

## Round 4

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### Tossups

(1) **The Teller Amendment guaranteed that this island would not be annexed by the United States. Frederic Remington was told to remain on this island by William Hearst so that Hearst could “furnish the war” that earned its independence.** (\*) Theodore Roosevelt led the Rough Riders during the Spanish-American War on, for ten points, what Caribbean island where the USS *Maine* exploded in Havana Harbor?

ANSWER: Cuba

(2) **These events are localized into a division of 754 regions made by Flinn and Engdahl. Multiplying 8.4 by the lag time between these event’s P and S-waves estimates the distance to the** (\*) epicenter of these events, which often occur along strike-slip faults like the San Andreas. For ten points, name these seismic events that were once measured on the Richter scale.

ANSWER: earthquakes

(3) **This god went fishing with Hymir, and disguised himself as a woman to get his favored weapon back from Thrymir. This husband of Sif is destined to kill and be killed by** (\*) Jörmungandr [yor-mun-GON-dur], the Midgard Serpent, at Ragnarök. For ten points, name this son of Odin, the wielder of Mjöllnir [mee-YOLL-neer], and Norse god of thunder.

ANSWER: Thor (accept Donar)

(4) **In this novel, a child with a “mulberry-colored birthmark” asks whether the “snake-thing” will be dealt with, and Simon hallucinates a conversation with a** (\*) boar’s head that had been mounted on a stick by Jack. Ralph, the conch-blowing chief, and Piggy, whose glasses are used to start fires, appear in, for ten points, what novel about a group of marooned boys, written by William Golding?

ANSWER: Lord of the Flies

(5) **Alexander Yee’s “y-cruncher” program has set numerous world records for computation of this value. Mario Lazzarini’s trial of the Buffon’s needle experiment cherry-picked its endpoint to approximate this value. Archimedes drew 96-sided polygons in and around a circle, finding** (\*) 223 over 71 for a lower bound and 22 over 7 as an upper bound for this number. For ten points, name this irrational number that can be approximated as 3.14.

ANSWER: pi

(6) **In this modern country, the 722 Battle of Covadonga sparked a centuries-long war against Islamic forces. The Alhambra Decree expelled practicing Jews from this country, which was unofficially unified after the marriage of monarchs from (\*) Castile and Aragon. For ten points, name this country where Ferdinand and Isabella maintained Catholic power during the Inquisition.**

ANSWER: Kingdom of Spain (accept Reino de España)

(7) **While filming a commercial for this brand, Michael Jackson's hair caught on fire in a pyrotechnics accident. In *World War Z*, Brad Pitt's character uses this (\*) beverage to distract zombies. In a quickly-pulled 2017 ad, Kendall Jenner ends a protest by giving a police officer a can of, for ten points, what soda that has fought the Cola Wars against Coke?**

ANSWER: Pepsi-Cola

(8) **Areas of this organ are named for Wernicke and Broca. This organ is divided by the corpus callosum and surrounded by three membranes known as meninges [meh-nin-jeez]. The (\*) stem of this organ contains the medulla oblongata and pons, and it is divided into temporal, parietal, occipital and frontal lobes. For ten points, name this primary organ of the nervous system, located in the skull.**

ANSWER: brain

(9) **In a book from this country, three men in a Peach Garden swear an oath they will die on the same day. A character in this country launches an attack on the Heavenly Kingdom, the domain of the Jade (\*) Emperor. *The Romance of the Three Kingdoms* and *Journey to the West* are two of the Four Great Classics of, for ten points, what country, whose poets commonly wrote about the Great Wall?**

ANSWER: China (accept Zhongguo)

(10) **A dwarf kicks at one of these animals in Velázquez's painting *Las Meninas*, and a small one of these animals stands near the feet of a dark-clothed man and a woman in a green dress in Van Eyck's (\*) *Arnolfini Wedding*. Andy Warhol painted one of these animals, his pet Archie the dachshund. For ten points, name these animals that Cassius Coolidge painted playing poker.**

ANSWER: dog (accept mastiff until "Van Eyck" is read)

(11) **In this novel, Walter Chase doesn't snitch on the protagonist because he is afraid of Meyer Wolfsheim. In this novel, Tom sends his wife away from the Plaza Hotel, and she kills (\*) Myrtle with a car while driving through the valley of ashes. The title character pursues Daisy Buchanan in this novel, which is narrated by Nick Carraway. For ten points, name this novel by F. Scott Fitzgerald.**

