Tossup 1: Literature — Literature

Born in St. Petersburg in 1905, this woman came to the United States in 1925 to become a screenwriter. She worked in Hollywood for almost a decade, marrying actor Frank O'Connor. Her first novel, We The Living, was published in 1934, beginning her career as an author. Over the next two decades she would write two major novels, both containing ideas behind her philosophy, which she called Objectivism. Name this author of "Anthem," "The Fountainhead," and "Atlas Shrugged."	**Ayn Rand** *(accept Alisa Zinovyevna Rosenbaum)*

Bonus 1: Social Studies — U.S. History

	Identify these famous journalists.	
A	This man, who created the St. Louis Post-Dispatch, created a series of awards in various fields, including journalism and literature.	**Joseph Pulitzer**
B	This editor of the New York Tribune ran for president in 1872.	**Horace Greeley**
C	Along with the answer to part A, this owner of the New York Journal is credited with creating yellow journalism.	**William Randolph Hearst**
D	This editor of the Chicago Tribune oversaw the construction of the Tribune Tower.	**Colonel Robert Rutherford McCormick**

Tossup 2: Social Studies — Geography

It was named for the American aviator who crash-landed his plane near it in 1937, and its height was not known until 1949. Located in the Guiana Highlands, it is fed by the Churun River. Name this Venezuelan waterfall, the highest in the world, which flows off of Devil's Mountain.	**Angel Falls**

Bonus 2: Miscellaneous — Other

	Sure, you may play cards, but how much do you know about the cards themselves? From descriptions, identify the following cards, giving both rank and suit.	
A	Often called the 'death card', it is the namesake of an hit song and an album by the band Motorhead.	**Ace** of **Spades**
B	These two cards make up the namesake meld in a game of Pinochle.	**Queen** of **Spades** and **Jack** of **Diamonds**
C	Sometimes seen as a depiction of Charlemagne, this card is pictured with a sword behind its head, leading to its moniker as a 'suicide card.'	**King** of **Hearts** *(the King of Diamonds has an axe, not a sword)*
D	In a standard game of Euchre, if spades is declared as trump, this card is the left bower.	**Jack** of **Clubs**

Tossup 3: Science — Biology

Often categorized by Brushfield spots on the iris, a short neck, a flat nasal bridge, and mental retardation, it is most often caused by nondisjunction during meiosis, but its mosaic form is caused by embryonic nondisjunction of chromosome 21. Name this genetic disorder caused by having three copies of the 21st chromosome.	**Down('s) syndrome** *(prompt trisomy 21)*

Bonus 3: Literature — Literature

	Given a brief description, name the better-known works of a certain World War I ambulance driver.	
A	A novel about a group of expatriates living in Europe, this book helped popularize Spain's running of the bulls and focuses on a relationship between Jake and Brett.	**The Sun Also Rises**
B	This novel's protagonist, Robert Jordan, is part of an anti-fascist guerrilla group and is commanded to blow up a bridge.	**For Whom the Bell Tolls**
C	Telling the story of an ambulance driver, it describes Frederic Henry falling in love with Catherine Barkley, and their escape to Switzerland.	**A Farewell to Arms**
D	This short story, set in Spain features a young man talking with Jig about having an operation.	**Hills Like White Elephants**

Tossup 4: Math — Geometry (Computational: 30 Seconds)

Find the area of a triangle whose vertices are at (0,0), (2,3), and (6,6).	**3**

Bonus 4: Science — Physics

	Identify these terms related to nuclear emissions.	
A	In this type of decay, a neutron is converted into a proton and electron.	**Beta** negative decay
B	In this process that's the reverse of the previous process, a proton in the nucleus pulls an electron into the nucleus, and they are converted into a neutron.	**Electron capture** *(accept K-capture)*
C	In this type of decay, the namesake particle, two protons and two neutrons, is ejected from a nucleus.	**Alpha** decay
D	This type of ray is often emitted from excited atoms as electromagnetic radiation.	**Gamma** rays

Tossup 5: Fine Arts — Music

He received the only "A" Fritz Reiner ever awarded while teaching conducting classes at the Curtis Institute of Music. This talented American would later spend years conducting at Boston University's Tanglewood Institute, although he is better known as music director for the New York Philharmonic. In addition to conducting, he also composed works such as his "Jeremiah" Symphony and Candide. Name this musician and host of the "Young People's Concerts" television series, best known for writing the score for West Side Story.	**Leonard <u>Bernstein</u>**

