

## Round 7

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### Tossups

(1) **Sky-clad Jain monks are required to remove this physical feature by hand. Two of the Five Ks of Sikhism are kanga, an object used to clean this body part, and kesh, which indicates that this body part should remain (\*) uncut; as a result, Sikhs often wear this body part coiled under a dastar turban. For ten points, name this human body part that may be worn in dreadlocks by Rastas.**

ANSWER: human hair

(2) **Using these numbers as the side lengths of squares can produce an approximation of the golden spiral. The ratio between one of these numbers and the next one approaches the golden ratio. Pine cone scales and flower petals often appear in patterns of these numbers. An (\*) Italian mathematician names, for ten points, what sequence of numbers that starts one, one, two, three, five, and is built by adding the two previous terms?**

ANSWER: Fibonacci numbers (accept Fibonacci sequence)

(3) **A Tatar assassin tried to kill this leader's youngest son, but was stopped by Altani, a woman whom this man honored as a *bataar*. This man's original successor, Jochi, led the Golden Horde before he was possibly poisoned, and his son (\*) Ogedei defeated the Jin Dynasty. This man's grandson founded the Yuan Dynasty, which expanded his empire south into China. For ten points, name this founder of the Mongol Empire and ancestor of Kublai Khan.**

ANSWER: Genghis Khan (accept Temujin; accept Chinggis Khan)

(4) **The ancient Dionysia festival included a competition at which playwrights would submit three plays in this genre and one satyr play. A play in this genre was set near Colonus by Sophocles, who also wrote the plays (\*) *Antigone* and *Oedipus*, whose title characters' stubbornness and hubris are the fatal flaws that lead to their downfalls. For ten points, name this genre of ancient drama, contrasted with comedy.**

ANSWER: tragedy

(5) **This phenomenon obeys Amontons' laws, which include the rule that it is independent of the contact area. This phenomenon, which comes in static and kinetic types, has a force equal to mu [mew], its namesake coefficient, times the normal force. (\*) Oil and other lubricants can reduce, for ten points, what force that opposes motion between two solids moving against each other?**

ANSWER: friction

(6) **A virtuoso player of this instrument, Art Tatum, was a master of its stride style. A quartet led by a musician who played this instrument used unorthodox time signatures in songs like “Take Five” on the album *Time Out*. Jazz musicians like (\*)** Thelonious Monk and Dave Brubeck played, for ten points, what musical instrument whose standard form has eighty-eight black and white keys?

ANSWER: piano (prompt on “keyboard” before mentioned)

(7) **Beverly Oliver claimed to be the “Babushka Lady” seen in a video of this event taken by Abraham Zapruder, the only person filming as an open (\*)** motorcade drove through Dealey Plaza on November 22, 1963. John Connolly was injured in, for ten points, what crime committed by Lee Harvey Oswald against the thirty-fifth President of the United States?

ANSWER: assassination (or murder, shooting, etc.) of John Fitzgerald Kennedy (accept assassination of JFK; prompt on partial answers; prompt on “assassination of Kennedy”)

(8) **The Rothschild subspecies of these animals have five ossicones, although most of these animals only have two, as do these animals’ relatives, (\*)** okapis. Darwin described these animals as “beautifully adapted for browsing on the higher branches of trees.” For ten points, name these mammals whose long necks make them the tallest land animals in the world.

ANSWER: giraffes (accept giraffa camelopardalis)

(9) **This poem’s speaker asks if in “the distant Aidenn” he could “clasp a sainted maiden” after he responds to a strange tapping at his window. An animal in this poem perches on a (\*)** “pallid bust of Pallas” and seems to taunt the speaker over the death of Lenore by repeating the word “nevermore.” For ten points, name this poem about a man driven to despair by a black bird, written by Edgar Allan Poe.

ANSWER: The Raven

(10) **Decreases in this phenomenon and the LFPR indicates a rise in discouragement. This economic phenomenon can be structural, when it is caused by technological changes, or frictional, which reflects the time spent trying to (\*)** end this phenomenon. Retired people are not counted by, for ten points, what negative economic rate that describes the number of people who aren’t working?

