Round 5

Michael Etzkorn ● Brad Fischer ● Clare Keenan ● Mike Laudermith ● Lauren Onel
Noah Prince ● Jacob Simmons ● Kristin Strey ● Tyler Vaughan

Tossups

(1) **In 2009, Stephen Hawking threw a party for people performing this action, but no one came. Faster than light speeds would allow tachyons to perform this action, and the (*)** grandfather paradox may indicate that this action is impossible. A wormhole might permit, for ten points, what staple action of science fiction that violates the arrow of time?

ANSWER: **time travel** (accept equivalents such as **traveling back in time**)

(2) **In this man's stories, Arcite and Palamon duel over Emily and a man is sent on a quest to find what women want. "The Knight's Tale" and "The (*)** Wife of Bath's Tale" are in this man's collection about pilgrims who tell stories on the way to Thomas Becket's shrine. For ten points, name this Middle English author of *The Canterbury Tales*.

ANSWER: Geoffrey **Chaucer**

(3) **This territory's northern border was set by Thomas Pinckney at the 31st parallel. This territory was acquired in the Adams-Onis Treaty, shortly after (*)** Andrew Jackson invaded it in the First Seminole War, sparking outrage from its owner, Spain. For ten points, name this US territory that became a state governed from Tallahassee.

ANSWER: **Florida** (accept West **Florida**; accept East **Florida**; accept Spanish **Florida**)

(4) **This man built a structure to imprison the son of Queen Pasiphae of Crete and a white bull, but it successfully navigated by (*)** Theseus using a ball of string. This man used honey and wax to build wings after he and his son were imprisoned by King Minos for building the Labyrinth. For ten points, name this Greek inventor, whose son Icarus died after flying too close to the sun.

ANSWER: **Daedalus**

(5) **A melody from this suite was adapted to fit Cecil Spring Rice's poem "I Vow to Thee, My Country." Girls from St. Paul's School formed the choir for this work's seventh section. Subtitles to this suite's sections include "the Bringer of (*)** War" and "the Bringer of Jollity." For ten points, name this orchestral suite by Gustav Holst that depicts celestial bodies like Mars and Jupiter.

ANSWER: The **Planets**

(6) **A simple model of this economic process was inspired by David Ricardo's explanation that this action can benefit countries through comparative advantage, even if one country is better at (*)** producing everything, using an example of exchanging wine and cloth. A global market allows, for ten points, what economic action, the exchange of goods between countries?

ANSWER: (international) **trade** (accept elaborations, such as free **trade**)

(7) **This location contains Lake Isa, which straddles the continental divide, and its Obsidian Cliff was used for tool making by ancient Native Americans. This World Heritage Site sits above North America's largest (*)** active supervolcano. Grand Prismatic Spring and the Old Faithful geyser are in, for ten points, what first US National Park found mostly in Wyoming?

ANSWER: **Yellowstone** National Park

(8) **This author wrote about Axel descending into an Icelandic Volcano with Otto Lidenbrock. This author wrote a novel about Phileas Fogg winning a wager with the help of (*)** Passepartout, and created Nemo, the captain of the *Nautilus* submarine. For ten points, name this author of *A Journey to the Center of the Earth*, *Around the World in 80 Days*, and *20,000 Leagues Under the Sea*.

ANSWER: Jules Gabriel **Verne**

(9) **One of this country's ships accidentally killed three British fisherman in the Dogger Bank incident. In 1904, this country launched a months-long journey around Africa to reinforce its Pacific Fleet; this country then lost much of its navy in the Battle of (*)** Tsushima Straits against Japan and had its admiral, Zinovy Rozhestvensky, taken prisoner. For ten points, name this country whose navy received orders from Moscow.

ANSWER: **Russia**n Empire (do not accept Soviet Union)

(10) **According to the Red Queen hypothesis, predators and prey force each other to develop these traits. By closely matching with local food sources, the beaks of Galapagos finches qualify as these traits. Opposable (*)** thumbs and a bipedal stance are among the most important of these in humans. For ten points, name this type of trait that develops to help an organism survive in its environment.

ANSWER: **adaptation**s (accept word forms like **adaptive** traits; prompt on less specific answers such as "useful traits" or "helpful traits")

(11) **This singer states "I love the way you know who you are" in a song she performed with The Scene. "Take away your things and go / You can't take back what you said, I know" opens a 2015 song by this artist. In a song with this artist asks, (*)** "Who's gonna walk you through the dark side of the morning?" For ten points, name this former Disney Channel star and singer of "Naturally, "Same Old Love", and "It Ain't Me."

