	a colorless, odorless, tasteless, non-toxic, inert, monatomic gas, the first in the noble gas series in the periodic table
7.	The earthquake was a from which the local people never recovered.
n.	a sudden violent event that changes the earth's environment, such as a flood or a war
	SWERS: 1. gravitational, 2. minuscule, 3. shockwave, 4. propel, 5. rarity, 6. ium-filled, 7. cataclysm

a medieval chemical philosophy and speculative theory that aimed to transform

base metals into gold or produce a universal elixir that could cure all diseases

and grant immortality; a process of transformation or creation that appears

n.

magical or mysterious

ANSWERS: 8. portray, 9. compressed, 10. dissolved, 11. eccentric, 12. gleamed, 13. extraterrestrial, 14. exploded, 15. alchemy

ANSWERS: 16. condense, 17. supernova, 18. geothermal, 19. swirled, 20. covet, 21. repel, 22. mimic, 23. knead

24.	We are trying to this disease from the world.
ν.	to get rid of or destroy something completely, especially something bad
25.	The medium comprises gas, dust, and cosmic rays that fill the space between stars.
adj	i. relating to or located in the space between stars
26.	There is plenty of space to everyone.
ν.	to place a dead body in the ground, grave, or tomb
27.	The solar wind is composed almost entirely of electrons and
n.	a very small particle with a positive charge equal to the negative charge of an electron that forms part of the nucleus of all atoms

ANSWERS: 24. eradicate, 25. interstellar, 26. bury, 27. protons