

Aegis Questions

**2008 IHSSBCA Kickoff
Round 1**

Tossup 1: Science (Astronomy)

Of its 13 satellites, only one was found before the twentieth century, a moon with a retrograde orbit. Atmospheric events on this planet include "the Scooter" as well as the Great Dark Spot. Voyager 2 discovered five of its moons, including Thalassa and Proteus, and collected pictures of the already-discovered Nereid and Triton. Name this planet, named for the Roman god of the sea, the eighth planet from the sun.

Answer: **Neptune**

Bonus 1: Social Studies (U.S. History)

Identify these facts related to the assassination of John F. Kennedy.

1. Shortly after Kennedy was killed, Jack Ruby murdered this man, the President's assassin.

Answer: **Lee Harvey Oswald**

2. This Governor of Texas riding in the car with Kennedy was also shot, but managed to survive.

Answer: **John Bowden Connally, Jr.**

3. This silent home movie showing the Presidential caravan is the best known recording of the assassination.

Answer: **Zapruder Film**

Tossup 2: Literature (Literature)

In one of his works, "Suddenly, Last Summer," Violet Venable threatens Catherine Holly with a frontal lobotomy. That procedure had been done to his sister Rose in 1937. He wrote numerous plays including Camino Real and The Rose Tattoo, while his only novel was The Roman Spring of Mrs. Stone. He wrote about Reverence T. Lawrence Shannon in The Night of the Iguana. Name this author, famous for his play about Tom Wingfield, whose sister Laura owns the titular Glass Menagerie.

Answer: **Tennessee Williams**

Bonus 2: Math (General) -- Computational

Given the starting value and common ratio for an infinite geometric series, find its sum or state that it diverges.

1. Starting value 2, common ratio 1/2.

2. Starting value 3, common ratio 1.

3. Starting value -2, common ratio 0.

Answers: 1: **4** 2: **Diverges** 3: **-2**

Tossup 3: Social Studies (World History)

Backed by the New York Herald, this man searched for the source of the Nile, encountering Lake Victoria and Lake Tanganyika in the process. However, the British weren't particularly impressed with his discoveries, but his knowledge of interior Africa led him to partner with Belgium's King Leopold II. Name this explorer who, upon finding a fellow explorer, uttered the words, "Dr. Livingstone, I presume?"

Answer: **Sir Henry Morton Stanley**

Bonus 3: Fine Arts (Visual Art)

Answer these questions about works of art that never quite got the finishing touch from their creators.

1. Begun in 1481, this early da Vinci painting has a complete central scene of the Virgin Mary and Child surrounded by praying shepherds, despite much of the background being unfinished.

Answer: **The Adoration of the Magi**

2. In 1909, this artist died, leaving his painting of four cowboys seated around a campfire incomplete, but an enlarged version of his bronze statue The Bronco Buster finished.

Answer: **Frederic Remington**

3. Along with St. Matthew, Michelangelo's other unfinished sculptures for the tomb of Julius II include Bearded, Beardless, Rebellious, and Dying examples of these figures.

Answer: **slaves**

Tossup 4: Math (Algebra) -- Computational (30 Seconds)

Calculate the determinant of a three by three matrix with rows 5 2 3, 4 7 0, and 9 2 3.

Answer: **-84**

Bonus 4: Social Studies (Geography)

Identify these facts related to South Africa, given a clue.

1. Formerly a leper colony, this island near Cape Town also used to be home to a prison, which once housed Nelson Mandela.

Answer: **Robben Island**

2. Maseru is the capital of this country that is entirely surrounded by South Africa.

Answer: **Kingdom of Lesotho**

3. This longest river of South Africa forms the border between it and Namibia.

Answer: **Orange River**

Tossup 5: Fine Arts (Music)

On the back of a rough draft of this work was found a fragment for a cello concerto that was finished by Leonovich and Langston. It has a second dance movement marked in an odd 5/4 and a loud third that traps audiences into clapping early. In the first movement, one instrument has a solo marked with 6 p's followed by a tutti fortissimo blast. That instrument, a bassoon, also introduces the first theme in an opening solo. The epithet for the symphony means "emotional," not the false cognate meaning "pitiful". Name this final symphony by Peter Ilyich Tchaikovsky.

Answer: **Pathetique Symphony** (or *Tchaikovsky's Sixth Symphony in B Minor*; accept just *Sixth* after "Tchaikovsky")

Bonus 5: Miscellaneous (Interdisciplinary)

Identify these people who majored in mathematics in college, yet still went on to lead normal, happy lives.

1. This actress was a math major at DeAnza Junior College before her TV roles as Lois Lane and Susan Mayer on Desperate Housewives.

Answer: **Teri Hatcher**

2. This composer earned a Bachelor's in math from the University of Chicago about 20 years before his operas Einstein on the Beach and Satyagraha made him famous.

Answer: **Philip Glass**

3. This communist had to end his mathematical studies in Odessa when he was sent to Siberia. Leading the Red Army in the Civil War and being exiled by Stalin also proved distracting.

Answer: **Leon Trotsky** (accept *Lev Davidovich Bronstein*)

Tossup 6: Social Studies (Other)

One type of it times the increase in the money supply equals money created. That monetary variety varies inversely as the reserve ratio. The spending type varies inversely with the derivative of the savings function with respect to disposable income. That value, the MPS, determines this number because the greater the marginal propensity to save, the greater the leakages that reduce its effect. In Keynesian economics, what number times the injection equals the net increase in GDP?

Answer: **multiplier**

Bonus 6: Math (Other) -- Computational

Answer the following about the sine of the quantity $\pi x + \pi$ over 4.

1. What is its period?

2. What is its value at 0?

3. What is the smallest positive number x for which it equals zero?

Answers: 1: **2** 2: **$\sqrt{2}/2$** (accept $1/\sqrt{2}$) 3: **$3/4$**

Tossup 7: Miscellaneous (Entertainment)

He traveled to the moon with Apollo 10, and he's often found riding a Sopwith Camel as one of his many alter egos. He likes to steal Bulwer-Lytton's opening phrase of "It was a dark and stormy night." His brothers include Spike and Olaf who were born at the Daisy Hill Puppy Farm. A lover of root beer and friend of Woodstock, he often sleeps on top of his doghouse. Name the beagle that appears in Charles Schultz's comic strip Peanuts owned by Charlie Brown.

Answer: **Snoopy**

Bonus 7: Literature (Literature)

Aeschylus was one of the most noteworthy Greek Tragedians.

1. This work of Aeschylus was set entirely at the rock on which the title character was chained for giving fire to mortals.

Answer: **Prometheus Bound** (*do not accept Prometheus Unbound*)

2. This work is actually a trilogy that includes parts "Agamemnon," "The Libation Bearers," and "The Eumenides;" the fourth part, "Proteus," does not survive.

Answer: **Orestia**

3. The action of this Aeschylus play immediately precedes the action of Sophocles' Antigone, and as such, had its ending rewritten after Aeschylus' death; changed to have Antigone announcing her intentions to bury the newly dead Polynices.

Answer: **Seven Against Thebes**

Tossup 8: Math (Algebra)

These are sometime plotted on a two dimensional number line to indicate their deviance from rational numbers. They were first mentioned by Gerolamo Cardano in the 16th century, and the name that eventually became attached to them was coined by Rene Descartes in the 17th century, although at the time the term referred to the entire class of complex numbers, not just this subgroup. Name this class of numbers whose progression through the powers can be recalled via the chant "i, -1, -i, 1" (*i, negative 1, negative i, one*).

Answer: **Imaginary numbers** (*Prompt on i on early buzz*)

Bonus 8: Science (Biology)

The Krebs cycle occurs in these organelles present in all cells.

1. Name these organelles responsible for regenerating ATP, known as the power plants of cells.

Answer: **Mitochondria**

2. Cristae and the inner membrane surround this acidic innermost region of mitochondria.

Answer: **Matrix**

3. According to this theory, mitochondria and chloroplasts were originally bacteria which eventually evolved to become part of eukaryotic cells.

Answer: **Endosymbiotic theory**

Tossup 9: Literature (Mythology)

One of this figure's sons was turned into a wolf only to tear out the entrails of another of his sons to fashion a chain. This came as a punishment for a previous action he had brought about while the gods were taking turns throwing things at a deity whose skin was penetrable only to mistletoe. His responsibility for the death of Baldur thus earned the ire of Odin, who kept this father of Sleipnir, Fenrir, and Jormungand (*YORE-moon-gond*) tied up until Ragnarok. Name this shape-shifting trickster god of Norse mythology.

Answer: **Loki or Loke**

Bonus 9: Math (Geometry) -- Computational

Calculate the surface area of the following solids.

1. A cylinder with radius 2 and height 3.
2. A sphere which can be inscribed in a cube of side length 4.
3. A cube whose surface area equals its volume.

Answers: 1: 20 pi 2: 16 pi 3: 216

Tossup 10: Science (Physics)

For chemical systems, it can be defined as the partial derivative of free energy with respect to the number of particles. It is equal to $k q_1 q_2 / r$ for stationary charged particles, and equals one half $k x$ squared for springs following Hooke's law. For gravity, it is equal to $m g h$. Name this type of stored energy, contrasted with kinetic energy.

Answer: Potential energy

Bonus 10: Literature (Literature)

Author Matthew Pearl's debut work was a murder mystery set with a very unlikely hero.

1. Identify that hero, who produced the first American translation of Dante's Divine Comedy.

Answer: Henry Wadsworth Longfellow

2. Longfellow invited people to gatherings at his house in order to discuss the ongoing translation, including this editor of The Atlantic Monthly author of The Bigelow Papers.

Answer: James Russell Lowell

3. Pearl's book "The Dante Club" also places this author of The Chambered Nautilus and The Autocrat of the Breakfast Table in on the meetings, though he might not have actually been involved.

Answer: Oliver Wendell Holmes, Sr.

HALFTIME

Tossup 11: Literature (Literature)

One of the main characters is reading Jude the Obscure in English class at the beginning of this work. It also sees Karen Aldrich successfully commit suicide and Jeannine Pratt become romantically involved with that aforementioned main character. Beth leaves Calvin at the climax of this novel, leading to the bridging of a gap between Calvin and his formerly disillusioned son. Chronicling the stories of Calvin and his son Conrad Jarrett after Con survives a sailing accident that his brother Buck didn't, identify this novel by Judith Guest.

Answer: **Ordinary People**

Bonus 11: Miscellaneous (Entertainment)

Name these Nickelodeon game shows from the 90s.

1. Contestants compete in various physical challenges that culminate in an ascent of the Aggro Crag.

Answer: **Nickelodeon GUTS** (accept *Global Guts*)

2. The field of six teams, including the Green Monkeys and Silver Snakes, was narrowed down to one that would try to retrieve an ancient object.

Answer: **Legends of the Hidden Temple**

3. Often featuring Danny and Lori Beth from "All That", it involved four panelists trying to guess the contestant's secret talent.

Answer: **Figure It Out**

Tossup 12: Math (Calculus) -- Computational (30 Seconds)

Find the limit, as x approaches infinity, of $(3x^2 + 14) / (x^2 - 912x + 1)$.

Answer: **3**

Bonus 12: Science (Earth Science)

Clouds are classified based on the height of their bottoms, not where the tip is. Identify the following related to clouds.

1. This type of high-altitude cloud is characterized by thin, wisplike strands, leading to the common name of "mare's tail." They are sometimes formed by the contrails of aircraft.

Answer: **Cirrus clouds**

2. Sometimes convection at high altitudes produces another form of Cirrus cloud called this, different due to containing not only frozen water crystals, but also some supercooled liquid water.

Answer: **Cirrocumulus clouds**

3. Often, the frozen water crystals in Cirrocumulus clouds rapidly freeze the liquid droplets, transforming them into Cirrostratus clouds and producing this form of precipitation which evaporates before reaching the ground.

Answer: **Virga**

Tossup 13: Miscellaneous (Sports)

His last NFL point was the first dropkick extra point since 1941. In 1999, he led the Buffalo Bills to ten wins but was controversially replaced by Rob Johnson in the playoffs. He achieved great success in the CFL and the USFL and in college, where he won the 1984 Heisman Trophy and a famous game against Miami. Identify this quarterback, famous for launching a Hail Mary pass on Thanksgiving for Boston College.

Answer: **Doug Flutie**

Bonus 13: Fine Arts (Music)

Identify these composers who each left an unfinished symphony behind.

1. Probably the most famous incomplete symphony is this man's No. 8 in B minor, which was only half finished when he began his first song cycle, Die schöne Müllerin.

Answer: **Franz Schubert**

2. This composer abandoned his Symphony in E flat in favor of his Pathétique Symphony, but part was later used in his Piano Concerto No. 3.

Answer: **Pyotr Ilyich Tchaikovsky**

3. Distracted by the affair between his wife and architect Walter Gropius, this man never completed his Symphony No. 10, but he did finish his Song of the Earth.

Answer: **Gustav Mahler**

Tossup 14: Science (Chemistry)

It can be calculated from the Faraday constant divided by the elementary charge, and was first calculated by Johann Loschmidt. It is also equal to the gas constant divided by Boltzmann's constant, and the atomic mass unit is defined in terms of it. Name this chemical constant defined as the number of atoms in 12 grams of carbon-12, whose value is 6.02 times 10 to the 23rd inverse moles.

Answer: **Avogadro's number**

Bonus 14: Social Studies (U.S. History)

Answer the following about constitutional amendments.

1. This amendment was proposed and ratified after part of the Wilson-Gorman Tariff was ruled unconstitutional in the case of Pollock v Farmer's Loan and Trust Co.

Answer: **16th**

2. This amendment replaced the Supreme Court decision in Chisholm v Georgia, and the case of Hans v Louisiana allowed for a broad interpretation of sovereign immunity.

Answer: **11th**

3. The constitutionality deadline for ratifying this amendment was upheld in Dillon v Glass, and it superseded the Volstead Act.

Answer: **18th**

Tossup 15: Fine Arts (Visual Art)

Although the figure himself is idealized, the rest of the painting is, for the most part, true to life. It is sometimes compared to Michelangelo's Pieta, since in both works, the person of focus has an elongated arm hanging down. In this 18th century painting, that arm is attached to a hand which clutches a quill, while their left hand is holding a note. A bloody towel lies behind the title figure, who is lying in a bathtub. Name this painting of a deceased French figure, a work by Jacques-Louis David (*dah-VEED*).

Answer: **The Death of Marat** (*accept La Mort de Marat*)

Bonus 15: Science (Physics)

In the equation $E = mc^2$, c stands for the speed of light. Identify the meanings of these other variables.

1. The Q in the formula $Q = mc\Delta T$, stands for this quantity.

Answer: **heat** (*prompt on energy*)

2. The L in the formula $L = mvr \sin \theta$, stands for this quantity.

Answer: **angular momentum**

3. The Φ in the formula $\Phi = AB \cos \theta$, stands for this quantity.

Answer: **magnetic flux**

Tossup 16: Social Studies (U.S. History)

Battles in this war included Red Bank and Bennington, the latter of which featured commanders Friedrich Baum and Seth Warner. General Charles Lee was captured at Basking Ridge, though later exchanged for an opposing general. The turning point in this war was the battles of Freeman's Farm and Bemis Heights, which composed the Battles of Saratoga. Name this 18th century war which ended when Cornwallis surrendered at Yorktown.

Answer: **American Revolutionary War** (*accept clear knowledge equivalents*)

Bonus 16: Math (Algebra)

Identify these conic sections from a description.

1. This conic section has eccentricity zero and is a special case of an ellipse.

Answer: **Circle**

2. This conic section is the set of points that are equidistant from a given point and line.

Answer: **Parabola**

3. This conic section has eccentricity greater than one, and consists of two disconnected branches.

Answer: **Hyperbola**

Tossup 17: Science (Biology)

This condition increases the risk of epilepsy, leukemia, and Alzheimer's disease, and is often accompanied by congenital heart disease. A Robertsonian translocation can result in the familial variety, and it can be diagnosed by monitoring alpha-fetoprotein levels or with a karyotype. Data suggests it is many times more likely to occur to mothers above the age of 35. Name this aneuploid genetic condition caused by having three copies of chromosome 21.

Answer: **Down('s) syndrome** (*accept trisomy 21 before the end*)

Bonus 17: Literature (Literature)

Works of allegory are ones that are written to represent a meaning other than the literal. Identify the following allegories of the Christian persuasion.

1. This, probably the most famous allegory of them all, is Dante's representation of the different levels of the Christian afterlife.

Answer: **The Divine Comedy** (accept *La Divina Commedia*)

2. This narrative poem by William Langland concerns the lives of the characters Dowel ("*Do-Well*"), Dobet ("*Do-Bet*"), and Dobest ("*Do-Best*").

Answer: **Piers Plowman**

3. This Bunyan work is also a very well known Christian allegory. Heck, he even went so far as to name the main character "Christian."

Answer: **The Pilgrim's Progress from This World to That Which Is to Come**

Tossup 18: Math (Geometry) -- Computational (30 Seconds)

Given a house that is 8 ft tall and a ladder placed at a 30 degree angle 5 ft away such that the ladder exactly touches the roof of the house, how long is the ladder?

Answer: **root 89 ft**

Bonus 18: Social Studies (World History)

Answer some questions about vetoes.

1. Though held by many governors, Clinton was the only U.S. President to have this power to reject specific parts of legislation.

Answer: **line-item veto**

2. Jus Exclusivae, the so-called papal veto, was the right of monarchs to exclude a certain cardinal from being elected during one of these meetings that determines the next pope.

Answer: **papal conclave**

3. Veto rights are given to the 5 permanent members of this smaller assembly of the United Nations.

Answer: **UN Security Council**

Tossup 19: Literature (Literature)

An early success of the writer by this name was about defective engines that kill the son of a war profiteer named Joe Keller. His essay manifesto "Tragedy and the Common Man" appeared shortly before a play about a common man who kills himself for insurance money to help his family: Linda, Happy and Biff Loman. Once called before the House Un-American Activities Commission because of supposed communist ties, name this playwright who wrote about McCarthyism in *The Crucible*.

Answer: **Arthur Miller**

Bonus 19: Science (Chemistry)

The third one states that, as a system approaches absolute zero, entropy decreases to a minimum value.

1. Give the collective term for these laws about work and heat.

Answer: **Laws of thermodynamics**

2. In Celsius, to the nearest degree, give the temperature of absolute zero.

Answer: **-273(.15) Celsius**

3. This law of thermodynamics states that, if two systems are each in thermal equilibrium with a third system, then they are also in thermal equilibrium with each other.

Answer: **Zeroth law of thermodynamics**

Tossup 20: Social Studies (Current Events)

Early in his governmental career, this man was head of the Committee for State Security, and later was the director of the Federal Security Service. Gaining fame for defeating rebels in Chechnya, in 1999 he became president of his country, replacing Boris Yeltsin. Name this former KGB agent and current Prime Minister of Russia.

Answer: **Vladimir Vladimirovich Putin**

Bonus 20: Literature (Literature)

Answer these questions about a book published in 1908.

1. This book includes an incident in which Rat and Mole are helped in their search for Otter's son by the god Pan.

Answer: **The Wind in the Willows**

2. This is the author of The Wind in the Willows.

Answer: **Kenneth Grahame**

3. This author wrote Toad of Toad Hall, the play that made The Wind in the Willows famous, in addition to stories about his son's stuffed animals.

Answer: **A(lan) A(lexander) Milne**

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Science (Biology)**

Deviations from this are measured by the inbreeding coefficient. It does not hold if genetic drift, mutations, or sexual selection occur, and it can be generalized to consider polyploid or multi-allele genes. It is usually formulated as $p^2 + 2pq + q^2 = 1$, where p and q are allele frequencies. Name this biological principle independently described by its two namesakes in 1908.

Answer: **Hardy-Weinberg equilibrium/principle** (*accept equivalents*)

Bonus 21: Social Studies (Geography)

Identify these European seas, given clues.

1. The Thames (*TEMS*) and the Elbe are two tributaries of this sea that connects to the Atlantic by way of the English Channel, and it is surrounded by Denmark and Norway, among others.

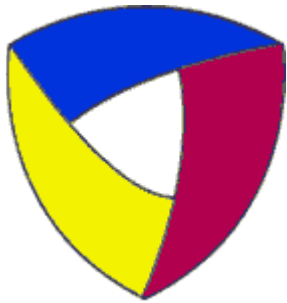
Answer: **North Sea**

2. Two straits connect the North Sea to this body of water to its east, and Stockholm and St. Petersburg lie on its banks.

Answer: **Baltic Sea**

3. This northern arm of the Mediterranean Sea bordering Italy is connected to the Ionian Sea by the Strait of Otranto.

Answer: **Adriatic Sea**



Aegis Questions

**2008 IHSSBCA Kickoff
Round 2**

Tossup 1: Social Studies (U.S. History)

In this town, the Niagra Movement held its first meeting in the U.S. in 1906 at Storer College. It is now the location of the headquarters of the Appalachian Trail Conservancy. In 1785, Washington traveled here to look into the possibilities of canals, and in 1794 he recommended that an armory and arsenal be built on this site. One notable October 16th, Dr. John Starry went to investigate the shooting of a freed black, Heyward Shepherd. Name this now West Virginia town, to which some marines under the command of Robert E. Lee were called out to put down an 1859 raid by the abolitionist John Brown.

Answer: **Harper's Ferry**

Bonus 1: Literature (Literature)

Tattoo is more than just a character on Fantasy Island.

1. This collection of short stories is tied together by a frame narrative about a man's animated tattoos, each of which tells one of the short stories within it.

Answer: **The Illustrated Man**

2. This Illinois native wrote The Illustrated Man.

Answer: **Ray Bradbury**

3. Another "illustrated man," Mr. Dark, appears as the owner of a nefarious carnival in this Bradbury work.

Answer: **Something Wicked This Way Comes**

Tossup 2: Math (General)

The non-negative ones are the coefficients of the power series of the function x over quantity one minus x , quantity squared. Their cardinality equals Aleph null. The floor function gives the largest one not greater than a number. They are often denoted with a symbol that stands for the German "Zahlen," which is a boldface Z. Name the set of numbers that can be negative, positive, or zero and have no fractional part.

Answer: **integer**

Bonus 2: Science (Physics)

Identify these things related to optics.

1. This law states that, for a ray passing between two media, the ratio of the sines of the angles of incidence equals the reciprocal of the ratio of the indices of refraction.

Answer: **Snell's law**

2. This phenomenon occurs when a ray of light strikes a boundary between two media and bounces entirely back into the original medium.

