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Vocabulary Builder Reference from...

Matt Russo: What does the universe sound like? A musical tour | TED Talk

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

Advanced Words Only

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Session 1: Word List

constellation

n. a group of stars that form a recognizable pattern and have a name; a group of related or similar ideas, things, or people

synonym: asterism, array, pattern

(1) the stars of the Scorpion **constellation**, (2) northern **constellation**

Navigators still use the Little Bear **constellation** at sea.

ram

v. to strike or push forcefully, often to cause damage; to batter or break open a door or barrier using brute force

synonym: crash, collide, slam

(1) **ram** the door open, (2) **ram** into the ice

The car **rammed** into the wall, causing significant damage.

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.

humming

adj. producing a continuous, low, vibrating sound like that of the bee

synonym : buzzing, droning, vibrating

(1) **humming** sound, (2) **humming** bird

The **humming** of the bees filled the air as she walked through the garden.

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.

harmonious

adj. characterized by harmony or agreement; free from conflict or disagreement; pleasing or soothing in sound or tone

synonym : concordant, consistent, melodious

(1) **harmonious** relationship, (2) **harmonious** blend

The painting's **harmonious** composition and balance of colors made it a masterpiece.

paraphrase

v. to restate or reword a passage in one's own words, often to clarify or simplify the original meaning

synonym : rephrase, reword, reinterpret

(1) **paraphrase** a poem into prose, (2) **paraphrase** the meaning

He **paraphrased** the article in his own words to avoid being accused of plagiarism.

audible

adj. able to be heard; loud enough to be heard clearly

synonym : hearable, perceptible, loud enough

(1) **audible** sound, (2) **audible** words

An **audible** sigh from the back of the room broke the silence.

shatter

v. to break suddenly into many pieces

synonym : break, crash, destroy

(1) **shatter** the plate, (2) **shatter** a world record
Her husband's death **shattered** her life entirely.

consonant

n. a speech sound that is produced by completely or partially blocking the airflow through the mouth; a letter or group of letters representing a consonant sound, for example, "b," "c," "d," etc.

synonym: agreement, harmony, concord

(1) **consonant** blends, (2) a medial **consonant**

The **consonant** sounds at the beginning and end of the word made it easy to pronounce.

dissonant

adj. sounds that are not in harmony or are in conflict with one another; an uncomfortable or tense feeling caused by conflicting ideas or emotions

synonym: discordant, harsh, inharmonious

(1) a **dissonant** voice, (2) **dissonant** note

The **dissonant** sound from the poorly tuned instruments was painful to listen to.

oscillate

v. to swing or move back and forth like a pendulum or a wave; to fluctuate or alternate between two points or states; to hesitate or be indecisive

synonym: fluctuate, swing, vibrate

(1) **oscillate** back and forth, (2) **oscillate** between joy and anger

The fan in the room **oscillates**, making the airflow more evenly.

interplay

n. the way in which two or more things interact or influence each other

synonym: interaction, give-and-take, interconnection

(1) **interplay** among neurons, (2) complex **interplay**

The **interplay** of light and shadow creates a dramatic effect in the painting.

consonance

n. agreement or compatibility between opinions, actions, or characters; the repetition of similar sounds, especially consonants, in a phrase or verse, especially to create a pleasing effect

synonym: harmony, agreement, concord

(1) imperfect **consonance**, (2) bring into **consonance**

The **consonance** between the speaker's words and their body language made it clear that they were being sincere.

dissonance

n. a lack of harmony or agreement between people or things; a harsh or discordant combination of sounds

synonym: conflict, disharmony, disagreement

(1) cognitive **dissonance**, (2) musical **dissonance**

The **dissonance** between the two melodies created a sense of tension in the music.

exoplanet

n. a planet that orbits a star outside of the solar system

(1) the closest **exoplanet** to Earth, (2) **exoplanet** mission

The **exoplanet** Kepler-186f is located 500 light-years from Earth and is believed to be habitable.

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.

dwarf

n. a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star

synonym: midget, lilliputian, pygmy

(1) a potted **dwarf** tree, (2) a wise old **dwarf**

The **dwarf** planet Pluto is much smaller than earth and orbits the sun.

methane

n. a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel

(1) atmospheric **methane**, (2) reduce **methane** emissions

The ignition of **methane** gas in the plant killed five employees.

Venus

n. the planet second in order from the sun

(1) **Venus** orbiter, (2) surface of **Venus**

They launched a rocket toward **Venus**.

tuck

v. to push a stray piece of clothing or material into a particular area or position, especially to make it more orderly or comfortable

synonym : insert, wrap, pinch

(1) **tuck** a baby in the blanket, (2) **tuck** into another cigarette

You should **tuck** your shirt into your trousers.