ANSWER: The Great Gatsby

(12) **In this state, a tree stump called the "Old Man of the Lake" floats in a lake created by the collapse of Mount Mazama. The cities of Eugene and Corvallis lie on Interstate 5 in this state, which is home to Crater Lake. Settlers who flocked to the (\*) Willamette Valley via a wagon trail eventually formed, for ten points, what Pacific Northwest state whose largest city, Portland, is just south of Washington?**

ANSWER: Oregon

(13) **This scientist’s prediction of the densities and melting points of substances he named eka-silicon and eka-boron was confirmed by the discovery of germanium and gallium. This man used (\*) atomic weight to arrange index cards, noting a repeating pattern in the properties of elements. For ten points, name this Russian chemist, the father of the Periodic Table.**

ANSWER: Dmitri Mendeleev

(14) **In 1970, a member of this family answered “just watch me” when asked how much liberty would be suspended to stop the October Crisis. Another member of this family said “Because it’s (\*) 2015” when asked why his cabinet was gender-balanced, shortly after taking over from Stephen Harper. For ten points, name this Canadian political family that includes former Prime Minister Pierre and current Prime Minister Justin.**

ANSWER: Trudeau family (accept Pierre Trudeau; accept Justin Trudeau after “2015” is read)

(15) **This philosopher described the “four causes” of objects in his *Metaphysics*, which some scholars believe are a series of lecture notes from his school, the Lyceum. *Poetics* and *Politics* were also written by this teacher of (\*) Alexander the Great. For ten points, name this ancient Greek philosopher, the student of Plato.**

ANSWER: Aristotle

(16) **This animal was the subject of a riddle given at Timnah, after Samson discovered honey inside the carcass of one of these animals. This animal “of Judah” is honored in Rasta by wearing (\*) dreadlocks. King Darius punished Daniel by throwing him into a den of these animals, which “roar for their prey” in Psalms. For ten points, name these ferocious big cats with dramatic manes.**

ANSWER: lion

(17) **This instrument plays a solo in the song “I’m Getting Sentimental Over You” and is featured in the standards “Moonlight Serenade” and “In the Mood.” This instrument was derived from the medieval (\*) sackbut, and requires little effort to perform a glissando on this instrument. For ten points, name this brass instrument that uses a slide to change pitch.**

ANSWER: trombone

(18) **Poems of this type tell a “Fair Youth” that “rough winds do shake the darling buds of May” and say that a “Dark Lady’s” “eyes are (\*) nothing like the sun.” The poem “Shall I compare thee to a summer’s day?” is this type of poem, which has three quatrains and a couplet. For ten points, name these 14-line poems, many of which were written by Shakespeare.**

ANSWER: Shakespearean sonnets (accept Elizabethan sonnets; accept sonnets by William Shakespeare)

(19) **Andrew Oliver was burned in effigy for his role in creating this act, whose repeal made the British government pass the Declaratory Act. The Sons of Liberty were founded to protest this act, which raised the cost of (\*) playing cards and legal documents. The phrase “taxation without representation is tyranny” was coined in response to, for ten points, what 1765 tax on printed goods in the American colonies?**

ANSWER: Stamp Act of 1765

(20) **The Venturi effect is a decrease in this quantity due to choked flow. Hydraulic brakes function when a change in this quantity is transmitted to all points throughout the fluid, according to Pascal's principle. A manometer measures this quantity with a column of liquid, using units such as (\*) millimeters of mercury. A barometer indicates the atmospheric type of, for ten points, what quantity, the force per unit area?**

ANSWER: pressure

## Bonuses

(1) An early thought experiment in physics involved a spinning bucket, meant to prove the existence of absolute motion. For ten points each,

The bucket argument was devised by this physicist, who also imagined a cannonball traveling fast enough to circle the Earth and pondered the meaning of a falling apple, consequences of his universal law of gravity.

ANSWER: Sir Isaac Newton

A later thought experiment, proposed by Erwin Schrodinger, posits that one of these animals trapped in a box can be alive and dead at the same time until the moment it is observed.

ANSWER: (Schrodinger's) cat

The second law of thermodynamics is violated by the subject of this 19th century thought experiment, a tiny being who controls a door that separates fast gas molecules from slow ones.

ANSWER: Maxwell's Demon

(2) At the end of this novel, every member of the title group denies a promotion to lieutenant. For ten points each, identify this novel named for Athos, Porthos, and Aramis, three French soldiers who use the motto "all for one, and one for all."