Bonus 5: Math — Calculus

	Given the function e to the x plus 2x, calculate the following.	
A	Its derivative at x equals 3.	<u>**e cubed + 2**</u>
B	Its definite integral from x equals 0 to x equals 2.	<u>**e squared + 3**</u>
C	Its limit, as x approaches zero.	<u>**1**</u>
D	Its third derivative, at x equals four.	<u>**e to the fourth power**</u>

Tossup 6: Miscellaneous — Entertainment

This film holds the distinction of being the only film in history to win as many as seven Oscars, and then not win the Best Picture Oscar. The plot drew from several archetypal characters and themes from world mythology such as the damsel in distress, the questing knight, the lusty rogue, and the wise wizard. Also a showcase for the director's innovative new ideas in visual and sound effects, this was what 1977 film that did not win the Best Picture Award, Best Supporting Actor Award for Alec Guiness, nor Best Director Award for George Lucas?	**Star Wars Episode Four: A New Hope**

Bonus 6: Social Studies — World History

	Identify these facts related to Italian Unification.	
A	This man led his Red Shirts through southern Italy.	**Giuseppe Garibaldi**
B	This statesman from Piedmont was often at odds with the answer to part A, and he died before the unification of Italy was complete.	**Camillo Benso, conte di Cavour**
C	This native of Sardinia was the first King of Italy.	**Victor Emanuel II** *(prompt on Victor Emanuel; accept Vittorio Emanuele II)*
D	This region joined Italy when Austria exchanged it for military help in 1866.	**Venetia** *(prompt on Venice; accept Venezia)*

Tossup 7: Math — Algebra (Computational: 30 Seconds)

Matrix A is a two-by-two matrix with top row 1, 2, and bottom row 2, 3. Find the inverse of A.	**Top row: -3, 2; bottom row: 2, -1**

Bonus 7: Fine Arts — Visual Art

	Identify the following about classical-style columns.	
A	This order of column is the most ornate of the orders, featuring a slender, fluted column and an elaborate capital.	**Corinthian**
B	This order is characterized by plain, round capitals and no base.	**Doric**
C	This order features a base on the column and typically has paired scrolling volutes as a defining feature of its capital.	**Ionic**
D	These types of column use representations of people, typically women, in place of the shaft portion of the column.	**Caryatid**

Tossup 8: Social Studies — World History

Its first resident died while giving birth to Gauhara Begum in 1631, and it lies on the shore of the Yamuna River. Built by Shah Jahan for his deceased wife Mumtaz, it is located in Agra. Name this iconic Indian structure that is actually a giant mausoleum.	**Taj Mahal**

Bonus 8: Science — Earth Science

	Identify these geologic time intervals.	
A	This is the broadest interval of time in Earth's history. We are currently in the Phanerozoic one.	**Eon**
B	The next largest interval of time is this, of which examples include the Cenozoic and Mesozoic.	**Era**
C	The next largest interval is this, of which examples include the Quaternary and Triassic.	**Period**
D	The smallest interval is this, of which we are now in the Holocene.	**Epoch**

Tossup 9: Literature — Mythology

The first is from Locris, the second from Telamon. The first was known as "the quick" because he was the second swiftest warrior at Troy, excelled in speed by only Achilles. The second nearly killed Hector by hurling a gigantic rock at him and owned a shield made of seven ox hides covered with bronze. Give the name shared by these two heroes from the Iliad - the more famous of the two was known for his prodigious strength and his battle with Hector that ended in a draw.	**Ajax**

Bonus 9: Math — General

	Name these fields of mathematics.	
A	This deals with counting the number of configurations of discrete objects, like permutations.	**Combinatorics**
B	This deals with the properties of integers, including prime numbers.	**Number theory**
C	This field studies the properties of namesake mathematical structures composed of nodes connected by directed or undirected edges.	**Graph theory**
D	This is the rigorous study of calculus and the theory behind calculus for real numbers.	**Real analysis**

Tossup 10: Science — Chemistry

This law was discovered independently by Edme Mariotte and its current namesake, who published it in 1662. This gas law can be easily explained by kinetic theory, since increasing the volume of a container makes particles inside hit the container's walls less often. Name this gas law that states that pressure and volume are inversely proportional, which is named after an Irish chemist.	**Boyle's Law**

Bonus 10: Literature — Literature

	Identify these novels known both for their exceptional quality and their exceptional length.	
A	Discussions on religion, language, and the Battle of Waterloo can be found in this 500,000 word Victor Hugo work about the reformed convict Jean Valjean.	**Les Miserables**
B	At roughly 1,460 pages, this novel describing the imprisonment, escape, disguise, revenge, and redemption of Edmond Dantes is easily the longest by Alexandre Dumas.	The **Count of Monte Cristo**
C	Containing 1.5 million words in seven volumes, this Marcel Proust novel that follows the narrator, his family, and friends through Paris high society is usually considered the world's longest.	**Remembrance of Things Past** *(accept In Search of Lost Time, and A la recherche du temps perdu)*
D	The quintessential long novel may be this Leo Tolstoy work that recounts Napoleon's invasion of Russia through the experiences of more than 500 characters.	**War and Peace**

