

Round 9

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Sophie Netzel • Lauren Onel • Aleija Rodriguez • Zane Smalley • Kristin Strey
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Tossups

(1) **This museum’s collection includes the rubber and black walnut zabutons designed for this building’s living room. Against the wishes of this building’s designer, steel rods were added to its concrete patios for support. This home was originally supposed to face Bear Run, but was instead (*) cantilevered over it, to the displeasure of Edgar Kaufmann. For ten points, name this family home in Southwestern Pennsylvania designed by Frank Lloyd Wright to sit over a small creek.**

ANSWER: Fallingwater (accept Kaufmann House before “Kaufmann” is read)

(2) **These mathematical objects are symmetric if they are equal to their transpose. One of these objects is called triangular if it contains all zeroes either above or below its main (*) diagonal; in such a case, multiplying the values along the diagonal will give the determinant. Adding these objects is only possible if they have the same number of rows and columns. For ten points, name these mathematical objects that often look like a rectangular array of numbers.**

ANSWER: matrix (accept matrices; accept square matrix; accept triangular matrix)

(3) **In this literary work, a bank worker angrily throws apples at his son until one becomes lodged in his back. Three boarders refuse to pay their rent in this work after they are interrupted while listening to Grete play her (*) violin. This work’s protagonist wakes up one morning to discover that he is late to his job as a traveling salesman and that he suddenly has a segmented belly and many thin legs. For ten points, name this novella about Gregor Samsa’s transformation into an enormous insect-like animal, written by Franz Kafka.**

ANSWER: The Metamorphosis (accept Die Verwandlung)

(4) **This event was preceded by a pair of radical conventions in Pittsburgh where militia were rallied by the Mingo Creek Association. During this event, Robert Johnson was tarred and feathered because he was recently named a (*) tax collector. General John Neville’s home was attacked by a group of 500 men during, for ten points, what 1791 rebellion that President Washington helped put down, a response to Alexander Hamilton’s unpopular tax on alcohol?**

ANSWER: Whiskey Rebellion (accept equivalents, like Whiskey Insurrection)

(5) **The World War II proximity fuse relied on this effect to detonate bombs near their targets, and this type of ultrasound measures the speed of blood through an artery. When applied to microwaves, this effect allows (*) meteorologists to track storms. This effect is exemplified by an ambulance siren whose pitch increases as it approaches the listener. For ten points, name this effect in which the frequency of waves changes because the source is moving toward or away from the observer.**

ANSWER: Doppler effect

(6) **German thinkers in this field like Kurt Koffka promoted a *Gestalt* approach to it. The “individual” approach to this field of study was pioneered by a man whose observations of siblings led him to coin the term (*) “inferiority complex.” Scientists in this field may use the MBTI questionnaire, which analyzes introversion and extraversion. Alfred Adler and Carl Jung studied, for ten points, what science of the mind, personality, and behavior?**

ANSWER: psychology

(7) **A poem by this author declares, “The willowy hills and fields among / They heard her singing her last song” as the protagonist dies after looking toward Camelot. This poet of “The Lady of Shalott” wrote about a group of soldiers at the Battle of (*) Balaclava, who charge with “cannon to the right of them / cannon to the left of them” as they go “half a league, half a league / half a league onward.” For ten points, name this Victorian poet who wrote “The Charge of the Light Brigade.”**

ANSWER: Alfred, Lord Tennyson

(8) **This place is within walls that were left unfinished when Svadilfari [svad-ill-far-ee] was drawn away by an Aesir [ay-seer] to prevent losing the sun, moon, and Freya. The gjallarhorn [gyall-ar-horn] will be blown by Heimdall when a ship made of (*) fingernails and toenails approaches this place. At Ragnarök, giants led by Loki will destroy this place, one of the nine realms in the branches of Yggdrasil [IGG-dra-seel]. Valhalla is located in, for ten points, what realm of Norse mythology, the home of Odin and Thor?**

ANSWER: Asgard

(9) **The KAAP version of this process uses a ruthenium catalyst. Gerhard Ertl proved that the rate-limiting step of this process requires breaking a triple bond. A blockade on (*) sodium nitrate imports during World War I forced Germany to develop this process, which operates under conditions in excess of 400 degrees Celsius and 200 atmospheres. For ten points, name this process that is now used to generate most of the world’s synthetic fertilizer by combining hydrogen and nitrogen gases to make ammonia.**

