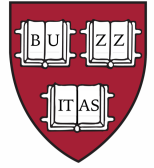


### Harvard Fall Tournament XIII

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**Special thanks to** Will Alston, Jordan Brownstein, Robert Chu, Stephen Eltinge, and Olivia Murton



Round 4

Tossups

1. **This scientist's fluctuation–dissipation relation considers the ratio between absolute temperature and drag coefficient and was co-discovered by William Sutherland. This man modeled the heat capacity of a solid by considering a lattice of quantum harmonic oscillators, and the four-by-four Ricci ["REE-chee"] tensor and a factor of  $8\pi$  (\*) big-G over speed of light to the fourth power feature in a tensor equation by him. This scientist developed a theory with ten field equations as well as a theory implying mass-energy equivalence. For 10 points, name this physicist behind the theories of general and special relativity as well as the equation  $E$  equals  $m c$  squared.**  
ANSWER: Albert Einstein <Yue>

2. **An artist from this movement was inspired by his parents-in-law's farm to paint a canvas whose right side depicts a stylized rooster and which was influenced by the death of his mother in the Armenian Genocide. *The Liver is the Cock's Comb* is a work from this movement that was championed by Clement (\*) Greenberg. A member of this movement was photographed by Hans Namuth, and notably began naming his works solely as numbers. Arshile Gorky belonged to this movement, as did a husband of Lee Krasner whose "action painting" consisted of dripping paint across a canvas. For 10 points, name this movement to which Jackson Pollock belonged.**  
ANSWER: abstract expressionism (do NOT accept or prompt on "abstraction" or "expressionism" on their own, as those are distinct periods and styles) <Chu>

3. **In 2015, a copy of this document was rediscovered in a scrapbook in a town in one of the Cinque ["sink"] Ports. A signer of this agreement who styled himself as the "Marshal of the Army of God and Holy Church" was Robert Fitzwalter. A clause of this document mandated the removal of fish (\*) weirs from all rivers. This agreement, which was declared "null, and void of all validity for ever" by Pope Innocent III, was made after one man's forces lost the Battle of Bouvines. Stephen Langton negotiated this agreement with a group of barons. For 10 points, name this document signed at Runnymede by John I of England that limited the power of his monarchy.**  
ANSWER: Magna Carta Libertatum (accept Great Charter of Liberties) <Suh>

4. **A character in this work claims "there is no applause" after death before stabbing another character, who collapses and is promptly applauded. A character in this play bizarrely offers to lick another character's toe to test the wind. A character in this play parodies the Lord's Prayer by saying (\*) "give us this day our daily cue." In this play, the protagonists and a group of Tragedians board a ship to England after their production of *The Murder of Gonzago* offends Claudius. This play begins with the title characters flipping a coin heads 92 consecutive times. For 10 points, name this Tom Stoppard play featuring two minor characters from *Hamlet*.**  
ANSWER: Rosencrantz and Guildenstern Are Dead <R. Li>

5. **This man denounced “half-baked, spurious nationalism” in an acceptance speech for the Liberty Medal from the National Constitution Center. In 2016, this politician defeated Kelli Ward in his party’s primary and Ann Kirkpatrick in the general election. Chuck Schumer has called for a building named after Richard (\*) Russell Jr. to be renamed after this politician. After telling reporters to “wait for the show,” this politician dramatically voted no on the Health Care Freedom Act, tanking Republicans’ efforts to repeal Obamacare. For 10 points, name this former Arizona Senator who passed away in August 2018 from glioblastoma.**

ANSWER: John McCain <R. Li>

6. **The direction of diagonal striations on these structures has been used to disprove the uniqueness of handedness to humans. Like tree rings, these structures contain growth lines that harbor historical environmental conditions. Humans are classified as diphodonts [“DIE-FY-oh-daunts”] because they develop (\*) two sets of these structures. Exposure of the nerves in the pulp chamber of these structures can cause intense pain. It’s not bone, but these structures contain hydroxyapatite in their outermost layer which forms the hardest substance in the human body. For 10 points, names these oral structures that dentists examine for a living.**

