

Round 2

First Half

(1) **Two of this man's paintings show a blue man strumming an instrument and a group of women whose faces were inspired by angular African masks. This creator of *The Old Guitarist* and *Les (*) Desmoiselles d'Avignon* [lay day-mwah-zells da-vee-NYON] painted a violin by representing all sides of it as a flat image composed of blocky shapes. For ten points, name this Spanish painter who co-founded the Cubist movement.**

ANSWER: Pablo Ruiz y Picasso

(1) For ten points each, give the following about the 1871 work *Aida*.

Aida is one of these dramatic performances, involving both acting and music. Unlike the musical, the driving force of this art form is the music rather than the words, so these works are usually performed in their original language.

ANSWER: operas

The music for *Aida* was composed by this Italian composer, whose other operas include *Rigoletto* and *La Traviata*.

ANSWER: Giuseppe Verdi

The part of *Aida* is sung by an actress in this vocal range, the highest in the SATB system.

ANSWER: soprano

(2) **For any convex polyhedron, this is the value of the Euler [oiler] characteristic, or the number of vertices plus faces minus edges. This number and 1 are the only numbers that are their own (*) factorial. When writing radicals, this number is often omitted from the radical sign because square roots are so common. For ten points, name this integer, the base of the binary number system and equal to the square root of 4.**

ANSWER: 2

(2) Heron's formula is a method of finding this quantity for a triangle, and the "shoelace" formula is a clever trick for finding this quantity under certain conditions. For ten points each,

Give this two-dimensional quantity. For a rectangle, it is equal to the product of the length and width.

ANSWER: area

Heron's formula gives the area of the triangle as equal to the square root of the product of four quantities: s , and s minus each of the three side lengths. In that formula, s is equal to half of this one-dimensional quantity for the triangle.

ANSWER: perimeter (accept semiperimeter)

The "shoelace" formula uses certain multiplications of coordinates of the vertices of a polygon, but it only applies to polygons that are simple, and therefore have this property. Star polygons are notably not simple, as they violate this rule. Description acceptable.

ANSWER: the sides don't intersect each other

(3) **Rather than adopt this technology, the city of Sparta used iron spits. The invention of these objects is usually credited to the city of Ephesus in Lydia, where they were made from (*)** electrum, a mixture of silver and gold. Examples of these objects from ancient Greece include obols and drachmas. For ten points, name these metal objects used as currency.

ANSWER: (ancient Greek) coins

(3) This man's interactions with the Taino people convinced him they would be easily converted to Christianity and serve as good slaves; shortly thereafter, the Taino population fell to only a few hundred. For ten points each,

Name this Italian explorer who sailed for Ferdinand and Isabella in 1492, "discovering" the West Indies.

ANSWER: Christopher Columbus (or Cristobal Colon)

Columbus founded a settlement called La Navidad on this Caribbean island, now home to the countries of Haiti and the Dominican Republic.

ANSWER: Hispaniola

The La Navidad settlement was established shortly after this ship, the largest of Columbus' original three ships, ran aground on Christmas Day, 1492.

ANSWER: Santa Maria

(4) **One part of this process takes place in the thylakoid membrane. The Calvin cycle is known as the "dark" portion of this process, because it is light-independent. This process, which produces (*)** carbohydrates and waste oxygen from carbon dioxide and water, takes place via the green pigment chlorophyll in chloroplasts. For ten points, name this process that generates energy in plants via the absorption of light.

ANSWER: photosynthesis (prompt on light-dependent reactions before "Calvin cycle" is read)

(4) The Tropic of Cancer is entirely within this hemisphere, which includes 67% of the Earth's land area. For ten points each,

Name this hemisphere of the Earth, which includes the majority of Africa and about 10 percent of South America's land area.

ANSWER: Northern Hemisphere

The Southern Hemisphere includes 18 million square miles of land; of that, roughly 3 million is taken up by Australia, and this continent further south takes up another 5.4 million square miles.

ANSWER: Antarctica

This light display takes place in the magnetosphere in high latitudes of the Northern Hemisphere. It also takes place in the Southern Hemisphere, but is named *Australis* instead.

ANSWER: Aurora Borealis (prompt on partial answers; prompt on the Northern Lights)

(5) **This poem begins “in the bleak December,” when the unnamed speaker hears tapping at his chamber door and window lattice. “With many a flit and flutter,” this poem’s title character invades the narrator’s room to sit “upon a (*) bust of Pallas,” where it taunts the speaker about his lost love, Lenore. For ten points, name this poem by Edgar Allan Poe about a bird who repeatedly caws “Nevermore.”**

ANSWER: The Raven

(5) In this novel, the twins Sam and Eric find the body of a parachutist, and Ralph and Jack vie for control of the tribe. For ten points each,

Name this novel about a group of young boys who are stranded on an island after surviving a plane crash.

