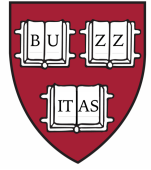


## Harvard Fall Tournament IX

Edited by Will Holub-Moorman and Raynor Kuang

Questions by Will Holub-Moorman, Raynor Kuang, Sriram Pendyala, Robert Chu, Mark Arildsen, Catherine Wu, Roger Jin, and Vimal Konduri



Round 6

Tossups

1. **Pagoda and leftist trees are binary tree implementations of an abstract form of a subclass of these data structures. Kendall's notation and the use of a Poisson process to count events are used in a branch of probability theory and operations research named after these data structures. The (\*) breadth-first search algorithm uses this data structure to store intermediate nodes as it traverses a graph. A heap can be used to implement the "priority" example of these data structures. These data structures are first-in first-out and thus contrasted with stacks. For 10 points, name these data structures that model lines of waiting people.**

ANSWER: queue [accept queuing theory]

2. **A ruler of this name allegedly defecated during his baptism, leading his opponents to derisively nickname him "Dung-Named." The rule of the ninth man of this name saw the excommunication of Michael Cerularius, and that ruler was married to Empress Zoe. Lorenzo Valla discovered that a document purportedly written by a man with this name that granted vast landholdings to (\*) Sylvester I was fraudulent; that was that ruler's "Donation." That ruler with this name defeated Maxentius after painting the Chi Rho on his soldiers' shields at the Battle of the Milvian Bridge. For 10 points, identify this regnal name, whose most famous bearer was the first Christian Emperor of Rome.**

ANSWER: Constantine [accept any of Constantine V Kopronymos, Constantine IX Monomachos, Constantine I, Constantine the Great]

3. **The Kahiltna glacier begins on this mountain before flowing between Mount Hunter and Mount Foraker, and the Moose's Tooth can be found beside Ruth Glacier near this mountain. This mountain can be viewed from across Wonder Lake, and climbed via the West Buttress route. This mountain sits in the ancestral homeland of the the Koyukon (\*) Athabaskan people, in whose language this mountain's name translates to the "High One." For 10 points, name this third most prominent peak on Earth and the highest point in North America, which sits in Alaska and is named after the victor of the 1896 and 1900 US presidential elections.**

ANSWER: Denali [Accept Mount McKinley, reluctantly.]

4. **In a painting by Titian, this figure attempts to hold onto a man wearing a hunting beret who holds the leashes of two dogs. In another portrayal, this figure looks into a mirror adorned with pink ribbons held by a figure wearing a blue sash. This subject of the *Ludovisi Throne* is the central figure of a painting in which Chloris clings to Zephyrus, who (\*) blows this figure to Cyprus. This figure was the subject of a sculpture housed in the Louvre which is now famously armless. For 10 points, name this figure depicted with flowing orange hair and shown standing atop a shell in a painting of her "birth" by Sandro Botticelli.**

ANSWER: Venus [accept Aphrodite]

5. The Meliae and Epimeliad are spirits that occupy these entities. Adonis was born out of one these entities that Myrrha was transformed into after having an incestuous relationship with her father. Pyramus and Thisbe died after agreeing to meet by one of these entities. For showing hospitality to Zeus and Hermes when they were disguised as travelers, (\*) Baucis and Philemon were transformed into these entities. Athena gave one of these entities to Athens in a contest with Poseidon, and Dryads are spirits connected to these entities. For 10 points, Apollo's pursuit of Daphne led to her transformation into the laurel kind of what plant?

ANSWER: trees [prompt on "plants"; accept ash, apple, myrrh, oak, linden, olive, and laurel trees, I guess]

6. In Roman religion, the *haruspex* could make prophecies based on the results of these events. In Islam, the rules of *dhabihah* govern this event, while in Judaism, the word "korban" broadly describes this type of event. While the Temple still stood, this event was performed on Passover eve, and an event of this type is the culminating focus of the Eid (\*) al-Adha. The phrase "Agnus Dei" refers to Jesus's symbolic role in one of these events, and after the Binding of Isaac, an event of this type took place instead. For 10 points, name this type of religious event that might involve the killing of a lamb.