ANSWER: teeth (accept word forms) <K. Li>

7. **The book *Two Evil Isms* alleged that this organization rigged the election of Senator Edward Wolcott of Colorado. A member of this group arrested Big Bill Haywood after the murder of Governor Frank Steunenberg of Idaho. Another member of this organization used the alias “James McKenna” to infiltrate an association of (\*) coal miners known as the Molly Maguires. While working for this group, Kate Warne may have foiled an assassination plot against Abraham Lincoln. For 10 points name this detective agency with the motto “we never sleep,” infamously hired by Henry Clay Frick to break up the Homestead Strike.**

ANSWER: Pinkerton National Detective Agency (accept Pinkertons) <Sayphraraj>

8. **One character in this novel says goodbye to another by saying he is “not made for the bitter, sour-tasting, rootless life of people like me.” In this novel, one character approaches his future wife hiding in a rye field and tells her that he doesn’t bite, and another thinks “Raphael isn’t worth a copper penny” and duels a man who used to love Princess R. In this novel, a character that (\*) dissects frogs kisses Fenichka and later dies after contracting typhus while performing an autopsy. Nikolai struggles to understand his son Arkady and his “nihilist” friend in this novel. For 10 points, name this novel about Arkady Kirsanov and Evgeny Bazarov by Ivan Turgenev.**

ANSWER: Fathers and Sons <Yue>

9. **A king of this city was buried near its Scaean [“SKAY-un”] Gate. A princess of this city gave birth to Teucer and was earlier rescued from being sacrificed to a sea monster. Eos abducted a prince of this city, and their son became immortal after initially dying in battle. The river (\*) Scamander flowed near this city. Heracles and Telamon sacked this city after its king reneged on his promise to give them his horses. Protesilaus died after being the first person to land near this city’s shores. Priam was the last king of this city, and his son Hector died after dueling Achilles. For 10 points, name this city that lost a namesake war against the Greeks as depicted in the *Iliad*.**

ANSWER: Troy (or Ilium) <Suh>

10. **One of these objects found covered in red ocher [“OH-ker”] in Montana that was not under the jurisdiction of the NAGPRA [pronounce as one word] is Anzick-1. One of these objects nicknamed “The Ancient One” was discovered in 1996 in Kennewick, Washington. Donald Johanson’s expedition repeatedly played a Beatles song during the (\*) discovery of one of these objects in 1974 in Ethiopia, which inspired that object’s popular name. Another of these objects discovered in the Alps in 1991 is known as “Ötzi.” For 10 points, name these objects, including “Lucy,” that are studied by forensic archaeologists.**

ANSWER: human remains (or reasonable equivalents of dead people; accept bones or skeletons; accept mummies; prompt on just people; prompt on early humans; prompt on Australopithecus) <Suh>

11. **The main character of this opera criticizes a servant for praying to fat and lazy gods. A character asks his wife not to cry in this opera's love duet that closes its first act, and its third act begins with sailors singing "heave-ho!" as the sun rises. The title character of this opera imagines seeing a puff of (\*) smoke on the horizon in the aria "Un bel di vedremo." A character introduced with "The Star-Spangled Banner" returns with his new wife Kate in this opera, prompting the main character to blindfold her infant son and give him an American flag before committing suicide. For 10 points, name this Giacomo Puccini opera about the Japanese geisha Cio-Cio San.**  
ANSWER: Madama Butterfly (or Madame Butterfly) <Suh>

12. **Since 1980, the president of this sport's international governing body has not been an athlete in this sport. This sport's governing body is the ISU, which hosts three championships each year, including the Four Continents Championships. A scandal involving Canada and Russia at the (\*) 2002 Olympic Games caused this sport to implement the international judging system. That system, the IJS, assigned point values to elements such as the flip, the layback, and the axel. For 10 points, name this sport at which Michelle Kwan excelled, and that requires one to spin and jump while on ice.**  
ANSWER: figure skating <K. Li>

13. **It's not a writer, but one character with this profession makes flints at Auschwitz, and another works under Max Gottlieb at the Caribbean island St. Hubert. Septimus Hodge wonders "what becomes of free will" when considering the work of a man with this profession. A character talks to Dr. Asa Breed about a man in his *karass* with this profession before visiting (\*) San Lorenzo with that man's children. A character with this profession describes his time studying at Ingolstadt to Robert Walpole; that character's creation frightens and kills his fiancée Elizabeth. For 10 points, identify this profession of Victor Frankenstein and Isaac Newton.**  
ANSWER: scientist (accept mad scientist, chemist, or physicist; prompt on researcher; prompt on doctor with "That's their degrees, but what do they do?") <Yue>