ANSWER: unemployment rate

(11) **This literary character is found dead in his laboratory by his servant, Poole, and his friend, J.G. Utterson, to whom this man shows a letter of apology supposedly written by the murderer of Sir (\*)** Danvers Carrew. Another of this man’s friends, Dr Lanyon, dies of shock after seeing this man reveal the “evil side” of his nature by consuming a potion. For ten points, name this fictional doctor who transforms himself into Edward Hyde.

ANSWER: Doctor Henry “Harry” Jekyll (accept Mr Edward Hyde until “Edward” is read; accept The Strange Case of Doctor Jekyll and Mr Hyde)

(12) **This figure was given a crown and necklaces by the Horae and the Graces for her wedding. Zeus ordered Hephaestus to make this woman as a gift for Epimetheus to punish mankind for accepting the gift of (\*) fire from this woman’s brother-in-law, Prometheus. For ten points, all of the evils in the world were released when what mythological woman opened her namesake “box?”**

ANSWER: Pandora

(13) **This city hosted a 1409 Catholic council that elected Alexander V as a third Pope in a failed attempt to end the Western Schism. This city near the mouth of the Arno River was briefly the home of Galileo, who performed a (\*) cannonball drop experiment from a structure that was stabilized with lead counterweights in 2008. For ten points, name this Italian city whose cathedral’s bell tower has a world-famous four degree lean.**

ANSWER: Pisa

(14) **The family of Dick Grayson, the original Robin, worked in this type of place. The song “Entry of the Gladiators” is commonly played at these places, one of which was operated until 2017 by (\*) Ringling Brothers and Barnum and Bailey. For ten points, name this type of traveling performance that commonly involves lion tamers, ring masters, and clowns.**

ANSWER: circuses

(15) **The man who discovered this object’s orbit died in 1742, sixteen years before he could prove that it is periodic. The European Space Agency’s *Giotto* was one of five spacecraft that studied this object in (\*) 1986, the last time it was visible to the naked eye. For ten points, name this object that approaches Earth every seventy-six years and is probably the most famous comet.**

ANSWER: Halley’s Comet (accept Halley alone after “comet” is read)

(16) **This state’s city of Beaumont near Port Arthur is home to Spindletop, the site of a 1901 discovery that triggered an economic boom. Geologists in this state have a hard time studying its Barnett Shale, a formation with massive (\*) natural gas reserves, because it lies underneath a sprawling metroplex that includes Plano and Fort Worth. For ten points, name this southern US state where the oil industry grew the cities of Dallas and Houston.**

ANSWER: Texas

(17) **A fifteenth-century statue of this religious figure wears sandals with ornate, knee-length leg guards, and twines his left toes into the beard of a defeated enemy. A (\*) bronze sculpture of this young man wears a wide-brimmed hat topped with laurels to represent his victory over a giant from Gath. For ten points, name this biblical king who, in a sculpture by Donatello, stands over the disembodied head of Goliath.**

ANSWER: David (accept Dawud)

(18) **In this story, a princess complains when her grandmother decorates her with eight oysters. This story’s protagonist transforms into sea foam because she is unable to gain a (\*) human soul. After rescuing a handsome prince, this story’s title character sells her voice to a sea-witch for a pair of legs, but fails to get a prince to fall in love with her. For ten points, name this classic Hans Christian Anderson fable about a title ocean-dwelling girl.**

ANSWER: The Little Mermaid (accept Den lille havfrue)

(19) **Gallium's sudden tendency to perform this action inspired the title of Sam Kean's book *The Disappearing Spoon*. Heat of fusion refers to the energy needed to achieve this process. Spreading rock salt on ice (\*) lowers the point at which this process takes place. For ten points, name this phase change, the opposite of freezing, in which a solid becomes a liquid.**

ANSWER: melting

(20) **While helping lead this event, Cotton Mather defended the use of "spectral evidence" based on visions. Giles Corey was killed in this event by having heavy stones piled on him because he refused to (\*) plead either guilty or innocent. Nineteen people were hanged during, for ten points, what 1690s hysteria in Massachusetts in which people were accused of sorcery?**