ANSWER: Selena Marie **Gomez**

(12) **This man won an election over an opponent who possibly lost votes to the Reform Party's Pat Buchanan on confusing "butterfly ballots." This man's 537 vote lead in one state was preserved after a 5-to-4 (*)** Supreme Court ruling stopped a recount in Florida. For ten points, name this President who defeated Al Gore in the Election of 2000 to succeed Bill Clinton.

ANSWER: **G**eorge **W**alker **Bush** (prompt on Bush and/or George Bush; do not accept or prompt on George Herbert Walker Bush)

(13) **The book of Matthew presents this text as a replacement for long, pagan-style prayers. In Catholicism, this text is recited between the decades of the rosary. Christians disagree about the use of the words (*)** "debts," "sins," or "trespasses" in this prayer's request for forgiveness "as we forgive others." For ten points, name this common Christian prayer that addresses "Our Father, who art in heaven."

ANSWER: The **Lord's Prayer** (accept **Pater Noster**; accept **Our Father** before it is read)

(14) **There are naturally this many atoms in the elemental forms of halogens. Alkaline earth metals always form cations with this charge. A single line in a (*)** Lewis structure represents this many electrons. For ten points, give this number of protons in a helium nucleus and number of hydrogen atoms found in a water molecule.

ANSWER: **2**

(15) **This character is revealed to be the Viscount of Greystoke [VYE-count of Greystoke] after going to Wisconsin. The daughter of Archimedes Porter meets this man while marooned in Africa. (*)** Kerchak, the leader of a tribe of animals, adopts this "feral child" after killing his father. For ten points, name this love interest of Jane, the subject of an Edgar Rice Burroughs book in which he is raised by apes.

ANSWER: **Tarzan** (accept John **Clayton** III)

(16) **This artist painted several of the *Venus de Milo* in *The Hallucinogenic Toreador*, and created a work in which three swans on a pond are reflected as (*)** elephants. A desolate landscape by this man includes a dead tree, a box-like platform, and a strangely distorted face, on which rest soft clocks. For ten points, name this Spanish surrealist artist of *The Persistence of Memory*.

ANSWER: Salvador Domingo Felipe Jacinto **Dalí** y Domènech

(17) **Euclid generated a new one of these numbers by multiplying all known examples together and adding one, thereby proving that there are infinitely many of this type of number. The (*)** Sieve of Eratosthenes generates a list of these numbers by crossing out multiples of them. Two, 3, 5, and 7 are the smallest examples of, for ten points, what type of number, contrasted with composites?

ANSWER: **prime** numbers

(18) **This man chaired a militant group formed from a banned political party after the Sharpeville massacre. This leader of the Spear of the Nation wrote the memoir *Long Walk to Freedom* about his 27 years of imprisonment on (*)** Robben Island near Cape Town. The African National Congress was once led by, for ten points, what opponent of apartheid and first black president of South Africa?

ANSWER: Nelson Rolihlahla **Mandela**

(19) **This poet wrote about a "Blue - uncertain - stumbling buzz / Between the light - and me" and wrote that, "the Horses' Heads Were towards Eternity" in a poem that describes a character who (*)** "kindly stopped for me." For ten points, name this "Belle of Amherst" who frequently used dashes in the poems "I heard a Fly buzz when I died" and "Because I could not stop for Death."

ANSWER: Emily Elizabeth **Dickinson**

(20) **Philip II expanded this city's Holy Innocents' cemetery, whose overflowing mass graves were later replaced by a series of catacombs. Jim Morrison, Oscar Wilde, and Frederic Chopin are buried in this city's (*)** Père Lachaise [pair la-shez] Cemetery. Napoleon Bonaparte commissioned the Arc de Triomphe in, for ten points, what capital of France?

ANSWER: **Paris**

Bonuses

(1) Stories of this ruler's largesse include a legend that he built a mosque every Friday during one of his travels. For ten points each,

Name this 14th century Mansa of the Mali Empire, best known for a legendary *hajj*.

ANSWER: Mansa **Musa** (accept **Musa** Keita I)

During his *hajj*, Mansa Musa spent so lavishly throughout northern Africa and the Arabian Peninsula that he temporarily destroyed the value of this precious metal. Caravans once traded this metal for salt throughout Africa.

ANSWER: **gold**

Mansa Musa's building projects, including the University of Sankore, transformed this city into a major trading center. By the 19th century, it had fallen into such disarray and became so hard to reach that many people thought it was a mythical city.

ANSWER: **Timbuktu**

(2) This man promoted the Usonian style of community planning, and set stained glass windows into the roofs of the Unity Temple in Oak Park and the Guggenheim Museum in New York. For ten points each,

Name this American architect, who designed low, flat buildings with natural features in his Prairie School designs.