Jovian

adj. relating to Jupiter or its characteristics

synonym : Jupiter, giant planet

(1) **Jovian** satellites, (2) **Jovian** planet

The **Jovian** moon Europa is believed to have an ocean beneath its icy surface.

molten

adj. in a liquid state as a result of being heated

synonym : melted, liquefied, fused

(1) a **molten** image, (2) **molten** lava

The **molten** metal was poured into the mold.

lava

n. molten rock that has been extruded from a volcano and solidified; a highly fluid, highly heated substance or material

synonym : molten rock, magma, volcanic rock

(1) **lava** flow, (2) molten **lava**

The volcano's eruption caused a **lava** river to flow down the mountainside.

sterilize

v. to make something free of all forms of life, especially bacteria or viruses, by using heat, chemicals, or radiation

synonym : disinfect, sanitize, cleanse

(1) **sterilize** chemically, (2) **sterilize** surfaces

The nurse **sterilized** the instruments before the surgery to prevent any infections.

resonant

adj. tending to reinforce or prolong sound by sympathetic vibration; having a quality that elicits a similar response or feeling

synonym : echoing, reverberating, resonating

(1) **resonant** with the sound, (2) **resonant** cavity

The **resonant** frequency of the guitar string was measured with a tuner.

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.

tug

v. to pull something quickly and hard, often several times

synonym : draw, jerk, pull

(1) **tug** a rope, (2) **tug** at his hand

This movie **tugs** at everyone's heartstrings.

resonate

v. to be filled with a deep echoing sound

synonym : echo, reverberate, resound

(1) deeply **resonate** with the consumers, (2) **resonate** in the same frequency

The sound **resonates** well in this theater.

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.

inhabitant

n. a person or an animal that lives in a particular place
synonym: dweller, occupant, resident

(1) the early **inhabitants** of Europe, (2) **inhabitant** tax
His family is the oldest **inhabitant** of the island.

fascinate

v. to attract and hold the attention of someone deeply and irresistibly

synonym: captivate, intrigue, mesmerize

(1) **fascinate** the public, (2) **fascinate** the young
The magic tricks **fascinated** the children.

planetarium

n. a building or facility that is designed to display the positions and movements of stars, planets, and other celestial bodies on a dome-shaped surface using a projection system

(1) optical **planetarium** projector, (2) inflatable **planetarium**
The **planetarium's** digital projection system provides an immersive experience of outer space.

cosmos

n. another name for the universe, mainly used when it is thought of as an ordered system

synonym: universe, macrocosm

(1) exploration of **cosmos**, (2) origin of the **cosmos**
Supercomputers enable scientists to create computational models of the **cosmos**.

deface

v. to mar or spoil the surface or appearance of something, typically by drawing or writing on it

synonym: disfigure, blemish, wreck

(1) **deface** private property, (2) **deface** the wall with graffiti
The teacher warned the boys not to **deface** public property.

observable

adj. that can be noticed or seen

synonym: visible, perceptible, detectable

(1) **observable** change, (2) experimentally **observable**

Any theorem relies on both **observable** fact and assumption.

odyssey

n. a long wandering and eventful journey; a Greek epic poem attributed to Homer, describing the journey of Odysseus after the fall of Troy

(1) go on a serious **odyssey**, (2) cross-country **odyssey**

He continued the extraordinary **odyssey** with his brother.

Session 2: Spelling

1. gra_____nal energy *adj.* relating to or caused by gravity (= the force that attracts objects towards one another)
2. har_____us relationship *adj.* characterized by harmony or agreement; free from conflict or disagreement; pleasing or soothing in sound or tone
3. gra_____nal waves *adj.* relating to or caused by gravity (= the force that attracts objects towards one another)
4. the stars of the Scorpion
con_____ion *n.* a group of stars that form a recognizable pattern and have a name; a group of related or similar ideas, things, or people
5. origin of the co___s *n.* another name for the universe, mainly used when it is thought of as an ordered system
6. optical pla_____um projector *n.* a building or facility that is designed to display the positions and movements of stars, planets, and other celestial bodies on a dome-shaped surface using a projection system
7. di_____nt note *adj.* sounds that are not in harmony or are in conflict with one another; an uncomfortable or tense feeling caused by conflicting ideas or emotions
8. Ve__s orbiter *n.* the planet second in order from the sun