ANSWER: Salem witch trials (accept anything indicating witches in Salem, such as Salem witch hysteria; prompt on partial answers)

## Bonuses

(1) This author wrote that he could “[smuggle] any amount of theology [...] into people’s minds under cover of romance,” and tried to do just that in works like *The Space Trilogy* and *The Great Divorce*. For ten points each,

Name this English author of Christian-influenced science fiction and fantasy novels like *Out of the Silent Planet* and *The Voyage of the Dawn Treader*.

ANSWER: C.S. Lewis (accept Clive Staples Lewis)

Lewis allegorized the sacrifice of Jesus with the death and resurrection of the lion Aslan in this fantasy series that includes *The Voyage of the Dawn Treader* and *The Silver Chair*.

ANSWER: The Chronicles of Narnia

The death and resurrection of Aslan occur in this first novel of the *Chronicles of Narnia*, which follows the adventures of the Pevensie children as they travel to Narnia through the title piece of furniture.

ANSWER: The Lion, the Witch, and the Wardrobe

(2) This leader was ousted in a 2017 coup d’etat and replaced with Emmerson Mnangagwa [m’nan-GAH-gwah] after the army feared he would try to name his wife, Grace, as his successor. For ten points each,

Name this longtime leader of Zimbabwe who passed away in September 2019 at age ninety-five.

ANSWER: Robert Mugabe [moo-GAH-bay] (accept Robert Gabriel Mugabe)

During the coup d’etat, Mugabe was held under house arrest in this capital city of Zimbabwe.

ANSWER: Harare [hah-RAH-ray]

Mugabe gained power in Zimbabwe in 1980, shortly after this European country granted the country its independence. Zimbabwe was earlier named Rhodesia after Cecil Rhodes, a businessman from this country who funded a namesake scholarship to its University of Oxford.

ANSWER: United Kingdom of Great Britain and Northern Ireland (accept UK; accept Great Britain; accept England)

(3) These objects can create virga, a visible trail that dissipates before reaching the ground. For ten points each,

Give this general term for an airborne mass of water vapor in Earth’s atmosphere. Classifications of these objects include cumulus, cirrus, and stratus.

ANSWER: clouds

Virga are streaks of this phenomenon, in which water vapor has condensed and gravity forces it to fall from the cloud. Rain, hail, and snow are different types of this phenomenon.

ANSWER: precipitation (accept word forms like precipitate)

Virga from higher clouds can accomplish this process in lower clouds, causing them to develop into storm clouds. This process, which can be done artificially with compounds like silver iodide, adds condensation nuclei to a cloud, usually to start or increase precipitation.

ANSWER: cloud seeding

(4) In *Earthbound*, Ness can find two tiny talking seeds, play a broken slot machine, and get heatstroke while exploring one of these regions called “Dusty Dunes.” For ten points each,

Name this biome, a common level theme in many video games, such as “Shifting Sand Land” in *Super Mario 64*.

ANSWER: **desert**

The second full kingdom of this 2017 *Mario* game is the Sand Kingdom, whose city of Tostarena features a slots minigame. This was the first *Mario* game released for the Nintendo Switch.

ANSWER: Super Mario **Odyssey**

This hit 2016 indie game was created by ConcernedApe and inspired by the *Harvest Moon* series. Despite being primarily a farming simulator, it features two dungeon-style mines, the second of which is found in a desert behind a casino.

ANSWER: **Stardew Valley**

(5) Samuel Huntington and Cyrus Griffin were the first and last men to serve as Presidents in Congress Assembled under this document. For ten points each,

Name this American governing document that was in effect between 1781 and 1789, when the much more effective Constitution replaced it.

ANSWER: **Articles of Confederation** and Perpetual Union

The Articles of Confederation included language requiring nine states’ approval to admit a new colony into the United States, with one exception. This massive territory could enter automatically if it wanted to, which it didn’t.