ANSWER: animal sacrifice [accept ritual slaughter or offering; accept martyrdom after "Agnus" is read]

7. A persistent example of these compounds is used to oxidize alcohols to aldehydes and ketones and contains a nitrogen-oxygen single non-dative bond; that is TEMPO. EPR spectroscopy can be used to probe the electronic properties of these compounds. These compounds are present as intermediates in alkane (\*) halogenation reactions. Reactions with these compounds have initiation and propagation steps and must use fishhook arrows to represent them. Nitric oxide and nitrogen dioxide are examples of these compounds. These compounds are created during the halogenation reactions that cleave oxygen and break down the ozone layer. For 10 points, name these compounds with unpaired electrons.

ANSWER: free radicals

8. One author of this last name created a character who laughs at an undertaker named Horse Hines after seeing the body of his brother Ben, and lives with his mother Eliza at the Dixieland boarding house. That work by that author of this last name centers on a citizen of Altamont named Eugene Gant. Another author with this last name wrote a novel in which the journalist Peter Fallow exposes the (\*) bond trader Sherman McCoy's involvement in a hit-and-run, and described the travels of Ken Kesey in his book *The Electric Kool-Aid Acid Test*. For 10 points, name this shared last name of the authors of *Look Homeward, Angel*, and *The Bonfire of the Vanities*.

ANSWER: Wolfe [accept Thomas Wolfe or Tom Wolfe]

9. In a concerto for this instrument, each movement begins with a chord consisting of an eleventh stacked on a ninth, nicknamed the "passport" chord by its composer. Eugene Ysaye [ee-say-EE], a player of this instrument, composed six unaccompanied sonatas dedicated to other players of it, including Jacques Thibaud [ti-BO]. Alban Berg dedicated a concerto for this instrument "To the (\*) memory of an angel," and Ralph [RAFE] Vaughan Williams employed pentatonic scales in a work inspired by a George Meredith poem for this instrument and orchestra titled *The Lark Ascending*. For 10 points, name this instrument played by Itzhak Perlman, for which the Suzuki method was first developed.

ANSWER: violin

WARNING: TWO ANSWERS REQUIRED

10. **These two countries used the “Condominium” system to govern an island then known as the New Hebrides. Representatives of these two countries engaged in an 1898 standoff after the Battle of Omdurman. One of these countries’ forces’ besieged the other’s trading post of Pondicherry in the first of three (\*) Carnatic wars fought between them. Diplomats from these two countries divided the Middle East into spheres of influence in the Sykes-Picot [pee-KO] Agreement. During a war between two of these nations’ colonies, James Wolfe died at the Battle of the Plains of Abraham. For 10 points, name these two nations which transferred possession of Canada after the Seven Years’ War.**

ANSWER: Great Britain and France [accept United Kingdom and France]

11. **The death of Benjamin Strong may have led to government inaction prior to this period, which led to the creation of a federal agency headed by Jesse H. Jones. 25,000 Pennsylvanians under James Renshaw Cox marched on Washington during this period, which saw the creation of an agency symbolized by a blue eagle that was declared unconstitutional in the “sick (\*) chicken” case. This period, which may have been brought on by the Smoot-Hawley Tariff, saw the creation of the Reconstruction Finance Corporation and was kicked off on Black Thursday. For 10 points, name this extended economic slump that was responded to by FDR’s New Deal.**

ANSWER: the Great Depression [anti-prompt on “New Deal” before mentioned, prompt on answers like “Presidency of FDR”]

12. **A goddess normally depicted standing atop an intertwined Kama and Rati performed this action to herself during the god-demon war, and is named Chinnamasta. Saint Denis preached a sermon after this action occurred to him on Montmartre [mon-MAR-truh], making him a cephalophore. In an Oscar Wilde play, a character demands that this action be performed on Jokanaan after performing the Dance of the (\*) Seven Veils, and Sir Gawain performs this action on the Green Knight upon his arrival in Camelot with surprisingly non-fatal results. For 10 points, name this punishment which saw frequent use during the Reign of Terror via the guillotine.**

ANSWER: beheading [accept descriptive equivalents, such as decapitation]

13. **Bernard Williams used an example of a person who produces these entities to describe the escapability of moral obligations. One of these entities is analyzed at the beginning of Michel Foucault’s [foo-KO’s] *The Order of Things*. One essay claims that the value of the “authentic” form of these entities is based in ritual, discusses the (\*) “aura” of these entities, and describes the implications of advances in technology on these entities. For 10 points, name these entities which Walter Benjamin [BEN-ya-meen] wrote about “in the age of mechanical reproduction” in one essay, examples of which include the *Diskobolos* and *American Gothic*.**

ANSWER: works of art [accept more specific answers, such as painting, sculpture, etc. Accept “The Work of Art in the Age of Mechanical Reproduction”]

