Round 4

Lilly Chavez • Brad Fischer • Natalie Howell • Clare Keenan • Mike Laudermith
Sophie Netzel • Lauren Onel • Aleija Rodriguez • Zane Smalley • Kristin Strey
Ethan Strombeck • Lana Kay Tutterow • Tyler Vaughan • Trevor Vice

Tossups

(1) **A man in this novel dresses as a woman to tell the fortunes of Blanche Ingram and his future wife. This novel's protagonist befriends Helen Burns when she attends Lowood School. In this novel, Grace Poole cares for the deranged (*)** Bertha Mason, who eventually burns down Thornfield Hall. For ten points, name this novel whose title character marries the mysterious Mr Rochester, a work by Charlotte Bronte.

ANSWER: **Jane Eyre**

(2) **This god's son, Tenages, was murdered by his four brothers over his scientific prowess, and this god's daughter Pasiphae was the wife of King Minos. This god had a sacred herd on Thrinacia, and his daughter Circe warned Odysseus against killing the (*)** cattle this god kept there. Phaethon, another son of this god, died while trying to control this god's chariot. For ten points, name this Greek god, the personification of the sun.

ANSWER: **Helios**

(3) **The hydrocarbon haze surrounding Titan contributes to the "anti-" form of this process. Svante Arrhenius linked this effect to a rise in (*)** carbon dioxide concentration, and a "runaway" form of it caused Venus to develop extreme global warming. For ten points, name this effect in which atmospheric gases absorb thermal radiation and redirect it back to Earth's surface, generating higher average temperatures.

ANSWER: **greenhouse** effect (prompt on "global warming" before it is read; prompt on "climate change")

(4) **A performer of this instrument used it to imitate a preacher's voice on the track "Psalm." This instrument was played by a performer who used "sheets of sound" on albums like *A Love Supreme* and *Giant Steps*. This instrument was played by John (*)** Coltrane, who collaborated with jazz trumpeter Miles Davis. For ten points, name this woodwind instrument that, in school wind bands, commonly comes in alto and tenor forms.

ANSWER: **sax**ophone

(5) **The story of Laura Bridgman inspired this figure's mother to meet with Alexander Graham Bell; this co-founder of the ACLU later dedicated her autobiography, *The Story of My Life*, to Bell. The play *The (*)* *Miracle Worker*** details Anne Sullivan's work teaching this woman hand signals for words like "water." For ten points, name this activist and author from Alabama who, as a result of a childhood fever, was deaf and blind.

ANSWER: Helen **Keller**

(6) **A transversal passing through two lines with this property creates equal alternate angles. A kite has no sides with this property, and if the opposite sides of a rhombus have this property, the rhombus is actually a (*)** square. Two lines with this property are always the same distance apart. For ten points, name this adjective from geometry that describes two lines that never intersect.

ANSWER: **parallel** lines

(7) **This writer noted that "Tyranny, like Hell, is not easily conquered" in a work that opens, "These are the times that try men's souls." This author of _The Crisis_ wrote an "Investigation of True and Fabulous Theology" that advocated (*)** deism, as well as a 1776 work that argued for independence from Britain. For ten points, name this early American pamphleteer who wrote _The Age of Reason_ and _Common Sense_.

ANSWER: Thomas **Paine**

(8) **Warehouses called _horrea_ were first built in this city, where working class families lived in apartments called _insulae_. This city was connected to Brindisi by the Appian Way, where followers of (*)** Spartacus were crucified. A valley between the Aventine and Palatine Hills was the site of this city's Circus Maximus, a racing stadium near the Colosseum. For ten points, name this ancient city, the center of a massive Italian empire.

ANSWER: **Rome** (accept **Roma**)

(9) **This author wrote about a character who jumps to reach a branch before deciding that he doesn't want the title fruit. A character created by this man begs a group of insects for food because he spent the summer (*)** playing music. "Slow and steady wins the race" is a moral created by, for ten points, what Greek author of fables such as "The Fox and the Grapes," "The Ants and the Grasshopper," and "The Tortoise and the Hare?"

ANSWER: **Aesop**

(10) **A waste product generated by these organisms is called ambergris [am-ber-gree]. The hippopotamus is the closest land relative of these animals. Some of these animals use (*)** baleen to filter krill, and the singing of the humpback species can travel hundreds of miles. For ten points, name this group of aquatic mammals whose "blue" species is the largest animal that ever lived.