ANSWER: The Three Musketeers (accept Les Trois Mousquetaires)

This protagonist of *The Three Musketeers* is beaten by the Comte de Rochefort upon arriving in Paris. After wounding one of Cardinal Richelieu's best fighters, this man is appointed to the King's Guard.

ANSWER: D'Artagnan (accept either underlined portion of Charles de Batz-Castelmore, Comte d'Artagnan)

This Haitian-French author wrote *The Three Musketeers* as well as *The Man in the Iron Mask* and *The Count of Monte Cristo*.

ANSWER: Alexandre Dumas, père (accept Dumas Davy de la Pailleterie)

(3) The harpsichord and pipe organ are generally incapable of changing this aspect of the music gradually during a piece, since pressing the keys harder does nothing. For ten points each,

Give this musical concept, usually noted in sheet music by markings like "mp" or "f" under the staff.

ANSWER: dynamics (accept dynamic level; accept volume; accept general descriptions of how loud and/or soft the music is)

The notation "mp" notes a dynamic level of mezzo piano, while "f" describes this loud dynamic level.

ANSWER: forte

Gustav Mahler's Seventh Symphony has the low strings play fortississississimo - that's five f's - and includes a variation on this direction, telling the player to "pluck so hard that the strings hit the wood." This Italian term indicates that a string player should pluck, rather than bow, the strings.

ANSWER: pizzicato

(4) The Latin name of a sword inspired this term. For ten points each,

Name this athletic occupation, usually held by slaves, that fought in arenas for the enjoyment of Roman citizens.

ANSWER: gladiators

The grandest examples of gladiatorial combat took place in this Roman arena, the largest amphitheater ever built.

ANSWER: the Colosseum (accept Flavian Amphitheatre)

This Roman emperor ordered the construction of the Colosseum; it was finished a year after this man died and his son, Titus, took power as Emperor.

ANSWER: Vespasian (accept Titus Flavius Caesar Vespasianus Augustus; do not prompt on Titus, Flavius, Caesar, or Augustus)

(5) The “Pink” one in Shiraz has extensive stained glass windows, and Al-Aqsa in Jerusalem is the “furthest” one of these buildings, to which Muhammad was transported during the Night Journey. For ten points each,

Name these places of worship in Islam. One of these buildings, Al-Haram, surrounds the Kaaba in Mecca.

ANSWER: mosque (accept masjid or masjed; accept Masjed-e Nasir-ol-Molk or Nasir ol-Molk Mosque or Pink Mosque; accept Masjid Al-Aqsa or Al-Aqsa Mosque; accept Masjid Al-Haram or Great Mosque)

The Blue Mosque in Istanbul has six of these towers. In many mosques, muezzins call out the adhan-the call to worship-from these tall, thin towers.

ANSWER: minaret (accept minare)

The adhan precedes this act of worship, which makes up the Pillar of Islam called salat when performed five times daily.

ANSWER: prayer (accept word forms like praying)

(6) These objects are left behind after some supernovas, and were discovered by Jocelyn Bell in 1967. For ten points each,

Name these stellar remnants, the densest known type of star. They pack a mass greater than the Sun into a ball about 10 miles across, largely because they are almost entirely made up of a certain subatomic particle.

ANSWER: neutron star

If a supernova leaves a remnant too large to stabilize as a neutron star, it may collapse into one of these regions of space whose gravitational pull is strong enough to prevent light from escaping.

ANSWER: black hole

The collision of two neutron stars probably gives off these phenomena, first observed in 2016 by the LIGO observatory. The 2017 Nobel in Physics was earned for detecting these phenomena.

ANSWER: gravitational waves (accept gravity waves)

(7) For ten points each, name the following historic American colleges and universities.

This university in Massachusetts, whose leaders have included Increase Mather and Charles Eliot, is the oldest American university.

ANSWER: **Harvard** University (accept **Harvard** College)

This school was founded in 1819 by Thomas Jefferson, an achievement he chose to list on his gravestone instead of his presidency.

ANSWER: University of **Virginia** (accept **UVA**)

Virginia is also home to this second oldest college in the US. Thomas Jefferson attended this school, as did James Monroe and John Tyler.

ANSWER: College of **William and Mary** (in Virginia) (accept **W and M**)

(8) One of these kicks can directly score a goal, a rare feat known as an Olympic goal. For ten points each,

Name this method of restarting play in soccer, named for the position in the field where the kick is made. This play results when, for example, the ball is kicked out of bounds over the goal line by a defender.