END OF FIRST HALF – 2 minute timeout

Tossup 11: Miscellaneous — Interdisciplinary

This five letter term is applied to an small naturally occurring hill. While typically applied to rural areas, the most famous one is located in a downtown setting, running in a northwest to southeast direction between a famous former warehouse and a railroad overpass. Identify this natural structure, the most famous of which lies on the southwest side of Elm Street in Dallas, Texas, just to the southeast of The Sixth Floor museum, and is of course covered in grass.	**Grassy Knoll**

Bonus 11: Literature — Mythology

	Given a description of an epithet, identify the Greek deity to whom it belongs.	
A	She is called 'potnia theron', or 'Mistress of the Animals', but is more commonly associated with hunting them.	**Artemis**
B	He is called 'ephebus,' or 'without beard,' and is usually depicted as a youthful god.	**Apollo**
C	Among his epithets are 'Argeiphontes' and 'psychopompus', which identify him as the slayer of Argus and the figure who guides souls to the underworld.	**Hermes**
D	She is sometimes given the epithet 'Cypria', as some believe she was born on Cyprus, but another myth attributes her birth to the castration of Uranus.	**Aphrodite**

Tossup 12: Social Studies — Current Events

Originally backed by the Fordham Company, it was later picked up Shellbourne Development Group. It will be located in DuSable Park, and is set to reach 2,000 feet. Designed by Santiago Calatrava, it has drawn criticism for its unique appearance, which will clash with the traditional Chicago skyline. Name this building currently under construction that, when completed, will be the tallest building in North America.	**Chicago Spire**

Bonus 12: Math — Algebra

	Answer the following questions about given polynomials.	
A	This is the degree of x cubed y squared plus three x to the fourth.	**5**
B	This is the sum of the roots of the equation x squared plus 3 x plus 2 equals zero.	**-3**
C	This is the product of the roots of the equation x squared minus 2 x plus 5 equals zero.	**5**
D	This is the number of distinct real roots of the equation x cubed plus 3 x squared plus x plus 3 equals zero.	**1**

Tossup 13: Math — Calculus (Computational: 30 Seconds)

Find the area under the curve f of x equals 12x squared minus 10x plus 10 from x equals zero to x equals three. It will help you to know that because the left endpoint is zero, the area of the curve can be found by just evaluating the antiderivative of the function at x equals three.	**93 square units**

Bonus 13: Science — Chemistry

	Name these measurements of concentration.	
A	This measurement is defined as one mole of a substance per liter of solution.	**Molarity** *(do not accept molality)*
B	This measurement is defined as one mole of a substance per kilogram of solvent.	**Molality** *(do not accept molarity)*
C	This dimensionless measurement is defined as the moles of a substance divided by the moles of solution.	**Mole fraction**
D	This measurement can be defined as the number of milligrams of a substance per kilogram of solution, or in general, the number of millionths of the solution that are composed of the substance.	**Parts per million** *(accept ppm)*

Tossup 14: Literature — Literature

The first story in this collection, "The Sisters", was originally written in 1904, and it details the narrator's reaction to Father Flynn's death. The third story deals with a young boy in love with Mangan's sister; he visits the bazaar Araby to buy her a gift. The fifteenth and final story depicts Gabriel Conway's social awkwardness at a party and his realization that he is already one of "The Dead". Name this collection of short stories by James Joyce.	**Dubliners**

Bonus 14: Miscellaneous — Sports

Identify these facts related to Tiger Woods.		
A	Woods attended and played golf at this University.	**Stanford** University
B	In 1997, Woods became the youngest player to ever win this major that's always held in April.	**Masters**
C	Woods currently has 13 major victories for his career, second only to this man.	Jack **Nicklaus**
D	Woods has won this tournament the least of all the majors, doing so only twice.	**U.S. Open**

Tossup 15: Science — Earth Science

This intrusive substance is sometimes converted into tephra when ejected. Depending on its silicate content, it can be categorized as mafic *(MAY-fik)* or felsic *(FEL-sik)*. When it solidifies, it forms plutonic rocks. Name this substance located beneath the surface of the Earth, which is called lava when it leaves a volcano.	**Magma**