ANSWER: **whale**s (accept **Cetacea**ns)

(11) **This artist sings of her "dream to have a family / a house and everything in between" in a song with Khalid and benny blanco. On the 2017 album _hopeless fountain kingdom_, this singer notes that a former boyfriend "wants me in the kitchen with a (*)** dinner plate." With Andrew Taggart, this artist repeats "We ain't ever getting older" in another song. For ten points, name this singer of "Bad At Love" who collaborated with The Chainsmokers on "Closer."

ANSWER: **Halsey** (acccept Ashley Nicolette **Frangipane**)

(12) **A failed exploration of this river ended when Robert de La Salle's men killed him. This river names a civilization that created the Cahokia Mounds. This river flowed backwards during the New Madrid earthquake and has its source at Lake (*)** Itasca in Minnesota. For ten points, name this river that flows through New Orleans and, with the Missouri River, forms the United States' longest river system.

ANSWER: **Mississippi** River

(13) **One sect of this religion contemplates questions known as koans, and the ideals of this religion are known as The Three Jewels. Adherents of this religion follow the (*)** Eightfold Path, and the two main branches are Theravada and Mahayana. For ten points, name this religion founded by Siddhartha Gautama, whose followers strive to achieve nirvana.

ANSWER: **Buddhism**

(14) **This literary character puts a barber's bowl on his head because he believes that it is the helmet of Mambrino, and duels with Sampson Carrasco, who dresses up as the Knight of the White Moon. The elderly horse (*)** Rocinante is the steed of this character, who falls in love with the farm girl Dulcinea and fights windmills with his companion Sancho Panza. For ten points, name this title knight of a novel by Miguel de Cervantes.

ANSWER: **Don Quijote** [kee-hoh-tay] de la Mancha (accept El Ingenioso Hidalgo **Don Quixote** de la Mancha)

(15) **These processes appear as horizontal lines on heating curves, and the temperature at which these processes takes place is affected by the van't Hoff factor. Sublimation is one of these events; two other examples take place for pure (*)** water at zero and one hundred degrees Celsius. For ten points, name this type of process, examples of which include melting and boiling.

ANSWER: **phase change**s (accept **phase transition**s; accept specific phase changes like **freezing**, **melting**, or **boiling** before they are mentioned)

(16) **This city's land includes Stonecutters Island, which is now connected to the Kowloon Peninsula. This city's Bank of China Tower is among its over 300 skyscrapers, the most in any city in the world. This city is a (*)** Special Administrative Region, and separated from its colonizers two years before its neighbor, Macau. In 1997, the British gave up control of, for ten points, what very densely populated Chinese city?

ANSWER: **Hong Kong**

(17) **A strongman who ruled this country gained power in the Revolt of the Sergeants and lost it in the 26th of July Movement. Fulgencio Batista was overthrown in this country in 1959 by Che (*)** Guevara and a man who ruled this country until 2008. Hundreds of thousands of exiled people from this country live in Florida, 90 miles to the north. For ten points, name this country once ruled by Fidel Castro from Havana.

ANSWER: **Cuba**

(18) **In this play, Judge Danforth demands a signed confession from a prisoner. A young girl in this play faints after dancing in the forest with her cousin Abigail and her father's slave, Tituba. In this play, (*)** Giles Corey asks for "more weight" while being pressed to death, and John Proctor is hanged for refusing to admit to false claims of witchcraft. For ten points, name this play about the Salem Witch Trials, written by Arthur Miller.

ANSWER: The **Crucible**

(19) **About nine billion transition cycles of cesium-133 define this unit, and a pendulum 99.4 centimeters long will precisely measure (*)** two of them. The ampere is the ratio of a coulomb to this unit, and the watt is the ratio of a joule to it. Hertz is the reciprocal of this unit that appears squared in the standard unit of force. For ten points, name this SI [S-I] base unit of time, sixty of which are in a minute.

ANSWER: **second**s

(20) **One of these objects sits on the windowsill in the Albrecht Dürer engraving *Saint Jerome in His Study*, and another of these objects is stretched diagonally across the bottom of Holbein's *The Ambassadors*. In art, these objects are used as *vanitas* or (*)** *memento mori*, artistic reminders of the viewer's mortality. For ten points, name these human bones used to represent death.

ANSWER: human **skull** (prompt on "skeleton" or "head;" prompt on "bone" before it is read)

Bonuses

(1) In 1964, a senator from this state had his campaign slogan "In your heart, you know he's right" parodied by his opponent, who gave out buttons reading "In your guts, you know he's nuts." For ten points each,

Name this home state of 1964 presidential runner-up Barry Goldwater. When Goldwater retired from the Senate in 1986, John McCain was elected by this state to fill his seat.