ANSWER: **corner** kick

The only Olympic goal in the actual Olympics was scored by this American winger in 2012. In 2011, her last-minute cross to Abby Wambach saved a World Cup game against Brazil, and in 2015, she joined Carli Lloyd and Lauren Holiday in the starting 11 against Japan in the USWNT's World Cup final victory.

ANSWER: Megan **Rapinoe**

The first attacker to touch the ball after a corner kick cannot be called for a violation of this often-confusing rule. Usually, violations of this rule take place when the ball is passed to an attacker who is in front of all defenders except the goalie.

ANSWER: **offsides**

(9) If a chemical causes *Salmonella* bacteria to start synthesizing histidine, then the Ames test indicates it is likely one of these substances. For ten points each,

Give this term for agents, like high frequency radiation and aromatic hydrocarbons, than can permanently alter an organism's DNA.

ANSWER: **mutagenic** (prompt on "carcinogen")

Mutagens cause mutations of these regions of DNA, the molecular units of heredity. Alleles [uh-leels] are variants of these entities.

ANSWER: **genes**

A frameshift mutation in the NOD2 gene results in this inflammatory bowel disease, named for its American discoverer, that is caused by the immune system attacking patches throughout the digestive tract.

ANSWER: **Crohn's** disease

(10) This author wrote long-titled short stories about “The Celebrated Jumping Frog of Calaveras County” and “The Man That Corrupted Hadleyburg.” For ten points each,

Name this American author of *The Adventures of Huckleberry Finn* and a novel in which a medieval “wizard” builds Gatling guns to defend against attacking knights.

ANSWER: Mark Twain (accept Samuel Langhorne Clemens)

In another novel by Mark Twain, a nineteenth-century man from this New England state is transported back in time to the court of King Arthur, where he uses his scientific knowledge to usurp Merlin’s power.

ANSWER: Connecticut (accept A Connecticut Yankee in King Arthur’s Court)

The title “Connecticut Yankee” of Twain’s novel is this man, who becomes known as “The Boss” after he predicts a solar eclipse.

ANSWER: Henry “Hank” Morgan

(11) For ten points each, give the following about psychologist Anna Freud [froyd].

Anna Freud’s essay “About Losing and Being Lost” analyzes forgetfulness and this emotional process, including how objects like photographs and heirlooms may affect someone going through it. Customs like wearing black clothing are common among people doing this.

ANSWER: mourning someone’s death (accept grieving someone’s death; accept word forms for either answer like mourn or grief; do not accept “dying”)

Anna Freud studied World War II’s effect on this group of people in England by establishing nurseries and orphanages. Jean Piaget [pee-ah-ZHAY] studied the development of these people in a four-stage model.

ANSWER: children (accept equivalents, including anything specific from babies to teenagers)

As a child, Anna Freud provided material for this work by her father, Sigmund. This book analyzes the unconscious mind through stories, such as “Irma’s Injection,” that he describes as attempts at “wish fulfillment.”

ANSWER: The Interpretation of Dreams (accept Die Traudeutung)

(12) Nathuram Godse committed this event out of anger at the victim’s support for Muslim rights during the partition of India. For ten points each,

Name this January 30, 1948 event that ended the life of an Indian nonviolent leader.

ANSWER: assassination of Mohandas Gandhi ( accept assassination of Mahatma Gandhi; accept killing, shooting, etc. in place of “assassination; prompt on partial answers, like “assassination of Gandhi”)

After he murdered Mahatma Gandhi, Godse was put on trial in the Red Fort of this Indian city. A “New” district of this city is the capital of India.

ANSWER: New Delhi

After Gandhi’s death, this Prime Minister of India spoke on the radio, noting that “the light has gone out of our lives, and there is darkness everywhere.”

ANSWER: Jawaharlal Nehru

(13) Answer the following about regions of the afterlife that share a name with the gods who governed them, for ten points each.

This is the name of both the god who governed the Greek underworld and that underworld itself.

ANSWER: **Hades**

This world of the Norse afterlife was named for the daughter of Loki, and was home to those who died of age or sickness rather than in battle.

ANSWER: **Helheim**

In this ancient culture's myth system, Xolotl guided the dead to Mictlan, an afterlife governed by Mictlantecuhtli. Quetzalcoatl used the bones from Mictlan to create the fifth version of the world in this culture's myth system.

ANSWER: **Aztec**

(14) The right side of this painting is dominated by an orange grove and a nymph offering a pink cloth to this painting's nude central figure. For ten points each,

Name this Italian painting, in which the wind god Zephyr flies into frame from the left to blow the title Roman love goddess to shore as she emerges from the sea on an enormous seashell.