Answer: **Total internal reflection**

3. Total internal reflection occurs when the angle of incidence is above this angle for the two media.

Answer: **Critical angle**

Tossup 3: Literature (Literature)

This character originally appeared in some short stories of his creator's; "Slight Rebellion off Madison" and "I'm Crazy" which were retooled into chapters of the book which he is the protagonist of. He lives with his roommate Stradlater, who has been going out with his childhood friend Jane Gallagher. His older brother D.B. is a Hollywood screener, and his sister Phoebe is only ten. He was profoundly affected by the death of his brother Allie, and often mentions his poetry-inscribed left-handed baseball mitt. Expelled from Pencey Prep, identify this character, the protagonist and antihero of J.D. Salinger's *The Catcher in The Rye*.

Answer: **Holden Caulfield**

Bonus 3: Social Studies (Other)

Give the terms related to the Roman Catholic Church.

1. The First Vatican council declared that the pope has infallibility only when he speaks "from the chair," which is the English translation of this Latin phrase.

Answer: **ex cathedra**

2. This form of prayer consists of decades of 10 Hail Marys and 1 Our Father prayed while meditating on certain Mysteries.

Answer: **rosary**

3. This is the process of formally declaring that a person is a saint.

Answer: **canonization** (*do not accept beatification*)

Tossup 4: Science (Biology)

A synthetic one of these chemicals was used as a defoliant in Agent Orange, because they promote ethylene production at high concentrations. Their action is explained by the acid growth hypothesis, and their polar diffusion results in apical dominance. Found in nature as indole-acetic acid, they are responsible for several tropisms. Produced in meristems and seeds, name this plant hormone responsible for cell elongation.

Answer: **Auxin**

Bonus 4: Literature (Literature)

The Harlem Renaissance was described by James Weldon Johnson as the "flowering of Negro literature." Identify the following Harlem Renaissance poets.

1. This author of the widely anthologized "We Wear the Mask" had his first work published in a newspaper printed by his high school friends Orville and Wilbur Wright.

Answer: **Paul Laurence Dunbar**

2. This influential poet penned "The Negro Speaks of Rivers," in addition to "Harlem: Dream Deferred".

Answer: **Langston Hughes**

3. While more well known for her novel *Their Eyes Were Watching God*, she also did anthropological work in college with the likes of Frank Boaz, Margaret Meade and Ruth Benedict.

Answer: **Zora Neale Hurston**

Tossup 5: Social Studies (World History)

Construction of this city began in 1703. Built on swampland by laboring serfs, it later became known as the Venice of the North, and over the course of the 20th century, endured many name changes, a revolution, and a 872 day siege at the hands of the German and Finnish armies. Name this second city of Russia.

Answer: **St. Petersburg**

Bonus 5: Math (Geometry)

Identify these formulas from geometry.

1. This theorem states that, for a right triangle, the sum of the squares of the legs is equal to the square of the hypotenuse.

Answer: **Pythagorean theorem**

2. This formula for the area of a triangle is named after an Alexandrian mathematician, and relies only on the semiperimeter and the lengths of each of the three sides.

Answer: **Hero's formula** (accept *Heron's formula*)

3. Hero's formula is a special case of this similar formula for the area of a cyclic quadrilateral.

Answer: **Brahmagupta's formula**

Tossup 6: Fine Arts (Visual Art)

Fluorescent lights had just been developed at time of this work's creation, which explains the unusual brightness at night. A yellow door on the right and an orange building on the left also add brightness to this painting, and an advertisement for Phillies cigars sits atop the main building. One figure has his back turned to the viewer, while two other patrons face the worker behind the counter. Name this painting of a diner and its customers by Edward Hopper.

Answer: **Nighthawks**

Bonus 6: Science (Astronomy)

Answer these questions about some locales within our solar system that just might harbor extraterrestrial life.

1. This planet's moon Enceladus has sub-surface liquid water and geysers powered by internal heat, making it a possible location.

Answer: **Saturn**

2. This largest moon of Saturn seems to have the perfect conditions for organic chemistry with a methane atmosphere and lakes of liquid hydrocarbons.

Answer: **Titan**

3. The most promising prospect, however, is this smallest of the Galilean moons, which boasts a thin oxygen atmosphere and immense oceans beneath a surface of ice.

Answer: **Europa**

Tossup 7: Science (Chemistry)

Its heaviest named element was predicted by Mendeleev, and is radioactive with a longest half-life around 8 hours. The only group in the periodic table to have solid, liquid, and gaseous elements at standard temperature and pressure, its elements are highly reactive, and all exist as diatomic molecules. Name this group containing astatine, iodine, bromine, chlorine, and fluorine.

Answer: **Halogens**

Bonus 7: Social Studies (U.S. History)

While Jamestown may have been the first permanent settlement in what is now the United States, the short-lived Roanoke Colony preceded it by roughly 20 years.

1. Queen Elizabeth I gave this famed explorer the right to establish a colony on the New World's coast.

Answer: **Sir Walter Raleigh**

2. This baby, the granddaughter of Colony leader John White, was the first English child born in the Americas.

Answer: **Virginia Dare**

3. When White returned in 1590 to find the area deserted, one of the few clues was this word etched into a nearby tree.

Answer: **Cro**

Tossup 8: Miscellaneous (Interdisciplinary)

It is the singular feminine demonstrative pronoun in French. It can be a term for a transparent sheet that traditional animation is drawn on. It is also a single hexagonal compartment of a honeycomb or an updraft in a thunderstorm. In chemistry, it describes a two half-reactions separated to create a current between them. Name this term, named after the ones that monks inhabit by Robert Hooke, for the smallest thing able to carry out all the functions of life.

Answer: **cell** (*all clues with different spellings are pronounced identically*)

Bonus 8: Fine Arts (Music)

Identify the following German Romantic composers.

1. This composer's first symphony is often referred to as "Beethoven's Tenth," and he made a name for himself with his German Requiem and namesake Lullaby.

Answer: **Johannes Brahms**

2. This composer of the Scottish and Italian Symphonies was unhappy with his fifth symphony, the Reformation, composed for the 300th anniversary of the Augsburg Confession.

Answer: **Felix Mendelssohn-Bartholdy**

3. When this composer of the Rhenish Symphony and husband to Clara Wieck (*veek*) went insane, Brahms was the only visitor he would accept in the asylum.

Answer: **Robert Schumann**

Tossup 9: Math (Geometry) -- Computational (30 Seconds)

Find the area of a hexagon in which the perpendicular distance between opposite sides is 14.

Answer: **98 root 3**

Bonus 9: Science (Biology)

Identify these functional units of the human body systems.

1. This unit of the nervous system is a single cell consisting of a body, dendrites, and an axon.

Answer: **neuron** (*prompt on nerve cell*)

2. This unit of the excretory system consists of proximal and distal convoluted tubules, a Loop of Henle, and a Bowman's capsule surrounding the glomerulus.

Answer: **nephron**

3. This unit of the muscular system is only found in striated tissue, and includes all overlapping actin and myosin filaments between adjacent Z-lines.

Answer: **sarcomere**

Tossup 10: Literature (Mythology)

Hesiod states that this figure was given the talent of needlework by Athena and the power of persuasion by Hermes. According to Greek mythology, this figure was forged by Hephaestus as a punishment for Prometheus tricking Zeus and, despite Prometheus's pleading, Epimetheus marries her. The Greeks consider her to be the first woman, and after a certain action, she leaves only hope in the jar she carries with her. Name this woman whose curiosity resulted in her releasing evils upon mankind from her eponymous "box".

Answer: **Pandora**

Bonus 10: Miscellaneous (Entertainment)

Few musicians have been as influential as the guitar player from Hibbing, MN.

1. An early icon of the folk movement, some of this singer-songwriter's better known songs are Like a Rolling Stone and The Times They Are-A Changin'.

Answer: **Bob Dylan** (*accept Robert Zimmerman*)

2. In the mid 1960s, Dylan toured Europe with this group backing him up. They went on to produce songs like The Night They Drove Old Dixie Down and The Weight.

Answer: **The Band**

3. Jakob Dylan, Bob Dylan's son, is the lead singer of this alternative band best known for their song One Headlight.

Answer: **The Wallflowers**

HALFTIME

Tossup 11: Science (Earth Science)

Composed mainly of silicon dioxide and aluminum oxide, this type of rock is especially common in the northeastern United States. As evidenced by its large grains, it's an igneous rock that is both felsic and intrusive. Name this type of rock frequently used in buildings and carvings, and that lends its name to the nickname of New Hampshire.

Answer: **Granite**

Bonus 11: Math (Calculus) -- Computational

Evaluate the derivatives of the following functions at $x = 2$.

1. The quantity x squared plus two, quantity squared.
2. Three sine of the quantity πx plus π , close quantity.
3. x over the quantity x squared plus 1, close quantity.

Answers: 1: **48** 2: **-3 pi** 3: **-3/25**

Tossup 12: Literature (Literature)

In one work written by an author from this country, Ambrose Bierce comes to this country to die. It is the native country of only one Nobel Prize winner in Literature. That 1990 winner wrote a non-fiction work about this country's history that examined machismo. Name this country, the setting of *The Old Gringo* and *The Labyrinth of Solitude* by Carlos Fuentes and Octavio Paz respectively.

Answer: **Mexico**

Bonus 12: Fine Arts (Visual Art)

Identify the creators of various Adoration of the Magi paintings for ten points each.

1. He painted many religious themes, including *The Adoration of the Magi*, but is more famous for mythological works like *The Birth of Venus* and *Primavera*.

Answer: **Sandro Botticelli**

2. Though all of the subjects in this Flemish man's *Adoration of the Magi* are clothed, he made himself known for painting nudes, as in *Massacre of the Innocents*.

Answer: **Peter Paul Rubens**

3. This man painted his *Adoration of the Magi* as a triptych. Many of his other paintings, such as *The Garden of Earthly Delights*, are also triptychs.

Answer: **Hieronymus Bosch**

Tossup 13: Math (Algebra) -- Computational (30 Seconds)

In $a + b i$ form, where i is the square root of negative one, give the simplified expansion of $(2+3i)$, quantity cubed.

Answer: **-46 + 9 i**

Bonus 13: Science (Chemistry)

Identify the gas law, from a brief description.

1. Pressure and volume are inversely proportional.

Answer: **Boyle's law**

2. Temperature and volume are directly proportional.

Answer: **Charles's law**

3. This law combines Boyle's law, Charles's law, and Gay-Lussac's law, stating that pressure times volume equals the number of moles times the gas constant times temperature.

Answer: **Ideal gas law**

Tossup 14: Miscellaneous (Sports)

This man was selected to the All-Pac 10 team three times, and was selected in the first round of the 2003 MLB draft. Prior to the 2008 season, he was traded to his current team for minor leaguer Chris Carter. Not even an opening day starter, he quickly gained time in left field and was the most consistent hitter for his team in the first half of the season, which kept them in the AL Central race. His season ended with an injury to his wrist, and likely factor in his team's first round playoff exit to the Tampa Bay Rays. Name this power hitting outfielder for the Chicago White Sox.

Answer: **Carlos Quentin**

Bonus 14: Literature (Literature)

A 1915 work sees the main character living in a room alone, mostly clinging to the ceiling or sleeping under the couch.

1. Identify this work, in which the main character is changed into a large insect.

Answer: **The Metamorphosis** (*do not accept Metamorphoses*)

2. The Metamorphosis was written by this man.

Answer: **Franz Kafka**

3. This is the main character who is mysteriously transformed.

Answer: **Gregor Samsa**

Tossup 15: Social Studies (U.S. History)

This treaty, negotiated with Alexander Baring, helped slow the slave trade, and gave the United States the right to navigate the St. John River. Putting an end to the Aroostook War, it was signed in 1842. Establishing a boundary on Lake Superior, name this treaty that also defined the border between New Brunswick and Maine.

Answer: **Webster-Ashburton Treaty**

Bonus 15: Math (Geometry) -- Computational

Find the following angles, expressed in degrees.

1. The sum of the internal angles in a hexagon.
2. The sum of the external angles in a 10-gon.
3. The measure of one internal angle in a regular 24-gon.

Answers: 1: **720 degrees** 2: **360 degrees** 3: **165 degrees**

Tossup 16: Fine Arts (Music)

One of Rick Mooney's books of etudes for this instrument is subtitled "Thumbs of Steel," humorously referring to the callus that forms when playing in the upper register. Its second lowest string is the bottom line in bass clef. The repertoire for it as a solo instrument includes a Concerto in E Minor by Elgar and one in B Minor by Dvorak, and two by Saint-Saens in addition to The Swan from Carnival of the Animals. Name the instrument for which J.S. Bach wrote 6 unaccompanied suites, always played sitting down by Yo-Yo Ma.

Answer: **violin-cello**

Bonus 16: Social Studies (U.S. History)

Answer some related questions about U.S. History

1. This strong-willed temperance advocate used to smash up bars with a hatchet to get her point across.

Answer: **Carrie Nation**

2. The League of Nations was proposed as part of this President's Fourteen Points

Answer: **Thomas Woodrow Wilson**

3. Wilson was the President of this University located in a New Jersey town of the same name.

Answer: **Princeton University**

Tossup 17: Math (Other) -- Computational (30 Seconds)

Convert the Cartesian coordinates $(\sqrt{3}, 1)$ to polar coordinates.

Answer: **(2, $\pi/6$)**

Bonus 17: Miscellaneous (Interdisciplinary)

Identify the following possessions of Jim Irsay.

1. Irsay is the sole owner of this NFL team which features noted skill Peyton Manning and won Super Bowl 41 over the Chicago Bears.

Answer: **Indianapolis Colts** (*accept either half*)

2. In 2001, Irsay purchased "the roll," a 120 foot long scroll of the original manuscript of this Beat novel featuring Sal Paradise and Dean Moriarty.

Answer: **On the Road**

3. Irsay owns numerous historic guitars, including one owned by this guitarist, famous for the songs "All Things Must Pass" and "Got My Mind Set On You."

Answer: **George Harrison**

Tossup 18: Social Studies (Geography)

It is technically made up of three volcanoes, and it last erupted in 1707. Located near five lakes that are named after it, its name means "everlasting life." Numerous shrines and temples are located in the vicinity of this volcano, which reaches 12388 feet. Name this volcano that women were not allowed to climb until the Meiji Restoration, the tallest point in Japan.

Answer: **Mount Fuji**

Bonus 18: Literature (Literature)

Answer the following about a play, for ten points each.

1. The title refers to one character's relapse into morphine addiction as a result of her son coming down with TB, while her husband is a cheapskate alcoholic.

Answer: **Long Day's Journey into Night**

2. Edmund, the TB-stricken youngest son, is seen as a self-depiction of this author of Long Day's Journey into Night.

Answer: **Eugene O'Neill**

3. This is the name of the family that is depicted in O'Neill's Long Day's Journey into Night.

Answer: **Tyrone family**

Tossup 19: Science (Physics)

It is typically described by the Coulomb approximation, which assumes that surface area does not affect its magnitude. Its "limiting" type is the maximum value before motion takes place, and is equal to the normal force times mu sub s. Name this force that comes in static and kinetic varieties, which resists motion between two bodies.

Answer: **Friction**

Bonus 19: Math (General) -- Computational

Find the following values related to the Fibonacci sequence, which starts 1, 1, 2, 3, 5.

1. Find the eighth number of the Fibonacci sequence.

2. This is the number of prime numbers in the first ten Fibonacci numbers.

3. This is the first number in the Fibonacci sequence above 100.

Answers: 1: **21** 2: **4** 3: **144**

Tossup 20: Literature (Literature)

His most famous novel describes such episodes as the narrator's adventures in San Francisco with Remi Boncoeur and his trip to Mexico with Stan Shepard. A collaboration he produced with William S. Burroughs titled "And the Hippos Were Boiled in Their Tanks" will be published for the first time this Tuesday. Besides writing The Dharma Bums, he is also known for writing his most famous work on sheets of huge tracing paper, which he taped together to form a massive scroll. A Beat Generation writer, identify this author of On the Road.

Answer: **Jack Kerouac**

Bonus 20: Social Studies (World History)

Let's see if you can best the Encyclopedia Britannica, which got the following facts wrong.

1. The EB misquotes the rule from Leviticus 18:16, forbidding marriage with a brother's wife, that this man invoked to annul his marriage to Catherine of Aragon.

Answer: **Henry VIII**

2. The actual birth year of this man, born Josef Dzhugashvili in Georgia, is 1878, but he tricked the EB into making him a year younger after he became dictator of the Soviet Union.

Answer: **Joseph Stalin**

3. The EB wrongly labels this city as capital of the Wu kingdom in 212 AD, but does accurately describe the massacre that took place there when the Japanese army invaded in 1937.

Answer: **Nanking** (accept *Nanjing*)

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Math (Geometry) -- Computational (30 Seconds)**

Give the area of a triangle with vertices (4,1), (2,5), and (1,0). Recall that the area of a triangle can be computed by finding half the magnitude of the cross product of two vectors along its sides.

Answer: 7

Bonus 21: Literature (Mythology)

Hephaestus, arguably the most brutish of the gods, was good with his hands, and not much else. Identify the following about the smith to the gods.

1. Either Zeus or Hera threw Hephaestus off Mount Olympus, and he landed on this island, where he made his forge.

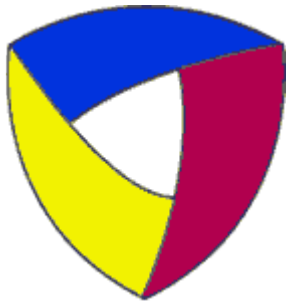
Answer: Lemnos

2. Hephaestus' failed attempt to sleep with this deity led to the birth of Erechtheus.

Answer: Pallas Athena (accept Minerva)

3. In Homer's Iliad, Hephaestus was said to have been married to Aglaea, a member of this trio of deities.

Answer: Graces (accept Charites or Gratiae)



Aegis Questions

**2008 IHSSBCA Kickoff
Round 3**

Tossup 1: Social Studies (U.S. History)

Prior to the events of September 11, 2001 this was the greatest single loss of American civilian life in a non-natural disaster. Occurring on November 18, 1978 in northwestern Guyana, this event was immediately preceded by shootings on the Port Kaituma Airstrip, including the death of Congressman Leo Ryan. Commonly called by the location at which it took place, identify this mass suicide by members of the People's Temple, which spawned the catchphrase "Don't Drink the Kool-Aid."

Answer: Jonestown Massacre

Bonus 1: Literature (Literature)

Name these novels that take place over the span of 24 hours.

1. This Joyce novel about Leopold Bloom is set in Dublin on June 16th, 1904.

Answer: Ulysses

2. This novel by Malcolm Lowry about Geoffrey Firmin is set on the Day of the Dead in 1939.

Answer: Under the Volcano

3. This 1962 Solzhenitsyn work follows the titular prisoner in a Soviet gulag.

Answer: One Day in the Life of Ivan Denisovich

Tossup 2: Math (General) -- Computational (30 Seconds)

Consider y to be a consonant. Given a sack of tiles with letters on them, where each vowel is on twice as many tiles as each consonant, what are the odds of drawing an E from the sack? Express your answer as a reduced fraction.

Answer: 2/31

Bonus 2: Science (Physics)

Answer these questions about superlative substances in nature.

1. These are chemicals whose pH is lower than concentrated H₂SO₄.

Answer: superacid

2. These are substances with zero viscosity, such as very cold helium.

Answer: superfluid

3. These are materials that can scratch diamond, such as rhenium diboride.

Answer: superhard

Tossup 3: Literature (Literature)

Robert Wood suggests in his "Essay on the Original Genius of" this man that he was as illiterate as some of his characters. A poem by Keats references Chapman's translation of him, and this man himself was known for a set of hymns to various deities. One of his most famous works begins "Rage--Goddess, sing the rage of Peleus's son Achilles" and tells of that man's exploits in the Trojan War. Name this wandering minstrel, the creator of The Odyssey and The Iliad.

Answer: Homer

Bonus 3: Social Studies (World History)

Answer these related questions.

1. This banker formed U.S. Steel with Elbert Gary and gave much of his art collection to the Metropolitan Museum of Art.

Answer: **John Pierpont Morgan**

2. Historian Edmund Morgan argued that this 1676 rebellion in Jamestown against Governor Berkeley helped switch labor from indentured servants to slaves.

Answer: **Bacon's Rebellion**

3. About fifty years before Bacon's Rebellion, Francis Bacon wrote this utopian novel about Bensalem and the experiments of the residents of Salomon's House.

Answer: **The New Atlantis**

Tossup 4: Science (Biology)

Members of this kingdom can reproduce asexually by producing spores that form clones, or sexually by a life cycle that goes through haploid, dikaryotic, and diploid stages. Yeasts are a member of this kingdom, whose larger members typically grow long filaments called hyphae, which form a larger mass known as the mycelium. Name this biological kingdom which includes molds and mushrooms.

Answer: **Fungi**

Bonus 4: Literature (Literature)

A 1942 novel tells the story of an alienated French man who kills an Arab man in Algiers.

1. Name this novel, which sees that man convicted of murder largely due to his lack of emotions at his mother's funeral rather than the actual act of murder.

Answer: **The Stranger** (accept *The Outsider* or *L'Étranger*)

2. This Algerian author wrote *The Stranger*.

Answer: **Albert Camus** (*ka-MOO*)

3. This is the name of the character who is on trial to be executed in *The Stranger*.

Answer: **Mersault**

Tossup 5: Social Studies (Geography)

The legislative assembly of the Spanish Basques is located in this town in Biscay, where the Gernikako Arbola, the oak which symbolizes the rights and freedoms of the Basque people. Since the tree's planting in the 14th Century, the town has suffered much, including a bombing by Luftwaffe planes on the 26th of April, 1937. Name this Spanish town, the destruction of which Pablo Picasso immortalized in one of his most famous paintings.

Answer: **Guernica**

Bonus 5: Math (Calculus) -- Computational

Find the following limits, or state that the limit does not exist.

1. The quantity sine of x, close quantity, over x, as x approaches 0.

2. The quantity x squared plus 2, close quantity, over the quantity 5x squared minus 5x, as x approaches infinity.

3. One over x, as x approaches 0.

Answers: 1: **1** 2: **1/5** 3: **does not exist**

Tossup 6: Fine Arts (Visual Art)

His "On the Threshold of Liberty" features a cannon pointing at what appear to be pictures of random environments on a wall. He is also remembered for his strategic placement of a green apple over the face of a man in a bowler hat. Creating one painting of a train coming directly out of a fireplace, identify this Belgian artist responsible for "Time Transfixed" as well as "The Treachery of Images", a picture of a pipe with subtext that reads "Ceci n'est pas une pipe."

Answer: **René Magritte**

Bonus 6: Science (Earth Science)

Identify these terms related to the measurement of earthquakes.

1. Developed by a Cal Tech professor, this most well known scale uses a base-10 logarithmic scale to measure the magnitude of an earthquake.