ANSWER: **Arizona**

This Texan politician succeeded John F. Kennedy as President and defeated Barry Goldwater for re-election in 1964.

ANSWER: **L**yndon Baines **Johnson** (accept **LBJ**; prompt on "Johnson" alone)

Lyndon Johnson successfully used television ads in his 1964 campaign against Goldwater, including a commercial featuring a little girl counting the petals on this type of flower before a nuclear bomb goes off.

ANSWER: **daisy**

(2) Answer the following about artists who included important elements of their life in their work, for ten points each.

This surrealist artist of *The Persistence of Memory* painted his wife Gala as a group of spheres in *Galatea of the Spheres* and as the *Madonna of Port Lligat*.

ANSWER: Salvador **Dalí** y Domenech

This artist used his wife, Jo, as a model for paintings like *Automat* and *Chop Suey*. She helped provide the title of this man's painting *Nighthawks*.

ANSWER: Edward **Hopper**

This painting, which drew from memories of Marc Chagall's birthplace in Belarus, colorfully depicts overlapping elements of Eastern European life, including a man with a scythe and an upside-down violinist in front of an Orthodox church.

ANSWER: **I and the Village**

(3) During this journey, participants throw rocks at a wall as part of the "stoning of the devil." For ten points each,

Name this pilgrimage undertaken by Muslims to visit the Ka'aba in Saudi Arabia.

ANSWER: **Hajj** (accept **Hagg**)

The focus of the Hajj is the Ka'aba in this holiest city in Islam, the birthplace of Mohammad. While not required, pilgrims can choose to visit Medina before or after reaching this city.

ANSWER: **Mecca** (accept **Makkah**)

After reaching Mecca, pilgrims visit this hill just outside the city where Mohammad delivered the Farewell Sermon.

ANSWER: Mount **Arafat**

(4) Gutta-percha is a naturally occurring form of this substance, also found in the juice of milkweed and dandelions. For ten points each,

Identify this substance that is commercially harvested by tapping trees. This substance is used to produce tires, elastic bands, and the soles of shoes.

ANSWER: **rubber** (accept **latex**)

Because natural rubber consists of a long, repeating chain of identical isoprene subunits, it is classified as this type of large molecule. Silk and cellulose are also described by this term.

ANSWER: **polymer**

Nearly all rubber used in modern manufacturing has undergone this process of heating with sulfur to create stronger bonds between polymer chains. This process was patented by Charles Goodyear in the 19th century.

ANSWER: **vulcanization** (accept word forms like **vulcanized** rubber)

(5) This poet said he would one day claim that, "Two roads diverged in a wood, and I, / I took the one less traveled by / And that has made all the difference." For ten points each,

Name this poet, who admitted that both paths "equally lay" in "The Road Not Taken."

ANSWER: Robert Lee **Frost**

In another poem, Frost wrote, "Some say the world will end in" this substance, and said that "from what [he'd] tasted of desire," he agreed, even though "for destruction ice / is also great / and would suffice."

ANSWER: **fire** (accept **Fire and Ice**)

In Frost's poem "Mending Wall," Frost describes fixing a stone fence with another man who claims that "good fences make" this two-word phrase.

ANSWER: **good neighbors** (accept **good fences make good neighbors**)

(6) For ten points each, answer the following about Elon Musk's entrepreneurial adventures.

This online money transfer company co-founded by Musk was formed in 2001 as the merger of Confinity, an online payment company, and X.com ["X com"], an online banking company founded by Musk.

ANSWER: **PayPal**

In December 2016, out of anger with L.A. traffic, Musk created this company to dig holes in the ground, preferably so that cars could drive through the resulting tunnels.

ANSWER: The **Boring Company**

In a public relations stunt for another one of his companies, Musk sent one of these objects as the dummy payload for Space X's Falcon Heavy rocket in February 2018.

ANSWER: his own **car** (accept **Tesla** and/or **Roadster**)

(7) In physics, applying this operation to work with respect to time yields power. For ten points each,

Identify this calculus operation that relates the velocity of an object to a change in its position. Graphically, this operation is the same as finding the slope of a line tangent to a curve.

ANSWER: **derivative** (accept **differentiation**)

This scientist explained how to take the derivative of a function, such as velocity, in his 1687 work *Principia*. According to one story, a falling apple inspired this man to develop the universal law of gravity.

ANSWER: Sir Isaac **Newton**

Taking the third derivative of position with respect to time yields this quantity. This quantity, the rate of change in acceleration, must be minimized in roller coaster loops and can result in whiplash from car crashes.