ANSWERS: 1. gravitational, 2. harmonious, 3. gravitational, 4. constellation, 5. cosmos, 6. planetarium, 7. dissonant, 8. Venus

9. inh_____nt tax *n.* a person or an animal that lives in a particular place
10. de___e the wall with graffiti *v.* to mar or spoil the surface or appearance of something, typically by drawing or writing on it
11. northern con_____ion *n.* a group of stars that form a recognizable pattern and have a name; a group of related or similar ideas, things, or people
12. 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
13. fa_____te the young *v.* to attract and hold the attention of someone deeply and irresistibly
14. bring into con_____ce *n.* agreement or compatibility between opinions, actions, or characters; the repetition of similar sounds, especially consonants, in a phrase or verse, especially to create a pleasing effect
15. os_____te back and forth *v.* to swing or move back and forth like a pendulum or a wave; to fluctuate or alternate between two points or states; to hesitate or be indecisive
16. t__k into another cigarette *v.* to push a stray piece of clothing or material into a particular area or position, especially to make it more orderly or comfortable
17. t_g a rope *v.* to pull something quickly and hard, often several times

ANSWERS: 9. inhabitant, 10. deface, 11. constellation, 12. astrophysics, 13. fascinate, 14. consonance, 15. oscillate, 16. tuck, 17. tug

18. molten l__a *n.* molten rock that has been extruded from a volcano and solidified; a highly fluid, highly heated substance or material
19. 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
20. surface of Ve__s *n.* the planet second in order from the sun
21. mo___n lava *adj.* in a liquid state as a result of being heated
22. hu____g bird *adj.* producing a continuous, low, vibrating sound like that of the bee
23. re____nt with the sound *adj.* tending to reinforce or prolong sound by sympathetic vibration; having a quality that elicits a similar response or feeling
24. au____e words *adj.* able to be heard; loud enough to be heard clearly
25. st____ze surfaces *v.* to make something free of all forms of life, especially bacteria or viruses, by using heat, chemicals, or radiation
26. sh____r a world record *v.* to break suddenly into many pieces
27. ex___e rebellion *v.* to make someone feel suddenly enthusiastic or eager
28. exploration of co____s *n.* another name for the universe, mainly used when it is thought of as an ordered system

ANSWERS: 18. lava, 19. astrophysics, 20. Venus, 21. molten, 22. humming, 23. resonant, 24. audible, 25. sterilize, 26. shatter, 27. excite, 28. cosmos

29. experimentally obs_____le *adj.* that can be noticed or seen
30. inflatable pla_____um *n.* a building or facility that is designed to display the positions and movements of stars, planets, and other celestial bodies on a dome-shaped surface using a projection system
31. hu_____g sound *adj.* producing a continuous, low, vibrating sound like that of the bee
32. cross-country od_____y *n.* a long wandering and eventful journey; a Greek epic poem attributed to Homer, describing the journey of Odysseus after the fall of Troy
33. re_____nt cavity *adj.* tending to reinforce or prolong sound by sympathetic vibration; having a quality that elicits a similar response or feeling
34. de_____e private property *v.* to mar or spoil the surface or appearance of something, typically by drawing or writing on it
35. di_____t sleep *v.* to prevent or stop something, especially an event, activity, or process, from continuing in the usual way by causing a problem or disturbance
36. ce_____al bliss *adj.* relating to the sky or the heavens; of or like the sky or the heavens
37. l__a flow *n.* molten rock that has been extruded from a volcano and solidified; a highly fluid, highly heated substance or material
38. the early inh_____nts of Europe *n.* a person or an animal that lives in a particular place

ANSWERS: 29. observable, 30. planetarium, 31. humming, 32. odyssey, 33. resonant, 34. deface, 35. disrupt, 36. celestial, 37. lava, 38. inhabitant

39. har_____us blend *adj.* characterized by harmony or agreement; free from conflict or disagreement; pleasing or soothing in sound or tone
40. in_____ay among neurons *n.* the way in which two or more things interact or influence each other
41. the closest ex_____et to Earth *n.* a planet that orbits a star outside of the solar system
42. co_____nt blends *n.* a speech sound that is produced by completely or partially blocking the airflow through the mouth; a letter or group of letters representing a consonant sound, for example, "b," "c," "d," etc.
43. t__k a baby in the blanket *v.* to push a stray piece of clothing or material into a particular area or position, especially to make it more orderly or comfortable
44. ex_____et mission *n.* a planet that orbits a star outside of the solar system
45. a di_____nt voice *adj.* sounds that are not in harmony or are in conflict with one another; an uncomfortable or tense feeling caused by conflicting ideas or emotions
46. obs_____le change *adj.* that can be noticed or seen
47. ex___e the crowd *v.* to make someone feel suddenly enthusiastic or eager
48. par_____se the meaning *v.* to restate or reword a passage in one's own words, often to clarify or simplify the original meaning