ANSWER: Frank Lloyd **Wright** (accept Frank Lincoln **Wright**)

Wright designed this house for Edgar Kaufmann's family in Pennsylvania. This house's patios are cantilevered over a running creek called Bear Run.

ANSWER: **Fallingwater**

Wright also designed a mile-high skyscraper that was never built in this US state. Wright designed the Unity Temple in Oak Park and the Midway Gardens in Chicago in this state.

ANSWER: **Illinois**

(3) This author's many book series follow Miss Jane Marple of St Mary Mead, Tommy and Tuppence Beresford, and a round-headed crime-solver with an enormous moustache. For ten points each,

Name this English author of *And Then There Were None*, whose novel *The Mysterious Affair at Styles* introduced the character of Hercule Poirot [ayr-KYOOL pwah-ROH].

ANSWER: Dame Agatha Mary Clarissa **Christie**

In this frequently-adapted novel, Hercule Poirot discovers who killed a man travelling under the name "Samuel Ratchett" on a train traveling from Istanbul to Calais.

ANSWER: **Murder on the Orient Express**

Before solving crimes in England, Poirot was a policeman in Brussels, the capital of this European country.

ANSWER: Kingdom of **Belgium**

(4) Matrix arithmetic comes with a set of rules that are significantly different than numeral arithmetic. For ten points each,

Matrix addition and subtraction only works if the two matrices have identical values for this property. In another context, this term describes the number of coordinates needed to describe a geometric object: two for a square or circle, and three for a cube or sphere.

ANSWER: **dimension**s (accept two-**dimension**al or three-**dimension**al; prompt on descriptions of "the number of rows and columns of the matrix")

This term describes the impossible addition of two matrices that don't have the same dimensions, as well as computations like zero to the zero power or 5 divided by 0.

ANSWER: **undefined**

This type of square matrix has a main diagonal of ones with zeroes everywhere else. Multiplying this type of matrix by another matrix may be undefined, if the dimensions don't match correctly, or it will leave the other matrix unchanged.

ANSWER: **identity** matrix

(5) This console's games included *Earthbound*, the first *F-Zero* game, and *Donkey Kong Country*, and its controller used X and Y buttons in addition to its predecessor's A and B buttons. For ten points each,

Name this 16-bit game console that was originally released in the US in 1991. An emulator of 20 of this console's games was released in 2017.

ANSWER: **Super Nintendo** Entertainment System (accept **SNES**; accept **SNES** Classic; accept **Super Famicom**; do not accept or prompt on answers that don't have "Super;" do not accept NES or NES Classic)

The SNES Classic includes a previously unreleased sequel to this SNES shooter game, whose supporting characters include Falco and the barrel roll-loving Slippy Toad.

ANSWER: **Star Fox** (accept **Star Fox** 2)

The SNES Classic also includes the first game in this racing series, in which Luigi and Yoshi can fire shells at each other on Rainbow Road.

ANSWER: **Mario Kart** series (accept **Super Mario Kart**)

(6) The northernmost land action of the Civil War took place in this state, when Confederate soldiers raided the city of St. Albans. For ten points each,

Name this New England state, the home of the Green Mountains and the cities of Burlington and Montpelier.

ANSWER: **Vermont**

During the Revolutionary War, the Green Mountain Boys captured this fort on Lake Champlain. This fort's cannons were then transported to Boston to help siege the city.

ANSWER: Fort **Ticonderoga**

With Benedict Arnold, this leader of the Green Mountain Boys commanded the forces that captured Fort Ticonderoga.

ANSWER: Ethan **Allen**

(7) For a sufficiently thin one of these devices, the reciprocal of focal length equals the reciprocal of object distance plus the reciprocal of image distance. For ten points each,

Name these optical devices that use refraction to focus light rays and produce an image.

ANSWER: **lens**es

A magnifying glass contains this type of simple lens, which causes parallel light rays to converge at a single point. Concave lenses cause light rays to diverge away from each other instead.

ANSWER: bi**convex** lens (accept **double convex**; accept **plano-convex**; prompt on "positive lens")

If an object is placed inside the focal length of a convex lens, this kind of upright image will result. These images cannot be projected onto a screen.

ANSWER: **virtual** image

(8) Answer the following about Hindu gods connected with Shiva, the god of death and rebirth. For ten points each,

Name this Hindu creator god, who is usually depicted with four faces, each facing a cardinal direction. This god is part of the Trimurti with Shiva and the preserver, Vishnu.