ANSWER: **Canada** (accept **Quebec**; do not accept “New France”)

The Constitution states that it becomes law after nine of the thirteen states ratify it; this state with capital Concord became the ninth state to do so in 1788.

ANSWER: **New Hampshire**

(6) In the Fischer esterification, one of these chemicals and a carboxylic acid are refluxed together. For ten points each,

Name this class of organic compounds that features a hydroxyl [**h**ye-**d**rox-**i**l] group. The names of these compounds end with the suffix -ol [**s**pell it], such as the intoxicating ethanol.

ANSWER: **alcohols**

The Fischer esterification reaction requires an acid to serve this purpose; the acid speeds up the reaction but is not consumed by it.

ANSWER: **catalyst** (accept word forms like **catalyze**)

This acid is commonly used to catalyze the Fischer esterification. The contact process is used to produce this acid, whose chemical formula is H<sub>2</sub>SO<sub>4</sub>.

ANSWER: **sulfuric** acid

(7) Answer the following about European national heroes, for ten points each.

Medieval ballads describe this English archer and outlaw, who led the Merry Men in Sherwood Forest. In most folk tales about this man, he robs from the rich to give to the poor.

ANSWER: **Robin Hood** (accept either underlined name of **Robin** or **Locksley**)

A series of *chansons de geste* [shan-sohn duh gest], epic poems from this country, relate the story of Roland, a paladin under Charlemagne. *The Song of Roland* depicts him dying at Roncevaux Pass [rohn-sah-voh pass] in the south of this country.

ANSWER: **France**

Finn McCool is a mythical hunter from this island, where he legendarily burned his fingers while cooking the Salmon of Knowledge and married Sadhbh [sah-eev], a woman who had been turned into a deer.

ANSWER: **Ireland** (accept **Eire**)

(8) In 1453, this empire conquered a crumbling rival with the help of a massive, twenty-seven foot long cannon designed by Orban. For ten points each,

Name this empire that dominated the eastern Mediterranean basin between the thirteenth and nineteenth centuries. After it collapsed during World War I, some of its former land became the country of Turkey.

ANSWER: **Ottoman** Empire

The Ottomans conquered this capital city of the Byzantine Empire in May 1453. Give its name as of 1453, not its ancient name or its modern name, which was adopted in 1923.

ANSWER: **Constantinople** (do not accept or prompt on “Byzantium” or “Istanbul”)

This Ottoman sultan led the 1453 capture of Constantinople and conquest of the Byzantines, helping earn his common epithet.

ANSWER: **Mehmed II** (accept **Mehmed the Conqueror**; accept **Fatih** Sultan **Mehmed**; prompt on “Mehmed”)

(9) For ten points each, answer the following about the work of Artemisia Gentileschi [ahr-teh-MEE-see-ah jen-tih-LESS-kee], an Italian painter who depicted herself leaning in to focus on her work in *Self-Portrait as the Allegory of Painting*.

Gentileschi may have included a self-portrait of herself as Judith in *Judith Slaying Holofernes*, a painting in which the title biblical woman kills Holofernes in this way. In another Gentileschi painting, Salome contemplates a silver tray that contains a body part of John the Baptist to show he has been killed in this way.

ANSWER: **beheading** (accept descriptions like having his **head cut off**; accept **Judith Beheading Holofernes**)

In addition to her common themes of *Judith Slaying Holofernes* and *Susanna and the Elders*, Gentileschi created many depictions of this biblical woman holding the infant Jesus.

ANSWER: Mother **Mary** (accept Blessed Virgin **Mary**; prompt on “Holy Mother” or “Holy Virgin”)

Gentileschi’s paintings are classified with this extravagant art movement that followed the Renaissance. Rococo style followed this art movement, which focused on bright, bold colors and sumptuous imagery.

ANSWER: **Baroque**

(10) For ten points each, give the following about locations in the short stories of Jorge Luis Borges.

Borges worked in these literary facilities, which are the subject of several of his stories. One of these locations “of Babel” is made up of infinitely many hexagonal rooms, each with four walls of books, each filled with four hundred and ten pages of seemingly random writing.