14. **One variety of this phenomenon can be related to the ratio of the cosmological scale factor between the two times in question. This phenomenon is commonly calculated by observing how much spectral lines such as the Lyman-alpha line have moved. The (\*) Doppler effect can explain this phenomenon, represented by the letter "z," at small distances. This phenomenon is caused by objects receding along the line of sight and comes in gravitational, cosmological, and relativistic Doppler varieties. For 10 points, name this phenomenon which describes an increase in wavelength named for the first color in the rainbow.**  
ANSWER: redshift (accept specific varieties; ONLY accept blueshift until "receding" is read, do NOT prompt afterwards; do NOT accept or prompt on "Doppler effect") <K. Li>

15. **The finale of a Copland symphony of *this number* takes its theme from "Fanfare for the Common Man," and a Górecki symphony of this number is titled for "Sorrowful Songs." An E-flat major symphony of this number quotes from *Creatures of Prometheus* in its finale and has a solo (\*) horn restate the first movement's main theme prematurely. A symphony of this number is subtitled "Organ," while another contains a C-minor funeral march and begins with two *sforzando* E-flat chords. That Beethoven symphony of this number was dedicated "to the memory of a great man" instead of Napoléon Bonaparte. For 10 points, give the number of the *Eroica* Symphony.**  
ANSWER: Symphony No. 3 (accept third or other word forms) <Yue>

16. **When this man's siblings stood in front of a prophet, God told the prophet that "people look at the outward appearance, but the Lord looks at the heart." This man referred to water that his generals brought as the blood of men who had risked their lives. After Nabal ["NEY-bul"] died, this man took (\*) Abigail as his wife. After this man's son Amnon committed incest with Tamar, he was killed by another son of this man. This man had to flee from Jerusalem after the rebellion of his son Absalom. Instead of wearing Saul's armor, this man chose to face a warrior with only a sling and five stones. For 10 points, name this Biblical king of Israel who slew Goliath.**  
ANSWER: David <Suh>

17. **In a short story by this author, the narrator discovers an elongated Spanish pistol while fishing, which prompts his companions to recite a song about the titular "hardy adventurer." In addition to "Kidd the Pirate," this author penned a story whose protagonist's wife disappears after venturing into a nearby swamp to meet Old Scratch; that *Faust*-like story is "The (\*) Devil and Tom Walker." Another story by this author sees the protagonist mysteriously disappear from the title locale after a confrontation with a ghostly "headless" Hessian. For 10 points, name this author of "The Legend of Sleepy Hollow."**  
ANSWER: Washington Irving <R. Li>

18. **The Y Combinator is a lambda expression that allows for this type of process, and memoization can be a faster alternative to it. The complexity of functions that have this property can be analyzed by the Master Theorem. Divide-and-conquer algorithms like quicksort rely on this process, the (\*) "tail" variety of which allows for machine optimization. This concept is usually taught to students with the Tower of Hanoi, and it typically features a "base case" at which the function ceases and returns up the stack. For 10 points, describe this type of computation in which a function calls itself.**  
ANSWER: recursion (accept word forms) <Horton>

19. **A president of this country had to raise a white flag from his palace as a token of surrender to Germany during the Lüders affair. The death of that president's cousin led the United States to occupy this country from 1915 to 1934. An organization in this country named after the mythological bogeyman Uncle Gunnysack was created by a (\*) physician-turned-dictator. That leader of this nation styled himself after Baron Samedi and employed the Tonton Macoutes. That man's son, "Baby Doc," was exiled from this nation in 1986. For 10 points, name this Caribbean nation once ruled by the Duvaliers that suffered a serious earthquake in 2010.**  
ANSWER: Haiti <Suh>

20. **The John Locke lectures by Daniel Dennett that became the book *Elbow Room* discuss this faculty. Harry Frankfurt described cases where people could be held morally responsible for their actions even when this faculty is not present. This faculty was rejected in a thought experiment by Simeon Poisson in which an omniscient being has knowledge of all (\*) particles. Libertarians with regard to this faculty argue that this faculty exists in the world because not all physical events are causally determined, while compatibilists argue that it is consistent with a deterministic universe. For 10 points, name this faculty, the ability to choose actions unimpeded.**  
ANSWER: free will <Jin>