ANSWER: Lord of the Flies

In *Lord of the Flies*, eyeglasses belonging to this chubby character are used to start fires for cooking and signalling. Roger kills this boy with a boulder.

ANSWER: Piggy

Lord of the Flies was written by this British author, who also wrote about Edmond Talbot in the *Ends of the Earth* Trilogy.

ANSWER: William Golding

(6) **Terry McGinnis takes on this role in a show set in a futuristic 2019. This character battles the Red Hood who, in recent stories, is his former ally (*) Jason Todd. Rocksteady Studios has made a series of games starring this character, the first of which is set in Arkham Asylum. For ten points, name this caped crusader who defends Gotham City and whose secret identity is usually Bruce Wayne.**

ANSWER: Batman

(6) The 2015-16 NBA season ended with three legends leaving the game. For ten points each,

This Los Angeles Lakers legend turned the season into his personal farewell tour. In this player's final game, he scored 60 points against Utah while putting up the most shot attempts in NBA history.

ANSWER: Kobe Bryant (accept either underlined portion)

Shortly after the start of the off-season, this long time anchor of the San Antonio Spurs retired. The Onion, poking fun at this player's stoic demeanor, reported this player "rode off into the sunset at safe and prudent speed."

ANSWER: Tim Duncan

This all-time leader in defensive rebounds won a title with Ray Allen and Paul Pierce in Boston and retired after spending his final seasons with his original team, the Minnesota Timberwolves.

ANSWER: Kevin Garnett

(7) **This country's Second Republic was replaced by a fascist regime after Francisco Franco won its civil war. Winston Churchill considered invading this country's Canary Islands if Britain was forced out of (*) Gibraltar by a mainland invasion.** This country honors St. Fermin with an annual running of the bulls in Pamplona. Portugal shares the Iberian peninsula with, for ten points, what country with capital Madrid?

ANSWER: Spain (accept Second Spanish Republic; accept Francoist Spain)

(7) James Wilson and Roger Sherman proposed this idea in 1787, and it was struck out by the Fourteenth Amendment. For ten points each,

Name this agreement regarding a calculation for Congressional apportionment, assigning slaves a fractional weight in population counts.

ANSWER: Three-Fifths Compromise

The Three-Fifths Compromise was reached at this 1787 meeting, which worked to replace the Articles of Confederation with a new governing document. George Washington chaired this meeting.

ANSWER: Constitutional Convention

Congressional apportionment is re-calculated every ten years, after these events provide a population count of the United States.

ANSWER: census

Sixty Second Rounds

The categories are ...

1. Romeo and Juliet
2. American Cities
3. Noble Gases
4. Ramadan

ROMEO AND JULIET

In the play *Romeo and Juliet*, who or what is...

(1) the Italian city where the play is set?

ANSWER: Verona

(2) the surname of Juliet's family, which is at war with the Montagues?

ANSWER: the Capulets

(3) Juliet's cousin, nicknamed "the prince of cats," who kills Romeo's friend Mercutio?

ANSWER: Tybalt

(4) the count whose desire to marry Juliet forces her to fake her own death?

ANSWER: Count Paris

(5) the chatty comic relief character who cared for Juliet as a baby and carries messages between the lovers?

ANSWER: Juliet's Nurse

(6) Romeo's friend, a Franciscan friar who marries Romeo to Juliet?

ANSWER: Friar Lawrence

AMERICAN CITIES

Which city in the United States...

(1) Is the most populous in Louisiana and was devastated by Hurricane Katrina in 2005?

ANSWER: New Orleans

(2) Is home to the Golden Gate Bridge and connected to Oakland by the Bay Bridge?

ANSWER: San Francisco, California

(3) Is the capital of Texas?

ANSWER: Austin

(4) Is home to the Gateway Arch on the Mississippi River?

ANSWER: St. Louis, Missouri

(5) Continues to suffer from lead in its tap water after it switched away from Detroit's water in 2014?

ANSWER: Flint, Michigan

(6) Was the site of the 2016 Pulse nightclub shooting?

ANSWER: Orlando, Florida

NOBLE GASES

In relation to the noble gases, what is...

(1) the position of the noble gases on the periodic table?

ANSWER: group **18** (accept descriptions like “along the **right**-hand side” or “in the **right**most column”)

(2) the lightest noble gas, with atomic number 2?

ANSWER: **helium** (prompt on **He**)

(3) the second-lightest noble gas, known for its use in colored lights?

ANSWER: **neon** (prompt on **Ne**)

(4) the most abundant noble gas in the Earth’s atmosphere, with atomic number 18?