Answer: **Richter Scale**

2. These machines are instrumental to the Richter scale, as they measure waves sent through the ground by an earthquake.

Answer: **Seismometers** (prompt *Seismographs*)

3. Often confused with the Richter scale, this scale that measures an earthquake's intensity was revised by Frank Neumann and Harry Wood.

Answer: **Modified Mercalli Scale**

Tossup 7: Science (Chemistry) -- Computational (30 Seconds)

A buffer is composed of two components: HA and A minus. Find the acid dissociation constant of HA if the pH of a buffered solution is 4.0 when the concentration of A minus in the solution is 2.0 molar and the concentration of HA is 0.2 molar.

Answer: **1.0 x 10⁻³** (or *0.001*)

Bonus 7: Social Studies (U.S. History)

Given clues, identify the following trails prominent in American history.

1. The most well known of all the trails, this 2,000 mile long stretch started in Independence, MO and led settlers towards the Columbia River.

Answer: **Oregon Trail**

2. The U.S. military used this trail during the Mexican-American War, and many travelers used the Cimarron Cutoff to get to its namesake city.

Answer: **Santa Fe Trail**

3. This cattle trail began near San Antonio and went north to Abilene, KS, where there was a depot for the Kansas Pacific Railroad.

Answer: **Chisholm Trail**

Tossup 8: Miscellaneous (Entertainment)

A running gag throughout this show is the subtle appearance of a pineapple in every episode. Taking place in Santa Barbara, CA one of the co-owners of the title business also works for a pharmacy company. The main character's father is a former cop who taught him to be especially observant, which allows him to appear as if he has supernatural powers. Name this USA show in which James Roday stars a police consultant with phony clairvoyant powers.

Answer: **Psych**

Bonus 8: Fine Arts (Music)

The third of them features strings only, while the penultimate one of them includes a lengthy harpsichord cadenza.

1. Name this set of six instrumental works, written for the margrave Christian Ludwig.

Answer: **Brandenburg Concertos**

2. This Baroque composer wrote the Brandenburg concertos and who probably played that harpsichord cadenza.

Answer: **Johann Sebastian Bach**

3. Bach published this 1722 set of 24 preludes and fugues - one in each major and minor key - for keyboard instruments.

Answer: **The Well-Tempered Clavier**

Tossup 9: Math (Geometry) -- Computational (30 Seconds)

Find the volume of a cube with an internal diagonal of $5\sqrt{3}$.

Answer: **125**

Bonus 9: Science (Chemistry)

Given an ion, identify its oxidation number.

1. Fluoride

Answer: **-1**

2. Ammonium

Answer: **+1**

3. Borate

Answer: **-3**

Tossup 10: Literature (Literature)

In this novel, Mademoiselle Reisz counsels a much younger protagonist in the proto-feminist ways of the independent woman. Adèle Ratignolle acts as a perfect wife and mother, a foil to the main character, while Alcée Arobin and Robert Lebrun serve as a means of sexual exploration to her. Taking place in Creole Louisiana, identify this work in which Edna Pontellier eventually drowns herself, written by Kate Chopin.

Answer: **The Awakening**

Bonus 10: Miscellaneous (Entertainment)

There are so many songs that you would easily recognize upon hearing them at a sporting event or dance, but can you remember who performed them?

1. "Get Ready for This" is one of the hit songs by this eurodance group from Amsterdam, featuring vocals by rapper Ray Slijngaard.

Answer: **2 Unlimited**

2. This German group had a huge 2006 hit, a cover of Maggie Reilly's "Everytime We Touch."

Answer: **Cascada**

3. This man performed "Rock and Roll, Part 2," also called "The Hey Song," a song often heard at sporting events after the home team scores.

Answer: **Gary Glitter** (accept *Paul Francis Gadd*)

HALFTIME

Tossup 11: Science (Astronomy)

The mass of all its objects combined is less than a tenth of the Earth's mass, and many of its objects are in binary systems, including Charon. It is located about 30 to 55 astronomical units from the sun, and Neptune's orbital resonances cause certain regions in it to be sparsely populated. Name this region of trans-Neptunian objects which includes Pluto.

Answer: **Kuiper belt**

Bonus 11: Math (Algebra) -- Computational

Given x equals $1 - 3i$ and y equals $2 + i$, calculate the following, expressing your answer in $a + bi$ form when appropriate.

1. a plus b .
2. a times b .
3. The complex modulus of a divided by b .

Answers: 1: **3 - 2i** 2: **5 - 5i** 3: **root 2**

Tossup 12: Literature (Literature)

One character in this work hangs himself in an attic, the church choir director Simon Stimson. Another character decides to relive her 12th birthday after dying in childbirth. It has three acts: "Daily Life," "Love and Marriage," and "Death." Staged with no scenery or props, it tells the story of George Gibbs and Emily Webb of Grovers Corners, New Hampshire. Featuring lots of meta-theatrical devices, identify this play featuring a Stage Manager for a narrator, written by Thornton Wilder.

Answer: **Our Town**

Bonus 12: Fine Arts (Visual Art)

Identify these related artists for ten points each.

1. Water lilies were a frequent subject for this French painter of Impression: Sunrise.

Answer: **Claude Oscar Monet**

2. Sunflowers appear often in the works of this Dutchman, who is also famous for The Potato Eaters.

Answer: **Vincent Willem van Gogh**

3. Irises and jack-in-the-pulpits appear often in the abstract pictures of desert flowers that made this American woman famous.

Answer: **Georgia O'Keeffe**

Tossup 13: Math (General)

This number is equal to i plus i times the square root of i , all over i . Its infinite tetrade is equal to its square. One plus this number is known as the silver ratio, named because its relationship to the Pell numbers is analogous to that between the golden ratio and Fibonacci numbers. One approximation of it is $99/70$. Give this number, also called Pythagoras's constant because one of his ancient followers proved that it is irrational, the length of the hypotenuse of a right isosceles triangle with a leg of length one.

Answer: **square root of two**

Bonus 13: Science (Biology)

It is responsible for motor control and coordination.

1. Name this region of the brain whose name is Latin for "small brain," and which is also responsible for integrating sensory information from other parts of the brain.

Answer: **Cerebellum**

2. This smallest, dorsal lobe of the brain is responsible for visual processing.

Answer: **Occipital lobe**

3. The two hemispheres of the brain are connected by this structure which is sometimes severed to alleviate extreme epilepsy.

Answer: **Corpus callosum**

Tossup 14: Miscellaneous (Interdisciplinary)

The one written by Aristotle encouraged remarriage while the one penned by Patrick Henry condemned it, though unsuccessfully. The one from Ben Franklin ironically advised his daughter that wearing jewelry was a "vain and useless pastime." Virgil's first one asked that the Aeneid be burned and Napoleon's second one requested that his hair be shaved off and distributed to friends. The most famous one, however, remains Shakespeare's in which his "second best bed" is the only item bequeathed to his wife, Anne Hathaway. Identify this formal legal document in which one outlines what will happen to his possessions and whatnot after they die.

Answer: **Last Will and Testament**

Bonus 14: Literature (Literature)

Since everybody seems to be going green these days, let's join them. Answer these ecology minded literature questions.

1. Esther Greenwood is a protagonist who could probably save some electricity by cutting back on her shock treatments in this Plath novel.

Answer: **The Bell Jar**

2. Unless this Fireside poet stops burning wood and spewing soot in the atmosphere, his poem "Snow-Bound" will become a thing of the past.

Answer: **John Greenleaf Whittier**

3. Graham Greene doesn't live up to his surname in this novel that shamelessly promotes taking long trips all over Mexico just like the Whiskey Priest.

Answer: **The Power and the Glory**

Tossup 15: Social Studies (Other)

This man compiled several Teacher's Word Books of frequently encountered words to be used with children. That intelligence facilitates the number of neural bonds formed by experience between perceived stimuli and emitted responses is his theory of connectionism. The fact that stimuli-response sequences followed by pleasure get "stamped in" and that sequences followed by pain get "stamped out" is his Law of Effect. Name this author of Animal Intelligence, who put cats into puzzle boxes to test their ability to learn.

Answer: **Edward Thorndike**

Bonus 15: Math (General) -- Computational

Give the probability of the following occurring for a fair two-sided coin. Express answers as reduced fractions.

1. You get exactly one head in two flips.
2. You get exactly two heads in three flips.
3. You get three or more heads in four flips.

Answers: 1: 1/2 2: 3/8 3: 5/16

Tossup 16: Fine Arts (Music)

In 1945, this man joined Charlie Parker's quintet, and ten years later, his first great quintet featured John Coltrane on tenor sax. He worked with Gil Evans on albums such as Sketches of Spain, but his most famous work came in 1959 with Bill Evans on piano for songs such as "Freddie Freeloader" and "So What." Name this jazz trumpeter, famous for the albums Birth of the Cool and Kind of Blue.

Answer: Miles Davis

Bonus 16: Social Studies (World History)

The Mexica Tenochca, the Acolhuas of Texcoco and the Tepanecs of Tlacopan, together made up one of the most powerful presences in Mesoamerica.

1. Identify the common name for the alliance of these three groups.

Answer: Aztec Empire (accept Aztec Triple Alliance)

2. The Aztecs are commonly associated with this seat of government power, located where present day Mexico City is.

Answer: Tenochtitlan

3. This is the language that the people of the Aztec Empire spoke.

Answer: Nahuatl

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

There is a room of leaky pipes. It takes Mario thirty minutes to fix it, and Luigi 20 minutes. How long does it take them to fix it if they work together?

Answer: 12 minutes

Bonus 17: Miscellaneous (Entertainment)

In honor of the late Paul Newman, identify these movies he starred in.

1. In this 1967 movie, Newman played the title prisoner in a Florida jail. It is best remembered for Newman delivering the line, "What we've got here is a failure to communicate."

Answer: Cool Hand Luke

2. Newman paired up with Robert Redford for this 1969 Western that featured the two actors in the title roles as bank robbers.

Answer: Butch Cassidy and the Sundance Kid

3. Butch Cassidy and the Sundance Kid was directed by George Roy Hill, who also directed this 1977 Newman comedy in which the actor starred as Reggie Dunlop, a player and coach for the Charlestown Chiefs, a minor league hockey team.

Answer: Slap Shot

Tossup 18: Social Studies (World History)

His parents' land was confiscated by the government during his youth, and early in his adult life he wrote works with Ivan Vyskocil. He frequently found himself in jail, especially after 1968's Prague Spring, during which his plays were banned. Always the political activist, his country would later join NATO during his reign. Name this president of the Czech Republic and previously Czechoslovakia, a position he reached because of the Velvet Revolution.

Answer: **Vaclav Havel**

Bonus 18: Literature (Literature)

Answer these questions about literary things related to the phrase "Arma virumque cano."

1. This is the English translation of the Latin phrase.

Answer: **I sing of arms and the man** (*accept any combination of the words with the same meaning*)

2. This epic poem begins "I sing of arms and the man."

Answer: **Aeneid**

3. This playwright's play "Arms and the Man" is about the Bulgarian Raina Petkoff, her betrothed Sergius Saranoff and a Swiss soldier named Bluntschli.

Answer: **George Bernard Shaw**

Tossup 19: Science (Physics)

When it is known through the center of mass, other ones of these can be obtained through the parallel axis theorem. It is equal to $m l^2$ for a rod, and one half of it times the rotational speed squared is the rotational kinetic energy of a body. Equal to $m r^2$ for a point mass, name this quantity of rotating bodies, analogous to mass.

Answer: **Moment of inertia** (*accept angular mass*)

Bonus 19: Math (Other)

Identify the answers all related to numbers with certain property.

1. This term marks a number that is equal to the sum of its divisors.

Answer: **perfect number**

2. This is the smallest perfect number.

Answer: **6** ($1+2+3$)

3. None of the perfect numbers observed so far are also this, meaning they are in the form $2n+1$ where n is an integer.

Answer: **odd**

Tossup 20: Literature (Literature)

One of his works was written as a fictionalization of a huge literary revelation he once had in his mother's room. The main character listens to and ridicules tapes of monologues he recorded in his youth, in that work, Krapp's Last Tape. Another of his works is a one-act play with four characters, including Hamm, an old, blind man and not able to stand up, and his servant Clov, who cannot sit down. That play, Endgame, while considered to be one of his best, pales in comparison to his other work featuring the tramps Vladimir and Estragon. Identify this Irish author of Waiting for Godot.

Answer: **Samuel Beckett**

Bonus 20: Social Studies (Geography)

Even in the realm of geography, the Encyclopedia Britannica can make a few goofs.

1. Along with stating the wrong date for the city's founding, the EB incorrectly places the town hall, cathedral, and Gediminas Castle of this capital of Lithuania.

Answer: **Vilnius**

2. The EB erroneously implies that there is only one island by this name, when in fact it is an entire archipelago in the Taiwan Strait with Nangan as the largest member.

Answer: **Matsu Islands**

3. A 12-year-old boy corrected the EB in 2005 by moving the town of Khotyn from Moldova to this larger neighboring country to the east.

Answer: **Ukraine**

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Fine Arts (Other)**

While this man was born in Kenosha, Wisconsin, he would rise to his greatest notoriety due to events which supposedly occurred in New Jersey. A superb actor and filmmaker, his work won numerous awards, including the Palme d'Or at Cannes for his version of Othello. However, he is more famous for a film loosely based on the life of William Randolph Hearst, and a radio broadcast of War of the Worlds. Name this lion of 20th Century American entertainment.

Answer: **Orson Welles**

Bonus 21: Literature (Mythology)

Geirrod tried to trap him, and the berserkers worshipped one of his sons.

1. Identify this Norse deity, the owner of Mjollnir.

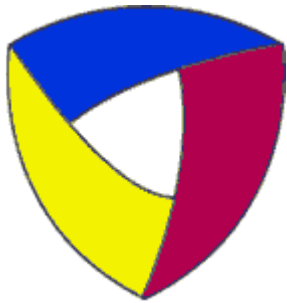
Answer: **Thor**

2. After Loki cut off the hair of this goddess, Thor's wife, Thor threatened to smash Loki unless his wife's hair was restored.

Answer: **Sif**

3. At Ragnarok, Thor will slay and be slain by this large creature which he had almost caught on a prior fishing trip.

Answer: **Jormungandr** (*accept Midgard serpent*)



Aegis Questions

**2008 IHSSBCA Kickoff
Round 4**

Tossup 1: Science (Astronomy)

Some candidates for its composition include WIMPs such as the Lightest Supersymmetric Particle and MACHOs. Evidence to support its existence includes the Bullet Cluster and Galactic rotation curves. Using gravitational lensing, one can reconstruct its location and density based on the bending of light that passes near it. Making up about a quarter of the mass-energy of the universe, name this indirectly observable phenomenon that gets its name because it does not give off electromagnetic radiation.

Answer: **dark matter**

Bonus 1: Social Studies (U.S. History)

It's not cold in here, but this bonus is about Aaron Burr!

1. Burr is perhaps most remembered for having shot and killed this first Secretary of the Treasury during a duel in New Jersey.

Answer: **Alexander Hamilton**

2. After Burr fled New York, he planned an invasion of this country, which led to him being brought up on charges of treason.

Answer: **Mexico**

3. Burr was betrayed by this American officer, who was actually a spy for Spain.

Answer: **General James Wilkinson**

Tossup 2: Literature (Literature)

The author of this work had his interest sparked enough by a three-hundred word New York Times article to take a cross country trip of over 1,600 miles. Two ex-convicts on parole, Richard Hickock and Perry Smith, hatch a brilliant plan to commit a robbery and then start a new life in Mexico. The work details how this all goes awry when they discover their intended target did not in fact, keep a safe full of cash. Detailing the 1959 murder of a wealthy farmer, his wife and two children in Holcomb, Kansas, identify this 1966 work of nonfiction by Truman Capote.

Answer: **In Cold Blood: A True Account of a Multiple Murder and Its Consequences**

Bonus 2: Math (General) -- Computational

You have three red marbles, four green, and one blue marble in a bag. Find the probability of the following, expressed as a reduced fraction.

1. You pull two marbles out of the bag, without replacement, and both are red.

2. You pull three marbles out of the bag, without replacement, and none is blue.

3. You pull four marbles out of the bag, without replacement, and all four are green.

Answers: 1: **3/28** 2: **5/8** 3: **1/70**

Tossup 3: Social Studies (World History)

This man's father was an adviser to Menilek II, and early in his political career he was governor of Sidamo. With a name meaning "Might of the Trinity," this man became ruler of his nation when Empress Zauditu died. He ruled until 1974, when he was deposed and lived in house arrest until his death a year later. Name this mid-20th century leader of Ethiopia.

Answer: **Haile Selassie I** (accept *Ras Tafari Makonnen*)

Bonus 3: Fine Arts (Visual Art)

Answer the following about the creators of some sculptures of David for ten points each.

1. This man created the most well-known David sculpture. The marble nude portrays David holding his sling, before the battle with Goliath.

Answer: **Michelangelo**

2. In the 15th century, this renaissance man created a nearly nude, bronze David standing on the head of Goliath and holding the giant's sword.

Answer: **Donatello**

3. Donatello is also famous for a statue of this slayer of dragons. The statue wears full medieval armor and was a tribute to armorers in Orsanmichele.

Answer: **St. George** (*do not accept St. George and the Dragon*)

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

Find the area of a square where the distance between the midpoints of adjacent sides is 3.

Answer: **18**

Bonus 4: Social Studies (Geography)

Identify these world capitals that were planned and built in the last 50 years.

1. Resembling an airplane when viewed from above, this capital is divided by the Monumental Axis and is located about 450 miles from Rio de Janeiro, the city it replaced.

Answer: **Brasilia, Brazil**

2. Completed in 1970 after Hurricane Hattie and a following tidal wave destroyed Belize City, this capital was built far enough inland to avoid another disaster.

Answer: **Belmopan, Belize**

3. Home to both the National Mosque and National Christian Centre, this capital replaced the overcrowded Lagos in 1991, but shanty towns have grown quickly here as well.

Answer: **Abuja Municipal Area Council, Nigeria**

Tossup 5: Fine Arts (Music)

It's not The Rite of Spring, but in 1912, Vaslav Nijinsky's performance of it caused outrage in Paris. That performance was a ballet inspired by a poem of the same name, describing the title character's experiences with nymphs following a nap, written by Stephane Mallarmé (*mal-ar-may*). Name this work, famous for a musical Prelude written by Claude Debussy.

Answer: **Afternoon of a Faun**

Bonus 5: Miscellaneous (Sports)

Answer these questions about some of the new events featured at the Summer Olympics in Beijing.

1. New to this year's games were men's and women's individual events using this kind of bike designed for hilly dirt tracks.

Answer: **BMX**

2. The only pure-swimming event not held in a pool and with no preliminary heats, this race used freestyle rules over its 10 kilometer length.

Answer: **Marathon swim**

3. This 3000 meter event that requires the runners to jump over 28 barriers and clear 7 water pits around the track saw women compete for the first time.

Answer: **Steeplechase**

Tossup 6: Social Studies (U.S. History)

Costing over \$300,000 when it was built, it was over 200 feet long and carried 50 guns. Under the command of Isaac Hull it defeated the Guerriere, which is where it received its nickname, as enemy sailors thought their shots could not penetrate this ship. Paul Revere crafted some of the ironwork for it, and Oliver Wendell Holmes wrote a poem about it. Christened in 1797, name this ship, the oldest commissioned warship still afloat.

Answer: **U.S.S. Constitution** (*prompt on Old Ironsides*)

Bonus 6: Math (Geometry) -- Computational

Find the areas of the following figures.

1. A regular hexagon with sides of length 2.
2. A square inscribed in a circle of diameter 4.
3. One face of a tetrahedron whose surface area is four times the length of an edge.

Answers: 1: **6 root 3** 2: **8** 3: **root 3 / 12** (*accept 1 / 4 root 3*)

Tossup 7: Miscellaneous (Interdisciplinary)

It is the name of the first single ever released by The Police, and also the title of the eleventh episode of Heroes, in which we see the Haitian speak for the first time. Also sharing this name is a series of PC and console games prominently featuring a mutant named Harold, remnants of the U.S. Government dubbed "The Enclave" and a series of underground "vaults"; the third installment of which was released on Oct. 28. Identify this, most commonly defined as the residual radiation hazard from a nuclear explosion.

Answer: **Fallout**

Bonus 7: Literature (Literature)

Identify these novels written in the early 20th century and set in Chicago.

1. This 1906 muckraking novel follows Jurgis Rudkus in the Back of the Yards neighborhood.

Answer: **The Jungle**

2. The protagonist and title character's last name is Meeber in this Dreiser novel published in 1900.

Answer: **Sister Carrie**

3. It was supposed to be the second of the Epic of the Wheat trilogy, but Norris never wrote "The Wolf" to follow this 1903 novel about the Board of Trade.

Answer: **The Pit**

Tossup 8: Math (Other) -- Computational (30 Seconds)

Convert the following number from decimal to binary: 153.

Answer: **1 0 0 1 1 0 0 1**

Bonus 8: Science (Biology)

It is produced in the pancreas, in the beta cells of the Islets of Langerhans.

1. Name this hormone whose absence causes diabetes.

Answer: **Insulin**

2. Insulin directs cells to stop using fat for energy, and to store glucose in this polysaccharide sometimes called "animal starch."

Answer: **Glycogen**

3. This hormone causes cells to convert glycogen back into glucose, and functions as the opposite of insulin.

Answer: **Glucagon**

Tossup 9: Literature (Mythology)

Along with his faithful friend Achates and his son Ascanius, this progeny of Anchises and Venus made a noteworthy escape. Consequently, he traveled to Thrace, Crete, Epirus, Sicily, and Cumae, where he visited the underworld, among other destinations. While his first wife Creusa died in the aforementioned escape, he later defeated Turnus to win Lavinia's hand in marriage. Also having a notable rendezvous with the Carthaginian Queen Dido, identify this Trojan hero who is the focus of a work by Vergil.

Answer: **Aeneas**

Bonus 9: Math (General)

Answer these questions about mathematical logic.

1. This namesake logic-based math uses the values "true" and "false," along with operations like "and," "or," and "not."

Answer: **Boolean algebra**

2. There are exactly this many distinct binary Boolean operators, a fact which can be determined by combinatorics.

Answer: **16**

3. These namesake laws state that, for example, the negation of the quantity P and Q is the same as the OR of the quantities "not P" and "not Q."

Answer: **De Morgan's laws**

Tossup 10: Science (Physics)

The value of the work function for a material determines the threshold frequency for this effect, under which it does not occur. It was first observed by Becquerel and Hertz, and its explanation relied on the then-new concept of quantized energy called photons. In this effect, electrons are ejected from metal when struck by light of a certain frequency. Also known as the Hertz effect, name this phenomenon first described completely by Einstein.

Answer: **Photoelectric effect** (*accept Hertz effect before mentioned*)

Bonus 10: Literature (Literature)

The metaphysical poets were a loose grouping of poets who were focused on, well, metaphysical concerns.