ANSWER: Haber-Bosch process

(10) **In 2001, the leader of this country avoided impeachment after the Senate voted not to open an envelope that supposedly contained evidence of his wealth. That leader, Joseph Estrada, then fled this country’s capital city amid the “second” People (*) Power Revolution. In 1986, the original People Power Revolution brought Corazon Aquino to power in this country and ousted Ferdinand Marcos. For ten points, name this Asian country currently led by Rodrigo Duterte from Manila.**

ANSWER: the Philippines

(11) **A band with this name sang about going “From Soho down to Brighton” to play games. The first baseman in a classic Abbott and Costello comedy routine and the rock band behind “Pinball Wizard” have this name, which also describes creatures that live on a (*) speck of dust and are saved by an elephant who declares, “A person’s a person, no matter how small.”** For ten points, name this questioning word that also names a frequently-regenerating Doctor in a British sci-fi TV series.

ANSWER: Who (accept The Who; accept Whos or Horton Hears a Who; accept Who’s on First; accept Doctor Who)

(12) **Nationalists spread a rumor that this man spread cholera throughout Saint Petersburg by importing poisoned Canadian apples. Felix Yusupov organized a plot to kill this man, whose body was eventually found in the Malaya Nevka. This man’s (*) advice and prayers were said to have stopped the bleeding of the hemophiliac Alexei.** For ten points, name this advisor to the Romanov family, a Russian mystic and supposed healer who was poisoned, shot, and thrown into a river in 1916.

ANSWER: Grigori Yefimovich Rasputin

(13) **A character in this play takes her sister to Eunice’s apartment after her husband, enraged at his sister-in-law’s dancing, throws a radio out of a window during a poker game with Mitch. This play’s protagonist is raped by her brother-in-law, and says she has (*) “always depended on the kindness of strangers”** as she is taken away to a psychiatric hospital. For ten points, name this play about Blanche DuBois’s [doo-BWAH’s] visit with Stella and Stanley Kowalski, written by Tennessee Williams.

ANSWER: A Streetcar Named Desire

(14) **This river empties into the Atlantic Ocean from Banana after traveling in a counterclockwise arc. A series of 32 cataracts, including Inga Falls, makes much of this river unnavigable. The Lualaba and Chambeshi Rivers are two major tributaries of this (*) second-longest river on its continent.** The capital cities of Brazzaville and Kinshasa are on, for ten points, what African river that shares its name with both those cities’ home countries, a Republic and a Democratic Republic?

ANSWER: Congo River

(15) **Milankovitch cycles predict a forty-one-thousand-year period for these events, which formed the once-enormous Lake Agassiz. The entire Quaternary period is sometimes called a “Great” one of these events, and a “Little” one mainly affecting (*) mountainous areas began in the fourteenth century.** The most recent North American stage of these events filled the Great Lakes and submerged the Bering Strait land bridge. For ten points, name these events, in which glaciers advanced to cover much of the Northern Hemisphere.

ANSWER: ice ages (prompt on “glacial age” or “glaciation”)

(16) **Priests in this religion play the Priye Ginen to begin important events. Recently-departed souls in this religion travel through seven gates to reach Guinee, an afterlife ruled by the tuxedo-wearing Papa (*) Legba.** In the Haitian version of this religion, bokors and caplatas are witches who legendarily have the power to turn people into zombies. Loas are worshiped in, for ten points, what religion that originated in Africa, and that does not focus on stabbing dolls with needles?