21. **The end of the first volume of this novel references *The Vicar of Wakefield* by addressing "the happy few." Prince Korasoff advises this work's protagonist to make a woman jealous by writing letters to Madame de Fervaques. The protagonist of this novel works at seminary in Besançon ["bey-zahn-SON"] under his mentor Abbe (\*) Pirard. A character in this novel faints after witnessing the protagonist decorate a cathedral, who is later sentenced to death after he shoots at Madame de Renal. The title of this novel refers to the colors of the clergy and the army. For 10 points, name this novel about the rise and fall of Julien Sorel, written by Stendhal.**  
ANSWER: *The Red and the Black* <Suh>

## Bonuses

1. For 10 points each, answer the following about the English nonfiction author James Boswell.

[10] Boswell is perhaps best known for writing one of these works about Samuel Johnson, which is commonly considered to be the greatest work of this genre written in the English language.

ANSWER: **biography** (or **life**; accept ***Life of Samuel Johnson***)

[10] Boswell traveled to this island to meet its independence fighter Pasquale Paoli and wrote an *Account of [this island]*. In 1769, Napoléon Bonaparte was born on this then French-controlled island.

ANSWER: **Corsica**

[10] Boswell's trip to Corsica was part of his journey across Europe, which was a common rite of passage for young members of the upper class during the 17th and 18th centuries known by this two-word phrase.

ANSWER: **Grand Tour** (prompt on partial answer) <Suh>

2. A novel by this author ends with the revelation that the eponymous seafarer "didn't even have time to kick off his seaboots" before drowning. For 10 points each:

[10] Name this author of the aforementioned *Pincher Martin*, as well as a trilogy about British aristocrat Edmund Talbot's journey to Australia.

ANSWER: William **Golding**

[10] In this Golding novel, Ralph and Jack wrestle for control of the island they are marooned on as their peers gradually regress into savagery. The title of this novel is derived from a nickname for the demon Beelzebub.

ANSWER: *The **Lord of the Flies***

[10] This character hears messages from the title Lord of the Flies, a pig's head on a stick. He discovers that "the Beast" is a dead parachutist before being killed by the other boys.

ANSWER: **Simon** <R. Li/Yue>

3. A tone poem by this composer features a solo violin with its E string tuned down a half-step, such that tritones are heard when the soloist plays open strings. For 10 points each:

[10] Name this French composer of an "Organ" Symphony, *The Carnival of the Animals*, and the *Danse Macabre*.

ANSWER: Camille **Saint-Saëns**

[10] An A-major section in Saint-Saëns's *Danse Macabre* quotes this Medieval chant, which is titled for a "Day of Wrath." It is commonly quoted in classical music as a symbol for death.

ANSWER: ***Dies irae*** ["dee-es ee-ray"] (accept "**Day of Wrath**" before mention)

[10] This composer frequently cited the *Dies irae* chant in his larger works, including his symphonic poems *The Bells* and *The Isle of the Dead*.

ANSWER: Sergei **Rachmaninoff** <Yue>

4. For 10 points each, answer the following about failed legislative initiatives in American history.

[10] This policy codified by the 18th Amendment and the Volstead Act banned the production and sale of alcoholic beverages. This policy was reversed with the ratification of the 21st Amendment in 1933.

ANSWER: **Prohibition**

[10] This proposed Constitutional amendment aimed at banning discrimination based on sex was defeated by the efforts of Phyllis Schlafly. The Illinois General Assembly belatedly ratified this amendment in May 2018.

ANSWER: **Equal Rights Amendment** (or **ERA**)

[10] This failed New Deal-era legislation gave the President power to regulate industry for fair wages and prices, but was overturned by the Supreme Court case *Schechter Poultry v. United States*.

ANSWER: **National Industrial Recovery Act** of 1933 (or **NIRA**) <Suh>

5. This character concocts a scheme to rescue an associate from legal trouble by impersonating a pastor from Coushatta, Louisiana. For 10 points each:

[10] Name this protagonist of a namesake television show who intimidates a trio of teenagers by dangling them in a room filled with piñatas as Huell Babineaux swings a baseball bat.

ANSWER: **Saul Goodman** (accept either underlined portion; accept Jimmy **McGill**)

[10] Saul Goodman originally appeared on this critically acclaimed series. Created by Vince Gilligan, this AMC series follows the evolution of Walter White from high school chemistry teacher to ruthless drug kingpin.