1. Perhaps the most famous metaphysical poet was this preacher who penned a collection of Holy Sonnets including number ten, which begins with the words "Death, be not proud..."

Answer: **John Donne**

2. Donne greatly influenced this Welsh poet and playwright who penned Under Milk Wood as well as "Do not go gentle into that good night."

Answer: **Dylan Thomas**

3. Donne also influenced this Anglo-American author of The Age of Anxiety and The Ascent of F6.

Answer: **W(ystan) H(ugh) Auden**

HALFTIME

Tossup 11: Literature (Literature)

A train ride in 1966 inspired his poem "Iron Horse" which was included in the collection "The Fall of America." Philip Glass's Sixth Symphony is based on his Plutonian Ode. A 1957 obscenity case concerns the publication of his most famous work by the San Francisco-based City Lights Bookstore, owned by Lawrence Ferlinghetti. Another of his poems is a five-part elegy for a woman who died in 1956, his mother Naomi, and is titled Kaddish. Identify this man, whose most famous poem, dedicated to Carl Solomon, is entitled Howl?

Answer: **Allen Ginsburg**

Bonus 11: Miscellaneous (Entertainment)

Identify the following songs about heroes.

1. This popular Bette Midler song is know for its opening lyrics, "Did you ever know that you're my hero?"

Answer: **You Are the Wind Beneath My Wings**

2. The titular musician in this Foreigner song "took one guitar" that got him to the top with "stars in his eyes."

Answer: **Jukebox Hero**

3. Covered by Green Day and David Bowie, among others, this 1970 John Lennon song is one of his most political, describing how they keep you "doped with religion and sex and TV."

Answer: **Working Class Hero**

Tossup 12: Math (General)

For a graph, this man's namesake path traverses each edge exactly once. His namesake identity states that e to the i $\pi = -1$. His circle is also known as the nine-point circle, as it connects nine points relevant to a given triangle. His line connects a triangle's circumcenter, orthocenter, centroid, and the center of the aforementioned circle. Name this mathematician, namesake of the notation e .

Answer: **Leonhard Euler** (*Oiler*)

Bonus 12: Science (Astronomy)

Identify the planets that the following moons orbit.

1. Io, Ganymede, and Callisto.

Answer: **Jupiter**

2. Titania and Oberon.

Answer: **Saturn**

3. Dysnomia, formerly known as Gabrielle.

Answer: **Eris**

Tossup 13: Miscellaneous (Interdisciplinary)

One named Roetzl is a Czech botanist who discovered many species of orchids. A saint by this name from Nursia was very important in establishing rules for monastic life. A reagent containing blue copper 2+ ions that are reduced by sugars is named after another. Also the surname of the author of The Chrysanthemum and the Sword as well as Patterns of Culture, give this name, the one assumed by Joseph Ratzinger in 2005 when he became pope.

Answer: **Benedict**

Bonus 13: Fine Arts (Music)

Identify these musical instruments that aren't celebrated nearly enough.

1. Producing a tone somewhere between the trumpet and French horn, this cornet cousin was made a jazz staple by Miles Davis, though its greatest player is still Chuck Mangione.

Answer: **flugelhorn**

2. Now more popular in the Far East than in its native Italy, the modern version of this instrument is a hollow, egg-shaped vessel with 8 fingerholes, 2 thumbholes, a mouth tube, and a distinctly squeaky sound.

Answer: **ocarina**

3. Invented by Ben Franklin and featured in compositions by Mozart and Beethoven, this instrument consists of a rotating spindle of glass bowls that produce tones when touched by the player's moistened fingers.

Answer: **glass harmonica** (accept *armonica*, *hydrocrystalophone*)

Tossup 14: Science (Chemistry)

He named hydrogen and oxygen, and used a calorimeter to show respiration produces energy. One of the creators of the original metric system, he showed that phlogiston does not exist. A tax collector in Paris, he was executed by guillotine during the French Revolution. Name this French chemist who formulated the law of conservation of mass.

Answer: **Antoine Lavoisier**

Bonus 14: Social Studies (Current Events)

Pirates aren't just funny historical figures! They still exist today, as evidenced by their raiding of a ship in September 2008.

1. The ship, bound for Kenya, originated from this European country.

Answer: **Ukraine**

2. Pirates attacked the Ukrainian vessel in waters off the coast of this East African country.

Answer: **Somalia** (accept *Somali Republic*)

3. One theory is that the weapons on board the ship were eventually going to be sold to people in this country, whose Darfur region has seen genocide for the past several years.

Answer: **Republic of the Sudan**

Tossup 15: Fine Arts (Visual Art)

One of this type of animal lies on the bed of the Venus of Urbino, while another is seen standing by the river in Constable's The Haywain. In The Luncheon of the Boating Party, Renoir depicts a woman playing with one, and another sniffs at the lunch of a small party in Sunday Afternoon on the Island of La Grande Jatte. Identify this animal, used to represent loyalty and protection in works like The Arnolfini Wedding and Las Meninas, a type of domestic canine.

Answer: **dog** (accept *reasonable equivalents*)

Bonus 15: Science (Physics)

The SI, or metric, system uses seven base units to define all units of measurement.

1. The base unit of temperature is this absolute scale.

Answer: **Kelvin**

2. Electric current is measured in these units, defined as one coulomb of charge per second.

Answer: **Ampere** (accept *amp*)

3. Luminous intensity is measured by this base unit, equal to one lumen per steradian.

Answer: **Coulomb**

Tossup 16: Social Studies (U.S. History)

This amendment mandates that congress must convene on January 3rd unless otherwise decided.

In addition, this amendment states how a president is chosen if one is not properly elected by inauguration day, such as was almost the case with George Bush and Al Gore in 2000. Until the passing of this amendment, new terms for elected officials started in March of the following year, rather than the January date we adhere to now. Name this amendment that lessens the time between election and swearing in, shortening its namesake "lameduck period".

Answer: **20th Amendment to the Constitution** (*Prompt on lame duck*)

Bonus 16: Math (Calculus) -- Computational

Find the derivatives of the following functions, at x equals negative one.

1. Arctangent of 3x.

2. 2 over the quantity x squared plus 1, close quantity.

3. Natural log of the quantity x plus 5.

Answers: 1: **$\frac{3}{10}$** 2: **$\frac{1}{4}$** 3: **$\frac{1}{4}$**

Tossup 17: Science (Biology)

Attached to the vastus intermedialis, medialis, and lateralis, this bone sits between two epicondyles. This is the largest of the sesamoid bones, so classified because it is completely embedded within a tendon. With a base situated above its apex, it functions primarily to increase the angle at which the quadriceps tendon acts on the femur, assisting in leg extension. Name this bone that protects the knee.

Answer: **patella** (or *kneecap*)

Bonus 17: Literature (Mythology)

At night, he fights Apep in the underworld, and in the Book of the Dead, he is the "Lord of the Northern Sky."

1. Identify this god of chaos and husband of Nephthys.

Answer: **Seth** (accept *Setekh* or *Setesh*)

2. In an eighty-year fight, Set tore out the left eye of this nephew of his, but lost a foreleg in the process.

Answer: **Horus** (accept *Har*)

3. In one story, Seth became the voice of thunder after going to live with this god.

Answer: **Ra** (accept *Re* or *Phra*)

Tossup 18: Math (Algebra) -- Computational (30 Seconds)

Calculate the cross product of the two vectors (1, 2, 3) and (2, 4, 5).

Answer: **(-2, 1, 0)**

Bonus 18: Social Studies (World History)

According to the late historian Thomas A. Bailey, there have actually been 9 world wars; identify the first three from brief descriptions.

1. Ended by the Treaty of Utrecht and encompassing Queen Anne's War in North American, this war was a conflict between the Bourbons and Habsburgs that finally placed Philip V on the disputed throne.

Answer: **War of the Spanish Succession**

2. Begun when Prussia refused to recognize the ascendancy of Maria Theresa to the Habsburg throne, this war saw fighting in Canada and India and was ended by the Treaty of Aix-la-Chapelle.

Answer: **War of the Austrian Succession**

3. Ending just three years before the War of Spanish Succession began, this war secured French control of Haiti and included William of Orange's invasion of England, but it severely harmed the prestige of Louis XIV.

Answer: **War of the League of Augsburg** (accept *Nine Years' War*, *War of the Grand Alliance*)

Tossup 19: Literature (Literature)

In this work, the death of Aeschere is prompted by an earlier killing, and the protagonist finds that man's head in an enemy's home. Earlier in his life, the protagonist had raced Breca in a swimming contest but had to fend off sea monsters along the way. That title hero of the Geats and one-time user of the sword Hrunting ends up finally being killed at an old age by a dragon. Name this old English epic poem about the slayer of Grendel.

Answer: **Beowulf**

Bonus 19: Science (Chemistry)

Identify these products of uranium-238's decay.

1. The loss of an alpha particle transforms uranium-238 into the 234 isotope of this element, considered the best alternative fuel for fission reactors.

Answer: **Thorium**

2. After four more transmutations, thorium-234 becomes the longest-lived isotope of this alkaline earth metal, first extracted from pitchblende by the Curies.

Answer: **Radium**

3. Another alpha decay changes radium-226 into an isotope of this gas with a half-life of just 4 days.

Answer: **Radon**

Tossup 20: Social Studies (Other)

This company was founded in Texas in 1984 as "PC's Limited". They had their IPO in 1988 for 8.50 a share, a far cry from their current position in the Fortune 500. That same year the company changed its name to what it is today, although in 2003 they swapped out the "Computer Corporation" ending in favor of simply "Inc." They gained a lot of attention in the 2000's for their commercials and also for their buyout of Alienware. Dude, name this computer company famous for their inexpensive equipment.

Answer: **Dell**

Bonus 20: Literature (Literature)

Identify the crimes committed by these fictional characters.

1. Jean Valjean is only trying to help his family but still receives a 5-year sentence for this crime in Les Misérables.

Answer: **stealing a loaf of bread** (*accept clear knowledge equivalents*)

2. In the play Oedipus Rex, Oedipus exiles himself from Thebes when he learns that he committed this specific crime some 12 years earlier.

Answer: **patricide** (*accept killing his father, prompt on murder*)

3. Although he also commits the crime of sex, Winston Smith is arrested and tortured by O'Brien in Orwell's 1984 for keeping a diary, which is this type of crime.

Answer: **thoughtcrime** (*accept crimethink*)

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Miscellaneous (Entertainment)**

As it begins, you learn that some member of the Villain's International League of Evil, or V.I.L.E. has stolen some priceless world treasure (an ancient Aztec calendar, the Stanley Cup, the Eiffel Tower elevators, it's all up for grabs), and it's your job as a member of the ACME detective agency to run out, recover the stolen item and nab the perpetrator. Some versions of this computer game included a world almanac in order to make getting around easier. Created by Brøderbund Software, identify this game that asks a question about a woman.

Answer: **Where in the World is Carmen Sandiego?**

Bonus 21: Social Studies (Other)

Answer these questions about some of the more controversial historians of the past century.

1. Widely condemned in the 1940s for claiming President Roosevelt tricked the country into war, this historian earlier argued that the Founding Fathers wrote the Constitution to best serve their own economic interests.

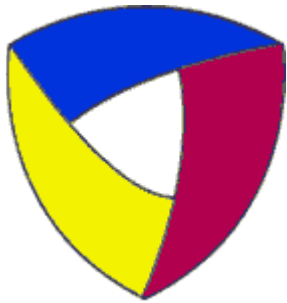
Answer: **Charles A. Beard**

2. Published in 1980, this Howard Zinn nonfiction book includes chapters on the genocide committed by Columbus, U.S. imperialism in the Philippines, and early American feminists.

Answer: **A People's History of the United States**

3. Completed in 2006, this Martin Bernal work uses linguistic evidence to argue that the ancient Egyptians were originally from central Africa and that their influence is responsible for the rise of Greek civilization.

Answer: **Black Athena: The Afroasiatic Roots of Classical Civilization**



Aegis Questions

**2008 IHSSBCA Kickoff
Round 5**

Tossup 1: Social Studies (U.S. History)

A graduate of the Harvard Business School, he also served on the faculty there, and became the first non-family member to be president of the Ford Motor Company. However, he only held that position for a month before joining Kennedy's cabinet. Name this former Secretary of Defense, who has often taken much of the blame for the American involvement in Vietnam.

Answer: **Robert Strange McNamara**

Bonus 1: Literature (Literature)

The Beat Generation took a lot from their poetic precursors.

1. This man, known for his long poem Howl, once had a memorable auditory hallucination of Blake reading poems aloud to him.

Answer: **Allen Ginsberg**

2. A great influence on Ginsberg was this man, who, in addition to having an outstanding beard, wrote such works as Leaves of Grass.

Answer: **Walt Whitman**

3. This Ginsberg poem specifically mentions Whitman, calling him a "childless, lonely old grubber, / poking among the meats in the refrigerator."

Answer: **A Supermarket in California**

Tossup 2: Math (Geometry) -- Computational (30 Seconds)

If the two legs of a right triangle measure 20 and 21, what is the perimeter of the triangle?

Answer: **70**

Bonus 2: Science (Physics)

It was elucidated by general relativity, and its strength is approximately 9.8 meters per second squared on Earth.

1. Name this fundamental force of nature first explained mathematically by Isaac Newton.

Answer: **Gravity**

2. The law of universal gravitation, like Coulomb's law, is this type of law due to its relationship with distance.

Answer: **Inverse-square law**

3. The universal gravitational constant was first determined experimentally by this British physicist, using a torsion balance.

Answer: **Henry Cavendish**

Tossup 3: Literature (Literature)

This author first gained acclaim for early novels like "The Victim" and "Dangling Man". His final novel, Ravelstein profiles his fellow university professor Allan Bloom, while he deals with the death of poet and friend Delmore Schwartz in one of his more noteworthy books, which won the 1976 Pulitzer and contributed to his winning of the Nobel that same year. Identify this author of Humboldt's Gift, Herzog, and The Adventures of Augie March,

Answer: **Saul Bellow**

Bonus 3: Social Studies (Other)

Given a description, identify these terms from law.

1. Originating from tort law, its written form is libel while its verbal form is slander, and to do it to a business is called disparagement.

Answer: **Defamation**

2. Typically, a defendant will receive this with a complaint, and it compels him or her to make an appearance.

Answer: **Summons**

3. While compensatory damages will reward a plaintiff for their actual injuries, these types of damages are intended to actually punish the liable party.

Answer: **Punitive Damages**

Tossup 4: Science (Biology)

These initially bind to the Shine-Dalgarno or Kazak boxes, and are released by release factor proteins. They are powered by GTP, and progress from the N-terminus to the C-terminus. Consisting of 30S and 50S subunits in prokaryotes, and 40S and 60S subunits in eukaryotes, they contain the A, P, and E binding sites, each of which accepts one tRNA and three mRNA base pairs. Name these organelles which translate mRNA into proteins.

Answer: **Ribosome**

Bonus 4: Literature (Literature)

Some works of Literature use a series of documents to depict the action that is going on in the story.

1. This is the name for the form of Literature that uses documents such as letters, newspaper clippings or even, in a more modern context, Instant Messages.

Answer: **Epistolary novel**

2. This Alice Walker novel, focusing on the life of the African American woman during the 1930s is written in the Epistolary form.

Answer: **The Color Purple**

3. This epistolary Goethe novel tells the story of a young artist who falls in love with Lotte, and eventually kills himself.

Answer: **The Sorrows of Young Werther** (*accept Die Leiden des jungen Werthers*)

Tossup 5: Social Studies (World History)

At the 1567 Council of Trent, they were forbidden to be given as a result of financial dealing. Johann Tetzel, who campaigned for the building of St. Peter's Basilica, is remembered for his work with these. They fell out of favor at least partially due to the work of Martin Luther who attacked their sale in his 95 Theses. Name these Catholic Church documents which give remission of sin for good deeds.

Answer: **Indulgence**

Bonus 5: Math (Geometry) -- Computational

Give the volumes of the following figures.

1. A sphere with a great circle of circumference 3π .

2. A cube with diagonal of length $6\sqrt{3}$.

3. A cone with height 4 and whose base has circumference 6π .

Answers: 1: **9π** / 2: **216** 3: **12π**

Tossup 6: Fine Arts (Music)

A symphonic poem by this man was written for the jubilee of Czar Alexander II. His most famous work, an opera, sees the Mongol Kontchak fighting Galitsky and his brother, the title character; one section in that opera is the Polovetsian Dances. Name this Russian composer of In the Steppes of Central Asia and Prince Igor.

Answer: **Alexander Borodin**

Bonus 6: Science (Earth Science)

Baking soda and vinegar can make a pretty big mess, but real volcanoes can be even more volatile.

1. Among volcanoes, this type is probably the most explosive. It is formed by its repetitive eruptions, layering lava on top of ash, on top of lava, etc.

Answer: **Stratovolcanoes** (accept *Composite volcanoes*)

2. One example of a stratovolcano is this small island in the Tyrrhenian Sea, one of the Aeolian Islands, that has been constantly erupting for thousands of years.

Answer: **Mt. Stromboli**

3. This feature of volcanoes occurs when a collapse is triggered by the emptying of the magma chamber beneath the volcano, usually as the result of a large volcanic eruption.

Answer: **Caldera**

Tossup 7: Science (Chemistry)

The Sanderson definition suggests it is related to the inverse of volume, while the Allred-Rochow definition relates it to the Z effective and inverse square of covalent radius. The Mulliken scale utilizes first ionization energy and electron affinity to measure this property, while the better known Pauling scale provides its value for in relation to hydrogen, though most agree that fluorine possesses the highest value. Name this chemical property, the ability of an atom to attract electrons in a bond.

Answer: **Electronegativity**

Bonus 7: Social Studies (U.S. History)

Everyone loves a little Teddy Roosevelt now and again! Answer these questions about one of our more humorous presidents.

1. Roosevelt was actually only elected once -- he initially ascended to the presidency upon the assassination of this president in Buffalo.

Answer: **William McKinley**

2. The 1906 Nobel Peace Prize was awarded to Roosevelt for his work in helping end the Russo-Japanese War, the culmination of which was this 1905 treaty.

Answer: **Treaty of Portsmouth**

3. In 1912, Roosevelt lost the Republican nomination, and instead ran for the Progressive party, which went under this name.

Answer: **Bull Moose Party**

Tossup 8: Miscellaneous (Entertainment)

In 2007 this man toured with John Mayer, who often played with this man on the song Narcoplepsy. That song was off the 1999 album the Unauthorized Biography of Reinhold Messner, the last album he produced with his band before going solo. A previous album with his band, Whatever and Ever Amen, featured a song about an abortion his high school girl friend had. Name this piano rocker who was in a band with two others, not four as the band's name would suggest, and had a hit song with Brick.

Answer: **Ben Folds**

Bonus 8: Fine Arts (Music)

Answer these questions about Shakespeare at the opera.

1. Prior to his successful Falstaff, this man composed the tragic masterpiece Otello, with the Moor as tenor and Jago as baritone.

Answer: **Giuseppe Verdi**

2. Based on Shakespeare's Much Ado About Nothing, this Hector Berlioz opera ends with the title couple, a mezzo-soprano and tenor, signing a marriage contract.

Answer: **Beatrice et Benedict** (accept *Beatrice and Benedict*)

3. A baritone Drunken Poet and non-singing Titania and Oberon are the main characters in Henry Purcell's The Fairy-Queen, which is loosely based on this Shakespeare play.

Answer: **A Midsummer Night's Dream**

Tossup 9: Math (Algebra) -- Computational (30 Seconds)

Give the two roots of the equation $5x^2 + 12x + 4$.

Answer: **-2** and **-2/5**

Bonus 9: Science (Biology)

Until the 90s, taxonomists considered the five kingdoms to be the main divisions of organisms.

1. Archaea, bacteria, and eukarya form the three of these that have supplanted kingdoms as the highest taxonomic rank.

Answer: **Domain**

2. The eukarya domain contains the animal kingdom, which contains many groupings of this level. Examples include chordates, arthropods, and echinoderms.

Answer: **Phylum**

3. On the other end of the spectrum is this rank, larger than species. For humans, it is "homo."

Answer: **Genus**

Tossup 10: Literature (Literature)

One of this authors works, about a lower-class young man who dreams of becoming a scholar, was publicly burnt by the Bishop of Wakefield. Becoming tired of his novels being panned for their purported moral ambiguity, this author began to dedicate himself fully to his poetry, including works like "Channel Firing", "The Darkling Thrush", and "The Convergence of the Twain," a poem about The Titanic. Identify this author who created the fictional locale of Wessex, and used it in such novels as Jude the Obscure and Tess of the D'Urbervilles.

Answer: **Thomas Hardy**

Bonus 10: Miscellaneous (Interdisciplinary)

Name these things related to the archangel Gabriel.

1. Gabriel's salutation at the Annunciation is the source for this prayer in honor of the Virgin, a major part of the rosary.

Answer: **Hail Mary** (or *Ave Maria*)

2. Troy Maxson's brother in this August Wilson play is insane and believes himself to be Gabriel; he even tries to blow a horn to open the gates of heaven for Troy.

Answer: **Fences**

3. After a plane crash, the Bollywood star Farishta takes on the persona of Gibreel in this novel that earned Salman Rushdie a Booker prize and a fatwa.

Answer: **The Satanic Verses**

HALFTIME

Tossup 11: Science (Astronomy)

Haumea (how-MAY-a) was officially recognized as the fifth of these in 2008. Haumea's discovery was officially announced in July 2005, two days before Mike Brown's team announced the discovery of two more current members of this classification, Makemake, as well as the largest known, Eris. Name this astronomical designation, also bestowed upon former planet Pluto in 2006.

Answer: **Dwarf Planet**

Bonus 11: Math (Calculus)

Identify these mathematicians who came close to inventing the calculus before Isaac Newton.

1. While trying to find the area of a circular quadrant, this man effectively integrated the sine function, but he is better known for work on the theory of probability and a namesake Triangle.

Answer: **Blaise Pascal**

2. This friend and colleague of Pascal devised a general procedure for finding the minima, maxima, and tangents of curves and also made contributions to number theory like his Little and Last Theorems.

Answer: **Pierre de Fermat**

3. It is clear from a recently rediscovered codex that this ancient Greek could sum infinite series and understood the concept of limits, but he has always been famous for approximating the value of pi and stating the Law of the Lever.

Answer: **Archimedes of Syracuse**

Tossup 12: Literature (Literature)

His desire to see American fairy tales that American children could relate to led him to write a collection of American folk-tales rooted in Midwestern culture, Rootabaga Stories. He included in it stories about things such as big cities, farms, trains and corn fairies. This Illinois native also won two Pulitzers, one for a biography of Abraham Lincoln and another for his poetry. Penning such lines as "The fog comes / on little cat feet" and "Hog Butcher for the World, / Tool Maker, Stacker of Wheat," identify this poet who wrote some famous poems about Chicago.

