

Round 3

First Half

(Tossup 1) **A compound made of this number of tetrahedra can be assembled to form a skeleton of a dodecahedron. In a convex polygon with this number of sides, drawing the diagonals from one vertex trisects its angle. The radical in the (*) golden ratio has this number inside of it. This number is the length of the hypotenuse of a right triangle with leg lengths of 3 and 4. For ten points, give this number of vertices of a pentagon.**

ANSWER: five

(Bonus 1) This operation has a shorter version called its “falling” form. For ten points each:

[Part A] Identify this operation that multiplies all integers from its input down to 1. This operation is symbolized with an exclamation point.

ANSWER: factorial

[Part B] Factorials can be used to count these rearrangements of a set in which order matters. These rearrangements are contrasted with combinations.

ANSWER: permutations

[Part C] The number of permutations of 3 books from a collection of 10 books is equal to “10 permute 3”, which can be computed as 10 factorial divided by the factorial of this number.

ANSWER: 7

(Tossup 2) **The first part of one of this man’s works opens up with the line “I am a sick man...I am a spiteful man.”, while its second part is titled *Apropos of the Wet Snow*. *Jesus Christ comes to Earth during the (*)* Grand Inquisition in another of this man’s works. Lizaveta is murdered in one of this man’s works by its protagonist Raskolnikov. For ten points, name this Russian writer of *The Brothers Karamazov* and *Crime and Punishment*.**

ANSWER: Fyodor Dostoevsky

(Bonus 2) Modern dramatists like to call attention to the “fourth wall”. For ten points each,

[Part A] Name this meta-play in which a family of unnamed characters interrupts the rehearsal of a play and informs the director that they are part of an incomplete story that needs to be finished.

ANSWER: Six Characters in Search of an Author

[Part B] This Italian author wrote *Six Characters in Search of an Author*.

ANSWER: Luigi Pirandello

[Part C] In this Pirandello play, a character who fell off his horse while playing the role of a certain Holy Roman Emperor ends up believing he really is that title monarch.

ANSWER: Henry IV

(Tossup 3) **During this war, Transylvania signed the Peace of Nikolsburg with the Holy Roman Empire after Emperor Ferdinand II won the Battle of White Mountain. One commander in this war won the Battle of Breitenfeld but lost the Battle of (*) Lutzen.** General Wallenstein lost to the army of Gustavus Adolphus in this war, which was started by the Defenestration of Prague. For 10 points, name this European war from 1618 to 1648.

ANSWER: Thirty Years' War

(Bonus 3) This woman was nicknamed “The Milk Snatcher”. For ten points each, [Part A] Name this first female Prime Minister of the United Kingdom.

ANSWER: Margaret Thatcher

[Part B] Under Thatcher’s leadership, the UK fought this conflict with Argentina over a group of islands in the South Atlantic.

ANSWER: Falklands War (or Guerra Malvinas)

[Part C] Margaret Thatcher was a graduate of Somerville College at this British university.

ANSWER: Oxford University

(Tossup 4) **This material is the default destination of the products of prokaryotic mRNA translation. Actin filaments are found within this material. Streaming of this material can help circulate nutrients in large cells. Human (*) ribosomes are found either along the rough endoplasmic reticulum or within this material. Surrounded by the cell membrane is, for ten points, what gel-like substance in which the organelles of a cell are suspended?**

ANSWER: cytoplasm (accept cytosol)

(Bonus 4) These compounds activate expansins in the cell wall, causing cell growth, stem elongation, and root initiation. For ten points each,

[Part A] Name these plant hormones that travel via polar transport through plant stems and shoots to induce phototropism. They can work in conjunction with or against cytokinins and gibberellins.

ANSWER: auxins (accept auxin)

[Part B] Phototropism is the tendency of a plant to grow in the direction of this external stimulus, whose energy is absorbed by chlorophyll during photosynthesis.

ANSWER: light (accept sunlight)

[Part C] Auxins also induce differentiation of this vascular plant tissue, which transports water upward from the roots. It is contrasted with phloem.

ANSWER: xylem

(Tossup 5) **This body of water is home to Fiery Cross Reef and Scarborough Shoal. One country has initiated a construction project known as the “Great Wall of Sand” in this body of water in order to assert its (*) “nine-dash line”. The Spratly islands lie in this body of water which also contains the Gulf of Thailand and the Gulf of Tonkin. For ten points, name this sea which borders Vietnam, the Philippines and the country it is named after.**

ANSWER: South China Sea

(Bonus 5) Olkhon Island is located in this body of water. For ten points each,

[Part A] Name this lake in Russia, the deepest freshwater lake in the world.