Bonus 15: Social Studies — Other

	Given an African country, identify its currency.	
A	Mozambique	**Mozambican Metical**
B	Rwanda	**Rwandan Franc**
C	Angola	**Kwanza**
D	South Africa	**South African Rand**

Tossup 16: Fine Arts — Visual Art

This humanist wrote the unfinished Commentarii, though he is best known for his art works. He made bronze statues of St. Mathew and St. Stephen, which can be found in Florence. He beat out Brunelleschi to design the doors to a Church, though he became more famous for designing another set of doors that depicted portions of the Old Testament. Name this creator of the Gates of Paradise.	**Lorenzo Ghiberti** *(Lorenzo di Bartolo)*

Bonus 16: Math — Geometry

Given the measure of an internal angle of a regular polygon, give the number of sides that polygon has.		
A	60 degrees	**3**
B	165 degrees	**24**
C	108 degrees	**5**
D	179 degrees	**360**

Tossup 17: Math — Algebra (Computational: 30 Seconds)

The sum of three consecutive odd integers is 75. What is their mean?	**25**

Bonus 17: Literature — Literature

	Identify the following Shakespearean characters.	
A	One of her more famous lines is "Out, damn'd spot! out, I say!"	**Lady Macbeth**
B	He is the Norwegian Crown Prince who delivers the final lines of Hamlet.	**Fortinbras**
C	With the surname Lackland, he is the titular character of one of Shakespeare's least staged plays.	**King John**
D	This rightful Duke of Milan is a master of magic, using it to create a huge storm.	**Prospero**

Tossup 18: Social Studies — U.S. History

Proposed by an Ohio senator, it was the first bill of its kind, and its use was upheld in 1895. One of the more memorable points of the Harrison administration, it mainly affected large companies such as Standard Oil. Name this piece of 1890 legislation that was the first attempt by the government to regulate business.	**Sherman Antitrust** **Act** *(prompt on Sherman)*

Bonus 18: Science — Biology

	Identify these terms related to evolution.	
A	This is the process of new species arising.	**Speciation**
B	The theory of natural selection was proposed by this author of The Origin of Species.	**Charles Darwin**
C	An earlier, incorrect concept of evolution was pioneered by this French namesake, who thought that traits acquired during an animal's lifetime were passed on to its offspring.	**Jean-Baptiste Lamarck**
D	Analogous structures in animals are ones that do the same thing but are not structurally related, like the wings of birds and of bats. In contrast, these types of structures are due to shared genes.	**Homologous structures**

Tossup 19: Science — Physics

It was first proposed by its namesake as affecting light waves emitted by binary star systems, but its effects on sound waves are perhaps more familiar. Responsible for redshift and the sliding pitch of sirens as they pass by, name this phenomenon that changes the perceived frequency of waves emitted by moving objects.	**Doppler** effect *(accept Doppler shift)*

Bonus 19: Fine Arts — Music

	Identify the following musical genres.	
A	This direct descendant of ska and rocksteady in the early 1960s, but took its name from a 1968 song from the Kingston band, Toots and the Maytals.	**Reggae**
B	This style shares its name with notes played or sung at lower pitches than the major scale, typically as flattened thirds, fifth, and sevenths in twelve bar patterns.	**Blues**
C	Influenced by funk, soul, and salsa, this form started in the 1970s, and came to an explosive halt on July 12, 1979. Combining Cajun and African American folk music, this is a heavily syncopated, fast tempo music developed in the twentieth century. The accordion and washboard are typical instruments.	**Disco**
D	Combining Cajun and African American folk music, this is a heavily syncopated, fast tempo music developed in the twentieth century. The accordion and washboard are typical instruments.	**Zydeco**

Tossup 20: Literature — Literature

He coined the term 'banana republic' while spending time in Honduras. Ending up there by fleeing embezzlement charges, he returned to the U.S. as his wife was dying. While in jail, he published 14 stories, including "Whistling Dick's Christmas Stocking," the first of them to feature his well known pen name. Often referred to as the American answer to Guy de Maupassant, identify this author, known for his frequent use of the twist ending, including in his work, "The Gift of the Magi".	**O. Henry** *(accept William Sydney Porter)*

Bonus 20: Social Studies — Geography

	Identify these European mountains.	
A	This highest point of the British Isles, rising to a mere 4,406 feet, can be found in Scotland.	**Ben Nevis**
B	This mountain on the Swiss-Italian border, first climbed by Edward Whymper, is more than 14,500 feet high.	**Matterhorn** *(accept Mont Cervin or Monte Cervino)*
C	This mountain in the Alps is the tallest in France.	**Mont Blanc** *(accept Monte Bianco)*
D	This Russian peak is the highest in Europe.	**Mount Elbrus** *(accept Gora Elbrus)*