ANSWER: Vodoun (accept Haitian Voodoo)

(17) **This leader of the 1874 Black Hills Expedition graduated last in his class at West Point with an amazing 726 demerits in four years. This man was the losing commander at a battle also known as the Battle of the Greasy (*) Grass, where Crazy Horse and Sitting Bull led a rout of his 7th Cavalry. For ten points, name this US Army officer who died in 1876 at the Battle of the Little Bighorn, also known as this man's Last Stand.**

ANSWER: George Armstrong Custer

(18) **In a story by this author, Elias Openshaw is found dead in a garden pool shortly after receiving a letter inscribed with the letters "KKK" and containing "The Five Orange Pips." In another story by this man, Nemor is destroyed by the title "Disintegration Machine" after being tricked by Professor (*) Challenger. This man's most famous character idolizes Irene Adler in "A Scandal in Bohemia" and lives at 221B Baker Street. Doctor John Watson narrates many works by, for ten points, what author who created Sherlock Holmes?**

ANSWER: Sir Arthur Conan Doyle

(19) **A Handel concerto for this instrument is called "The Harmonious Blacksmith." Domenico Scarlatti wrote most of his 555 sonatas for this instrument, a relative of the spinet and virginal. Because this instrument's strings are (*) plucked, it has no dynamic range, inspiring the need for another, ultimately more popular instrument. For ten points, name this Baroque and Classical keyboard instrument, the predecessor to the piano.**

ANSWER: harpsichord (prompt on "keyboard" before it is read)

(20) **The red dye Prontosil was the first successful "sulfa" type of these compounds, many of which contain a four-membered beta-lactam ring. Cystic fibrosis patients often take a daily (*) "broad-spectrum" one of these compounds, and one of these drugs that disrupts Gram-positive cell walls was discovered accidentally by Alexander Fleming. Overuse of these drugs has led to the rise of MRSA. For ten points, tetracycline and penicillin are what type of medication that treats bacterial infections?**

ANSWER: antibiotics (prompt on "drug" before it is mentioned)

Bonuses

(1) Astronomer Carl Sagan is the namesake of both the number of stars in the observable universe and an indefinite quantity equal to “billions and billions.” Answer these questions about some of his other work, for ten points each.

Sagan chaired the committee that selected music by Bach, Stravinsky, Chuck Berry, and others for inclusion on the Golden Records attached to these spacecraft. The first of these craft flew by Jupiter and Saturn and left the Solar System in 2004.

ANSWER: Voyager 1 and 2

In 1980, Sagan hosted this thirteen-part television series on PBS that popularized many concepts in astronomy. With over 500 million viewers, this series is still the most-watched science program in TV history.

ANSWER: Cosmos: A Personal Voyage

A sequel to *Cosmos*, subtitled *A Spacetime Odyssey*, was aired in 2014 with this scientist and friend of Carl Sagan as host. This man is a frequent talk show guest and Reddit AMA participant, and he published *Astrophysics for People in a Hurry* in 2017.

ANSWER: Neil deGrasse Tyson

(2) In a poem about this concept, it accompanies the speaker past a “School, where Children strove / At Recess - in the Ring” and stops in front of a grave that the speaker sees as a “House that seemed / A Swelling of the Ground.” For ten points each,

Name this event at the end of life, which rides in a carriage with the speaker and Immortality in a poem that begins “Because I could not stop for” this concept, “He kindly stopped for me.”

ANSWER: death (accept **Because I could not stop for Death**)

This American poet wrote that “There is no Frigate like a Book / To take us Lands away” as well as “Because I could not stop for Death.”

ANSWER: Emily Elizabeth Dickinson

Emily Dickinson contrasts this concept with “Confident Despair” and says that “Had [she] presumed” to do this, “The loss had been to [her].” In another poem, Dickinson describes this concept as “the thing with feathers - / That perches in the soul.”

ANSWER: hope (accept **Had I presumed to hope**; accept **“Hope” is the thing with feathers**)

(3) This city was supposedly founded by the legendary Dido, lover of Aeneas. For ten points each,

Name this city, the center of an empire that went to war with Rome, backed by an army led by Hannibal Barca and his war elephants.

ANSWER: Carthage

Carthage and Rome participated in these three conflicts that showed the prowess of the Carthaginian navy, but resulted in Hannibal's death and Carthage's fall.

ANSWER: Punic War(s)

In response to Cato the Elder's frequent demands, Rome destroyed Carthage after the 3rd Punic War and, according to legend, the Roman soldiers did this to the land so that nothing would ever grow there.

ANSWER: salting the earth (accept anything related to salt)

(4) One of these things named "Tristan" is made of the notes F, B, D sharp, and G sharp. For ten points each,

Name these musical structures made of several notes played together. They form the basis for musical harmony.