ANSWER: **Brahma** (do not accept Brahman or Brahmin)

This love goddess is Shiva's consort, and is one of the Tridevi along with Lakshmi and Saraswati.

ANSWER: **Parvati**

After the god Ganesha came between Parvati and Shiva, Shiva beheaded him and replaced his head with that of this large animal, with ivory tusks and large ears.

ANSWER: Indian **elephant**

(9) Co-sponsors on a September 2017 bill to overhaul this government agency "for All" included Kirsten Gillibrand, Kamala Harris, and Cory Booker. For ten points each,

Name this government agency, established as part of Lyndon Johnson's "Great Society" initiative, that provides health insurance to the elderly and disabled. Part D of this program, established under President Bush in 2003, covers prescription drugs.

ANSWER: **Medicare** (accept "**Medicare** for All;" accept **Medicare** Part D; do not accept "Medicaid")

The 2017 "Medicare for All" bill was introduced by this Vermont Senator, an independent who ran for the 2016 Democratic presidential nomination against Hillary Clinton.

ANSWER: Bernard "Bernie" **Sanders**

This Massachusetts senator also co-sponsored the bill. Prior to her 2012 election to the Senate, she pushed for the creation of the Consumer Financial Protection Bureau.

ANSWER: Elizabeth **Warren** (accept Elizabeth **Herring**)

(10) Answer the following about ancient literary monsters, for ten points each.

In this Old English epic poem, the monster Grendel and his mother attack the mead-hall Heorot until they are defeated by the title Geatish ["GATE"-ish] hero.

ANSWER: **Beowulf**

Beowulf was translated by this English linguist, who wrote about balrogs, giant creatures of darkness and shadow from Middle Earth's First Age, in *The Lord of the Rings*.

ANSWER: J.R.R. **Tolkien** (accept John Ronald Reuel **Tolkien**)

This American writer wrote about shape-shifting shoggoths, enormous monsters that serve the Old Ones, in his extensive stories about a pantheon that includes Cthulhu.

ANSWER: H.P. **Lovecraft** (accept Howard Phillips **Lovecraft**)

(11) Beginning Phase II clinical trials in 2017, SAV001 is the first of these treatments to use a whole "dead" HIV virus. For ten points each,

Name these preventative treatments, first described by Edward Jenner, in which a killed or weakened virus is injected to stimulate a rapid immune response to the infectious virus.

ANSWER: **vaccine** (accept **vaccination**; accept **inoculation**; accept word forms; prompt on immunization)

This Frenchman and his colleague, Emile Roux, first showed that a "dead" virus vaccine could work when they saved Joseph Meister from rabies in 1885.

ANSWER: Louis **Pasteur**

Much of the difficulty in creating an HIV vaccine is due to this error-prone retrovirus enzyme that makes a DNA copy of an RNA strand.

ANSWER: **reverse transcriptase**

(12) This family produced three popes, a large bank, and a giant power vacuum in Tuscany after it declined. For ten points each,

Name this powerful Italian family that dominated politics in Florence for multiple centuries.

ANSWER: de' **Medici** family

In the 15th and 16th centuries, the wealth of the Medici family supported this period of cultural progress. For example, Cosimo de' Medici was a patron of artists like Donatello.

ANSWER: Italian **Renaissance**

This member of the Medici family, known as "the Magnificent," helped keep peace in Italy during the Renaissance and sponsored artists like Michelangelo.

ANSWER: **Lorenzo** the Magnificent (accept **Lorenzo** de' Medici)

(13) In the *Oresteia* [oh-ress-TYE-ah] trilogy, Agamemnon returns from this war only to be murdered by his wife, Clytemnestra. For ten points each,

Name this legendary war, in which Agamemnon, Odysseus, and the combined forces of Greece besieged an enemy city-state.

ANSWER: **Trojan** War

Agamemnon returns from the Trojan War with Cassandra, a Trojan princess who had been given this gift by Apollo, though she had also been cursed so that no one believed her predictions.

ANSWER: **prophecy** (accept descriptions like **tell**ing the **future**)

The *Oresteia* is by this Greek playwright, who also wrote *Prometheus Bound* and *Seven Against Thebes*.

ANSWER: **Aeschylus** [ESS-kih-luss]

(14) The numerous collaborations between this woman and Elizabeth Cady Stanton included *The Revolution*, a newspaper that advocated for women's rights, and the six-volume *History of Woman Suffrage*. For ten points each,

Name this suffragette. The American Equal Rights Association was driven by her work, as well as that of Stanton, Lucy Stone and Lucretia Mott.