ANSWERS: 39. harmonious, 40. interplay, 41. exoplanet, 42. consonant, 43. tuck, 44. exoplanet, 45. dissonant, 46. observable, 47. excite, 48. paraphrase

49. a wise old dw__f *n.* a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star
50. atmospheric me____e *n.* a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel
51. r_m the door open *v.* to strike or push forcefully, often to cause damage; to batter or break open a door or barrier using brute force
52. a medial co_____nt *n.* a speech sound that is produced by completely or partially blocking the airflow through the mouth; a letter or group of letters representing a consonant sound, for example, "b," "c," "d," etc.
53. complex in_____ay *n.* the way in which two or more things interact or influence each other
54. imperfect con_____ce *n.* agreement or compatibility between opinions, actions, or characters; the repetition of similar sounds, especially consonants, in a phrase or verse, especially to create a pleasing effect
55. par_____se a poem into prose *v.* to restate or reword a passage in one's own words, often to clarify or simplify the original meaning
56. fa_____te the public *v.* to attract and hold the attention of someone deeply and irresistibly
57. t_g at his hand *v.* to pull something quickly and hard, often several times

ANSWERS: 49. dwarf, 50. methane, 51. ram, 52. consonant, 53. interplay, 54. consonance, 55. paraphrase, 56. fascinate, 57. tug

58. go on a serious od____y *n.* a long wandering and eventful journey; a Greek epic poem attributed to Homer, describing the journey of Odysseus after the fall of Troy
59. di____t a well-ordered condition *v.* to prevent or stop something, especially an event, activity, or process, from continuing in the usual way by causing a problem or disturbance
60. a potted dw__f tree *n.* a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star
61. Jo____n planet *adj.* relating to Jupiter or its characteristics
62. st____ze chemically *v.* to make something free of all forms of life, especially bacteria or viruses, by using heat, chemicals, or radiation
63. ce____al navigation *adj.* relating to the sky or the heavens; of or like the sky or the heavens
64. sh____r the plate *v.* to break suddenly into many pieces
65. r_m into the ice *v.* to strike or push forcefully, often to cause damage; to batter or break open a door or barrier using brute force
66. Jo____n satellites *adj.* relating to Jupiter or its characteristics
67. musical dis____ce *n.* a lack of harmony or agreement between people or things; a harsh or discordant combination of sounds
68. reduce me____e emissions *n.* a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel

ANSWERS: 58. odyssey, 59. disrupt, 60. dwarf, 61. Jovian, 62. sterilize, 63. celestial, 64. shatter, 65. ram, 66. Jovian, 67. dissonance, 68. methane

69. deeply re_____te with the consumers *v.* to be filled with a deep echoing sound
70. cognitive dis_____ce *n.* a lack of harmony or agreement between people or things; a harsh or discordant combination of sounds
71. a mo_____n image *adj.* in a liquid state as a result of being heated
72. re_____te in the same frequency *v.* to be filled with a deep echoing sound
73. os_____te between joy and anger *v.* to swing or move back and forth like a pendulum or a wave; to fluctuate or alternate between two points or states; to hesitate or be indecisive
74. au_____e sound *adj.* able to be heard; loud enough to be heard clearly

ANSWERS: 69. resonate, 70. dissonance, 71. molten, 72. resonate, 73. oscillate, 74. audible

Session 3: Fill in the Blanks

1. The _____ sound from the poorly tuned instruments was painful to listen to.
adj. sounds that are not in harmony or are in conflict with one another; an uncomfortable or tense feeling caused by conflicting ideas or emotions
2. The teacher warned the boys not to _____ public property.
v. to mar or spoil the surface or appearance of something, typically by drawing or writing on it
3. They launched a rocket toward _____.
n. the planet second in order from the sun
4. The fan in the room _____ making the airflow more evenly.
v. to swing or move back and forth like a pendulum or a wave; to fluctuate or alternate between two points or states; to hesitate or be indecisive
5. The car _____ into the wall, causing significant damage.
v. to strike or push forcefully, often to cause damage; to batter or break open a door or barrier using brute force
6. The _____ between the speaker's words and their body language made it clear that they were being sincere.
n. agreement or compatibility between opinions, actions, or characters; the repetition of similar sounds, especially consonants, in a phrase or verse, especially to create a pleasing effect
7. The volcano's eruption caused a _____ river to flow down the mountainside.
n. molten rock that has been extruded from a volcano and solidified; a highly fluid, highly heated substance or material