ANSWER: **jerk**

(8) Commentators noted that the format of this tournament's knockout rounds made it advantageous for England and Belgium to try to *lose* their last group stage match against each other. For ten points each,

Name this 2018 soccer tournament that was held in Russia. Belgium won that match, then lost in the quarterfinals to Brazil, while England lost in the semifinals on penalty kicks.

ANSWER: 2018 FIFA **World Cup**

This country, a rival of England, won the 2018 FIFA World Cup, with Antoine Griezmann, Paul Pogba, and dynamo Kylian Mbappé scoring goals in the final.

ANSWER: **France**

This country upset England in the semifinals, then lost to France in the final, where Mario Mandzukić [man-joo-kitch] gave up an own goal to open the scoring.

ANSWER: **Croatia**

(9) One of these works was produced by minister Elijah Lovejoy in Alton, Illinois until 1837, when a pro-slavery mob murdered him and destroyed his printing press. For ten points each,

Name this type of work. *The Liberator* was another anti-slavery examples of this type of periodical.

ANSWER: abolitionist **newspaper**

The Liberator was published by Isaac Knapp and this man, who infamously burned a copy of the Constitution in 1854, calling it an "Agreement with Hell" for its support of slavery.

ANSWER: William Lloyd **Garrison**

After the Civil War, many abolitionists turned their focus to women's rights; in 1868, Elizabeth Cady Stanton and this woman co-founded and published *The Revolution*.

ANSWER: Susan B. **Anthony**

(10) One of these characters complains that a sailor's wife refused to share her chestnuts, and decides to sail in a sieve to Aleppo to get magical revenge on the woman's husband. For ten points each,

Identify these unnamed characters, who hail a Scottish soldier as the "thane of Glamis," "thane of Cawdor," and one who "shalt be king hereafter" in a Shakespeare play.

ANSWER: **Weird Sisters** (accept the three **witch**es)

The Weird Sisters predict the futures of Banquo and the title man in this "Scottish play" by Shakespeare, whose title character murders the king to gain the throne with the encouragement of his ambitious wife.

ANSWER: The Tragedy of **Macbeth**

Macbeth murders this king to briefly seize the throne of Scotland. This man's son Malcolm later reclaims the throne with the help of Macduff.

ANSWER: King **Duncan**

(11) For ten points each, give the following about Vaslav Nijinsky.

Nijinsky worked as a performer and choreographer of this art form, in which the company may vacate the stage so that two people can perform a *pas de deux* [pah-dah-doo]. Nijinsky's works in this form include *The Rite of Spring*.

ANSWER: **ballet** (accept **dance**)

Nijinsky and his company, the Ballets Russes ["ballet" roos], collaborated with this composer on several of his ballets, including *The Rite of Spring* and *The Firebird*.

ANSWER: Igor Fyodorovich **Stravinsky**

Nijinsky was considered one of the finest ballet dancers of his time, in part because he could perform this ballet technique in which all of the dancer's weight is placed on the toes. Sustaining this technique is nearly impossible for most male dancers.

ANSWER: en **pointe**

(12) Regions along this national border include Kootenai National Forest, Glacier National Park, and the Blackfeet Reservation. For ten points each,

The border between these two countries is the longest between any two nations in the world.

ANSWER: **Canada and the United States** of America (accept **America** or **US** in place of "United States;" accept adjective forms, like **US-Canadian** border; prompt on a partial answer)

Kootenai National Forest, Glacier National Park, and the Blackfeet Reservation are all found in this US state, which has the second longest portion of the US-Canadian border after Alaska.

ANSWER: **Montana**

The Blackfeet Reservation lies on the border between Montana and this Canadian province, the westernmost of the two that border Montana. Driving north into this province from Montana may take you through Lethbridge on your way to Calgary.

ANSWER: **Alberta**

(13) Answer the following about Omar Khayyam's *Rubaiyat*, for ten points each.

The Persian title *Ribaiyat* indicates that Khayyam's poems are written in this format. These poetic stanzas include four lines each.

ANSWER: **quatrain**s

Khayyam's most famous quatrain has been re-translated many times, but always includes a reference to a jug of this drink, which he says can make the wilderness a paradise when accompanied by a loaf of bread and a book of verse.

ANSWER: a jug of **wine**

Another Khayyam poem describes this mystical bodypart, which "writes / and, having writ, moves on."

ANSWER: the moving **finger**

(14) When this condition occurs during the summer months it is called estivation. For ten points each,

Name this inactive state of some animals during the winter, in which heart rate and breathing slow down and body temperature drops below normal. Bears, bats, and many rodents experience this state.