Answer: **Carl Sandburg**

Bonus 12: Fine Arts (Visual Art)

Answer the following about art and one of its creators for ten points each.

1. Identify this painting, in which a young woman is seen using a shallow pan to wash a little girl's foot.

Answer: **The Child's Bath** (accept *The Bath*)

2. The Child's Bath is an example of the scenes of typical family life painted by this American Impressionist of the 19th century.

Answer: **Mary Stevenson Cassatt**

3. Mary Cassatt also painted this boldly colored 1894 picture of a man, woman, and child in a rowboat.

Answer: **The Boating Party**

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

Find the area bounded by the y axis, y equals 0, y equals 1, and the graph f of y equals y squared plus 4y minus 2. It may help you to realize that although the function is in terms of y, the fact that all the other boundaries are also in terms of y ensure it is still possible to integrate using the same procedures as functions in terms of x.

Answer: 1/3 square units

Bonus 13: Science (Chemistry)

Identify these constants from chemistry.

1. Usually symbolized by a capital R, the approximate value of this constant is 0.0821 liter-atmospheres per Kelvin per mole.

Answer: ideal gas constant (*accept universal gas constant*)

2. Calculated by dividing the gas constant by Avogadro's number, this constant, represented by small k, is about 1.38×10^{-23} Joules per Kelvin.

Answer: Boltzmann constant

3. Useful for describing the size of an electron cloud, this constant has the symbol a-sub-zero and is approximately 0.53 angstroms for hydrogen.

Answer: Bohr radius

Tossup 14: Miscellaneous (Sports)

This man played for three teams in his 23 year career, including the Winnipeg Jets and Hartford Whalers. He wore two different numbers before settling on 9, and he won the Stanley Cup in 1961. Known as the Golden Jet, he was a teammate of Stan Mikita for much of his career. Name this Chicago Black Hawk great, the father of former NHL star Brett.

Answer: Bobby Hull

Bonus 14: Literature (Literature)

Britons love their King Arthur.

1. This Tennyson work is a cycle of twelve narrative poems that tell the entire story of Arthur from birth to death.

Answer: Idylls of the King

2. This work by T.H. White is divided into four parts and takes its title from the inscription above Arthur's grave.

Answer: The Once and Future King

3. This Thomas Malory work is the source material for both Idylls of the King and The Once and Future King.

Answer: Le Morte d'Arthur (*do not accept "The Death of Arthur"*)

Tossup 15: Social Studies (U.S. History)

Although a graduate of Yale, he was later president of Princeton University. Initially not a believer of predestination, he later embraced the idea and this became part of his writings. A colleague of George Whitefield, his most famous work was delivered at Enfield. Name this colonial preacher, an integral component of the Great Awakening, who wrote Sinners in the Hands of an Angry God.

Answer: Jonathan Edwards

Bonus 15: Math (Other) -- Computational

Convert the following numbers to binary.

1. 24 in base 10.
2. 1F in base 16.
3. 144 in base 5.

Answers: 1: 1 1 0 0 0 2: 1 1 1 1 1 3: 1 1 0 0 0 1

Tossup 16: Fine Arts (Visual Art)

One of his first paintings, *The Procuress*, betrays the influence of the Utrecht Caravaggists (*Kare-ah-vah-jists*). Later works include *Little Street* and an allegory called *The Art of Painting*. His most famous works depict his hometown, as seen across a river, and a young lady in a blue turban. Name this Dutch Baroque painter of *View of Delft* and *Girl with a Pearl Earring*.

Answer: **Johannes of Jan Vermeer van Delft**

Bonus 16: Social Studies (World History)

Everyone knows those Spartans loved to fight. Answer the following about battles involving Sparta.

1. In this 480 C.E. battle, Leonidas I delayed Xerxes I advance using a narrow passage, and many fewer soldiers than the Persians had.

Answer: **Battle of Thermopylae**

2. The last major battle of the Peloponnesian War, this 405 C.E. naval battle saw the Spartans completely destroy the Athenian navy in the Hellespont.

Answer: **Battle of Aegospotami**

3. This was the Spartan general who destroyed the Athenian navy at Aegospotami.

Answer: **Lysander**

Tossup 17: Math (Calculus)

When he was 15, Gauss guessed that n over this function of n is approximately equal to the number of primes less than n . A Taylor series centered about x equals one must be used to provide a power series of it since it cannot be expressed using a Maclaurin series. Using an accumulation function, it is the integral of one over t , dt , from 1 to x . Its graph is monotonic positive, and its domain is limited to the positive real numbers. What function is the logarithm base e of x ?

Answer: **natural logarithm of x** (accept ln of x)

Bonus 17: Miscellaneous (Entertainment)

Answer these questions about some films left unfinished, at least for a while, after the death of their stars.

1. Although this star of *Enter the Dragon* died in 1973, the movie he was making, *Game of Death*, was released five years later with a look-alike in the non-martial arts scenes.

Answer: **Bruce Lee**

2. *The Other Side of the Wind* and *The Dreamers* both ceased production in 1985 upon the death of this actor-director, though his first film, *Citizen Kane*, won't soon be forgotten.

Answer: **Orson Welles**

3. After Heath Ledger died in January, director Terry Gilliam suspended production of this not-yet-released fantasy film, but decided to finish it when Johnny Depp, Jude Law, and Colin Farrell all agreed to fill Ledger's role.

Answer: **The Imaginarium of Doctor Parnassus**

Tossup 18: Social Studies (Geography)

Designated a UNESCO world heritage site in 1982, its name means "Wild Geese" and it is believed nearly 20,000 people once lived here. Artifacts from as far away the Appalachians and the Gulf of Mexico have been found here, and the largest of its eponymous structures is named Monks. Name this ancient site of the Mississippian people, located near St. Louis in southwestern Illinois.

Answer: **Cahokia Mounds**

Bonus 18: Literature (Literature)

Identify these literary works that were left unfinished at the time of their authors' deaths.

1. Charles Dickens was writing the seventh installment of this novel when he died, so the murderer of the title character remains unknown, though several clues point to John Jasper.

Answer: **The Mystery of Edwin Drood**

2. Set in 1930s Hollywood, this unfinished F. Scott Fitzgerald novel is narrated by Cecelia, whose love for the frustrated movie producer Monroe Stahr goes unrequited.

Answer: **The Love of The Last Tycoon: A Western**

3. This satirical poem by Lord Byron stops in the middle of Canto XVII, after the title character has fallen in love with Aurora and seen what he thinks is the Black Friar ghost.

Answer: **Don Juan**

Tossup 19: Science (Physics) -- Computational (30 Seconds)

A particle of mass 4kg, initially starting at rest at the origin experiences a force along the x-axis of $8x^3$ Newtons. Find its velocity in meters per second after it travels a distance of 4 meters. It may help to know that the force does work equal to the kinetic energy of the object, and that work is also the integral of force along the x-axis from 0 to 4.

Answer: **16 m/s**

Bonus 19: Math (General) -- Computational

Given the sets A equals 2, 3, 4, 5, and B equals 1, 3, 5, give the following.

1. The cardinality of A union B.
2. The cardinality of A intersect B.
3. The cardinality of the power set of A.

Answers: 1: **5** 2: **2** 3: **16**

Tossup 20: Literature (Literature)

His first revolutionary exploits were directed against the Austrian empire on behalf of Italian nationalists. However, it was his exploits against the Ottoman Empire, on behalf of Greek rebels which cemented his reputation as a champion of revolutionaries. Name this British poet, author of works such as "Childe Harold's Pilgrimage" and "She Walks in Beauty."

Answer: **Lord Byron** (accept *George Gordon*)

Bonus 20: Social Studies (World History)

Identify the following about angry mobs throughout history.

1. During it, a still-unidentified person threw a bomb among protesters and police, and several labor leaders were convicted and hanged. Three of those convicted were later pardoned by Illinois Governor John Altgeld.

Answer: **Haymarket Square Riot**

2. This insurrection immediately followed the collapse of the Second Empire, and the government formed by it was made up of Jacobins, Proudhonists, and Blanquistes.

Answer: **Paris Commune** (*accept Commune of Paris*)

3. Also known as Wat Tyler's Rebellion, this English revolt was caused by the instigation of a poll tax and an attempt to fix maximum wages immediately following the Black Death.

Answer: **Peasants' Revolt**

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Literature (Literature)**

His "Observations of an Unpolitical Man" showed him early on to be a conservative, which is why his quick endorsement of the Weimar republic surprised many at the time. Late in life, he got into an argument with Schoenberg after he attributed the 12-tone style to the character Adrian Leverkühn. His novel "Lotte in Weimar" concerns the life of Goethe, whom he imitated in the choice of a subject for his novel Doktor Faustus. Name this German author famous for his depiction of Gustav von Aschenbach in the novella Death in Venice.

Answer: **Thomas Mann**

Bonus 21: Fine Arts (Music)

Answer the following about Italian opera.

1. The last opera by Rossini, this work is famous for its overture which ends with a cavalry charge galop, commonly associated with the Lone Ranger.

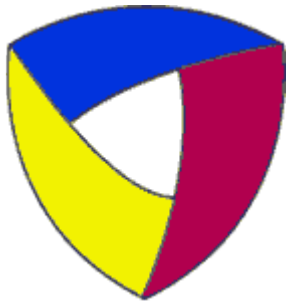
Answer: **William Tell**

2. 14 of this composer's 24 operas, including Idomeneo and *Così fan tutte*, are Italian language, even though the composer himself was Austrian.

Answer: **Wolfgang Amadeus Mozart**

3. The title character of this Puccini opera, loved by both a painter and the chief of police, leaps to her death at the end of the opera.

Answer: **Tosca**



Aegis Questions

**2008 IHSSBCA Kickoff
Round 6**

Tossup 1: Social Studies (U.S. History)

Born to a 16 year old girl, this man was frequently in trouble with the law in his youth out east. Interested in music, he knew many in the industry, including Dennis Wilson. Shortly after moving to California, he began preaching about an approaching race war to members of his "Family," and he held his headquarters at Spahn Ranch. Name this cult leader held responsible for the 1969 murder of Roman Polanski's pregnant wife, Sharon Tate.

Answer: **Charles Milles Manson**

Bonus 1: Literature (Literature)

Robots create all sorts of ethical dilemmas that Literature loves to explore in depth.

1. One such work is this Philip K. Dick novel in which Rick Deckard is an android bounty hunter who comes to find himself feeling empathy for his realistic humanoid targets.

Answer: **Do Androids Dream of Electric Sheep?** (*do not accept Blade Runner*)

2. In order to make robots more useful to humans, and to make his stories more interesting, this author came up with three laws of robotics.

Answer: **Isaac Asimov**

3. This Czech author invented the word "robot" itself in his Rossum's Universal Robots.

Answer: **Karel Capek**

Tossup 2: Math (Other) -- Computational (30 Seconds)

Convert the following number from hexadecimal to decimal: 2 A 3.

Answer: **675**

Bonus 2: Science (Physics)

Its relation with current is described by the Biot-Savart law.

1. Name this force which affects moving charges, whose poles always come in pairs.

Answer: **Magnetism** (*accept electromagnetism*)

2. This is the SI unit of the magnetic field, equal to 10,000 gauss, named after a famous Serbian inventor.

Answer: **Tesla**

3. Iron, cobalt, and nickel are among the substances which are permanently magnetized, referred to as this type of magnetism.

Answer: **Ferromagnetism**

Tossup 3: Literature (Literature)

One memorable episode in this work sees the Marquis St. Evrémonde killing the son of the peasant Gaspard, and tossing him a coin in recompense for his loss. Later, in order to buy some time for two of the main characters to escape the country, Miss Pross engages in a struggle with the pistol-carrying Madame Defarge, with the result being a deaf Pross and a dead Defarge. Ending with the death of Sydney Carton and also featuring the love of Lucie Manette and Charles Darnay, identify this Dickens novel which begins "It was the best of times, it was the worst of times."

Answer: **A Tale of Two Cities**

Bonus 3: Social Studies (World History)

Beginning with the Battle of Covadonga in 718, it was partially finished by Alfonso III of Portugal.

1. Identify the term applied by to the military campaigns organized to drive the Moors out of the Iberian peninsula.

Answer: **Reconquista**

2. The Reconquista in Spain was completed after this tiny Nasrid kingdom.

Answer: **Granada**

3. This pair of monarchs set up a base in Santa Fe and remained until Granada was taken over.

Answer: **Ferdinand II of Aragon and Isabella I of Castile**

Tossup 4: Science (Biology)

Hfr bacteria have the genes necessary for this already integrated into their plasmids. Discovered by Lederberg and Tatum, it requires a relaxosome and transferosome to take place, and bacteria capable of this have a special pilus that helps attach them to other bacteria. Unlike the similar transformation and transduction mechanisms, it requires direct cell contact. Name this mechanism requiring an F plasmid, in which bacteria can transfer genes to other bacteria.

Answer: **Bacterial conjugation**

Bonus 4: Literature (Literature)

Middle English can be pretty hard to pronounce, even if you know what you're doing.

1. This author of Parliament of Fowls, The Romance of the Rose, and Treatise on the Astrolabe is probably the best known user of Middle English.

Answer: **Geoffrey Chaucer**

2. Chaucer is best known for writing this unfinished frame narrative.

Answer: **The Canterbury Tales**

3. The Canterbury Tales begins with a storytelling contest proposed by Harry Bailey, the owner of this Inn and starting point for the journey.

Answer: **The Tabard Inn**

Tossup 5: Social Studies (Geography)

It forms a part of the border between four sets of states, and the Cannonball, Knife, and Teton rivers are tributaries of it. Fort Peck is situated along it, and it flows past Council Bluffs and Omaha.

Nicknamed the "Big Muddy," it merges with the Mississippi in its namesake state. Name this river, this second longest in the United States.

Answer: **Missouri River**

Bonus 5: Math (Algebra) -- Computational

Simplify the following expressions containing logarithms. Your answers should contain at most one logarithm.

1. $\log_{10} 15 - \log_{10} 5$.

2. $\log_9 27 \cdot \log_5 25$.

3. $\log_4 64 \cdot \log_8 2$.

Answers: 1: **log** base 10 of **3** 2: **9/2** 3: **1**

Tossup 6: Fine Arts (Visual Art)

He was the court painter for Philip the Good, and he once painted a Madonna with Child featuring the energetic Chancellor Rolin directly interacting with them. His Portrait of a Man in Red Turban actually depicts a man wearing red a chaperon, and might be a self-portrait. Completing his brother Hubert's work on the Ghent Altarpiece, identify this artist who also painted the Arnolfini Wedding Portrait.

Answer: **Jan Van Eyck**

Bonus 6: Science (Astronomy)

Answer the following about our planetary neighbor, Mars.

1. Originally "discovered" by Giovanni Schiaparelli, Percival Lowell thought that these were areas of vegetation.

Answer: **canals of mars** (*accept canali*)

2. This system of canyons near Mars' equator contains sedimentary sequences, suggesting the former presence of lakes. Some of its walls may have been formed as a result of the shifting of the Tharsis rise.

Answer: **Valles Marineris** (*accept Mariner valleys*)

3. To the northwest of the Tharsis rise is this volcano, the highest point in our known solar system. Its summit is a caldera that measures 85 km across.

Answer: **Olympus Mons**

Tossup 7: Science (Chemistry)

The Born-Haber cycle utilizes it to calculate the lattice energy of an ionic compound. It can be used to calculate the energy of difficult reactions, such as the conversion of graphite to diamond. Though it also applies to entropy and Gibbs free energy, it is usually stated in terms of enthalpy, and essentially states that enthalpy is a state function. Name this chemical law stating that any pathway from certain reactants to products has the same change in enthalpy.

Answer: **Hess's law**

Bonus 7: Social Studies (U.S. History)

Who knew Jefferson Davis was related to so many famous politicians? Identify them from the following clues.

1. Jefferson's father-in-law was this 12th president that was known as Old Rough and Ready, and who died less than a year and a half into his term.

Answer: **Zachary Taylor**

2. Davis was distantly related to this vertically challenged fourth president, who was named as defendant in an 1803 case against Marbury.

Answer: **James Madison**

3. By way of Taylor, Davis was also distantly related to this Colonial politician from Virginia, who was the congressman who first proposed the idea of declaring America's independence.

Answer: **Richard Henry Lee**

Tossup 8: Miscellaneous (Entertainment)

This arcade game was the first to feature the input of initials on the high score table. It came about due to the invention of holograms, despite the fact that it features none. This game was one of the games set to be released for the ill-fated holographic projection gaming system Cosmos. A space shooter designed by Ed Logg, identify this game, set to a thumping Jaws-like bass track, which had players shooting flying saucers and minor planetoids.

Answer: **Asteroids**

Bonus 8: Fine Arts (Visual Art)

Give the titles of these paintings that have something in common.

1. A masterpiece from Picasso's Blue Period, the distorted title figure of this painting is blind, emaciated, and plays while seated cross-legged on the floor.

Answer: **The Old Guitarist**

2. Rejected by the Salon for its intentional flatness, the title figure of this Edouard Manet painting wears a blue and red uniform and plays while standing.

Answer: **The Fifer**

3. Sold by the Pennsylvania Academy to help finance the purchase of The Gross Clinic, this other Thomas Eakins painting shows the bearded title figure naturally playing while seated.

Answer: **The Cello Player**

Tossup 9: Math (General) -- Computational (30 Seconds)

Seven answers required. In order of descending powers of x , give the coefficients of the expansion of $(1+x)^6$. It may help to know that the answer is the same as the values across the 6th row of Pascal's triangle.

Answer: **1 6 15 20 15 6 1**

Bonus 9: Science (Chemistry)

It replaced Liebig's definition of acids and bases, and states that bases dissociate to produce hydroxide ions in solution.

1. Name this acid-base definition proposed by a namesake Swedish chemist.

Answer: **Arrhenius definition**

2. A generalization of the Arrhenius definition, this definition states that bases are proton acceptors.

Answer: **Bronsted-Lowry definition**

3. The Bronsted-Lowry and Lewis definitions explain the existence of this type of substance which can act as either an acid or a base.

Answer: **Amphoteric**

Tossup 10: Literature (Literature)

He was president of the Royal Society when Newton first published Principia Mathematica, and hence, his name appears on the first page of every first edition of it. His most famous work was written in a type of shorthand known as Tachygraphy, and upon its discovery was thought to be ciphered. A key for his work eventually discovered for it, but not before The Reverend John Smith spent three years decoding it. Writing about a paragraph a day for almost a decade, identify this man, most famous for chronicling in his diary events such as The 1666 Great Fire of London.

Answer: **Samuel Pepys**

Bonus 10: Miscellaneous (Sports)

Coaches have a weird way of giving back to former employers. FTPE, answer the following about coaches "giving back" to old stomping grounds.

1. This Tampa Bay Buccaneers coach won Super Bowl XXXVII over the Oakland Raiders, who had traded him the previous year.

Answer: **Jon Gruden**

2. Former England international Shaun Edwards was offered the job of coaching England's B team, but instead joined as an assistant under Warren Gatland for this country's national team which won the 2008 Six Nations.

Answer: **Wales**

3. This former Dallas Mavericks coach and current Golden State Warriors head coach upset the top-seeded Mavs in the first round of the 2007 NBA playoffs.

Answer: **Don Nelson**

HALFTIME

Tossup 11: Science (Earth Science)

One term associated with them is a Wadati-Benioff zone, which occur at depths of more than 700 kilometers. Earthquakes are partially created when the cool layer of rock from the earth's surface is thrust down into the asthenosphere. The opposite of sea-floor spreading, they occur at convergent plate boundaries. Name these areas where plates collide and one slides under another one.

Answer: **Subduction Zones**

Bonus 11: Math (Algebra) -- Computational

Given the vector $A = (1, 3, 5)$, find the following.

1. The length of A.
2. The cosine of the angle between A and $(1,0,0)$.
3. The cross product of A and $(2,5,10)$.

Answers: 1: **root 35** 2: **1 / root 35** (accept $(\text{root } 35) / 35$) 3: **(5, 0, -1)**

Tossup 12: Literature (Mythology)

Some sources call him an Athenian by birth who was banished after killing his brilliant nephew Perdix. In an attempt to locate him, another man presented the challenge of passing a thread through a spiraled shell. At the behest of King Cocalus, this man had an ant crawl through the passages. Traveling to Sicily, King Minos then demanded that Cocalus hand over this man, but was instead killed himself. Name this legendarily clever artist and scientist who escaped from the island of Crete and his own Labyrinth by means of wax wings along with his ill-fated son Icarus.

Answer: **Daedalus** (accept *Daidalos*)

Bonus 12: Fine Arts (Music)

It ends with "When I am laid in Earth," known as the lament of the title female character.

1. Name this 1689 opera, based on the fourth book of Virgil's epic poem.

Answer: **Dido and Aeneas**

2. The composer of Dido and Aeneas was this Englishman, who also composed The Fairy-Queen.

Answer: **Henry Purcell**

3. The original score of Dido and Aeneas has been lost. This composer of The Young Person's Guide to the Orchestra wrote one realization of the score in the 20th century.

Answer: **Benjamin Britten**

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

Give the indefinite integral of the following: $4/5 x^3 - 27 x^2 + 12 + e^x$.

Answer: **1/5 x^4 - 9 x^3 + 12x + e^x + C** (Accept "plus a constant" or similar in lieu of "+ C")

Bonus 13: Science (Biology)

Varieties include mutualistic, parasitic, and commensal.

1. Name this term referring to long-term inter-species relations in ecosystems.

Answer: **Symbiosis**

2. Contrasted with symbiosis, this mechanism involves one species evolving to look like another one.

Answer: **Mimicry**

3. In this form of mimicry named after an English biologist, one species evolves to be harmful to predators, and then another harmless species evolves to look like the first one.

Answer: **Batesian mimicry**

Tossup 14: Miscellaneous (Interdisciplinary)

In French, the pleonastic use of these two letters occurs after certain conjunctions such as *avant que*. In Latin, placing them at the end of the first word in a sentence indicates a question. In Esperanto, Czech, Serbian, and Croatian, they simply mean "no." It is the atomic symbol of the element with valence electron configuration $2s^2 2p^6$. Give the abbreviation for a compass bearing of 45 degrees and the postal code of the state with capital at Lincoln.

Answer: **ne**

Bonus 14: Literature (Literature)

Children often appear in Literature and are often the crux around which the action revolves. Identify the following about children in Literature.

1. Eppie is rescued by the title character and, after settling in to his home, jumps into the "coal hole" in this work by George Eliot.