ANSWERS: 1. dissonant, 2. deface, 3. Venus, 4. oscillates, 5. rammed, 6. consonance, 7. lava

8. Supercomputers enable scientists to create computational models of the _____.
- n.* another name for the universe, mainly used when it is thought of as an ordered system
9. The ignition of _____ gas in the plant killed five employees.
- n.* a chemical compound with the chemical formula CH₄ with no smell or color, often used as a fuel
10. The magic tricks _____ the children.
- v.* to attract and hold the attention of someone deeply and irresistibly
11. The _____ of light and shadow creates a dramatic effect in the painting.
- n.* the way in which two or more things interact or influence each other
12. 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
13. The news of her promotion _____ her.
- v.* to make someone feel suddenly enthusiastic or eager
14. The _____ sounds at the beginning and end of the word made it easy to pronounce.
- n.* a speech sound that is produced by completely or partially blocking the airflow through the mouth; a letter or group of letters representing a consonant sound, for example, "b," "c," "d," etc.
15. The _____ moon Europa is believed to have an ocean beneath its icy surface.
- adj.* relating to Jupiter or its characteristics

ANSWERS: 8. cosmos, 9. methane, 10. fascinated, 11. interplay, 12. disrupt, 13. excited, 14. consonant, 15. Jovian

16. You should _____ your shirt into your trousers.

- v. to push a stray piece of clothing or material into a particular area or position, especially to make it more orderly or comfortable

17. He _____ the article in his own words to avoid being accused of plagiarism.

- v. to restate or reword a passage in one's own words, often to clarify or simplify the original meaning

18. Her husband's death _____ her life entirely.

- v. to break suddenly into many pieces

19. 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)

20. An _____ sigh from the back of the room broke the silence.

- adj. able to be heard; loud enough to be heard clearly

21. The _____ planet Pluto is much smaller than earth and orbits the sun.

- n. a person or animal that is much smaller than usual or expected for its type; a celestial body, especially a planet, that is smaller and less massive than a star

22. This movie _____ at everyone's heartstrings.

- v. to pull something quickly and hard, often several times

23. The _____ of the bees filled the air as she walked through the garden.

- adj. producing a continuous, low, vibrating sound like that of the bee

ANSWERS: 16. tuck, 17. paraphrased, 18. shattered, 19. gravitational, 20. audible, 21. dwarf, 22. tugs, 23. humming

24. The nurse _____ the instruments before the surgery to prevent any infections.
- v.* to make something free of all forms of life, especially bacteria or viruses, by using heat, chemicals, or radiation
25. He continued the extraordinary _____ with his brother.
- n.* a long wandering and eventful journey; a Greek epic poem attributed to Homer, describing the journey of Odysseus after the fall of Troy
26. Navigators still use the Little Bear _____ at sea.
- n.* a group of stars that form a recognizable pattern and have a name; a group of related or similar ideas, things, or people
27. 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
28. Any theorem relies on both _____ fact and assumption.
- adj.* that can be noticed or seen
29. The _____ frequency of the guitar string was measured with a tuner.
- adj.* tending to reinforce or prolong sound by sympathetic vibration; having a quality that elicits a similar response or feeling
30. The painting's _____ composition and balance of colors made it a masterpiece.
- adj.* characterized by harmony or agreement; free from conflict or disagreement; pleasing or soothing in sound or tone
31. The sound _____ well in this theater.
- v.* to be filled with a deep echoing sound

ANSWERS: 24. sterilized, 25. odyssey, 26. constellation, 27. celestial, 28. observable, 29. resonant, 30. harmonious, 31. resonates

32. The _____ digital projection system provides an immersive experience of outer space.
- n.* a building or facility that is designed to display the positions and movements of stars, planets, and other celestial bodies on a dome-shaped surface using a projection system
33. The _____ between the two melodies created a sense of tension in the music.
- n.* a lack of harmony or agreement between people or things; a harsh or discordant combination of sounds
34. His family is the oldest _____ of the island.
- n.* a person or an animal that lives in a particular place
35. The _____ Kepler-186f is located 500 light-years from Earth and is believed to be habitable.
- n.* a planet that orbits a star outside of the solar system
36. 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
37. The _____ metal was poured into the mold.
- adj.* in a liquid state as a result of being heated

ANSWERS: 32. planetarium's, 33. dissonance, 34. inhabitant, 35. exoplanet, 36. astrophysics, 37. molten