ANSWER: **Breaking Bad**

[10] Aaron Paul, who played Jesse Pinkman on *Breaking Bad*, made a cameo as a disgruntled gamer on this show's episode "USS Callister." Another *Breaking Bad* alum, Jesse Plemons, starred as the sadistic Captain Robert Daly in that episode of this Netflix anthology series.

ANSWER: **Black Mirror** <R. Li>

6. For 10 points each, answer some questions about the antibiotic colistin.

[10] Colistin is effective in treating this condition when it is caused by the most infamous species in the genus *Klebsiella*. This condition causes inflammation in the alveoli and is commonly diagnosed via X-ray imaging.

ANSWER: **pneumonia**

[10] Colistin is a cyclic polypeptide antibiotic containing six of this amino acid. Like lysine, this amino acid cannot be used for gluconeogenesis.

ANSWER: **leucine**

[10] The main reason colistin is rarely used is because it is toxic to this organ. Colistin causes cells in this organ to burst, hindering its ability to filter blood, regulate fluid levels, and excrete waste products into urine.

ANSWER: **kidney** <K. Li>

7. King Seonjo ["**SUN-joe**"] of this country sent two men to the court of Toyotomi Hideyoshi, which was unhelpful because the two men delivered exactly opposite impressions about him. For 10 points each:

[10] Name this East Asian country that was ruled by the Joseon ["**joe-sun**"] dynasty for over 500 years. Hideyoshi's invasion of this peninsular country from 1592 to 1598 was repelled with the help of Admiral Yi's turtle ships.

ANSWER: **Korea**

[10] This daimyo preceded Toyotomi Hideyoshi as the first "great unifier." He was killed in 1582 when his retainer Akechi Mitsuhide ["**mit-soo-hee-day**"] rebelled against him.

ANSWER: Oda **Nobunaga**

[10] Portuguese traders introduced this type of matchlock firearm to the Japanese in 1543. Hideyoshi's men used a type of this firearm called the *tanegashima* to great effect during the invasions of Joseon.

ANSWER: **arquebus** (prompt on rifles) <Suh>

8. (NOTE TO MODERATOR: “proem” is NOT a typo. Pronounce as [“PRO-um”])

This poet wrote that “the game enforces smirks” in a poem that claims that “our obsequies are, in a way, no enterprise.” For 10 points each:

[10] Name this poet of “Chaplinsque” who addressed the title object of one of his “proems” as “vaulting the sea, the prairies’ dreaming sod” before saying that it “lend[s] a myth to God.”

ANSWER: Hart **Crane**

[10] That “proem” was addressed to a bridge in this city, the namesake of a school of poets that included Frank O’Hara, Kenneth Koch, and John Ashbery. This city was the setting of Whitman’s “Crossing Brooklyn Ferry.”

ANSWER: **New York** City (or **NYC**)

[10] In this other poem, some of “the best minds of [the poet’s] generation...chained themselves to subways for the endless ride from Battery to holy Bronx on benzedrine.” This poem opens describing those minds as “destroyed by madness, starving hysterical naked.”

ANSWER: **Howl** <Yue>

9. This sculptor made figures of Cupid and Psyche as part of his work for the Sèvres porcelain manufactory. For 10 points each:

[10] Name this French sculptor who is better-known for a much larger work in St. Petersburg. That work’s pedestal, the Thunder Stone, is the largest stone ever moved by human beings.

ANSWER: Étienne Maurice **Falconet**

[10] The Thunder Stone is the pedestal of this equestrian statue of Peter the Great whose common name comes from a Pushkin poem.

ANSWER: **Bronze Horseman**

[10] A Falconet statue at the National Gallery depicts this Roman goddess of *the Doves*. An armless statue of this goddess was discovered on the island of Milos. Sandro Botticelli painted the “Birth” of this goddess.

ANSWER: **Venus** (accept **Venus of the Doves**; accept **Venus de Milo**; do NOT accept or prompt on “Aphrodite”) <Chu>

10. Answer some questions about the mathematics of diffusion, for 10 points each.

[10] The motion of a diffusing molecule can be modeled by a stochastic process named for a walk with this property. If a variable has this property, its value is based on chance, and slot machines generate numbers with this property.