ANSWER: library (accept The Library of Babel)

Borges described one of these locations “of Forking Paths” in a short story set during World War I. Mary Lennox explores a “Secret” one of these locations at Misselthwaite Manor in a novel by Frances Hodgson Burnett.

ANSWER: garden (accept The Garden of Forking Paths; accept The Secret Garden)

Many of Borges’ stories, including “The Aleph,” are set in this South American country, where he worked at the National Library in Buenos Aires.

ANSWER: Argentina (accept Argentine Republic)

(11) Name the following famous volcanoes, for ten points each.

This volcano covered the entire city of Pompeii in ash in 79 CE. The most complete account of this volcano’s eruption was written by Pliny the Younger.

ANSWER: Mount Vesuvius

This volcano’s most famous eruption, which occurred in 1980, created a two hundred fifty foot wide crater at its summit, making it no longer the fifth highest peak in Washington state.

ANSWER: Mount Saint Helens

This volcano off the coast of Indonesia erupted in 1883, killing over thirty-six thousand people. It is theorized that the gases released from this volcano caused the average temperature of Earth to decrease for several years.

ANSWER: Krakatoa (accept Krakatau)

(12) The angle of this phenomenon and the angle of incidence are found in Snell’s Law. For ten points each,

Name this phenomenon that causes light to bend as it passes between two media. This effect is commonly seen by placing a straw in a glass of water and observing a distorted “break” in the straw at the water line.

ANSWER: refraction (accept word forms like refracting; do not accept “reflection”)

When light passes through a denser medium, this quantity of the light wave decreases. This quantity is defined as the distance between two peaks on a wave and is equal to the wave’s velocity divided by its frequency.

ANSWER: wavelength

Light refracted from rain drops can form these phenomena. It is recommended that viewers use a roughly forty degree angle to view these multicolored arcs.

ANSWER: rainbows

(13) For the equation “ $x$  squared plus twenty  $x$  equals one hundred twenty-five,” this process would begin by adding one hundred to both sides of the equation. For ten points each,

Name this strategy for solving certain equations. This strategy chooses numbers convenient for clever factoring, then exploits that for an easy square root.

ANSWER: completing the square (accept word forms)

Completing the square is used to solve this type of equation involving polynomials with degree two, such as the example in this bonus. A namesake formula for solving these equations involves a fraction usually written with “two  $a$ ” in the denominator.

ANSWER: quadratic equations (accept quadratic formula, etc.)

Completing the square is usually easier than it would be to use a pure factoring strategy when the solutions of the equation are this type of real number that cannot be written as a fraction.

ANSWER: irrational numbers

(14) Give the following about African Nobel Peace Prize laureates, for ten points each.

This South African anti-apartheid leader was awarded the Nobel Peace Prize in 1993, three years after he was freed from Robben Island prison and a year before he became South Africa’s first freely elected president.

ANSWER: Nelson Mandela (accept Nelson Rolihlahla Mandela)

Kofi Annan, a Nobel Laureate from Ghana, was awarded the Prize in 2001 while serving as Secretary-General of this global organization.

ANSWER: United Nations (accept UN)

Ellen Johnson Sirleaf, who was co-awarded the Nobel Peace Prize in 2011 for her advocacy of women’s rights, led this West African country from 2006 to 2018 as the first woman elected head of state in African history.

ANSWER: Republic of Liberia

(15) This Abrahamic religion believes in the validity and equality of all people and religions. For ten points each,

Name this religion founded in the nineteenth century by the Báb [bob], who preceded the prophet Bahá’u’lláh [bah-hah-oo-lah].

ANSWER: Bahá’i Faith

In the Bahá’i Faith, the Báb and Bahá’u’lláh are one of the Twin Manifestations of this being. Because Bahá’i is a monotheistic religion, Bahá’is believe that there is only one of these beings, who created the universe.