ANSWER: Lake **Baikal**

[Part B] Lake Baikal is the home of the variant of this animal called the Nerpa. A “ringed” type of these animals typically live in the Arctic.

ANSWER: **Seals**

[Part C] Lake Baikal is located in this vast eastern region of Russia known for its cold winters and prison camps.

ANSWER: **Siberia**

(Tossup 6) **This man once used an ant to thread a string through a conch shell. This man’s nephew invented the saw but was later pushed off the Acropolis to his death by this man. While imprisoned by Minos, this man built (*) wings for himself and his son in order to escape the labyrinth of his own creation. This man’s son later died after flying too close to the sun. For ten points, name this Greek inventor, the father of Icarus.**

ANSWER: **Daedalus**

(Bonus 6) This beast was the target of Hercules’ First Labor. For ten points each,

[Part A] Name this monster with impenetrable golden fur whose coat was later worn by Hercules.

ANSWER: **Nemean Lion**

[Part B] In his fourth labor, Hercules was sent to capture this monstrous boar which may have later swam to Italy.

ANSWER: **Erymanthian** Boar

[Part C] In his second labor, Hercules slew this multi-headed monster which dwelled in the Lake of Lerna.

ANSWER: Lernean **Hydra**

(Tossup 7) **Aided by his Treasury Secretary Roger Taney [tawney], this president vetoed Nicholas Biddle’s attempts to gain a charter for the Second National Bank. This politician had earlier defeated Edward Pakenham’s forces during the War of (*) 1812. This president began the process of Indian removal continued by his successor Martin Van Buren. For ten points, name this seventh president of the United States nicknamed “Old Hickory”.**

ANSWER: Andrew **Jackson**

(Bonus 7) Susanna Dickinson was a survivor of this battle. For ten points each,

[Part A] Name this siege of a mission compound in Texas in which defending forces under William Travis and James Bowie held off waves of Mexican attacks before being overwhelmed.

ANSWER: Battle of the **Alamo**

[Part B] This Mexican President and General commanded the Mexican army at the Alamo and was later captured at the Battle of San Jacinto.

ANSWER: Antonio Lopez de **Santa Anna**

[Part C] This American folk hero often nicknamed the “King of the Wild Frontier” fought at the Battle of the Alamo where he was killed.

ANSWER: Davy **Crockett**

Sixty-Second Rounds

The categories are . . .

1. Harry Potter Characters
2. Australia
3. Jupiter

HARRY POTTER CHARACTERS

In world of Harry Potter, name the...

(1) Dark Lord who killed Harry Potter's parents and was ultimately defeated by Harry. ANSWER: **Voldemort** (Accept **Tom Riddle**)

(2) Headmaster of Hogwarts who was killed by Severus Snape.
ANSWER: Albus Percival Wulfric Brian **Dumbledore**

(3) Close friend of Harry, a studious girl who went on to marry Ron Weasley. ANSWER: **Hermione Granger** (Accept either underlined section)

(4) Member of the Weasley family who lost his ear during the Battle of the Seven Potters.
ANSWER: **George** Weasley

(5) Beauxbatons champion during the Triwizard tournament who later married Bill Weasley. ANSWER: **Fleur Delacour** (Accept either underlined section)

(6) Death Eater who killed Remus Lupin.
ANSWER: **Antonin Dolohov** (Accept either underlined section)

AUSTRALIA

Name...

(1) The island state of Australia formerly known as Van Diemen's Land.
ANSWER: **Tasmania**

(2) The city that became Australia's national capital in the early 20th century.
ANSWER: **Canberra**

(3) The inselberg in the Northern Territory, which as of this October, it will be forbidden to climb. ANSWER: **Uluru** (Accept **Ayers Rock**)

(4) Its largest city by population, which hosted the 2000 Olympics.
ANSWER: **Sydney**

(5) By land area, the largest state in Australia.
ANSWER: **Western Australia**

(6) The peninsula home to rainforests in the far north of Queensland which is bordered by the Gulf of Carpentaria to its west.
ANSWER: **Cape York**

JUPITER

Name the...

(1) Type of “Giant” planet which Jupiter is.

ANSWER: **Gas** Giant

(2) Jovian moon which may have an ocean beneath its icy surface.