ANSWER: **argon** (prompt on **Ar**)

(5) the number of electrons in the outer shells of all but the lightest noble gas, which stops them from reacting with other elements?

ANSWER: **eight**

(6) the device, named after a German physicist, that uses noble gases or another inert gas to detect levels of ionizing radiation?

ANSWER: **Geiger counter**

RAMADAN

In relation to the month of Ramadan, what is...

(1) the practice that is observed from sunup to sundown during the holy month?

ANSWER: **fasting** (accept **sawm**; accept descriptions like **not eating**)

(2) the Islamic holy book whose revelation to the prophet Muhammad is the reason for celebration?

ANSWER: **Quran**

(3) the common name for the central tenets of Islam, of which observing Ramadan is one?

ANSWER: **Five Pillars** of Islam (accept **arkan** al-Islam)

(4) the “sayings” of Muhammad, which dictate the timing and duration of Ramadan?

ANSWER: **hadiths**

(5) the holiday that ends Ramadan, which includes rambunctious celebrations and feasting?

ANSWER: **Eid** al-Fitr

(6) the day in Ramadan on which the holy book was first revealed to Muhammad?

ANSWER: **Laylat al-Qadr** (accept **Night of Power**)

Second Half

(8) **In Federalist Paper 68, Alexander Hamilton noted that because members of this body could not hold other elected office, foreign powers could not interfere with this body's work. When this group meets in December, its members are instructed by the (*) 12th Amendment to name two people on their ballots; members of this group are considered "faithless" if they vote against the winner of their state's popular vote. For ten points, name this body of 538 officials whose votes determine the U.S. President.**

ANSWER: Electoral College

(8) Give the following about maps for ten points each.

This term describes the east-west coordinate on a map, with the Prime Meridian serving as 0 degrees; its complement coordinate, latitude, gives the north-south position.

ANSWER: longitude (accept elaborations, like "lines of longitude")

A Flemish cartographer devised and names this common type of map projection, in which latitude and longitude lines are drawn perpendicular to each other. This projection distorts areas, stretching out regions far from the equator.

ANSWER: Mercator projection

In particular, the Mercator projection makes this landmass, a Danish-held island east of Canada roughly the size of Algeria, appear larger than the entire continent of Africa.

ANSWER: Greenland

(9) **The discovery of this process earned Otto Hahn the 1944 Nobel in Chemistry, though Lise Meitner explained it first. When this process, originally described as a "bursting," takes place with (*) uranium-236, elements like krypton and barium are produced. Most nuclear reactors generate heat via, for ten points, what nuclear process in which an atom is split, contrasted with nuclear fusion?**

ANSWER: nuclear fission

(9) Small pieces of this molecule can be amplified by the polymerase chain reaction, or PCR. For ten points each,

Name this molecule that carries the genetic information of an organism. Strands of this molecule are composed of cytosine, guanine, adenine, and thymine.

ANSWER: DNA (or deoxyribonucleic acid)

DNA is contained within these structures. Humans have a set of 46 of these structures, two of which are labeled X and Y.

ANSWER: chromosomes

In 1953, Rosalind Franklin's data allowed Watson and Crick to discover that DNA's strands formed this molecular shape.

ANSWER: double helix (prompt on helix)

(10) **This religious figure was foretold by Asita to become a great sage or ruler. This man preached the Four Noble Truths, and discovered that the Eightfold Path provided a Middle Way between self-indulgence and self-denial after he (*)** meditated under a Bodhi tree. For ten points, Siddhartha Gautama is the birth name of what founder of an Indian religion that focuses on attaining freedom from the cycle of rebirth by seeking enlightenment?

ANSWER: Gautama Buddha (accept either name of Siddhartha Gautama before it is read)

(10) This god keeps ravens named Huginn [HOO-gihn] and Muninn [MOO-nihn], and rides the eight-legged horse Sleipnir [SLYP-neer]. For ten points each,

Name this chief god of Norse mythology, who traded his eye for wisdom.

ANSWER: Odin (accept Wotan)

In another attempt to gain wisdom, Odin hung from one of these objects, Yggdrasil [IG-drah-zill], for nine days.

ANSWER: ash tree (accept world tree)

After hanging from Yggdrasil for nine days, Odin discovered this alphabet, composed of angular symbols used in Norse culture.

ANSWER: runes

(11) **A character in this novel uses the name De Ville to ship fifty boxes of dirt to various buildings in London, and controls three "sisters" who intimidate Jonathan Harker. Lucy Westenra is finally killed in this novel when (*)** Van Helsing beheads her, puts a stake through her heart, and fills her mouth with garlic, preventing her from arising from her grave after she is infected by the title creature. For ten points, name this novel by Bram Stoker about a Transylvanian vampire.