ANSWER: The **Birth of Venus** (accept **Nascita di Venere**)

*The Birth of Venus* is by this Renaissance artist from Florence.

ANSWER: Sandro **Botticelli** (accept Alessandro di Mariano di Vanni **Filipepi**)

Botticelli also painted an orange grove in the background of a painting of this season. Botticelli's *Allegory of this season* shows Bacchus cavorting with the Graces in a flower-strewn clearing while Venus looks on.

ANSWER: **Spring** (accept **Allegory of Spring**; accept **Primavera**)

(15) For ten points each, give the following about proportional relationships in math.

The volume of a cube is proportional to the cube of its side length; as a result, if you multiply the side length of a cube by 3, the volume of the cube will be multiplied by this factor.

ANSWER: the volume is **27** times larger than it originally was (accept descriptions thereof; prompt on generic answers of the form "it gets larger/bigger")

In a directly proportional relationship, a rise in one variable accompanies a rise in another variable. This other term describes a relationship in which a rise in one variable instead causes a fall in the related variable.

ANSWER: **inverse** (accept word forms and elaborations, such as "**inversely** proportional" or "**inversely** related")

On a map, the ratio between the map's distances to the distances in real life is known by this term. Examples of this concept are often provided by an inch-long line on a map and a note like "one inch equals 300 miles."

ANSWER: **scale** factor (accept other additional information)

(16) In this novel, Isabella names her son Linton to spite her husband, who badly mistreats Hareton after inheriting the title home. For ten points each,

Name this novel, in which Heathcliff usurps control of the title estate out of bitterness after Catherine does not marry him.

ANSWER: Wuthering Heights

After establishing ownership of Wuthering Heights, Heathcliff uses his son to take over this nearby house, which had belonged to the Linton family.

ANSWER: Thrushcross Grange

*Wuthering Heights* is by this English author, who used the pseudonym “Ellis Bell” to distinguish her from her sisters Charlotte and Anne.

ANSWER: Emliy Brontë (prompt on “Brontë”)

(17) This continent is home to the Drakensberg, a 600 mile long formation in the Great Escarpment, and Mount Kenya, which features over a dozen peaks. For ten points each,

Name this continent whose highest peak, Kilimanjaro, stands over Tanzania.

ANSWER: Africa

A few different African mountains in Morocco have been proposed as the legendary southern “Pillar of Hercules;” the pillars are on either side of this narrow waterway that separates the Mediterranean Sea and Atlantic Ocean.

ANSWER: Strait of Gibraltar

On the opposite side of the continent, Table Mountain overlooks this city, the second most populous in South Africa after Johannesburg. South Africa’s Parliament meets in this coastal city.

ANSWER: Cape Town

(18) A natural one of these compounds is red cabbage juice, which changes from red to green to yellow as pH [”p”  
[”H”]] increases. For ten points each,

Give this term for compounds like methyl red, bromothymol blue, and phenolphthalein that show different colors at different pH levels.

ANSWER: pH indicators (accept acid/base indicators)

This common indicator is extracted from a lichen and often embedded in a namesake paper that turns red in acids and blue in bases.

ANSWER: litmus paper

The exact pH at which litmus changes color can be found using this equation, which involves the  $pK_a$  value and the concentration ratio of conjugate base to weak acid.

ANSWER: Henderson-Hasselbalch equation

(19) According to some legends, this man reached Greece as a slave from Ethiopia. For ten points each, Name this ancient fabulist whose tales, such as “The Ant and the Grasshopper,” are catalogued in the Perry Index.

ANSWER: Aesop

In this fable by Aesop, a “slow and steady” animal defeats a fast and self-assured animal in a foot race.

ANSWER: The Tortoise and the Hare

In another of Aesop’s fables, a fox attempts to reach this fruit, but decides he didn’t want it anyway when he discovers it is too far away to get.

ANSWER: grapes

(20) The Bonus Army built one of these settlements in the Anacostia Flats in Washington, D.C., and Central Park was home to a large one of these in Manhattan. For ten points each,

Give this term for shantytowns built in the 1930s. This term “honors” the US President blamed for the economic troubles that led to the widespread homelessness.

ANSWER: Hoovervilles

Herbert Hoover was in office at the start of this massive economic downturn. A stock market crash on “Black Tuesday” began this period of American history.

ANSWER: Great Depression

The Hooverville in this city, built on the shores of Elliott Bay near Pike Place Market, was one of the largest and most stable camps in the nation, even though this city’s police burned it down twice.

ANSWER: Seattle