ANSWER: **Europa**

(3) Type of feature consisting mainly of dust which exists around Jupiter.

ANSWER: **Rings**

(4) Giant storm on Jupiter known to have existed since the 17th century, named for its color ANSWER: **Great Red Spot**

(5) First spacecraft to orbit Jupiter which is named after an astronomer.

ANSWER: **Galileo**

(6) Latest probe to visit Jupiter which arrived in 2016. ANSWER: **Juno**

Second Half

(Tossup 8) **This author of the poem “Rhodora” addressed Harvard’s Phi Beta Kappa Society in a speech known as “The American Scholar”. One of this man’s works titled *Essays: First Series* contains an essay which argued that “The (*) soul is the perceiver and revealer of truth.” This author of “The Over-Soul” was the mentor of Henry David Thoreau. For ten points, name this American transcendentalist author of “Self Reliance” and “Nature”**

ANSWER: Ralph Waldo **Emerson**

(Bonus 8) This author of the *Nick Adams* stories was an ambulance driver in Italy, an avid fisherman, and a boxing enthusiast. For ten points each,

[Part A] Name this author who wrote *For Whom the Bell Tolls*.

ANSWER: Ernest **Hemingway**

[Part B] In this Hemingway novel, the fisherman Santiago struggles to catch a marlin and then desperately tries to keep it safe from sharks on his journey home.

ANSWER: **The Old Man and the Sea**

[Part C] This Hemingway novel follows Jake Barnes, Lady Brett Ashley and their clique from the bohemian cafes of Paris to the bullfighting ring of Pamplona.

ANSWER: **The Sun Also Rises**

(Tossup 9) **In physics equations, the Planck base unit for this variable is 5.91×10^{-44} of this variable's SI unit. Power is equal to the amount of work divided by this variable. Acceleration is equal to (*) meters divided by this variable squared, while velocity is equal to the distance divided by this variable. For 10 points, distance equals rate times what variable, which is measured in seconds?**

ANSWER: **Time** (accept **minutes** or **seconds** until seconds is mentioned)

(Bonus 9) This man's film studio was called the Black Maria. For ten points each,

[Part A] Name this American inventor of the incandescent electric lightbulb who advocated for the use of Direct Currents.

ANSWER: Thomas **Edison**

[Part B] Thomas Edison fought the War of the Currents against the Alternating current system, which was largely designed by this Serbian-American inventor who also created a namesake coil.

ANSWER: Nikola **Tesla**

[Part C] In 1934, Nikola Tesla claimed to have invented this superweapon which could "send concentrated beams of particles through the free air".

ANSWER: **Teleforce** (Accept **Death Ray**)

(Tossup 10) **The basic law of this concept is violated by Veblen goods and Giffen goods. Factors that affect this concept include consumer expectations and the price of related goods. When a good has very few substitutes, this concept is (*) price-inelastic for that good. This concept is commonly defined as the quantity of a good consumers are willing and able to purchase. For ten points, name this economics concept often contrasted with "supply".**

ANSWER: **Demand**

(Bonus 10) This philosopher tutored Alexander the Great. For ten points each,

[Part A] Name this Greek philosopher, the student of Plato who is often called the "Father of Western Philosophy".

ANSWER: **Aristotle**

[Part B] Aristotle founded and taught at this educational center in Athens, where the Peripatetic school of philosophy was founded.

ANSWER: **Lyceum**

[Part C] Aristotle is credited with the earliest study of this concept which was examined in his works *Prior Analytics* and *Organon*. This concept usually involves reasoning and making deductions.

ANSWER: **Logic**

(Tossup 11) **In 1482, the Duke of Milan commissioned this artist to create a huge equestrian statue that was never completed in his lifetime. This man's works include *Madonna of the Carnation* and *Lady With an Ermine*. A famous work by this man is a mural in (*) Milan which depicts a central man with his arms placed on the table seated alongside a rather feminine Apostle John. For ten points, what Renaissance artist painted *The Last Supper*?**

ANSWER: Leonardo **Da Vinci**

(Bonus 11) This artist was commissioned by Clare Boothe Luce to paint a work depicting a woman falling from Hampshire House. For ten points each,

[Part A] Name this artist of *The Suicide of Dorothy Hale*. She showcased her unibrow in a self-portrait with a thorn necklace and a dead hummingbird.

ANSWER: Frida **Kahlo** de Rivera

[Part B] Frida Kahlo was from this country, also home to her husband Diego Rivera who created a mural of Tenochtitlan currently found in this country's Palacio Nacional.