ANSWER: **random** (accept word forms; accept **random** walk)

[10] The displacement after some number of steps in the one-dimensional random walk follows this distribution. For a large number of trials, this distribution can be well-approximated by the Poisson distribution.

ANSWER: **binomial** distribution

[10] Diffusion is modeled as a Gaussian random walk with this quantity increasing proportional to the square root of time. This quantity, also the root mean square displacement in diffusion, measures spread and is the square root of variance.

ANSWER: **standard deviation** (accept **root mean square** displacement before mention; prompt on **sigma**) <Yue>

11. For 10 points each, answer the following about creatures in Hindu mythology.

[10] Shesha was the king of these creatures that were often associated with water and treasure. One of these creatures was used to churn the Ocean of Milk.

ANSWER: **nagas** (prompt on snakes)

[10] Nagas were the enemies of this avian creature, who was also their step-brother. This creature was the mount of Vishnu.

ANSWER: **Garuda**

[10] The mount of Shiva was one of these animals named Nandi. These animals are sacred in Hindu tradition.

ANSWER: **bull** (or **cow**) <Duffy>

12. A scene from this movie preceded by a title card reading “Shift Change” shows two columns of identically dressed workers shuffling past each other in opposite directions. For 10 points each:

[10] Name this film, a scene from which includes a kaleidoscopic shot of the eyes of rich men in the title city who are watching Maria’s seductive dance.

ANSWER: **Metropolis**

[10] Fritz Lang’s *Metropolis* was made in this country. Eight years later, Leni Riefenstahl’s *Triumph of the Will* would chronicle the rise of the Nazi Party in this country.

ANSWER: **Germany** (or **Deutschland**)

[10] The city of Metropolis heavily incorporates this architectural style and helped popularize it in Europe and the United States. Lang may have been inspired by examples of this style such as New York’s Chrysler Building.

ANSWER: **Art Deco** <Chu>

13. For 10 points, answer the following about topological surfaces.

[10] Name this nonorientable surface which has only one boundary and one side. It is frequently modeled by twisting one end of a strip of paper and connecting it to the other.

ANSWER: **Möbius** strip

[10] This surface can be defined as the Cartesian product of two circles. An oft-quoted joke claims that a mathematician cannot tell the difference between a coffee cup and this surface, as they are topologically homotopic.

ANSWER: **torus** (prompt on donut)

[10] This surface’s namesake “eversion” consists of turning this surface inside out in three-dimensional space. The volume element in this surface’s namesake coordinate system is given by “r-squared sine theta d-r d-theta d-phi.”

ANSWER: **sphere** <R. Li>

14. The short stories “Lies” and “As a Woman Grows Older” examine this character’s relationship with her son and daughter. For 10 points each:

[10] Name this fictional woman, a lecturer at Appleton College and the author of *The House on Eccles Street*. Beside her eponymous novel, she also appears in the pro-vegetarian book *The Lives of Animals*.

ANSWER: **Elizabeth Costello** (accept either or both underlined parts)

[10] Elizabeth Costello is a creation slash alter-ego of this Nobel winning novelist, whose novels *Waiting for the Barbarians* and *Life and Times of Michael K* examine the presence of individuals in desolate landscapes.

ANSWER: J. M. **Coetzee**

[10] Coetzee is a novelist originally born in this country. Many of this country’s authors, like Athol Fugard and Alan Paton, grapple with its legacy of apartheid.

ANSWER: **South Africa** (accept Republic of **South Africa** or **RSA**) <R. Li/Kuang>



15. The Zamzam Well and the Al-Haram Mosque are located in this city. For 10 points each:

[10] Name this holiest city in Islam, the destination of the annual Hajj pilgrimage. Sura 9:28 of the Quran forbids foreigners from accessing the Grand Mosque in this city.

ANSWER: **Mecca**

[10] Unlike the Hajj, this minor form of pilgrimage can be done at any time.

ANSWER: **umrah**

[10] The second holiest site of Islam is the Prophet's Mosque located in this city, where Muhammad is said to be buried.

ANSWER: **Medina** <Suh>

16. Contemporary comedians made fun of this man's large head and called him "Squill-head." For 10 points each:

[10] Name this Athenian leader who was held in such high regard that Thucydides ["thoo-SEE-duh-dees"] called him "the first citizen of Athens." He and most of his family died in a plague during the Peloponnesian War.