ANSWER: gods (accept Divine Spirit; accept Holy Spirit; accept descriptions of an ultimate deity)

Twin Manifestations of God in Bahá’i include one person who predicts the coming of the second, like the Báb who predicted the coming of Bahá’u’lláh and this Christian figure, the son of Elizabeth who predicted the coming of Jesus.

ANSWER: Saint John the Baptist (prompt on “John” or “Saint John”)

(16) There's more to F. Scott Fitzgerald than *The Great Gatsby*. Answer some questions about Fitzgerald's short stories, for ten points each.

The Fitzgerald collection *Flappers and Philosophers* includes a short story in which Marjorie tricks Bernice into getting this physical feature cut into a bob. In revenge, Bernice cuts off two braids' worth of this stuff belonging to Marjorie.

ANSWER: hair (accept **Bernice Bobs Her Hair**)

In another Fitzgerald short story, collected in *Tales of the Jazz Age*, the Washington family works to keep the secret that they live on a mountain made entirely out of this substance. The story is titled for one of these minerals "as Big as the Ritz."

ANSWER: diamond (accept The **Diamond as Big as the Ritz**)

*Tales of the Jazz Age* also contains "The Curious Case of" this man, who is born with the appearance of an old man and proceeds to age backwards.

ANSWER: Benjamin Button (accept The **Curious Case of Benjamin Button**)

(17) This location was named after President Eisenhower's grandson. For ten points each,

Name this retreat in Maryland, the site of a landmark agreement between Egypt and Israel mediated by a US president in 1978.

ANSWER: Camp David (accept **NSF Thurmont**)

This president negotiated the Camp David Accords between Israel and Egypt. He was defeated by Ronald Reagan in 1980 after his poor handling of the Iran Hostage Crisis.

ANSWER: Jimmy Carter (accept James Earl **Carter** Jr.)

Earlier, this president hosted Winston Churchill at Camp David during World War II. The Works Progress Administration, which built Camp David, was created by this President's New Deal.

ANSWER: Franklin Delano Roosevelt (accept **FDR**; prompt on "Roosevelt")

(18) A murmur can be heard when blood leaks back through the valves of this organ. For ten points each,

Name this major organ of the circulatory system that pumps blood through four chambers called atria and ventricles.

ANSWER: heart

Blood pumped from the left ventricle enters the aorta, the largest of these vessels that carry blood away from the heart.

ANSWER: artery (accept **arteries**; do not accept or prompt on "vein")

When the wall of an artery weakens, one of these outward bulges will form, which can be lethal if they rupture in the brain or aorta.

ANSWER: aneurysm

(19) This author wrote that “a foolish consistency is the hobgoblin of little minds” in the essay “Self-Reliance.” For ten points each,

Name this American Transcendentalist essayist and poet, who wrote works like “Nature,” “The Over-Soul,” and “The American Scholar.”

ANSWER: Ralph Waldo Emerson

In the Transcendentalist essay “Nature,” Emerson describes himself as a “transparent” one of these body parts, claiming that “I am nothing; I see all.”

ANSWER: transparent eyeball

As a poet, Emerson wrote a “Hymn” named for this Massachusetts town near Lexington. In the poem, commemorating an early battle of the American Revolution, Emerson describes “embattled farmers” standing on a bridge near this town, where they “fired the shot heard round the world.”

ANSWER: Concord Hymn

(20) For ten points each, give the following about Christmas-inspired classical music.

Several of these Christmas songs have melodies written by classical composers, including “Joy to the World” by Handel and “Hark! The Herald Angels Sing” by Mendelssohn. Groups often go door to door singing these songs around Christmas.

ANSWER: Christmas carols

This English folk song provides the melody for the carol “What Child is This?” This song, which may have been written by Henry VIII for Anne Boleyn, is titled for the color of dress the singer’s love wears.

ANSWER: Greensleeves

Clara receives the title object of this ballet as a Christmas gift. Clara later defeats the Rat King to free a prince trapped inside the title object of this ballet, which is frequently performed around Christmas.

ANSWER: The Nutcracker (accept Shchelkunchik, Balet-feyeriya)