ANSWER: **Mexico** [or **United Mexican States**; or **Estados Unidos Mexicanos**]

[Part C] Inspired by complications from a bus accident, Frida Kahlo painted this work that depicts a woman whose fractured spine is replaced by the title object.

ANSWER: The **Broken Column**

(Tossup 12) **This structure was where the Yellow Fleet was trapped for eight years. Lester Pearson gained a Nobel Peace Prize and Anthony Eden resigned due to a 1956 (*) crisis named for this structure involving President Gamal Abdel Nasser.** For ten points, name this canal in Egypt that connected the Mediterranean with the Red Sea.

ANSWER: **Suez Canal**

(Bonus 12) This man was executed in December 2006. For ten points each,

[Part A] Name this dictator of Iraq who was overthrown after a US-led invasion in 2003. ANSWER: **Saddam Hussein** (Prompt on partial answer)

[Part B] In 1990, Saddam Hussein's Iraq invaded this other country in the Persian Gulf, leading to the outbreak of the first Gulf War.

ANSWER: **Kuwait**

[Part C] Saddam Hussein also led Iraq through a war with this other country which was led by Ayatollah Khomeini from Tehran.

ANSWER: **Iran**

(Tossup 13) **This character eventually retired to a farm on the Sussex Downs and took up beekeeping. "The Great Hiatus" refers to a period in this character's life. This character investigated the death of Sir Charles in the (*) moors of Devonshire after an encounter with a large animal. This character first appeared in the novel *A Study in Scarlet* and is usually aided by his friend Dr. Watson.** For ten points, name this fictional detective created by Sir Arthur Conan Doyle.

ANSWER: **Sherlock Holmes** (accept either underlined name)

(Bonus 13) This well-travelled Scotsman wrote *A Child's Garden of Verses*. For ten points each, [Part A] Name this author of *Dr. Jekyll and Mr. Hyde*.

ANSWER: Robert Louis **Stevenson**

[Part B] Stevenson also wrote this adventure story about Jim Hawkins and the peg-legged pirate, Long John Silver.

ANSWER: **Treasure Island**

[Part C] In this other Stevenson novel, Ebenezer Balfour tries to kill his nephew, Davie, then sells him to slavers.

ANSWER: **Kidnapped**

(Tossup 14) **Baily's beads, also known as the diamond ring effect, may be seen during one of these events. In 1919, Arthur Eddington confirmed the theory of general relativity by observing the bending of light during one of these events. The (*) umbra of one of these events traced a path from Oregon to South Carolina in 2017, allowing the corona to be visible from Earth. For the point, name these events in which the Moon blocks out the Sun.**

ANSWER: total **solar eclipse** (prompt on "eclipse")

(Bonus 14) This object may have been formed from an impact between Theia and Earth. For ten points each,

[Part A] Name Earth's only permanent natural satellite.

ANSWER: **Moon** (or **Luna**)

[Part B] The first manned lunar mission, Apollo 11, landed at this region of the Moon. This region is a lunar mare [mah-ray].

ANSWER: **Sea of Tranquility** (Accept **Mare Tranquillitatis**)

[Part C] China's Chang'e 4 recently touched down in the Von Karman crater which is located on this side of the moon. This side is mostly not visible from Earth.

ANSWER: **Far Side** of the moon (Accept **Dark Side** of the moon)

Tiebreakers

(Tossup 15) **A set of anti-semitic pamphlets by this man titled "The International Jew" was published in his newspaper *The Dearborn Independent*. This man allegedly noted that one of his products could be purchased in (*) "any color so long as it is black"; that vehicle, also known as the Tin Lizzie, was mass marketed because of his perfection of the assembly line. For ten points, name this automaker whose namesake motor company created the Model T.**

ANSWER: Henry **Ford**

(Bonus 15) This document notably exclaimed that "all men are created equal." For ten points each:

[Part A] Name this document signed on July 4, 1776, which declared America's separation from Britain.

ANSWER: **Declaration of Independence**

[Part B] The Declaration of Independence was addressed to this British king, who reigned from 1760 to 1820.

ANSWER: King **George III** (prompt on George, accept **George** William Frederick **III**)

[Part C] King George III had previously rejected this petition, which was signed on July 5, 1775, and was the Thirteen Colonies' last attempt at peace.

ANSWER: **Olive Branch** Petition (prompt on partial answer)