14. **When light is incident upon a metal surface in surface-enhanced Raman spectroscopy, localized excitations of quasiparticles of this substance are generated. In these substances, MHD waves propagate where electrons oscillate in response to an effective tension on magnetic field lines; those waves are Alfvén waves. The Coulomb force between charged particles in these substances is exponentially screened with a length-scale equal to the (\*) Debye radius. Tokamaks are toroidal structures that contain this substance. At ultrahigh temperatures and densities, a “quark-gluon” variety of this phase of matter is generated, and this phase can be found in the interior of the sun. For 10 points, name this state of ionized matter.**

ANSWER: plasma

15. Upon obtaining his first Christmas tree at age 40, this musician made his wife bring the tree on tour with them. This musician released a cover album of music by W.C. Handy in 1954, and collaborated with Earl Hines on a recording of “Weather Bird,” which this musician also earlier recorded with its composer, King (\*) Oliver. This musician played a famous stop-time solo on the track “Potato Head Blues,” which he recorded with his “Hot 7.” This New Orleans native opened a 1928 recording of Oliver’s “West End Blues” with a virtuoso trumpet solo. For 10 points, name this singer of “What a Wonderful World,” a trumpeter nicknamed “Satchmo.”  
ANSWER: Louis Armstrong [accept Satchmo before mentioned]

16. A poetic work in this language features the line “Myth is the nothing that is everything” in its poem “Ulysses” and describes the rise of the Fifth Empire in its third cycle, “The Hidden One.” That work, *Message*, was written in this language by a poet who also wrote *The Book of Disquiet* and heavily used (\*) heteronyms. An epic poem in this language closes on the Isle of Love and sees the appearance of Adamastor, a spirit of the Cape of Good Hope who attempts to prevent sailors from reaching the Indian Ocean. For 10 points, name this language used by Fernando Pessoa and Luis de Camoens [ca-MOYNSh], who wrote about the voyages of Vasco da Gama in his *Lusiads*.  
ANSWER: Portuguese [accept língua portuguesa]

17. This entity's *calmecacs* prepared nobility for service in the military or priesthood, and its imperial roots involved two half-brothers who created its namesake Triple Alliance in the aftermath of a civil war caused by the death of the Tepanec king Tezozomoc. After capturing twenty prisoners or performing twenty equivalent deeds, soldiers from this entity could be promoted to the rank of either (\*) Eagle or Jaguar Warrior. This empire participated in the Flower Wars with neighboring city states, including Tlaxcala [tla-SCAL-a]. For 10 points, name this empire that experienced *La Noche Triste* after stupidly welcoming Hernán Cortés into its capital Tenochtitlán.  
ANSWER: Aztec Empire

18. In a story titled for one of these objects “of Sand,” a character trades his pension to a Scotsman for a magical one of them. The sinologist Dr. Albert and the German spy Yu Tsun discuss one of these objects created by Tsun’s ancestor Ts’ui [SWAY] Pen in the story “The Garden of Forking Paths.” In a story set in a location consisting of infinite (\*) hexagonal rooms, the “Purifiers” destroy these objects. In another story, Pierre Menard recreates one of these objects originally created by Cervantes. For 10 points, name these objects, many of which are contained in Jorge Luis Borges’ [BOR-hays] “Library of Babel.”  
ANSWER: books [accept more specific answers, like textbooks, novels, etc.]

19. Some cells in this tissue contain the MC2 cell-surface receptor; those cells are mainly found in the zona fasciculata of this tissue. This tissue has an outer part that is mesodermal in origin and an inner part that is derived from ectodermal neural crest cells. Pheochromocytomas are tumors of this gland. The insufficient production of a hormone by this gland is termed (\*) Addison’s disease, while the overproduction of that same hormone causes Cushing’s disease. The core of this gland is the medulla, and it produces cortisol and a hormone responsible for “fight or flight.” For 10 points, name this endocrine gland which sits above the kidneys and produces epinephrine.  
ANSWER: adrenal glands

20. A curly-haired character created by this author sleeps “no more than does a nightingale” and describes the gift of a teleporting brass horse to Genghis Khan. A scholar created by this author convinces a carpenter to sleep in a suspended tub in expectation of a second (\*) great flood so that he can sleep with his wife. Three characters created by this author set out to kill death, but die after discovering gold under an oak tree. This character created a condemned knight sent on a quest by Queen Guinevere to find what women most desire. For 10 points, name this author of a work in which a group of pilgrims journey to the shrine of Thomas a Becket, *The Canterbury Tales*.