Answer: **Silas Marner: The Weaver of Raveloe**

2. This author's young Alice appears in numerous fantastical works including "Through the Looking-Glass"

Answer: **Lewis Carroll** (*accept Charles Lutwidge Dodgson*)

3. Cosette, a young girl, is forced to do chores for the Thénardiens around their inn, before she is rescued by Jean Valjean in this Victor Hugo work.

Answer: **Les Misérables**

Tossup 15: Social Studies (Other)

Founded in 1913, its headquarters are located in the Eccles building, though it is more well known for its other locations. Thousands are members of it, and their chief interaction is through setting of discount rates. With branches in cities such as Minneapolis and Chicago, it was formerly chaired by Alan Greenspan. Name this banking authority currently headed by Ben Bernanke.

Answer: **Federal Reserve System** (*prompt on The Fed or Federal Reserve Bank*)

Bonus 15: Math (Geometry)

Identify these three-dimensional objects.

1. Informally known as a donut, this surface can be generated by revolving a circle about an axis that does not touch the circle.

Answer: **Torus**

2. This is a portion of a sphere to one side of a plane intersecting the sphere.

Answer: **Spherical cap**

3. This is a non-orientable surface formed by joining two ends of a strip after twisting one end halfway. Curiously, it has only one side.

Answer: **Mobius strip**

Tossup 16: Fine Arts (Music)

Two of the operas of this composer concern musical contests. In one, a young knight named Walther woos Eva. Another concerns a legendary German poet and a conflict between Venus and Elisabeth. Those operas are titled The Master Singer of Nurnberg and Tannhauser. Name this composer, most famous for a four-part opera involving Fafnir, Brunnhilde, and the Ring of the Niebelungs (*NEE bah lungs*).

Answer: **Richard Wagner**

Bonus 16: Social Studies (Other)

Answer these questions about ancient sects whose beliefs are still largely a mystery.

1. According to Julius Caesar, this Celtic order burned human sacrifices in giant wickermen, believed in transmigration of the soul, and worshiped oak trees.

Answer: **Druids**

2. The main enemy of the Israelites from Judges through second Samuel, this people worshiped Dagon, Ashtoreth, and Baal, but ran into some trouble when Samson pulled down their temple.

Answer: **Philistines**

3. The followers of this ancient Greek were taught to believe in reincarnation, the harmony of the spheres, the purifying qualities of music, and a universe built from numbers.

Answer: **Pythagoras**

Tossup 17: Math (Other)

It can be computed by evaluating the Gregory-Leibniz series, but much more effectively are algorithms discovered by Ramanujan. It is the volume of Gabriel's horn, the surface formed by rotating $1/x$ around the x axis from x equals one to x equals infinity. It is not constructible, a consequence of which implies the impossibility of squaring the circle. Name this transcendental number, famously computed by Archimedes.

Answer: **pi** (or *Archimedes' number, or Ludolph's number*)

Bonus 17: Miscellaneous (Entertainment)

Sometimes one band covers another and makes a song a completely different genre.

1. This happened in 2006 when Quietdrive released a cover of "Time After Time", originally performed by this New Wave songstress.

Answer: **Cynthia Ann "Cyndi" Lauper**

2. Aerosmith covered "Remember (Walking in the Sand)", which was originally performed by this 60's girl group also known for "Leader of the Pack".

Answer: **The Shangri-Las**

3. Outkast's rockin' song about a breakup "Hey Ya!" was turned into an internet sensation when Mat Weddle, frontman of this unsigned folk band covered it acoustically.

Answer: **Obadiah Parker**

Tossup 18: Social Studies (World History)

He certainly got off to a rough start with the senate, instilling an early enmity towards himself due to his execution of four former consuls. He put down the Jewish Bar Kokhba revolt after three long years of fighting. Having a sexual relationship with a young Greek boy named Antinous, he was subsequently ridiculed for it. The third of the Five Good Emperors, identify this Roman man, famous for his namesake wall.

Answer: **Publius Aelius Hadrianus**

Bonus 18: Literature (Literature)

It began to fly solo after finally breaking off from the renga, where it had initially served as an introductory stanza.

1. Identify this type of poem which features a standard number of syllables in each line, and often include allusions to seasons in their most traditional form.

Answer: **Haiku**

2. This poet of the Edo period in Japan is probably the most noteworthy writer of haiku.

Answer: **Matsuo Basho**

3. Haiku had a large impact on the Imagist writers, including this poet, who trimmed a sixty line poem down to two, creating his "In a Station of the Metro."

Answer: **Ezra Pound**

Tossup 19: Science (Physics)

They are analogous to springs in oscillatory circuits, and high-quality ones have mica or glass. They can be used in AC coupling, to filter out DC signals, because they pass AC voltages more easily. The voltage across one is inversely proportional to the permittivity of its dielectric, and these are measured by charge divided by voltage. Classically consisting of two charged plates separated by a dielectric, name these circuit elements measured in farads.

Answer: **Capacitor**

Bonus 19: Math (Geometry) -- Computational

Find the area of the following figures.

1. A triangle with sides of length 3, 5, and 6.

2. A circle circumscribed about a square of side length 2.

3. A rhombus with diagonals of length 4 and 5.

Answers: 1: **$2\sqrt{14}$** 2: **2π** 3: **10**

Tossup 20: Literature (Literature)

Its first edition states that its contents are experimental, and also calls the materials of poetry “every subject which can interest the human mind.” One poem in it begins “five years have passed,” referring to the time since the speaker has been to the Wye River. Another, the first in the work, is in seven parts and contains the line “I shot the Albatross.” A seminal work of Romantic poetry, identify this collection which includes “Lines Composed a few Miles Above Tintern Abbey” and “Rime of the Ancient Mariner,” written by William Wordsworth and Samuel Taylor Coleridge.

Answer: **Lyrical Ballads, With a Few Other Poems**

Bonus 20: Social Studies (Geography)

Time for a bonus about everybody's favorite state you can see Russia from! That's right, Alaska.

1. Surrounded by the mainland and the Alaska Peninsula, this body of water known for its high tides is at the eastern edge of the Bering Sea.

Answer: **Bristol Bay**

2. Gravina Island's 50 residents would have been among the few people helped by this structure, often in the news recently as an example of pork barrel spending.

Answer: **Bridge to Nowhere** (*prompt on Gravina Island Bridge*)

3. There is constant debate over whether to drill for oil in this protected zone of northern Alaska.

Answer: **ANWR** (*accept Arctic National Wildlife Refuge*)

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Literature (Literature)**

One of his novels is presented as a 999 line long poem of the fictional John Shade, paired with an expository introduction and commentary on it by the just as fictional scholar Charles Kinbote. He also made several noteworthy contributions to the field of entomology, including the discovery of some species of butterfly. Writing first in his native Russian, he came to prominence when he began writing in English, including his best known work, about a girl named Dolores Haze and a man named Humbert Humbert. Identify this author of Pale Fire and Lolita.

Answer: **Vladimir Nabokov**

Bonus 21: Science (Biology) -- Computational

In a monohybrid cross, one of these would have two lowercase letters in the bottom right.

1. Named after a British geneticist, identify these grids used to diagram the possible genotypes of a test cross.

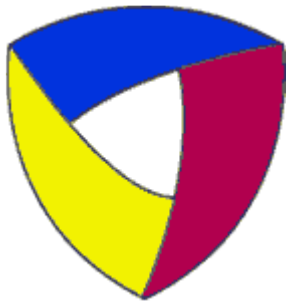
Answer: **Punnett square**

2. In a monohybrid cross big A little a, cross big A little a, what fraction of the offspring will have a dominant phenotype?

Answer: **3/4** (*accept 75%*)

3. Of the 3/4 of the offspring exhibiting a dominant phenotype, 2/3 of those have both a dominant and a recessive allele, and are called this.

Answer: **Heterozygotes**



Aegis Questions

**2008 IHSSBCA Kickoff
Round 7**

Tossup 1: Science (Earth Science)

This Era was a time of tectonic, climatic and evolutionary activity, the beginning of which is set by the P-T boundary, a cataclysmic extinction event coming at the end of the Permian Period. Dinosaurs lived and died in this Era, which also saw the proliferation of birds, primates and flowering plants. Containing the Cretaceous, Jurassic and Triassic Periods, identify this Era of geologic time, from the Greek for "middle animals."

Answer: **Mesozoic Era**

Bonus 1: Social Studies (U.S. History)

Identify these Civil War battles from clues.

1. Stonewall Jackson was accidentally killed by Confederates at this 1863 battle in Virginia.

Answer: **Chancellorsville**

2. Confederate General Albert Sidney Johnston was killed at this 1862 battle in Tennessee that is called the Battle of Pittsburg Landing in the south.

Answer: **Shiloh**

3. William Rosecrans commanded the losing Union troops while the Confederates were successfully led by Braxton Bragg at this 1863 battle in northern Georgia. The harshest yet defeat for the north, it marked the end of that campaign.

Answer: **Chickamauga**

Tossup 2: Literature (Literature)

At one point in this story, the narrator is infatuated with a girl named Gilberte. Her mother used to be called Odette de Crecy. Her father, a wealthy jew, once visited the narrator's great-aunt's house in Cambay. Years later, the narrator is reminded of that place by the taste of a pastry called a madeleine. The narrator describes two roads, Guermantes Way and Swann's way, which are names of two of the seven parts of this work. The free-form recollections of a narrator who shares the author's given name, identify this work, the magnum opus of Marcel Proust.

Answer: **Remembrance of Things Past** (accept *In Search of Lost Time* or *A la recherche du temps perdu*)

Bonus 2: Math (Other) – Computational

Convert the following numbers to decimal.

1. 1001 in binary.

2. 3F in hexadecimal.

3. 743 in octal.

Answers: 1: **9** 2: **63** 3: **483**

Tossup 3: Social Studies (World History)

It occurred after Herschel Grynszpan shot Ernst vom Rath, and cost its victims billions of dollars. Orders for it were actually issued from Munich, where there was a celebration for the anniversary of the Beer Hall Putsch. Directly resulting in the expansion of concentration camps, it occurred in November, 1938. Name this two day campaign to terrorize Jewish people in Germany.

Answer: **Kristallnacht** (accept *Night of the Broken Glass*)

Bonus 3: Fine Arts (Other)

Answer these questions about some famous buildings that survive in an unfinished state.

1. Even after 28 years of building the 56 bedrooms, 41 fireplaces, and 61 bathrooms, the San Simeon Castle of this newspaper magnate still didn't fulfill the original plans.

Answer: **William Randolph Hearst**

2. One of Spain's most popular tourist attractions, this Barcelona church, designed by Antoni Gaudi, was begun in 1882, but the apse may not be finished until 2026.

Answer: **La Sagrada Familia**

3. Built for Richard Wagner and famous as the model for Sleeping Beauty Castle in Disneyland, construction of this Bavarian palace stopped the day King Ludwig was declared insane.

Answer: **Neuschwanstein Castle**

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

Find the length of one edge of an icosahedron if the total surface area is 320 times root 3. It may help to know that an icosahedron has 20 sides that are all equilateral triangles.

Answer: **8**

Bonus 4: Social Studies (Geography)

Identify these terms for the administrative divisions of a country, similar to states in the U.S.

1. The Swiss Confederation consists of 26 of these sovereign regions, including Geneva and Bern, that have their own constitutions and may choose to practice direct democracy.

Answer: **cantons**

2. Ranging in size from the whole island of Hokkaido to the 700 square mile Kagawa area, there are 47 of these governor-led subdivisions in Japan.

Answer: **prefectures** (*accept todofuken*)

3. Commonly used in medieval Europe and referring to an area controlled by a bailiff for the benefit of the monarch, Jersey and Guernsey in the Channel Islands are the only two of these that still exist.

Answer: **bailiwicks**

Tossup 5: Fine Arts (Music)

This composer's most famous work sees the newlywed Judith asking the title character to allow her to open seven doors. Inspired by the atonality movement, his mime drama The Miraculous Mandarin premiered to scandal in 1926. That atonality contrasted with the folk songs that he recorded from his native Hungary and other nations. Name this composer, most famous for Duke Bluebeard's Castle.

Answer: **Bela Bartok**

Bonus 5: Miscellaneous (Interdisciplinary)

Answer these questions related to the French word for fox, "renard" (*ray-NARD*).

1. The Renard is a friend of this character who hails from Asteroid B612 in a Saint-Exupery work of the same name.

Answer: **The Little Prince** (*ou Le Petit Prince*)

2. "Renard" is a 1916 opera-ballet by this composer, better known for The Firebird, which he based on the medieval fables of the trickster fox.

Answer: **Igor Stravinsky**

3. Gabrielle Renard was the nanny for this artist's son and appears in some of his paintings. He is better known for The Dance at Le Moulin de la Galette.

Answer: **Pierre Auguste Renoir**

Tossup 6: Social Studies (U.S. History)

Born in Homer, Illinois, this lawman gained fame for his work as a cavalry scout for the Union Army in the West during the civil war, and then for his later work as marshal of the violent cattle town of Abilene, Kansas. There was nothing wrong with drawing a hand of aces and eights until this man drew it in a game of five card draw in Deadwood, South Dakota, and was promptly shot in the back. Name this gunfighter of the Wild West.

Answer: **Wild Bill Hickok**

Bonus 6: Math (General)

This term was coined by Benoit Mandelbrot.

1. Identify these self-similar geometric objects, examples of which include the Mandelbrot set and Julia set.

Answer: **Fractal**

2. This fractal consists of a triangle whose middle section is repeatedly removed.

Answer: **Sierpinski triangle**

3. This extends the concept of dimension to fractals, assigning them fractional dimensions.

Answer: **Hausdorff dimension**

Tossup 7: Miscellaneous (Entertainment)

Save for one guitar part, this band's self-titled first album was entirely performed by its founder and lead singer. Their live album, Skin and Bones, contained the song Marigold, which was actually written by the band's founder while he was the drummer for a previous band. Their second album produced hits such as Walking After You and My Hero, as well as a song that was on Guitar Hero 2, Monkey Wrench. Name this band fronted by former Nirvana drummer Dave Grohl, whose album The Colour and the Shape featured the track Everlong.

Answer: **Foo Fighters**

Bonus 7: Literature (Literature)

Answer the following about some grave poems. Do not answer with a number.

1. In this poem, the title figures pass by "a house that seemed a swelling of the ground," and ride in a carriage that "held but just ourselves and immortality."

Answer: **Because I Could Not Stop for Death**

2. After "the windows failed," the speaker "could not see to see," and the stillness around the speaker's body was like that "in the air between the heavens of a storm."

Answer: **I Heard a Fly Buzz When I Died**

3. Because I Could Not Stop for Death and I Heard a Fly Buzz When I Died were both penned by this reclusive poet from Amherst, Massachusetts.

Answer: **Emily Dickinson**

Tossup 8: Math (Algebra) -- Computational (30 Seconds)

Find the sum of the coefficients of the terms in the expansion of the quantity $x + y$, close quantity, to the fifth power.

Answer: **32**

Bonus 8: Science (Biology)

Identify these important biological molecules.

1. This ubiquitous polysaccharide makes up the cell wall in plants, and is a major component of paper.

Answer: **Cellulose**

2. Related to cellulose, this nitrogen-containing polysaccharide is found in fungi and crustaceans.

Answer: **Chitin**

3. This is a term for lipids with four fused carbon rings, all of which are produced in plants from the molecule lanosterol.

Answer: **Steroid**

Tossup 9: Literature (Literature)

Two of these "of Mutabilitie" comprise Book 7 of The Fairie Queene. Sets of them discuss John Adams, China, and Venice in a work by an expatriate Modernist who lived in Italy. A famous one that is the first of a hundred begins "Midway upon the journey of our life." Childe Harold's Pilgrimage, The Divine Comedy, and Ezra Pound's work of the same name are all divided into them. Name the type of division, often present in epic works, whose name comes from the Latin for song.

Answer: **Canto** (*do not accept "Cantus"*)

Bonus 9: Math (Calculus) -- Computational

Find the derivatives of the following functions.

1. sine of x times cosecant of x .

2. Inverse tangent of x .

3. x times the natural log of x .

Answers: 1: **0** 2: **$1 / (x^2 + 1)$** 3: **$1 + \ln(x)$**

Tossup 10: Science (Physics)

Scientists at the South Pole constructed one that took 24 hours and 50 minutes to complete its precession. Its angular speed is proportional to the sine of the latitude, so at the equator it does not rotate. One of them that operates in the Musee des Arts et Metiers in Paris figures prominently in a novel by Umberto Eco. Name this device that has a weight at the end of a wire, used to demonstrate the rotation of the Earth.

Answer: **Foucault pendulum**

Bonus 10: Literature (Literature)

Maxwell Perkins joined the venerable publishing house of Scribner's in 1910 as an editor and never looked back.

1. Among the men Perkins is responsible for discovering include this author who made his first big break with This Side of Paradise.

Answer: **F. Scott Fitzgerald**

2. Perkins' next big find was Ernest Hemingway, who published this first major work about expatriate Americans under Perkins.

Answer: **The Sun Also Rises**

3. The relationship between Perkins and Thomas Wolfe featured lots of conflict, including much disagreement over the removal of 90,000 words from this novel of Wolfe's, which centers on a thinly veiled mirror of Wolfe's hometown.

Answer: **Look Homeward, Angel**

HALFTIME

Tossup 11: Literature (Literature)

Prior to glasnost, it was distributed largely by means of Samizdat, an underground ring of literature distribution. Tracing the history of the titular locales from 1918 to 1956, it begins with Lenin's original decrees shortly after the October Revolution, and ends with Khrushchev's Secret Speech denouncing Stalin's cult of personality. The author of this work also produced "The First Circle," which details a specific instance of the titular entity. Focusing on a system of Russian labor camps, identify this work by Aleksandr Solzhenitsyn.

Answer: **The Gulag Archipelago**

Bonus 11: Miscellaneous (Entertainment)

Identify these mock awards that few people want the honor of accepting.

1. Actually accepted by Halle Berry in 2005, "winners" of this award last year included Worst Actor, Eddie Murphy for Norbit, and Worst Actress, Lindsay Lohan for I Know Who Killed Me.

Answer: **Golden Raspberry Award** (accept *Razzie*)

2. Awarded to scientists who make people laugh and think, this prize has gone to Mayu Yamamoto for extracting vanilla flavor from cow dung and to Patricia Agostino for giving Viagra to hamsters.

Answer: **Ig Nobel Prize** (do not prompt on Nobel Prize)

3. Honoring those who improve the species' gene pool by accidentally removing themselves from it, one 2008 nominee for this award blew up his snowmobile when he crashed attempting to chase a jackrabbit into a drainage pipe.

Answer: **Darwin Award**

Tossup 12: Math (Calculus)

It is the Householder method of order 1, and counting the iterations of this for $x^3 - 1$ yields a Wada basin. For the cube root of x , this always results in worse estimates, and starting values can never be taken at the extrema of a function. Otherwise, it converges quadratically. Name this eponymous method for finding roots of a differentiable function, named after a prominent British mathematician.

Answer: **Newton's method**

Bonus 12: Science (Astronomy)

They are smaller than their Schwarzschild radii, which are consequently known as their event horizons.

1. Name these gravitational singularities in space, from which not even light can escape.

Answer: **Black holes**

2. According to the "no hair" theorem, mass, charge, and this are the only independent properties of a black hole.

Answer: **Angular momentum**

3. Tiny black holes can evaporate by emitting enough of this type of theorized radiation, predicted by its namesake to emanate from all black holes.

Answer: **Hawking radiation**

Tossup 13: Miscellaneous (Interdisciplinary)

The name's the same. Esther was known for her portrayal of Florida on "Good Times". Capcom created a female robot by this name who was built for housekeeping instead of fighting; she might be Mega Man's sister. Michel was a French mathematician with a namesake theorem. Samari and Antrel are unrelated professional football players. A barrel one means to rotate along the lateral axis. Building up to a big announcement might require one to be performed on a drum, identify this word, which is a notable candy when paired with "Tootsie".

Answer: **Roll(e)**

Bonus 13: Fine Arts (Music)

Name the following composers who worked with Maurice Maeterlinck's play *Pelleas et Melisande*.
(*pell-ee-as ay mell-ih-sahnd*)

1. This composer's only opera is the most famous adaptation of *Pelleas et Melisande*, but he is more famous for the work *Clair de Lune*.

Answer: **Claude Debussy**

2. This composer's first completed orchestral work was a symphonic poem based on the play; this came several years before he developed the 12-tone technique.

Answer: **Arnold Schoenberg**

3. This composer did an eight movement suite on the work; he also wrote the *Karelia Suite*, serenading his homeland.

Answer: **Jean Sibelius**

Tossup 14: Science (Chemistry)

This type of property requires van 't Hoff's factor as an empirical correction for the amount of solute which actually dissociates. Raoult's law describes one of these, vapor pressure, which is proportional to the mole fraction of each dissolved component. Osmotic pressure, boiling point elevation, and freezing point depression are the other common examples of these. Name these chemical properties which depend on the molality (*moh-LAL-ih-ty*) of solute in a substance, but not their identity.

Answer: **Colligative properties**

Bonus 14: Social Studies (Current Events)

Identify these current Illinois political figures.

1. This current Illinois governor has been under a cloud of corruption for most of tenure, especially since the recent conviction of friend Tony Rezko.

Answer: **Rod Blagojevich**

2. One possible contender for governor in the next election is this Attorney General, the child of the Speaker of the Illinois House.

Answer: **Lisa Madigan**

3. In August, this President of the Illinois Senate announced he will not seek another term, and caused a stir by saying he wished his son would take over his spot in the Senate.

Answer: **Emil Jones, Jr.**

Tossup 15: Fine Arts (Visual Art)

In one of this man's paintings, animated skeletons wage war on the living. Another shows fishermen cutting open an enormous catch. In addition to The Triumph of Death and Big Fish Eat Small Fish, he painted Landscape With the Fall of Icarus and many images of Flemish working-class life. Name this painter of The Peasant Wedding and The Peasant Dance.

Answer: **Pieter Bruegel the Elder** (*prompt on Bruegel, accept equivalents*)

Bonus 15: Science (Physics)

They can capture electrons to turn into neutrons, the opposite of beta decay.

1. Name these particle whose charge is opposite that of the electron's.

Answer: **Proton**

2. There are six flavors of these subatomic particles, including "charm" and "strange." Protons are made up of two "up" ones and one "down" one.

Answer: **Quark**

3. In addition to an electric charge, quarks have this kind of so-called charge, allowing them to interact via the strong force.

Answer: **Color charge**

Tossup 16: Social Studies (Geography)

While this nation's official language is English, its 3,000 kilometer north-south railway is named the Ghan in honor of the Afghan camel drivers who helped white settlers explore the arid interior. Name this country, whose northern port of Darwin was connected via rail to Adelaide only in 2004.