ANSWER: **hibernation** (accept word forms like **hibernating**)

By definition, only mammals and birds hibernate because they can be described by this term, meaning they maintain a constant internal temperature.

ANSWER: **endotherm**ic (accept **warm-blooded**; prompt on "homeothermic")

Hummingbirds and some small mammals experience a daily fluctuation in body temperature that is controlled by one of these rhythms. These 24-hour cycles also determine sleep patterns in humans.

ANSWER: **circadian** rhythm (accept **diurnal** rhythm)

(15) This European country lost the 1896 Battle of Adowa, ending its first attempt to conquer an East African country. For ten points each,

Name this country that re-invaded Abyssinia in 1935 under Benito Mussolini.

ANSWER: **Italy** (accept **Italia**)

This African country, known as Abyssinia at the time of its Italian invasion, was led by Haile Selassie [hay-lee seh-lah-see] when it was conquered and annexed by Italy in the 1930s.

ANSWER: **Ethiopia** (accept **ye'Itiyoppya**)

Italy invaded Ethiopia despite both countries being members of this international organization, which was supposed to prevent such wars. When Haile Selassie went to speak to this body in May 1936, the Italian delegation jeered and was kicked out of the room.

ANSWER: **League of Nations**

(16) This god was a protector of Ra on his nightly journey through the Duat. For ten points each,

Name this desert god, represented by an unidentifiable beast. This evil brother of Isis was the brother-husband of Nephthys [NEFF-this].

ANSWER: **Set** (accept **Seth**)

Seth killed this god, his brother, twice; the second time, he scattered the pieces of this god's body across Egypt. This god's son, Horus, then fought a long war with Seth over control of Egypt.

ANSWER: **Osiris** (accept **Usiris**; accept **Aser**)

After the first time Seth killed Osiris, Isis found his body inside a pillar, which became this symbol of Osiris. This symbol of stability and strength represents the backbone of Osiris and was used in funerals to ensure the resurrection of a dead person, just as Isis had returned Osiris to life.

ANSWER: **Djed**

(17) A theorem by a French mathematician states that if a prime number has a remainder of one when it's divided by four, like thirteen and seventeen do, then it can be written as the sum of two of these numbers. For ten points each,

Name this type of whole number. A theorem by Lagrange notes that every natural number can be written as the sum of four of these numbers.

ANSWER: perfect **square**s

This French mathematician names the aforementioned theorem about sums of two squares. This man didn't bother to write out a proof for the theorem, or for his "Last Theorem."

ANSWER: Pierre de **Fermat**

Prime numbers that follow Fermat's theorem on the sum of two squares are named for this ancient Greek mathematician. More famously, he names a geometric formula that involves adding two squared numbers to find the hypotenuse of a right triangle.

ANSWER: **Pythagoras** (accept **Pythagorean** primes; accept **Pythagorean** theorem or formula)

(18) In 1956, this country invaded Egypt in what is sometimes known as the Sinai War. For ten points each,

Name this country whose prime minister is Benjamin Netanyahu.

ANSWER: **Israel**

After France was granted control of the Levant in the end of World War I, the Hashemites established an Arab Kingdom in this country and unsuccessfully fought the French. Today, this country is controversially led by Bashar al-Assad.

ANSWER: **Syria**

In 1967, Israel and Syria fought in this short conflict that involved a battle at Golan Heights and the capture of the Sinai Peninsula, the Gaza Strip, the West Bank, and old Jerusalem.

ANSWER: **Six-Day** War

(19) This author's only work was discovered in the achterhuis [ock-tur-hwees] by Miep Gies, who worked for this author's father, Otto. For ten points each,

Name this German-born author, whose work was published as *The Diary of a Young Girl* shortly after World War II.

ANSWER: Anne **Frank**

The achterhuis was Anne Frank's hiding place in this European city, where she and her family had gone to try to flee the Holocaust.

ANSWER: **Amsterdam**

Anne Frank's diary is largely addressed to an unknown girl with this name.

ANSWER: **Kitty**

(20) A second occurrence of this phase in any calendar month is known as a blue moon. For ten points each,

Name this phase in which the portion of the Moon's surface visible from Earth is greatest. A lunar eclipse can only occur during this phase.

ANSWER: **full** moon

The transition of the Moon from new to full can be described by this term, which means that the amount of visible surface area is increasing.

ANSWER: **waxing** (accept word forms)

More than half of the surface of the moon can actually be seen during full moons because of this phenomenon, the apparent rocking back and forth of the Moon due to its axis tilt and varying orbital speed.

ANSWER: latitude **libration** (accept longitude **libration**)