ANSWER: Geoffrey Chaucer

21. One stochastic way of estimating this number is by simulating a sequence of uniform random variables on the interval between 0 and 1, and then calculating the expected number of terms in the sequence needed to generate a sum greater than 1. This constant is the limit of the sequence with  $n$ th term equal to  $n$  over the  $n$ th root of  $n$  factorial. This constant is the argument where the maximum of the function (\*)  $x$  to the one-over- $x$  occurs. This value is also equal to the sum of the reciprocals of the factorials of the natural numbers, but is usually defined as limit of the product of 1 plus 1 over  $n$  all taken to the  $n$ th power. For 10 points, give this number, the base of the natural logarithm whose first six digits are 2.71828.

ANSWER: e [accept **Euler's number**; do not accept or prompt on “Euler's constant”, as that refers to the Euler-Mascheroni constant]

## Bonuses

1. After returning home drunk, one character stands on a table in this location and proclaims himself “Flaming Spear.” For 10 points each:

[10] Name this location which a family leaves for a house in Clybourne Park, against the objections of Mr. Lindner, who attempts to pay its residents to stay there.

ANSWER: the **Younger** family **apartment** [or the **apartment** from *A Raisin in the Sun*; accept **home** in place of “apartment,” but not “house”]

[10] The entirety of *A Raisin In the Sun*, a play by this author, takes place in the Younger family apartment.

ANSWER: Lorraine **Hansberry**

[10] At the end of *A Raisin in the Sun*, Joseph Asagai attempts to convince Beneatha to go to this continent with him. In his autobiography, Olaudah Equiano describes his kidnapping in and transportation away from this continent.

ANSWER: **Africa**

2. As an infant, this hero’s suckling led to the creation of the Milky Way. For 10 points each:

[10] Name this enormously strong hero who performed Twelve Labours as atonement for killing his family in a rage.

ANSWER: **Heracles** [or **Hercules**]

[10] Heracles’s first labor was to slay this lion that had an impenetrable pelt, which he did by strangling it.

ANSWER: **Nemean** Lion

[10] While traveling to his 11th Labor, Heracles wrestled Antaeus, who gained strength as long as he was performing this action, thanks to Antaeus’s descendance from Gaia. Heracles eventually got around this tactic by killing Antaeus in a bearhug.

ANSWER: **touching the earth** [accept general descriptions]

3. Examples of these include catalase and carbonic anhydrase. For 10 points each:

[10] Name these biological catalysts whose three-dimensional conformation is the subject of major study.

ANSWER: **enzymes**

[10] Enzymes, like all catalysts, lower the activation energy of reactions. This equation from reaction kinetics explains how the rate constant is proportional to the exponential of the negative activation energy over RT.

ANSWER: **Arrhenius** equation

[10] This model of enzyme kinetics assumes the reversible association of enzyme and substrate to form an enzyme-substrate complex, which irreversibly forms enzyme and product. This model predicts a linear association between one over rate and one over substrate concentration.

ANSWER: **Michaelis-Menten** kinetics

4. When he was a boy, this man’s tribe was attacked in the Three Knolls Massacre. For 10 points each:

[10] Name this “last Yahi” studied by the anthropologist Alfred Kroeber.

ANSWER: **Ishi**

[10] Kroeber performed an ethnographic survey of the Yurok people with Erik Erikson, who is well-known for authoring a psychoanalytic biography of this German monk and creator of the 95 Theses in which he famously stands up and shouts “I am not!”

ANSWER: Martin **Luther** [accept *Young Man Luther*]

[10] Erikson was also trained in this educational method developed by an Italian physician. It emphasizes freedom of choice and movement, as well as play.

ANSWER: **Montessori** System

5. Answer the following about the African city of Entebbe, for 10 points each:

[10] Entebbe is a city in this sub-kingdom of a larger African country, which has been ruled by 36 *kabakas* throughout its history, including its founder, Kato Kintu.

ANSWER: **Buganda** [or **Baganda**, do not accept “Uganda”]

[10] Entebbe sits on the northern shore of this lake, which Henry Morton Stanley confirmed as the source of the Nile in 1875.

ANSWER: Lake **Victoria**

[10] In 1976, Entebbe’s airport was the site of a hostage situation involving 94 citizens of this country. Immigrating to this country is known as *aliyah*, while emigrating from it is called *yerida*, and it was admitted to the UN in 1949.