ANSWER: chords

This composer included the Tristan chord in the prelude to his opera *Tristan and Isolde*. This composer is best known for his massive *Ring* cycle of operas.

ANSWER: Richard Wagner ([ree-kart VAHG-ner], but be lenient)

Wagner used the Tristan chord as one of these musical devices, in which a theme is repeated throughout an opera to associate it with a character or idea.

ANSWER: leitmotif (prompt on "motif")

(5) This concept, along with interest and money, are the three subjects of a *General Theory* that was published in 1936. For ten points each,

Name this economic concept that theoretically cannot be "full" in a competitive labor market, according to the aforementioned *General Theory*, in part because the number of people engaged in this activity is not determined by the wages earned by it.

ANSWER: employment (accept labor; accept working; accept other equivalents; do not accept unemployment)

This British economist wrote *The General Theory of Employment, Interest, and Money*, which outlines a theory of macroeconomics now commonly named for him.

ANSWER: John Maynard Keynes [canes]

In *The General Theory*, Keynes criticizes Say's Law, which argues that production of a good generates this phenomenon for the good. This consumer-oriented phenomenon is usually contrasted with the employer-oriented supply.

ANSWER: demand

(6) Jaundice of the skin will result if one component of this bodily fluid is not excreted fast enough. For ten points each,

Name this greenish-yellow fluid that is produced in the liver and sent through a namesake duct to the small intestine to aid the digestion of fats.

ANSWER: bile

Bile is stored in this small organ beneath the liver. About half a million Americans have this organ removed each year because of the formation of cholesterol stones.

ANSWER: gallbladder

Bile helps the digestion of lipids by forming one of these mixtures in which tiny drops of fats are dispersed in water. Mayonnaise and vinaigrette dressing are also considered this type of mixture.

ANSWER: emulsion (prompt on “colloid”)

(7) This man, who was given his last name by an Imperial recruiter, shoots Tobias Beckett before he has a chance to kill him. For ten points each,

Name this smuggler who meets Chewbacca and pilots the *Millennium Falcon* through the Kessel Run in a 2018 prequel film.

ANSWER: Han Solo (accept either or both names)

In *Solo: A Star Wars Story*, Lando Calrissian is played by this actor, who plays Earn Marks on *Atlanta* and enjoys a rapping career as Childish Gambino.

ANSWER: Donald Glover

Ray Park reprises this role in *Solo*. This Sith Lord is shown with robotic legs, which he receives in *Clone Wars* after having been cut in half in *Phantom Menace*.

ANSWER: Darth Maul

(8) According to the Uttardhyayana [oo-tahr-dyah-yah-nah], this concept determines whether a person is reincarnated as a demon, an ant, or something else entirely. For ten points each,

Name this common concept in Indian religions, that dictates that individual choices, both good and bad, affect the conditions of one’s rebirth.

ANSWER: karma (accept kamma)

The Uttardhyayana is a sacred text of this religion. This religion is divided into “white-clad” and “sky-clad” sects and practices intense non-violence.

ANSWER: Jainism (accept Jain Dharma)

Jains can voluntarily undergo an extreme type of this religious practice called Sallekhana that ends with their death. More commonly, this practice involves temporarily avoiding consuming food.

ANSWER: fasting

(9) Two weeks before his death, this man asked the *New York Evening Sun* to publish his obituary early, so that he might read it. For ten points each,

Name this 19th-century businessman who worked with James Bailey to create the world's biggest circus.

ANSWER: Phineas Taylor "P.T." **Barnum**

This opera singer toured America on P.T. Barnum's invitation in the early 1850s. This singer, known as the "Swedish Nightingale," inspired a mania and earned hundreds of thousands of dollars for charity.

ANSWER: Jenny **Lind**

P.T. Barnum also had a political career in this state, where he served as mayor of Bridgeport. He also co-sponsored an anti-contraception bill, which the Supreme Court struck down in the 1965 *Griswold* case, while working as a state senator in Hartford.

