

Round 4

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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 is shocked by the arrival of a visitor from Jamaica after he 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 Brontë.**

ANSWER: Jane Eyre

(2) **This god's son, Tenages, was murdered by his four brothers over his scientific prowess, and this god's daughter Pasiphaë 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. The termite fumigant sulfuryl fluoride is 160 times more potent an emitter than methane in 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 performed "St Thomas" and "Moritat" on the album titled "[this instrument] Colossus." Another performer of this instrument used it to imitate a preacher's voice on the track "Psalm." Wayne Shorter and Sonny Rollins played this instrument, which was also played by a performer who used "sheets of (*) sound" on albums like *A Love Supreme* and *Giant Steps*. For ten points, name this instrument played by John Coltrane, who collaborated with jazz trumpeter Miles Davis.**

ANSWER: saxophone

(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) **This adjective describes the fifth postulate of Euclid’s *Elements* which, if dropped, creates models like hyperbolic or spherical geometry. A kite has no pairs of sides with this property, and a (*) transversal passing through two lines with this property creates equal alternate angles. For ten points, name this adjective from geometry that describes two lines that are always the same distance apart and therefore never intersect.**

ANSWER: parallel (accept parallel postulate; accept parallel lines)

(7) **The *Proslogion* advocated for this concept using an early example of the ontological argument. The 1670 work *Pensées* [pahn-say] argues in favor of this concept with an example involving a wager, and noted that betting on this concept provides the possibility of (*) infinite gain, while betting against it has the possibility of infinite loss. Blaise Pascal and Saint Anselm advocated for, for ten points, what theological position that is opposed by atheists?**

ANSWER: existence of (a Christian) god (accept descriptive answers related to belief in a god)

(8) **Grain warehouses known as *horrea* were first built in this city, which housed working class families in apartments called *insulae*. This city was connected to Brindisi by the (*) Appian Way, where the 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) **In a story by this author, the title character 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 has spent all summer (*) playing music. Another story by this man espouses the moral “slow and steady wins the race.” For ten points, name this 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]. They are not reptiles, but an ancestor of this group is named *Basilosaurus*. The hippopotamus is the closest land relative of these animals, which fossils indicate were the primary food of the (*) megalodon. 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: whales (accept Cetaceans)

(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 a 2016 number one single. For ten points, name this singer of “Bad At Love” who collaborated with The Chainsmokers on “Closer.”**

ANSWER: Halsey (accept 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. Hernando de Soto was the first European explorer to see this river, which 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. The creator of the religion was troubled by seeing an (*) old man, a sick man, and a corpse. 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 destroys Master Pedro’s puppet show and puts a barber’s bowl on his head because he believes that it is the helmet of Mambrino. This character duels with Sampson Carrasco, who dresses as the Knight of the White Moon to make this man return to his home. 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) **The vapor pressure during one of these events can be estimated by the Clausius-Clapeyron equation. The van’t Hoff factor, i , affects the temperature elevation or depression for two of these processes. (*) Sublimation is one of these events, which appear as horizontal lines on heating curves. At atmospheric pressure, examples of this process occur 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 changes (accept phase transitions; accept any specific phase changes before they are mentioned)

(16) **This city’s land includes Stonecutters Island, which is now connected to the Kowloon Peninsula. This city’s 118-story-tall International Commerce Center and Bank of China Tower are among its over 300 skyscrapers, the most in any city in the world. This city, officially a (*) Special Administrative Region, separated from its colonizers two years before its neighbor, the former Portuguese colony of Macau. In 1997, the British gave up control of, for ten points, what very densely populated Chinese city?**

ANSWER: Hong Kong

(17) **A photo of this man named *Guerrillero Heroico* [gare-ee-yare-oh hair-oh-ee-co] has been cited as the “most famous photograph in the world.” This man proclaimed “Shoot, coward; you are only going to kill a man!” before he was killed. After helping overthrow (*) Fulgencio Batista, this man was appointed head of the national bank of Cuba. For ten points, name this doctor-turned-revolutionary who helped Fidel Castro take over Cuba.**

ANSWER: Ernesto “Che” Guevara

(18) **In this play, a prisoner refuses to give a signed confession to Judge Danforth because he won't soil his name. A young girl in this play faints after dancing in the forest with her cousin Abigail and her father's slave, (*) Tituba.** At the end of 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: seconds

(20) **One of these objects sits on the windowsill in the Albrecht Dürer engraving *Saint Jerome in His Study*, where this object recalls the resurrection. One of these objects is stretched diagonally across the bottom of Holbein's *The (*) Ambassadors*.** These objects often appear in art 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: Lyndon 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 Mandžukić [**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 witches)

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 Blackfoot 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 Blackfoot Reservation are all found in this US state, which has the second longest portion of the US-Canadian border after Alaska.

ANSWER: Montana

The Blackfoot 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) This country is home to author Nadine Gordimer. For ten points each,

Name this country. Common themes in literature from this country include colonialism and its former system of apartheid. Gordimer's novel *Burger's Daughter* begins in this nation's city of Johannesburg.

ANSWER: South Africa

In this novel, the priest Stephen Kumalo finds out that his son, Absalom, has murdered Arthur Jarvis after leaving his home village for Johannesburg.

ANSWER: Cry, the Beloved Country

This South African author wrote *Cry, the Beloved Country*.

ANSWER: Alan Paton

(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: endothermic (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 squares

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) After a long feud with the Marquess of Queensberry, this author was imprisoned and wrote “The Ballad of Reading Gaol” [redding jail]. For ten points each,

Name this Irish poet and playwright, whose trial was not helped by his flippant satire of Victorian values in plays like *An Ideal Husband* and *Lady Windermere’s Fan*.

ANSWER: Oscar Fingal O’Flahertie Wills **Wilde**

Oscar Wilde was sentenced to hard labor for this crime, which the Marquess of Queensberry accused him of due to his anger at Wilde’s relationship with the Marquess’s son, Alfred Douglas.

ANSWER: **homosexuality** (accept descriptions like being **gay**; accept gross **indecenty**, which was the official charge; accept **sodomy** or **somdomy**, which was the Marquess’s misspelled accusation)

The Queensberry-Wilde feud came to a head after Wilde refused the Marquess admittance to this play by Wilde. In this play, Jack Worthing discovers that he is actually Algernon Moncrieff’s elder brother and, to the delight of Gwendolen Fairfax, he actually has the title first name.

ANSWER: The **Importance of Being Earnest**

(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**)