Answer: **Australia**

Bonus 16: Math (Algebra) -- Computational

Given the complex numbers $x = 3 + 3i$, and $y = 2 + i$, find the following. Give your answers in $a + bi$ form where appropriate.

1. Give the modulus of a .

2. Give a times b .

3. Give a divided by b .

Answers: 1: **$3\sqrt{2}$** 2: **$3 + 9i$** 3: **$9/5 + 3/5i$** (*accept $1.8 + .6i$*)

Tossup 17: Science (Biology)

Recognition of Class I or Class II MHC molecules distinguishes two types of these. The former is responsible for killing cancerous or virally infected cells and is responsible for tissue transplant rejection. The latter binds to antigen-presenting cells like dendritic cells or macrophages and then releases cytokines to further promote the immune response. Including cytotoxic and helper cells, name this type of white blood cell involved in cell-mediated immunity that partially develops in the thymus.

Answer: **T cell or lymphocyte**

Bonus 17: Literature (Language Arts)

Answer these questions about the T-V dichotomy, a social distinction in language.

1. T-V distinguishes between formal and informal pronouns of this "person," the one used when addressing someone directly.

Answer: **second person**

2. The T-V dichotomy can be seen clearly in these two second person subject pronouns of French

Answer: **tu and vous** (*either order*)

3. The T-V dichotomy is evident in this now-archaic subject pronoun in English which used to be derogatory in some circumstances, but now ironically survives mostly in liturgical addresses to deities.

Answer: **thou**

Tossup 18: Math (Other) -- Computational (30 Seconds)

Give the period of the equation $y = 2 \sin(3 \pi x + 12)$.

Answer: **3/2**

Bonus 18: Social Studies (World History)

Given clues, identify the Egyptian ruler.

1. The second longest serving Pharaoh, he warred with the Hittites, and was also ruler when the Exodus occurred.

Answer: **Ramses II** (*prompt on Ramses*)

2. This ruler during the New Kingdom died young, and his tomb was found in 1922 by Howard Carter.

Answer: **Tutankhamen** (*prompt on King Tut; accept Tutankhaten*)

3. This ruler of the 18th dynasty was the Father-in-law of Tutankhamen, and he also built many cities and temples, like on at Karnak.

Answer: **Akhenaton** (*accept Amenhotep IV*)

Tossup 19: Literature (Literature)

The title of this novel was adjusted from "Dark House" to its current name due to a comment by the author's wife while sitting on the porch one evening. In it, Reverend Gail Hightower is somewhat of a town pariah, only visited occasionally by Byron Bunch. Bunch also figures into the story because he has fallen in love with the pregnant Lena Grove, who is traveling to Jefferson to locate her unborn child's father. Set in the fictional Yoknapatawpha county, identify this novel which also follows Joe Christmas, written by William Faulkner.

Answer: **Light in August**

Bonus 19: Science (Chemistry)

Identify these terms related to radioactive decay.

1. These particles are helium nuclei, and were shot at gold foil in a famous Rutherford experiment.

Answer: **Alpha particle**

2. These are simply electrons emitted by nuclei during radioactive decay.

Answer: **Beta particle**

3. Beta and gamma radiation can be detected by this "counter" which clicks when it is hit by ionizing radiation.

Answer: **Geiger counter**

Tossup 20: Social Studies (Other)

Named after Viracocha, an Incan sun god, this vessel was crewed by six men, none of whom were from the continent it set sail from. Its captain was attempting to prove that ancient people could have settled Polynesia by sailing from South America. Name this raft that was piloted across the Pacific Ocean by Thor Heyerdahl.

Answer: **Kon-Tiki**

Bonus 20: Literature (Literature)

Sometimes characters can come to be defined by their careers. Identify the following characters based on their work experience.

1. This character is an immigrant working in the meat packing industry in Chicago in an Upton Sinclair work.

Answer: **Jurgis Rudkis** (*accept either*)

2. This title character of a Sinclair Lewis work runs the gamut of scientific jobs in his tenure as a doctor all over the world.

Answer: **Martin Arrowsmith**

3. This man might be one of the best representatives of teachers to be found in Literature. He teaches at Brookfield, an all-boys boarding school in a work by James Hilton.

Answer: **Mr. Chips** (*accept Arthur Chipping*)

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Social Studies (World History)**

He gained infamy due to the legend of him ordering the murder of his two nephews, both of whom had greater claim to the British throne than he. According to Shakespeare, he would have fared poorly at horse trading. Name this king of England who was a member of the house of York, and reigned from 1483 to his death in 1485 at the conclusion of the Wars of the Roses.

Answer: **Richard III**

Bonus 21: Miscellaneous (Interdisciplinary)

Answer these questions about a set of classical elements and their influence on pop culture.

1. In the dialogue Timaeus, Plato associates the tetrahedron, octahedron, icosahedron, and cube with these four basic elements.

Answer: **fire, air, water, & earth** (*accept answers in any order*)

2. Stan Lee was influenced by the Greek elements when he assigned powers to the Fantastic Four in 1961; give the superhero names of the four team members in any order.

Answer: **Mr. Fantastic, Human Torch, Thing, & Invisible Woman/Girl** (*accept answers in any order*)

3. In this animated series that airs on Nickelodeon, the world is divided into four nations, each based on an element, and the hero Aang must master all four to defeat the Fire Lord.

Answer: **Avatar: The Last Airbender**



Aegis Questions

**2008 IHSSBCA Kickoff
Round 8**

Tossup 1: Social Studies (U.S. History)

Headed by over a group of over 50 local leaders, it began with the desire to promote "peace, civil authority, (and) righteousness." In addition, it sought to protect its members from foreign invaders, who were beginning to enter its lands. When the Tuscarora joined in 1722, its membership rose from five to six tribes. Name this group of American Indian tribes in New York.

Answer: **Iroquois Confederacy** (*accept Iroquois League; prompt on Five or Six Nations*)

Bonus 1: Literature (Literature)

A group of people called the "Merry Pranksters" drove a bus called "Furthur" cross-country in 1964.

1. The group formed around this proponent of psychedelic drugs and author of *One Flew Over the Cuckoo's Nest*.

Answer: **Ken Kesey**

2. This work of New Journalism centers around parties that Kesey held, often featuring performances by The Grateful Dead, which received their moniker from their substantial use of LSD.

Answer: **The Electric Kool-Aid Acid Test**

3. This author of *The Electric Kool-Aid Acid Test* also penned *The Bonfire of the Vanities*.

Answer: **Tom Wolfe**

Tossup 2: Math (Geometry) -- Computational (30 Seconds)

Give the side length of a triangle which is inscribed in a circle of circumference 20 pi.

Answer: **10 root 3**

Bonus 2: Science (Physics)

Answer these questions about fluid dynamics.

1. This quantity describes a fluid's resistance to flow, and corresponds to its perceived thickness.

Answer: **Viscosity**

2. Fluids for which viscosity is a simple linear relationship are termed this. More precisely, these namesake fluids have shear stress proportional to velocity.

Answer: **Newtonian fluids**

3. A smooth, parallel fluid flow is called laminar; the opposite, a chaotic flow, is called this.

Answer: **Turbulent**

Tossup 3: Literature (Literature)

This protagonist kills four people during the course of the book. An old man named Ezeudu warned him against killing the first, a boy named Ikemefuna. Later at a funeral, this man's gun explodes, and a shard of it accidentally strikes and kills a boy. Consequently, he is exiled from his village of Umuofia for seven years. He returns and eventually kills a white man and then hangs himself.

Identify this man, of the Ibo clan, the main character of Chinua Achebe's *Things Fall Apart*.

Answer: **Okonkwo**

Bonus 3: Social Studies (Other)

What the hell! Identify the following about various hells.

1. This Judaic underworld is sometimes translated as "hell" but really is simply a final resting place for all the dead.

Answer: **Sheol**

2. This Islamic hell derives from the Hebrew word for the Judaic place of torment and contains the tree Zaquum.

Answer: **Jahannam** (*three syllables, do NOT accept Jannah, or Gehennam*)

3. This place in Greek mythology is a lower world of punishment for evildoers, more like Jahannam than Sheol.

Answer: **Tartarus**

Tossup 4: Science (Biology)

It typically occurs in the tropo- form, consisting of numerous long fibers in a helix. Ehlers-Danlos syndrome, osteogenesis imperfecta, and scurvy affect its production. When hydrolyzed, it forms gelatin, and along with keratin, it makes up skin and many other tissues. Name this most common protein in mammals, a major component of connective tissue.

Answer: **Collagen**

Bonus 4: Literature (Literature)

The country of China is responsible for a great many prolific poets.

1. This poet, the writer of "Drinking Alone by Moonlight" among many others, was said to have drowned attempting to embrace the reflection of the moon.

Answer: **Li Bai** (*accept Li Po*)

2. Li Bai was idolized by this other poet, sometimes called the Poet-Sage by Chinese critics, whom he met for the first time in 744.

Answer: **Du Fu** (*accept Tu Fu*)

3. Both Li Bai and Du Fu wrote during this golden age of Chinese literature, a dynasty that lasted from 618-907, a period which also saw the An Shi Rebellion take place.

Answer: **T'ang Dynasty**

Tossup 5: Social Studies (World History)

This man was the second member of the dynasty with which he shares his name. During his reign, General Belisarius managed not only to crush unrest, but also take back North Africa from the Vandals, and defeat the Ostrogoths in Italy. Ruling from 527 until his death, this Eastern Roman Emperor saw to the building of the Hagia Sophia during his reign. Ruling with his Empress Theodora by his side, identify this Emperor who is noteworthy for his judicial reforms, specifically completing the codification of Roman Law.

Answer: **Justinian I the Great** (*accept Flavius Petrus Sabbatius Iustinianus*)

Bonus 5: Math (Geometry) -- Computational

Perform the following conversions between coordinate systems.

1. (2, 150 degrees) from polar to rectangular.

2. (3, 135 degrees, 45 degrees) from spherical to rectangular.

3. (2, 45 degrees, 2 root 3) from cylindrical to spherical.

Answers: 1: **(- root 3, 1)** 2: **(-3/2, 3/2, 3 root 2 / 2)** 3: **(4, 45 degrees, 30 degrees)**

Tossup 6: Fine Arts (Visual Art)

British members of this artistic school include Sir Peter Blake , David Hockney, and Richard Hamilton, who created the collage Just What is it that Makes Today's Homes So Different, So Appealing? Other works of this movement include an American flag by Jasper Johns and comic-strip paintings by Roy Lichtenstein. Name this twentieth century art movement associated with mass production of commercial images, whose most famous member was Andy Warhol.

Answer: **Pop Art**

Bonus 6: Science (Astronomy)

It plots the spectral class versus the magnitude of stars.

1. Name this doubly-eponymous diagram also referred to as the color-magnitude diagram.

Answer: **Hertzsprung-Russell diagram** (accept *HR diagram*)

2. Most stars lie on a diagonal band on the HR diagram, known as this.

Answer: **Main sequence**

3. One of the axes on the HR diagram is absolute magnitude, or equivalently, this scale measuring the energy output of a star, which rates the sun as a 1.

Answer: **Luminosity**

Tossup 7: Science (Chemistry)

One type of it uses a supercritical fluid, usually carbon dioxide, and is useful for separating chiral compounds. More common are the high performance liquid type, which employs a pressurized column, and the thin layer type, which often uses a silicon wafer. In general, it always has a mobile phase and a stationary phase. Name this lab technique for separating mixtures, commonly used in basic biology classes to analyze the plant pigment chlorophyll.

Answer: **chromatography**

Bonus 7: Social Studies (U.S. History)

Identify these historical figures whose likenesses have been added to the National Statuary Hall Collection this decade.

1. Given by Kansas as the first ever replacement, this man's statue is fittingly green since he served as Supreme Allied Commander during Word War II before being elected the thirty-fourth president.

Answer: **Dwight D. Eisenhower**

2. Shown carrying her infant son, this woman is honored by North Dakota's statue recognizing her indomitable spirit while guiding the Lewis and Clark expedition.

Answer: **Sakakawea** (accept *Sacajawea*, *Sacagawea*)

3. New Mexico's statue of this Native American religious leader is the only one carved in pink marble and it shows the scars from his flogging and the knotted cord he used to time the 1680 Pueblo Revolt that defeated the Spanish.

Answer: **Po'pay**

Tossup 8: Miscellaneous (Technology)

This company had its roots in seismic technology to search for petroleum. Recently, it has won two Emmy awards for developing DLP television technology. In 1958, one of its employees, Jack Kilby, decided not to go on vacation, and proceeded to invent the integrated circuit. Identify this company which has two divisions, Semiconductor and Educational Technologies, the second of which produces a line of calculators including the "84 plus" and "89 Titanium".

Answer: **Texas Instruments** (*prompt on TI*)

Bonus 8: Fine Arts (Music)

Identify the following works by Igor Stravinsky.

1. This primal ballet is subtitled "Pictures from Pagan Russia." Consisting of The Adoration of the Earth and The Sacrifice, it features tonic dissonance and heavy percussion.

Answer: **The Rite of Spring** (*accept Le Sacre du Printemps*)

2. Based on the traditional puppet theater of Russia, this ballet tells of the titular doll's imprisonment by the cruel Showmaster and his love for the Ballerina.

Answer: **Petrushka**

3. With the help of the titular creature, Prince Ivan rescues a group of princesses from the castle of an ogre in this ballet inspired by a Russian folk tale.

Answer: **The Firebird Suite** (*accept L'Oiseau de Feu*)

Tossup 9: Math (Calculus) -- Computational (30 Seconds)

Find the derivative of $(4x^2 + 10)^2 + 3x^4$.

Answer: **76x cubed + 160x**

Bonus 9: Science (Biology)

Developed by Kary Mullis, this technique requires thermal cycling usually performed by special machines.

1. Name this laboratory technique that allows the rapid amplification of a DNA sequence.

Answer: **PCR** (*accept polymerase chain reaction*)

2. Because PCR is performed at higher temperatures than normal DNA synthesis, it requires the thermostable Taq version of this enzyme responsible for DNA replication.

Answer: **DNA polymerase**

3. Polymerase needs these short fragments of complementary DNA strands, which serve as the starting points of DNA synthesis.

Answer: **Primer**

Tossup 10: Literature (Literature)

One of them features personified figures of Love, Ambition, and Poetry and is "on Indolence."

Another that begins "O Goddess!" is dedicated to the lover of Eros, Psyche. One of the most famous ends with the question "Do I wake or sleep?" while another that begins "Thou unravish'd bride of quietness" ends by equating truth and beauty. Name these poems of a specific form by the author of Endymion, which include the one "on a Grecian Urn" and another "to a Nightingale."

Answer: **odes of John Keats** (*prompt on insufficient answers like "poems by Keats"*)

Bonus 10: Miscellaneous (Entertainment)

War movies are awesome. As such, you will get a bonus about them.

1. Mel Gibson plays a soldier in Vietnam in this 2002 film directed by Randall Wallace.

Answer: **We Were Soldiers**

2. Matthew Broderick portrays Robert Gould Shaw, the commander of an all Black regiment in the Civil War, in this movie also starring Morgan Freeman and Denzel Washington.

Answer: **Glory**

3. Tom Hanks leads a squad of soldiers, one whom is played by Vin Diesel, in performing the titular act. Matt Damon also stars.

Answer: **Saving Private Ryan**

HALFTIME

Tossup 11: Science (Earth Science)

Brackish water is found in these, and life often flourishes based on the salinity of the water. The Amazon River creates one that extends far beyond the Brazilian coast, and the Chesapeake Bay is the largest one in the US. Identify this type of body of water, featuring fresh water emptying into a salt water sea.

Answer: **Estuary**

Bonus 11: Math (Algebra) -- Computational

Solve the following equations for x. Give all solutions.

1. $x^2 + x - 2 = 0$

2. $x^3 + 2x^2 - x - 2 = 0$

3. $\sin x = \cos x$. Only give solutions between 0 and 2π .

Answers: 1: **-2 and 1** 2: **1 and -1 and -2** 3: **$\pi/4$ and $5\pi/4$**

Tossup 12: Literature (Literature)

He is a notable member of the Cacophony Society, people who pursue "experiences beyond the pale of mainstream society." This society would provide the basis for his creation of "Project Mayhem" in his most famous novel. A pioneer of modern Transgressional Fiction, he has written such works as "Invisible Monsters", and a horror trilogy consisting of "Diary", "Lullaby" and "Haunted". Also producing a story about con man Victor Mancini, "Choke", identify this author whose most famous novel is about a nameless protagonist and his interactions with Tyler Durden, in "Fight Club"

Answer: **Chuck Palahniuk**

Bonus 12: Fine Arts (Visual Art)

Answer the following about an architect for ten points each.

1. This American architect is associated with the Prairie School of design and is known for buildings like The Imperial Hotel in Tokyo and the Guggenheim Museum in New York City.

Answer: **Frank Lloyd Wright**

2. This Chicago building became the quintessential example of Prairie House design. It was originally built to house the family for which it is named.

Answer: **Robie House**

3. Wright built this private home to highlight surrounding natural features, especially the natural stream that runs through and below the house.

Answer: **Fallingwater**

Tossup 13: Math (Other) -- Computational (30 Seconds)

You have a dartboard shaped like a square with side length 4. It has a circular region inscribed in it. If you are guaranteed to hit the square with a dart, then what is the probability that you hit inside the circular region?

Answer: **$\pi/4$**

Bonus 13: Science (Chemistry)

It requires nitrogen and hydrogen gas, and uses an iron catalyst.

1. Name this industrial chemical process which produces ammonia.

Answer: **Haber(-Bosch) process**

2. The solid iron catalyst is in a different phase from the gaseous reactants, so it is called this type of catalyst.

Answer: **Heterogeneous catalyst**

3. The Haber process is conducted under very high pressures, because this principle dictates that high pressures shift the chemical equilibrium toward the products.

Answer: **Le Chatelier's principle**

Tossup 14: Miscellaneous (Interdisciplinary)

Tamoszius plays one in The Jungle, and Mick tries to make one out of a ukulele in The Heart Is a Lonely Hunter. Laura and Mary listen to Pa play one from their trundle bed in Little House in the Big Woods. In a Study in Scarlet, Watson mentions that the detective Sherlock Holmes also plays it. Name the instrument supposedly played by the Devil in Georgia and by Nero while Rome burned, the highest stringed instrument in the orchestra.

Answer: **violin** (accept *fiddle*)

Bonus 14: Literature (Mythology)

Answer the following about some strange, but surely delicious, mythological creations.

1. In order to appease the Greek gods, this figure slew his son and had him made into food. He resides in the underworld, unable to eat and unable to drink.

Answer: **Tantalus**

2. This "feathered serpent" used his own blood and bone meal to make a race of humans.

Answer: **Quetzalcoatl**

3. The mead of poetry that was consumed by Odin was a mixture of honey and the blood of Kvasir. Kvasir himself was made from a mixture of this substance belonging to the Aesir and Vanir.

Answer: **spit** (accept *equivalents*)

Tossup 15: Social Studies (U.S. History)

He was taught to read by Mrs. Hugh Auld while living in Maryland. He held multiple political offices, including minister to Haiti and was an adviser to Abraham Lincoln. An opponent of violence, he founded the North Star. Name this former slave who was instrumental in the 19th century abolitionist movement.

Answer: **Frederick Douglass** (accept *Frederick Augustus Washington Bailey*)

Bonus 15: Math (Algebra) -- Computational

Find the following related to the vectors $A = (1, 2)$ and $B = (4, 1)$.

1. Find the dot product of A and B.

2. Find the cosine of the angle between A and B.

3. Find the area of the triangle bounded by the two vectors.

Answers: 1: **6** 2: **$\frac{7}{\sqrt{85}}$** (accept $\frac{7}{\sqrt{85}}$) 3: **$\frac{7}{2}$**

Tossup 16: Fine Arts (Music)

He wrote the Song of the Rats and the Song of the Fleas for an oratorio, The Damnation of Faust, and he also wrote an opera set after the Trojan War, called Les Troyens. His most famous work features hallucinations following an opium trip; the fourth movement ends with a decapitation, and the fifth and final movement portrays a Witches' Sabbath. Name this lover of Harriet Smithson and French composer of Symphonie Fantastique.

Answer: **Hector Berlioz**

Bonus 16: Social Studies (Geography)

Its water famously becomes mist before it hits the ground after a plunge of about half a mile.

1. Name this waterfall, the tallest in the world.

Answer: **Angel Falls**

2. Angel Falls is south of the Orinoco River in this country.

Answer: **Venezuela**

3. Angel Falls is in this Venezuelan state, whose namesake, along with Jose de San Martin, liberated much of South America from Spain in the 1830's.

Answer: **Simon de Bolivar**

Tossup 17: Math (General)

It is generalized by the unproven Hadwiger conjecture, and a weaker version was proven by Petersen in 1891. For surfaces other than the plane, the number required by the theorem depends on the characteristic of the surface, and is seven for a torus. Its eventual proof in the 70s required listing hundreds of pages of cases, and was verified by a computer. Name this theorem about the number of labels required to label planar graphs.

Answer: **Four color theorem**

Bonus 17: Miscellaneous (Sports)

Name the following inductees into the MLB Hall of Fame.

1. Two answers required: Both of 2007's inductees, one Oriole and one Padre, received more than 97% of the vote.

Answer: **Cal Ripken Jr. and Tony Gwinn Sr.**

2. This longtime Kansas City Royal third baseman, inducted in 1999, was famously ejected from a game after a home run for using too much pine tar.

Answer: **George Brett**

3. The only player inducted in 2008 was this relief pitcher who played for 9 teams, but is possibly best known as a New York Yankee.

Answer: **Rich "Goose" Gossage** (*prompt on "Goose"*)

Tossup 18: Social Studies (Other)

He both attended and taught at Harvard, and he also was the chair of the Psychology department at Indiana University. In 1957 he published his Verbal Behavior, and he is known for extensive work with operant conditioning. Some of this research used his so called "box" which trained animals to complete certain tasks. Name this behaviorist who authored Walden Two.

Answer: **Burrhus Frederic Skinner**

Bonus 18: Literature (Literature)

The "big three" of 17th century French Literature have undeniably had great impact on Literature as we know it.

1. One of the "big three," Pierre Corneille wrote this work, based upon the legend of Rodrigo Díaz de Vivar.

Answer: **Le Cid** (*do not accept El Cid*)

2. Another member was this man, most often called by his stage name, best known for *The Misanthrope* and *Tartuffe*.

Answer: **Molière** (*accept Jean-Baptiste Poquelin*)

3. After Corneille and Molière, the third member is this man, who wrote of Roman Emperor Titus and his tragic love for a woman the public disapproves of in his *Bérénice*.

Answer: **Jean Baptiste Racine**

Tossup 19: Science (Physics)

It only affects left-handed leptons and quarks, and can violate P and CP symmetries. Because it is mediated by heavy bosons, it only operates within distances of 10 to the -18 meters. The only flavor-changing interaction, it is mediated by the W and Z bosons. Name this fundamental force which is responsible for beta decay, and which has been unified with the electromagnetic force.