END OF MATCH

Tossup A: Math — Geometry (Computational: 30 Seconds)

Find the area of a regular hexagon with apothem of length 2, and sides of length 4 root 3 over 3.	**8 root 3**

Bonus A: Social Studies — World History

	Given a description, identify the Latin American civilization.	
A	This civilization, whose capital city was Tenochtitlan *(tay-NOAK-teet-LAHN)*, fell after the arrival of Hernan Cortes *(cor-TEZ)*.	**Aztec**
B	These people made their home in the Yucatan, and thrived for hundreds of years, ending the 9th century or so.	**Mayans**
C	These people joined with Cortes to help bring down the answer to part 1.	**Toltecs**
D	One of the earliest civilizations to be active within South America, being so by 1200 BCE, it was centered around San Lorenzo, which is not too far from Tenochtitlan.	**Olmec**

Tossup B: Science — Biology

Composed of tracheids and vessel elements, its adhesion allows it to store fluid against the pull of gravity. Root pressure and the transpiration mechanism help draw water through it from plant roots to leaves, and its secondary variety is the substance commonly called "wood." Name this vascular transport system in plants, the complement of phloem.	**Xylem**

Bonus B: Literature — Literature

Name the Shakespearean play given a list of servants from that work.	
A	Stephano, Gonzalo, and Caliban.	The **Tempest**
B	Fabian, Feste, and Malvolio.	**Twelfth Night**
C	Sampson, Gregory, and Balthasar.	**Romeo and Juliet**
D	Leonardo, Launcelot Gobbo, and Nerissa.	The **Merchant of Venice**

Tossup C: Literature — Literature

The title sport of a poetry collection by Henry Taylor, Gaev in the The Cherry Orchard is an avid player of it and in Act II Scene V of Shakespeare's Antony and Cleopatra, Cleopatra asks Mardian to play it with her. In A Farewell to Arms, Frederick Henry plays it with Count Greffi, and Peregrine Pickle and Godfrey defeat con men at it. Identify this sport that Robert Fahmel plays at half-past nine in a work by Heinrich Boll, and whose variants include pool and snooker.	**Billiards** *(do not accept pool or snooker, as a title is referenced in the first clue)*

Bonus C: Science — Chemistry

	Identify the name of each of the following phase changes. For example, the answer for "liquid to gas" would be "boiling."	
A	Solid to a liquid.	**Melting**
B	Gas to a liquid.	**Condensation**
C	Solid to a gas.	**Sublimation**
D	Gas to a solid.	**Deposition**

Tossup D: Social Studies — U.S. History

There is much debate over its direct cause, though an overuse of speculation, also known as buying on margin, is often seen as the problem. Marring the presidency of Herbert Hoover, it consisted mainly of Black Thursday and Black Tuesday. Name this 1929 economic disaster that is often credited with instigating the Great Depression.	**Stock market crash of 1929** *(accept Wall Street Crash of 1929, the Great Crash, or other equivalents)*

Bonus D: Math — Other

	You have a sack of marbles that contains three red, four blue, and one green marble. Calculate the probability of the following events, if you don't put marbles back after taking them out in each scenario.	
A	You pull out a red marble, and then a green one.	**3/56**
B	You pull out a red marble, then another red marble.	**3/28**
C	You pull out a blue and a red marble, in either order.	**3/7**
D	You pull out a green marble, then a green marble.	**0**

Tossup E: Miscellaneous — Entertainment

This film was based on the story "The Tin Star" by John Cunningham. Carl Foreman, the screenwriter, claimed that the story was an allegory of individuals who stood-up to the House Un-American Activities Committee when others refused to do so. Considered among the greatest Westerns ever filmed, name this classic, shown in real time lasting one hour and twenty-five minutes, and starting at 10:40 A.M.	**High Noon**

Bonus E: Fine Arts — Visual Art

	Answer the following about pop art.	
A	This Swedish pop artist created Crusoe Umbrella and Clothespin.	**Claes Oldenburg**
B	This man's most famous work involves comic book art such as "Whaam!" and "Drowning Girl."	**Roy Lichtenstein**
C	This man's early work involves Encaustic, a heavy dripping wax-based paint. Examples include "Flag".	**Jasper Johns**
D	Pop artist David Hockney theorized that Old Masters used optic tricks to project an image onto an easel. Two key pieces of evidence are the chandelier and mirror in this most famous work of Jan Van Eyck.	**The Arnolfini Wedding** *(accept reasonable equivalents, such as "Arnolfini Marriage")*