ANSWER: **Pericles**

[10] During one of these annual events in Athens, Pericles gave a speech in which he claimed that the "reputations of many brave men" should "not be imperilled in the mouth of a single individual."

ANSWER: **funeral** (accept **Funeral** Oration)

[10] This woman was the lover and long-term partner of Pericles. Not very much is known about her, and a scholar said that "to ask questions about *this woman's* life is to ask questions about half of humanity."

ANSWER: **Aspasia** <Suh>

17. BASE Jumping, although popularized by Norwegian Carl Boenish, has found a largest fanBASE in the United States. For 10 points each, "dive" into some common BASE jumping spots.

[10] October 28th marks Official Bridge Day for this river, where three divers have fallen to their death. Name this river whose gorge is also home to many abandoned coal towns.

ANSWER: **New River Gorge**

[10] The New River Gorge is featured on this state's quarter. That quarter also marks the date of 1863 when this state broke off from its eastern neighbor to join the union.

ANSWER: **West Virginia**

[10] The Royal Gorge Bridge is another popular attraction for BASE Jumping, lying above the Arkansas River, northwest of Pueblo, in this state.

ANSWER: **Colorado** <Oberhaus>

18. For 10 points each, answer these questions about thought experiments.

[10] In his "Twin Earth" thought experiment, Hilary Putnam imagines a planet identical to Earth except for a different chemical version of this substance. In the "Buridan's bridge" sophism, Socrates creates a paradox by telling Plato "you will throw me into" this substance.

ANSWER: **water**

[10] This philosopher imagined an identical copy of him being assembled via lightning bolt in his "Swampman" thought experiment. This former UC Berkeley professor was well-known for his "truth-conditional" perspective of semantics.

ANSWER: Donald **Davidson**

[10] This figure lends his name to a thought experiment similar to "Swampman" in which his "ship" is replaced plank by plank. This hero fell in love with Ariadne and slayed the Minotaur in a certain myth system.

ANSWER: **Theseus** <R. Li>

19. One of this man's plays uses an Author and his play as allegories for God and the world. For 10 points each:

[10] Name this 17th century author of prominent "sacramental plays" such as *The Great Theater of the World*. In another of his plays, King Basilio imprisons his son in response to a prophecy.

ANSWER: Pedro **Calderon** de la Barca [the unnamed play is *Life is a Dream*]

[10] Along with his contemporary Lope de Vega, Calderon de la Barca was instrumental in developing the literature of this European country's "Golden Age" from its capital of Madrid.

ANSWER: **Spain**

[10] In another Calderon play, Pedro Crespo ascends to this eponymous profession in the town of Zalamea and has his daughter's rapist hanged. Casterbridge resident Michael Henchard has this profession in a Thomas Hardy novel.

ANSWER: a **mayor** (accept *The Mayor of Zalamea* or *The Mayor of Casterbridge*) <R. Li>

20. For 10 points each, answer some questions about palladium:

[10] Palladium catalyzes this cross-coupling reaction that joins an unsaturated halide and an alkene in the presence of a base. Its namesake won the 2010 Nobel Prize with two Japanese chemists.

ANSWER: Mizoroki-**Heck** reaction

[10] Palladium is oxidized to this oxidation state in the Heck reaction as well as its other cross-coupling reactions. This is the preferred oxidation state of zinc and the alkaline earth metals.

ANSWER: **+2** (accept equivalents, prompt on 2)

[10] Palladium deposited on calcium carbonate, the Lindlar catalyst, can be used to react this gas with ethene to produce ethane. The electrolysis of water produces oxygen and this other, lightest diatomic gas.

ANSWER: **hydrogen** gas (accept **H<sub>2</sub>**) <Yue>

21. For 10 points each, answer some questions about azeotropes:

[10] Azeotropes are mixtures of liquids that cannot be easily separated by this process. This process involves heating a mixture up and selectively condensing out its components based on boiling point and can be used to purify water.

ANSWER: **distillation**

[10] Azeotropes form due to deviations from this law. This law states that the vapor pressure of a mixture is equal to the weighted average of the vapor pressure of its components.

ANSWER: **Raoult's** law

[10] This material with small pores of uniform size can be used to break an azeotrope. They work by adsorbing the smaller component of the azeotrope and are commonly used to remove water from a mixture.

ANSWER: **molecular sieve** <K. Li>