Answer: **Weak force**

Bonus 19: Math (Calculus)

Identify the following theorems from calculus. All refer to smooth, differentiable curves.

1. On an interval from a to b, there exists some point c, where the derivative of f at c has the same slope as the line connecting a and b.

Answer: **Mean Value Theorem**

2. On an interval from a to b, where f of a equals f of b, the derivative of f equals zero at some point.

Answer: **Rolle's Theorem**

3. For a closed curve, the line integral of some vector function within the curve is equivalent to the double integral of the function's curl across the region.

Answer: **Green's Theorem**

Tossup 20: Literature (Literature)

The starting manuscript of this novel was a letter that its author began writing to a dying grandfather. Some critics say that it is actually roman à clef, telling a real life story behind a façade of fiction. It is proposed that The Poet in the novel probably represents Pablo Neruda, and that the author's cousin, once removed represents both The Candidate and The President. Detailing four generations of life in the Trueba family and mostly chronicling Esteban his clairvoyant wife Clara, identify this work, the debut novel of Isabel Allende.

Answer: **The House of the Spirits** (*accept La Casa de los Espíritus*)

Bonus 20: Social Studies (World History)

Answer these questions about some of the most feared secret police in history.

1. Like the SS, this group was headed by Heinrich Himmler until the end of the war and it was mainly responsible for the "preventative arrest" of communists, trade unionists, clergy, and other political opponents of the Nazis.

Answer: **Gestapo** (accept *Geheime Staatspolizei*)

2. In this country, the SAVAK had the power to censor fundamentalist Muslim books and torture dissenters but could not prevent the toppling of the Shah in 1979.

Answer: **Iran**

3. Transformed into the KGB by Khrushchev, this secret police force ran the Gulag system, purged the Communist Party, and carried out nearly one million executions under Stalin.

Answer: **NKVD** (accept *People's Commissariat of/for Internal Affairs*)

TIEBREAKERS/REPLACEMENTS**Tossup 21: Social Studies (World History)**

The Polish bombe was invented expressly to crack the codes used by this machine. Invented in the 1920s, the machine came into widespread use in the late 1930s, and was the target of much work by cryptographic analysts at Bletchley Park, England, during the course of World War II. Name this German code machine.

Answer: **Enigma**

Bonus 21: Science (Biology)

Many advances in biology have come from research performed on animals.

1. These animals were researched by Karl Landsteiner, who discovered their namesake Rh-positive and Rh-negative blood groups.

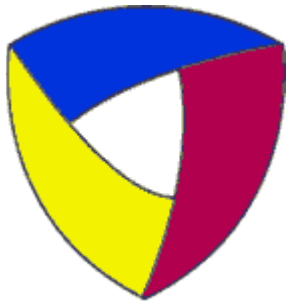
Answer: **Rhesus monkeys** (*prompt on monkey*)

2. Using the domestic chicken as a test subject, Robert Good found that this organ was responsible for cell-mediated immunity and the maturation of T-lymphocytes.

Answer: **thymus**

3. Cats were the first recipients of split-brain surgery and the first mammals whose female cells were found to contain an inactivated X-chromosome, more commonly called this.

Answer: **Barr body**



Aegis Questions

**2008 IHSSBCA Kickoff
Round 9**

Tossup 1: Social Studies (U.S. History)

The Supreme Court ruled these entities constitutional in a case that used the “strict scrutiny” standard as outlined in footnote four to a 1938 Supreme Court case. Hugo Black claimed that “pressing public necessity,” and not racism, justified their existence in the 1944 case *Korematsu vs. US*. Name these entities, established by Executive Order 9066 during World War II.

Answer: **Japanese internment camps** (accept equivalents, prompt if “Japanese” is not given)

Bonus 1: Literature (Literature)

Name these poets that died in World War I.

1. This American is really only known for the cute 12-line poem “Trees.” He died at the Second Battle of the Marne in 1918.

Answer: **Joyce Kilmer**

2. This English author of realistic war poetry such as “Anthem for a Doomed Youth” and “Dulce Et Decorum Est” was killed shortly before the war ended.

Answer: **Wilfred Owen**

3. This poet’s patriotic and idealistic poetry is often contrasted with that of Owen. He died after a mosquito bite got infected before his collection “1914” could be published.

Answer: **Rupert Brooke**

Tossup 2: Math (Algebra) -- Computational (30 Seconds)

Calculate the dot product of the vector normal to the plane $2x + 3y + 4z = 3$ and the vector (4, 8, 7).

Answer: **60**

Bonus 2: Science (Physics)

Name these effects from physics.

1. In this effect, a wave emitted by a moving source is perceived at a different frequency.

Answer: **Doppler effect**

2. In this effect, in a rotating frame of reference, objects moving in a straight line are seen to move in an arc.

Answer: **Coriolis effect**

3. In this strange effect, under certain conditions, warm water freezes more quickly than colder water. It can be accounted for by convection currents and a number of other contributing factors.

Answer: **Mpemba effect**

Tossup 3: Literature (Literature)

This most important possession was supposedly dyed by an Egyptian with blood “conserved from maidens’ hearts.” A prostitute, Bianca, is ordered to copy the embroidery on it, a pattern of red strawberries. Since it was a husband’s first gift to a wife, Cassio’s possession of it gives that husband enough evidence to smother that wife. Identify this important piece of cloth owned by Desdemona in Shakespeare’s *Othello*.

Answer: **Desdemona’s Handkerchief**

Bonus 3: Social Studies (World History)

Identify the following Israeli Prime Ministers.

1. This founder of the Histadrut served as the first Minister of Defense and Prime Minister of the state of Israel.

Answer: **David Ben-Gurion** (accept *Gruen*)

2. The successor to Levi Eshkol, the government of this former Minister of Defense under Ben-Gurion and Eshkol fell apart as a result of the Yom Kippur War.

Answer: **Golda Meir** (accept *Mabovitch* or *Myerson*)

3. The Chief of Staff during the Six-Day War, in 1993 he signed the Israeli-PLO accords, but was shot in 1995 by Yigal Amir.

Answer: **Yitzhak Rabin**

Tossup 4: Science (Biology)

It is elucidated in the cohesion-tension theory, which states that capillary action and water's cohesion allow this to occur. It starts when water evaporates in stomata, causing a column of water below to rise up due to surface tension. Name this mechanism which, along with root pressure, transports water up the xylem in a plant.

Answer: **Transpiration**

Bonus 4: Literature (Mythology)

FTPE, identify the following about mythological dogs.

1. This canine always caught its prey, except when chasing the Teumissian fox, who could never be caught. Zeus had enough of their chase, and turned both to stone.

Answer: **Laelaps**

2. This four-eyed dog guards the entrance to Helheim and its chest is covered in blood. Tyr will kill it at Ragnarok.

Answer: **Garm**

3. Sirius, the Dog Star, was put into the sky after this giant hunter and his dog were killed by a scorpion.

Answer: **Orion**

Tossup 5: Social Studies (Geography)

Over three million people inhabit this country currently led by Ellen Johnson-Sirleaf. The Mande, Kwa, and Mel make up much of the indigenous population of this country, though many of its citizens are descended from people who arrived from America in the early 19th century. Name this country with capital at Monrovia that was founded in 1822 by freed slaves.

Answer: **Republic of Liberia**

Bonus 5: Math (Calculus) -- Computation

Find the definite integrals from 0 to 1 of the following functions.

1. $x^2 + 1$.

2. Natural log of the quantity x^2 .

3. x^2 over the quantity $1 + x$, close quantity.

Answers: 1: $\frac{4}{3}$ 2: -2 3: $\ln(2) - \frac{1}{2}$ (*natural log of 2, minus 1/2*)

Tossup 6: Fine Arts (Visual Art)

The house portrayed is located in Cushing, Maine, where the artist had been staying when he saw the scene that inspired the painting, still stands. The artist took artistic license in its depiction, separating the barn from the house and changing the lay of the land a bit. The title girl had an undiagnosed muscular deterioration that paralyzed her lower body; it was likely Polio. Featuring a girl in a pink dress lying in some grass, identify this painting by Andrew Wyeth.

Answer: **Christina's World**

Bonus 6: Science (Earth Science)

Answer the following about glaciers.

1. Surface tension on a glacier can create these rifts that commonly present problems for mountain climbers.

Answer: **Crevasse**

2. This is the term for the reduction in size of a glacier. Zones where this occurs are contrasted with accumulation zones.

Answer: **Ablation**

3. This is the term for a long, whale-shaped hill formed by a glacier, commonly found in the Eastern United States and in Europe.

Answer: **Drumlin**

Tossup 7: Science (Chemistry)

He discovered tetratomic oxygen, and diagrammed atoms as cubes with electrons on the corners. A rival of Irving Langmuir, he was key in developing modern chemical thermodynamics. His early work on the covalent bond led to his namesake dot structures and his expanded definition of acids and bases in terms of electron pairs. Name this American chemist whose namesake acids are electron-pair acceptors.

Answer: **Gilbert Lewis**

Bonus 7: Social Studies (U.S. History)

Answer these questions about the various plans of government debated at the 1787 Constitutional Convention.

1. Largely the work of James Madison, the plan named after this state favored large states by making the size of both legislative houses proportional to population.

Answer: **Virginia Plan**

2. Drafted by William Paterson in response to the Virginia Plan, this plan aided small states by giving equal representation in the legislature and would have allowed for multiple presidents.

Answer: **New Jersey Plan**

3. Never seriously considered by the delegates, the plan submitted by this man resembled the old Roman Republic with Senators and a national Governor elected for life.

Answer: **Alexander Hamilton**

Tossup 8: Miscellaneous (Entertainment)

He was responsible for a Saturday morning show geared towards children titled "Sam and Friends," which featured the first appearance of what was to become his most famous, green character. He met his wife while they were working on this show, and when she finally retired, he hired Jerry Juhl and Frank Oz to replace her in two of her duties. Innovating the use of a soft foam covered with fabric instead of wood, and rods instead of strings for puppets, identify this creator of Kermit the Frog along with the rest of The Muppets.

Answer: **James Maury "Jim" Henson**

Bonus 8: Fine Arts (Music)

Sometimes popular figures have no choice but to be the subjects of 20th century works of opera and ballet. Identify the following about the subject.

1. Henry McCarty, better known as Billy the Kid was the subject of a ballet by this man, also known for Appalachian Spring.

Answer: **Aaron Copland**

2. This minimalist composer came to prominence with his opera Nixon in China.

Answer: **John Coolidge Adams**

3. This Stephen Sondheim musical is based on the painting "Sunday Afternoon on the Island of La Grande Jatte".

Answer: **Sunday in the Park with George**

Tossup 9: Math (Calculus)

The Scott version of this concept applies to partially ordered sets. Topologically, if the inverse image of any open set is open, then a function is this. The popcorn function and the step function are not, while all polynomials are. The intermediate value theorem applies to any function that is this, also defined as the condition that f of x equals the limit of f at x for all x . Name this type of function from calculus, a superset of the differentiable functions.

Answer: **Continuous function**

Bonus 9: Science (Chemistry)

Its structure consists of six carbons in a ring, each bonded to one hydrogen.

1. Name this molecule with formula C_6H_6 , whose alternating single and double bonds resonate.

Answer: **Benzene**

2. Benzene is the simplest of this class of hydrocarbons, also known as arenes, which are named for their scent.

Answer: **Aromatic hydrocarbons**

3. One derivative of benzene is this solvent, also known as methylbenzene, a gasoline additive and main ingredient of TNT.

Answer: **Toluene**

Tossup 10: Literature (Literature)

This author got his first break with a story that includes a unicycling bear, "The Pension Grillparzer." His later novels such as "The Second Wind of the Cuckold" were all overshadowed by his mother's feminist non-fiction work "A Sexual Suspect," which elucidates upon such events as his one-sided conception. He died at the hand of a woman who had cut out her own tongue to join the Ellen Jamesians. Identify this character, named after his father, a Technical Sergeant, who is the title character in a novel by Johnathan Irving, telling of "The World According to" this man.

Answer: **T. S. Garp**

Bonus 10: Miscellaneous (Interdisciplinary)

Identify the following insurance agents. Obviously, they became famous for other occupations.

1. This writer is famous for novels featuring Jack Ryan, including The Hunt for Red October and Patriot Games.

Answer: **Tom Clancy**

2. This modernist poet wrote "Thirteen Ways of Looking at a Blackbird" and "The Emperor of Ice Cream."

Answer: **Wallace Stevens**

3. This American composer of Three Places in New England wrote a work with four movements based on transcendentalists called the Concord Sonata.

Answer: **Charles Ives**

HALFTIME

Tossup 11: Science (Astronomy)

Antony Hewish first discovered, and Jocelyn Bell first interpreted, these entities. One of these is in the center of the Crab Nebula, and they were originally called Little Green Men, due to the prevailing thought they were caused by aliens. Identify this type of astronomical body, which Thomas Gold correctly determined is a rotating neutron star.

Answer: **Pulsar**

Bonus 11: Math (Algebra)

Identify the following terms relating to functions.

1. A function maps from a set called this, to another set called the range.

Answer: **Domain**

2. If f of x does not equal f of y , whenever x does not equal y , then f is said to be this.

Answer: **Injective** (accept *one-to-one*)

3. If, for any y in the range, there is an x such that f of x equals y , f is said to be this.

Answer: **Surjective** (accept *onto*)

Tossup 12: Literature (Mythology)

He decreed that all of the hymens of the virgins in the city he ruled belonged to him. To burn off some of that extra energy, Aruru creates a wild man to match him. After wrestling, this man has a bunch of dreams on the way to killing the guardian of the Cedar Forest, Humbaba. After he rejects the sexual advances of Ishtar, she sends the Bull of Heaven to attack him, and this man and his companion kill it. Name this man, a king of Uruk, who gets really sad and goes to find immortality after his friend Enkidu dies.

Answer: **Gilgamesh**

Bonus 12: Fine Arts (Visual Art)

Mythology is often the subject of many famous works of art.

1. One such often depicted woman was this daughter of King Acrisius and mother to Perseus who was impregnated by a shower of gold.

Answer: **Danaë**

2. Danaë was famously painted in the 16th century by this painter, who depicted her as rather nonchalant about Zeus' visit; at least compared to her handmaiden, who is trying to use her apron to catch some of the gold.

Answer: **Titian** (accept *Tiziano Vecelli*)

3. Danaë was then painted some eighty years later by this artist, who depicted her as having just awoken, reaching out for the golden light around her.

Answer: **Rembrandt van Rijn**

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

Give the tenth derivative of e to the $2x$ power.

Answer: **$1024 \cdot e^{(2x)}$**

Bonus 13: Science (Biology)

Its name comes from the Latin and Greek for "putrefaction of tissues."

1. Name this medical condition defined as the death of tissue due to loss of blood supply.

Answer: **Gangrene**

2. This form of gangrene results from a bacterial infection that causes swelling which blocks blood vessels.

Answer: **Wet gangrene**

3. This condition, usually called "flesh-eating bacteria," results from a bacterial infection which releases toxins destroying skin and muscle tissue.

Answer: **Necrotizing fasciitis**

Tossup 14: Miscellaneous (Sports)

He was selected in the 2005 draft a pick after Marvin Williams, whose college team had beaten his months earlier in the NCAA Men's Basketball championship. This point guard played high school basketball in Texas with Bracey Wright, who played his college ball for the rival Indiana Hoosiers. In the pros he has had a rivalry with fellow 2005 draft pick Chris Paul, who teamed with this man to lead the United States to a gold medal at the 2008 Olympic Games. Name this former member of the Illinois basketball team, a current starter for the Utah Jazz.

Answer: **Deron Williams**

Bonus 14: Literature (Literature)

Literary Criticism is one of the most confusing and complicated fields of study.

1. This is one of the most well known strategies of critical analysis; it tries to uncover internal contradictions and assumptions within the language of works.

Answer: **Deconstruction** (*do not accept deconstructivism*)

2. The creation of the term "deconstruction" is attributed to this man, an Algerian-born Frenchman whose best known work is *Of Grammatology*.

Answer: **Jacques Derrida**

3. One of Derrida's more famous interpretations was of a Biblical passage, specifically one involving Abraham's sacrifice of this son.

Answer: **Isaac**

Tossup 15: Social Studies (Current Events)

According to the Washington Times, he might run against Marty Kaptur for Congress in 2010. An opponent of Social Security, he is an employee of A.W. Newell Corporation. He is in talks to purchase the Toledo company that annually earns more than a quarter of a million dollars. Critical of a proposed tax plan, he recently met with Democratic leaders to express his concerns, which made him the talk of the national media. Name this man frequently used by the McCain campaign to illustrate its supposed benefits for the middle class, a skilled laborer from Ohio.

Answer: **Joe the Plumber** (*accept Joseph Wurzelbacher*)

Bonus 15: Math (Algebra) - Computational

Identify the following about the matrix with top row 3, 4, 5, middle row 1, 2, 7, and bottom row 0, 0, 3.

1. The trace of the matrix.
2. The determinant of the matrix.
3. The 2,1 minor of the matrix.

Answers: 1: 8 2: 6 3: 12

Tossup 16: Fine Arts (Music)

In this opera, Marzelline, Rocco's daughter, falls in love with the titular character, though it turns out that he is actually a woman in disguise. This opera exists in three versions, and has four different overtures, including one called "Leonore No. 3". Taking place in a Spanish prison, it tells the story of Florestan's wife, who saves him from execution by Governor Pizarro. Name this only opera of Beethoven.

Answer: Fidelio

Bonus 16: Social Studies (U.S. History)

Answer the following about important Supreme Court cases.

1. This case established that speech that caused "clear and present danger," such as falsely shouting fire in a movie theater, was not protected under the First Amendment.

Answer: Schenck v. United States

2. This case involved a man charged with breaking into a pool hall but who was not given legal counsel because it was not a capital crime.

Answer: Gideon v. Wainwright

3. This 1973 case, heard by the Burger court, upheld the right to privacy.

Answer: Roe v. Wade

Tossup 17: Math (General) -- Computational (30 Seconds)

Given an urn with 8 blue marbles, 3 green marbles, and 5 red marbles, what are the odds of pulling two blue marbles in consecutive draws in the marbles are not replaced?

Answer: 7/30

Bonus 17: Miscellaneous (Entertainment)

Answer these questions related to the "Battle of Britpop" that occurred in 1995 between two British bands that released singles on the same day.

1. This band led by the Gallagher brothers lost the "Battle," but other songs off the same album did better commercially, such as "Don't Look Back in Anger" and "Wonderwall."

Answer: Oasis

2. Oasis lost out to this band and their single "Country House," but they are much more well known for the later hit "Song 2."

Answer: Blur

3. After Blur went on hiatus in 2003, Damon Albarn focused his efforts on this virtual band, that has hits like "Kids With Guns" and "Feel Good, Inc."

Answer: Gorillaz

Tossup 18: Social Studies (World History)

This man served as consul in 460 BCE and was a persistent opponent of attempts to improve legal situations for the Roman plebeians. Upon promotion to his most famous position, he immediately appointed Lucius Tarquinius his Magister Equitum. The morning after this promotion, he went to the popular assembly and ordered that everyone of military age to report to the Campus Martius by the end of the day. The next day he personally led this newly amassed army into battle against the neighboring Aequians. Identify this man, a dictator for only sixteen days, who retired back to his farm after that period.

Answer: **Lucius Quinctius Cincinnatus**

Bonus 18: Literature (Literature)

Identify the following about Ireland's National Theatre.

1. Name this theatre, located in Dublin, where Sean O'Casey debuted *The Plough and the Stars* in 1926 to riots.

Answer: **Abbey Theatre**

2. This earlier play about Christy Mahon by John Synge also premiered at the Abbey and produced riots.

Answer: **The Playboy of the Western World**

3. This Nobel Prize winning playwright's "*On Baile's Strand*" and "*Cathleen Ni Houlihan*" were on the first bill at the Abbey.

Answer: **William Butler Yeats**

Tossup 19: Science (Physics)

The basis for the 1907 Nobel Prize in Physics, this experiment used a device which could be rotated on top of a pool of mercury. The device used mirrors and a beam of light, and could detect interference as small as a hundredth of a fringe. The so-called interferometer was used to prove the famous null effect, that an aether could not be detected. Name this experiment which disproved the luminiferous aether and paved the way for Einstein's special relativity.

Answer: **Michelson-Morley experiment**

Bonus 19: Math (Other) -- Computational

Given the letters A, B, C, D, and E, find the number of distinct ways for the following to occur:

1. The number of five-letter sequences, where each letter is used once.
2. The number of three-letter sequences, where each letter can be used any number of times.
3. The number of two-letter pairs, where each letter can be used any number of times, where neither letter is a vowel.

Answers: 1: **120** 2: **125** 3: **9**

Tossup 20: Literature (Literature)

A crucial subplot of this work involves a group of schoolboys, including one sickly one, whose funeral acts as the epilogue to the work. "The Grand Inquisitor" is a poem contained within Book Five of this work, which also features a character who, as a child, collected stray cats so that he could hang them and later conduct elaborate burials for them. Identify this final novel of Fyodor Dostoevsky, featuring the titular characters Alyosha, Ivan and Dmitri.

Answer: **The Brothers Karamazov**

Bonus 20: Social Studies (Other)

Little Billy had a bad day at school; identify by number the constitutional amendment in the Bill of Rights suppressed or violated in each of the following cases.

1. When he got to school, Little Billy's teacher searched his backpack, had a police dog sniff out his locker, and made him give a urine specimen.

Answer: **Fourth Amendment**

2. Later, when Little Billy passed a note to his friend Little Jimmy, the teacher hit him with a hard paddle.

Answer: **Eighth Amendment**

3. At the end of the day, the principal noticed that Little Billy was wearing a black armband to protest the war and so he was suspended from school.

Answer: **First Amendment**

TIEBREAKERS/REPLACEMENTS:**Tossup 21: Science (Biology)**

Varieties of it include transient global, lacunar, and posthypnotic. Dissociative fugue is a prolonged kind in which the patient leaves home and develops an entire new identity. Some people who have it cannot imagine the future, as there is damage to the hippocampus. It comes in anterograde and retrograde varieties, depending on relative position of events to the onset of the symptoms, often a head trauma. Name this psychological symptom in which the memory is impaired.

Answer: **amnesia**

Bonus 21: Math (Other)

Given two fair, six-sided dice, give the probabilities of the following occurring, as reduced fractions.

1. You roll the dice twice, and get a total of seven each time.

Answer: **1/36**

2. You roll the dice once, and the total is a prime number.

Answer: **15/36**

3. You roll the dice once, and the two dice have the same number.

Answer: **1/6**