ANSWER: **Connecticut**

(10) Ancient Greek tragic plays often include a "deus ex machina" [day-oos ex mah-kee-nah] or "god from the machine," a literary device in which a god or other character is suddenly brought onto the stage to resolve the play's central problem, often while being moved by a "mechane" [meh-kah-nay] device to make it look like they are flying. Answer some questions about deus ex machina in the works of ancient Greek tragedians, for ten points each.

In the *Oresteia*, a tragic trilogy by Aeschylus [ESS-kill-us], this Greek goddess of wisdom is brought in as a deus ex machina to establish the court of her namesake city as a means of settling disputes.

ANSWER: **Athena**

This Greek tragedian used Heracles as a deus ex machina in his play *Philoctetes* [fih-LOCK-teh-teez], but left the device out of his "Theban plays" trilogy, which includes this author's *Antigone*, *Oedipus Rex*, and *Oedipus at Colonus*.

ANSWER: **Sophocles**

At the end of a tragedy named for this mythical sorceress, Euripides [yoo-RIH-pih-deez] used the mechane to lift this woman and the bodies of her sons in the chariot of Helios as she escapes from the unfaithful hero Jason.

ANSWER: **Medea**

(11) Answer the following about the Green-Tao theorem, for ten points each.

The Green-Tao theorem concerns these lists of numbers that, unlike a set, are allowed to repeat values. A series is generated by adding the values within these mathematical objects.

ANSWER: **sequences**

Specifically, the Green-Tao theorem looks at the sequence of these numbers. The first of these numbers are 2, 3, 5, 7, 11, and they cannot be divided evenly by integers other than themselves and 1.

ANSWER: **prime** numbers (accept **primes**)

The Green-Tao theorem says that, for any natural number n , there is a list of n prime numbers that form this type of sequence, in which any two consecutive numbers are always separated by the same difference.

ANSWER: **arithmetic** sequence

(12) This citizen of the Massachusetts Bay Colony was tried in 1637 for “traducing,” or slandering, the local ministers. For ten points each,

Name this 17th-century woman who was sentenced in a trial overseen by John Winthrop for holding prayer sessions for women and speaking out against religious gender norms.

ANSWER: Anne **Hutchinson**

Hutchinson and the Massachusetts Bay Colony belonged to this religious sect, known for its strict adherence to the Bible and proclivity for witch hunting.

ANSWER: **Puritans** (accept word forms, like **Puritanism**)

After Anne Hutchinson was exiled, she followed the advice of Roger Williams, another victim of banishment, and settled at Portsmouth in what is now this US state.

ANSWER: **Rhode Island** and Providence Plantations

(13) Most of the money spent on the Manhattan Project was not used to construct bombs, but to prepare material capable of sustaining this process. For ten points each,

Identify this process in which the nucleus of a heavy atom splits into two lighter nuclei. The energy released by the “Little Boy” bomb resulted from uranium forming smaller barium and krypton atoms by this process.

ANSWER: nuclear **fission**

Besides smaller nuclei, the fission of uranium-235 also produces these particles that start a chain reaction in the bomb’s core. Unlike the positive protons, these particles in the nucleus have no charge.

ANSWER: **neutrons**

In December, 1942, this physicist demonstrated that neutrons could sustain a chain reaction when he built the first nuclear reactor under the University of Chicago’s football field’s stands. This man is also the namesake of element 100.

ANSWER: Enrico **Fermi**

(14) In a play by this man, Nora Helmer is extorted after taking out a loan from the banker Krogstad. For ten points each,

Name this Norwegian playwright of *A Doll’s House* and *Peer Gynt*.

ANSWER: Henrik **Ibsen**

In a play by Henrik Ibsen named for one of these animals, Hedvig shoots herself under the pretense of killing a “Wild” one of these water birds.

ANSWER: **duck** (accept The **Wild Duck** or **Vildanden**)

In this Ibsen play, Eilert Lovborg is encouraged to commit suicide by the wife of his academic rival, George Tessimson, who had recently married this play’s title character.

ANSWER: **Hedda Gabler**

(15) The Golden Horn cuts into this city and was once spanned by a large chain to prevent enemy ships from getting in. For ten points each,

Name this Turkish city that was previously named Byzantium and Constantinople.