ANSWER: Dracula

(11) The protagonist of this novel meets an enlightened race of horses who are served by human-like Yahoos, and has difficulty getting used to human society afterward. For ten points each,

Name this novel in which the title man repeatedly gets shipwrecked and marooned in strange lands like Lilliput, an island inhabited by tiny people.

ANSWER: Gulliver's Travels

In addition to Lilliput, the land of tiny people, Lemuel Gulliver travels to this land of giants, where he is kept in a cage as a pet.

ANSWER: Brobdingnag

This Irish author wrote satirical novels like *Gulliver's Travels* and *A Tale of a Tub*.

ANSWER: Jonathan Swift

(12) **In the 1980s, TOTO drums were unsuccessfully used to study these events; it proved too difficult to deploy the heavy metal barrels. These phenomena are expected when a hook echo appears on Doppler radar. An (*) "Alley" of these phenomena stretches from Texas to Iowa.** The Fujita scale measures, for ten points, what devastating cyclonic events that can take place during thunderstorms, especially in the American midwest?

ANSWER: tornadoes (prompt on thunderstorm and similar equivalents before "Alley" is read)

(12) Give the following about heat-releasing reactions for ten points each.

Reactions that give off heat to their surroundings are known by this term, which uses a Greek root for "outward."

ANSWER: exothermic reactions

Exothermic reactions can be studied by observing the change in this quantity, the average value of the kinetic energy of all of the particles in a sample. It is measured via a thermometer.

ANSWER: temperature

This unit describes the amount of energy needed to raise 1 gram of water 1 degree Celsius. It is equivalent to 4.19 joules and is one thousand times smaller than a unit of the same name commonly used in nutrition.

ANSWER: calories

(13) **This company ran the River Rouge Complex and built its headquarters in Dearborn. In 1914, the founder of this company instituted a 5-day work week and raised his company's minimum wage to \$5 a day. This company introduced the world's first moving (*) assembly line, reducing the time to build a chassis to under two hours.** For ten points, name this automobile company which manufactured the Model T and is named for its founder, Henry.

ANSWER: Ford Motor Company

(13) This modern-day country was, as a colony, called the British Raj. For ten points each, Name this country which, when it was granted its independence in 1947, split off from Pakistan.

ANSWER: India

This Indian independence activist and frequent hunger striker was assassinated by Nathuram Godse in 1948.

ANSWER: Mohandas (or Mahtama) Gandhi

In 1930, Gandhi led a 240-mile-long march to Dandi on the Indian coast, protesting a British tax on this vital substance. At the end of the march, Gandhi illegally produced this substance on the beach.

ANSWER: salt (accept descriptions of the salt march)

(14) **In this novel, the July Rebellion of 1832 includes a barricade put up by Grantaire, Enjolras, and other student members of the Friends of the ABC. In this novel, Marius marries (*)** Fantine's daughter, Cosette. This novel was adapted into a musical in which Inspector Javert pursues the escaped criminal Jean Valjean. For ten points, name this Victor Hugo novel.

ANSWER: Les Misérables (accept Les Mis)

(14) This author's characters include the son of Frey and the siblings Carter and Sadie. For ten points each,

Name this American author of mythology-inspired novel series like *Magnus Chase* and *The Kane Chronicles*.

ANSWER: Richard Russell "Rick" Riordan

Rick Riordan's first mythological novel series is named for this son of Poseidon and Sally and friend of fellow demigod Annabeth Chase.

ANSWER: Perseus "Percy" Jackson (accept either underlined name)

Riordan's non-mythological work includes this novel, the first installment in the collaborative series *The 39 Clues*. This novel introduces Amy and Dan Cahill, who investigate the Paris catacombs.

ANSWER: The Maze of Bones

Extra Question

Only read if you need a backup or tiebreaker!

(15) **The volume of this shape cannot be doubled via compass-and-straightedge construction, one of the three classical impossible constructions. The space diagonal through one of these solids has length equal to the square root of 3 times the length of one of its (*) 12 edges. This Platonic solid is a parallelepiped ["parallel"-ih-"pipe"-ed] whose edges all meet at right angles. For ten points, name this three-dimensional solid with six square faces.**

ANSWER: cube (or regular hexahedron)

(15) Pulsars are rapidly spinning examples of these stars. For ten points each,

Name this type of super-dense star, made up of uncharged particles created by the combination of electrons and protons.

ANSWER: neutron star

Neutron stars are created after these massive explosions, one of which created the Crab Nebula.

ANSWER: supernovas

If a star weighs several times that of our Sun, it may eventually collapse into a neutron star; stars weighing less than 1.4 solar masses, a number called the Chandrasekhar limit, will collapse into this type of dwarf star.

ANSWER: white dwarf