ANSWER: Susan B. **Anthony**

As suffragettes, Anthony and Stanton argued for the right to perform this action. Anthony illegally did this in 1872, four decades before the 19th Amendment guaranteed this right for women.

ANSWER: right to **vote**

Three years before Anthony and Stanton met, Stanton co-organized this 1848 event, the first women's rights convention. Lucretia Mott spoke at this event, where the Declaration of Sentiments was produced.

ANSWER: **Seneca Falls** Convention

(15) This region of the Periodic Table contains the elements with the highest oxidation state, melting point, and electrical conductivity. For ten points each,

Name this collection of elements that includes gold, nickel, titanium, and tungsten. It is usually placed in the center of the Periodic Table, spread over groups 3 through 12, above the lanthanides and actinides.

ANSWER: **transition** metals/elements (accept, but *do not otherwise mention*, **d-block** elements)

The transition metals may contain up to ten electrons in this subshell, which follows *s* and *p* and names the central block of the Periodic Table.

ANSWER: **d** (subshell or block)

The two transition metals that favor a full *d*-subshell over a full *s* are copper and this element, which makes rubies red and steel stainless.

ANSWER: **chromium** (accept **Cr**)

(16) String instruments represent this character, who declares "Boys like me are not afraid of wolves!" and, when one comes out of a forest, catches it in a noose and takes it to the zoo. For ten points each,

Name this young boy, the title character of an orchestral composition for children.

ANSWER: **Peter** (accept **Peter** and the Wolf)

Peter and the Wolf was composed by this Soviet composer, whose other works include *The Love for Three Oranges*.

ANSWER: Sergei **Prokofiev**

In *Peter and the Wolf*, this double reed instrument represents the duck, which is swallowed whole by the wolf.

ANSWER: **oboe**

(17) The ball-turret gunner was killed in one of these vehicles "six miles from earth / loosed from its dream of life." For ten points each,

Name these flying vehicles, one of which explodes over the English channel in Salman Rushdie's *The Satanic Verses*.

ANSWER: air**plane**s

Yossarian attempts to avoid flying his airplane during World War II in this Joseph Heller novel, but is stymied by the title rule, which says that any man able to demonstrate insanity and ask to be sent home is too sane to be sent home.

ANSWER: **Catch-22**

Joe Keller avoids being convicted for selling faulty airplane parts in *All My Sons*, a play by this American playwright.

ANSWER: Arthur Asher **Miller**

(18) Hundreds of thousands of tourists flock to this state each August for the Sturgis Motorcycle Rally. For ten points each,

Name this US state, where Sturgis rallygoers can visit the gold rush town of Deadwood in the northern stretch of the Black Hills.

ANSWER: **South Dakota**

The Sturgis rally fills hotel rooms down the road in Rapid City; the rest of the year, tourists stay in Rapid City to visit this national memorial, a Gutzon Borglum rock sculpture of four US Presidents.

ANSWER: **Mount Rushmore** National Memorial

Sturgis and Rapid City both lie on this interstate highway, which is absolutely filled with billboards for Wall Drug. This longest interstate in the country runs between Boston and Seattle; note that, because it runs east-west, it's designated with an even number.

ANSWER: Interstate **90** (accept I-**90**)

(19) Ancient Egyptian religion required complicated funeral rites, though only wealthy Egyptians could afford full embalming. Answer the following about embalming and entombment, for ten points each.

The wealthiest Egyptians were entombed in these large structures, which were filled with treasures, food, and embalmed servants for the afterlife. Three of these structures near Giza were built by Khufu and his descendants.

ANSWER: **pyramid**s (accept **Great Pyramids** of Giza)

Though the organs of the poor were liquified and drained, wealthy Egyptians' stomach, intestines, lungs, and liver were stored in these containers, which were decorated with and guarded by the four sons of Horus.

ANSWER: **canopic jar**s (accept **canopic box**es)

These insectoid amulets were placed over the heart or sewn onto the chest of mummies, and may have represented a connection to Ra.

ANSWER: **scarab**s (prompt on "beetles" or "dung beetles")

(20) The Global Positioning System relies on 31 of these devices, each containing a precise atomic clock. For ten points each,

Name these devices that can be used to monitor weather, gather intelligence, and relay communication signals back to Earth.

ANSWER: artificial **satellite**s

Satellites are launched into these trajectories, circling around the Earth.

ANSWER: **orbit**s

Most communications satellites have this type of orbit exactly 22,236 miles above the Earth's equator. A satellite in this orbit appears to stand still in the sky because its period of revolution matches the Earth's rotation rate.

ANSWER: **geostationary** equatorial orbit (accept **GEO**; prompt on "geosynchronous" orbit)