ANSWER: Istanbul

Istanbul lies on both banks of this narrow strait that links the Black Sea to the Sea of Marmara. Further west, the Dardanelles strait links the Sea of Marmara to the Mediterranean.

ANSWER: the Bosporus (accept Bosphorus)

Despite a metropolitan population of over 15 million and its position on the Bosporus, Istanbul is *not* the capital of Turkey; instead, this central city became the capital when Turkey became a republic in 1923.

ANSWER: Ankara

(16) By the time of the Middle Kingdom, this god had been supplanted by Osiris as lord of the underworld. For ten points each,

Name this jackal-headed Egyptian god who judged whether souls were worthy to enter the realm of the dead.

ANSWER: Anubis (accept Anpu; accept Anapa; accept Inpu; accept Inpw)

To judge the dead, Anubis utilized a scale and a feather named for this goddess of truth and balance.

ANSWER: Ma'at

The feather of Ma'at was weighed against this vital organ, which the Egyptians considered the seat of the soul. If weighed-down with wrongdoing, this organ would be devoured by Ammit.

ANSWER: heart (accept ib; accept jb; accept jib)

(17) Answer the following about everyone's favorite artist from Vinci [vin-chee], for ten points each.

Leonardo was born in Vinci but trained as an artist in this city. The Uffizi Gallery is in this city, and Brunelleschi's massive dome tops this city's Duomo.

ANSWER: Florence

After training in Florence, Leonardo created this work on the wall of the Santa Maria delle Grazie in Milan. In this painting, Jesus is framed by a rectangular window and sits at a long table with his disciples.

ANSWER: The Last Supper (accept L'Ultima Cena)

Toward the end of his life, Leonardo left Italy and traveled to France, taking with him his painting of *The Virgin and Child with* this woman. In the painting, Mary sits on this woman's lap and reaches toward her infant son, who is wrestling with a lamb.

ANSWER: Saint Anne (accept The Virgin and Child with Saint Anne)

(18) This author's six published novels include one in which Elizabeth Bennett comes into conflict with Fitzwilliam Darcy, but eventually marries him. For ten points each,

Name this English author of "manners novels" like *Pride and Prejudice*.

ANSWER: Jane Austen

In this other Jane Austen novel, the title pair of concepts are represented by the practical Elinor Dashwood and her emotional sister, Marianne, as they deal with their relationships with Edward Ferrars, John Willoughby, and Colonel Brandon.

ANSWER: Sense and Sensibility

This Jane Austen novel follows the title matchmaker, Miss Woodhouse, as she tries to arrange marriages among her friends and eventually ends up marrying Mr Knightly.

ANSWER: Emma

(19) In a 19th century civil war in this country, Fructuoso Rivera's Colorados fought Manuel Oribe's agrarian Blancos. For ten points each,

Name this South American country where wealthy businessmen in Montevideo [mon-tay-vih-DAY-oh] supported the Colorados, the eventual winning side.

ANSWER: Uruguay

This Italian freedom fighter assisted the Colorados in the Uruguayan Civil War and became known as the "Hero of Two Worlds." His Expedition of the Thousand helped solidify the unification of Italy.

ANSWER: Giuseppe Garibaldi

Both sides in the Uruguayan Civil War took this action to gain support and bolster their ranks. Brazil took this action in 1888 with the Golden Law.

ANSWER: ending slavery (accept freeing the slaves; accept abolition; accept equivalent answers; prompt on partial answers)

(20) In 2016, the International Union of Pure and Applied Chemistry officially approved names for elements 113, 115, 117 and 118, the most recent additions to the periodic table. For ten points each,

Name any *one* of those four elements. The four are named after a country, a city, a state, and a physicist, respectively.

ANSWER: nihonium, moscovium, tennessine, or oganesson

Tennessee is the second US state to be honored with the name of an element. The first is this state whose flagship public university in Berkeley, near San Francisco, is also the namesake of an element.

ANSWER: California

All four of the new elements are unstable and must be synthesized in one of these devices that fuses nuclei together by bombarding them at high speed. CERN's Large Hadron Collider is the most powerful one of these devices in operation.

ANSWER: particle accelerator (accept synchrotron; prompt on "cyclotron"; prompt on "atom smasher")