ANSWER: State of **Israel** [accept Medīnat **Yisrā'el** and Dawlat **Isrā'īl**]

6. This era of American history effectively began with the passage of legislation during World War I to conserve grain for the war effort. For 10 points each:

[10] Name this period during which the manufacture, sale, and transportation of alcohol was outlawed at the federal level by the Eighteenth Amendment to the U.S. Constitution.

ANSWER: **Prohibition**

[10] This act drafted by Wayne Wheeler defined the scope of the Eighteenth Amendment’s prohibitions, and its “non-intoxicating cider and fruit juice” exception effectively legalized home winemaking.

ANSWER: **Volstead** Act

[10] This religious anti-alcohol organization adopted a “Do Everything” philosophy under its president Frances Willard, and was also led by Matilda Carse.

ANSWER: **Women’s Christian Temperance Union**

7. For 10 points each, answer the following questions about relatedness in animals:

[10] In humans, a mother and child have a coefficient of relatedness of this value, because this proportion of the child’s genes are from the mother.

ANSWER: **one-half** [accept equivalents like **fifty percent** or zero **point five**]

[10] Inclusive fitness proposes that this behavior will be maintained by evolution. The reciprocal version of this behavior would be more likely to occur in social groups such as humans and can entail symmetry-based and attitudinal mechanisms.

ANSWER: **altruism**

[10] The concept of relatedness appears in the model of inclusive fitness, which was proposed by this man. His namesake rule states that the coefficient of relatedness multiplied by the benefit must be greater than the cost in order for an organism to be altruistic.

ANSWER: William **Hamilton**

8. One poem by this author notes how “The women shared / The secret like a happy funeral” and depicts a train ride from Kingston upon Hull into London on Pentecost. For 10 points each:

[10] Name this British poet of “The Whitsun Weddings,” who concluded that “What will survive of us is love” in his poem “An Arundel Tomb.” Another work by this poet urges the listener, “don’t have any kids yourself.”

ANSWER: Philip **Larkin**

[10] That poem by Larkin is “This Be The Verse,” which takes its title from this earlier poet’s “Requiem.” This author of *A Child’s Garden of Verses* also wrote a novel in which Ebenezer Balfour sells his nephew David to the captain of the *Covenant*.

ANSWER: Robert Louis **Stevenson**

[10] Stevenson also wrote about this character, whose potion-facilitated transformations into Edward Hyde are investigated by Gabriel Utterson.

ANSWER: Dr. Henry **Jekyll**

9. Answer the following about some notable photographs taken in New York City, for 10 points each:

[10] In a 1962 photograph taken in Central Park, Diane Arbus showed a child holding a toy one of these items.

ANSWER: **hand grenade**

[10] Richard Drew's controversial photo *The Falling Man* depicts an unidentified person falling from one of these buildings during the 9/11 attacks.

ANSWER: **World Trade Center** [accept **Twin Towers**]

[10] This earlier photographer and husband of Georgia O'Keeffe depicted passengers entering the lower-class berths in a trip from New York to Germany in his *The Steerage*.

ANSWER: Alfred **Stieglitz**

10. In this artist's best-known painting, a nude woman sits next to two clothed men and a basket of fruit as another woman bathes in the background. For 10 points each:

[10] Name this artist of *Luncheon on the Grass*.

ANSWER: Edouard **Manet**

[10] Another painting by Manet depicts a dish of oranges and barmaid standing in front of a mirror at this Parisian nightclub.

ANSWER: the **Folies Bergere**

[10] Influenced by *The Third of May 1808*, Manet painted three versions of a scene depicting the execution of this historical figure.

ANSWER: Emperor **Maximilian I**

11. Let's play some games! For 10 points each:

[10] In this canonical example from game theory, two players must decide to either defect or cooperate without knowing the other player's choice. The iterated version of this game gives rise to strategies such as tit-for-tat and forgiveness.

ANSWER: **prisoner's dilemma**

[10] For the prisoner's dilemma, this strategy leads to defection for both prisoners. For a non-cooperative game with two players, this is the equilibrium strategy taken by both players such that neither player has anything to gain by changing their own strategy.

ANSWER: **Nash** equilibrium

[10] The ultimatum game and the centipede game use this strategy, which involves analyzing the last step to make decisions in previous steps.

ANSWER: **backward induction**

12. Answer the following about characters who have special affections for their wedding dresses, for 10 points each:

[10] Miss Havisham never removes her wedding dress and has all of her clocks set to 8:40am in this Charles Dickens novel centering on Pip's rise to wealth, with a little help from his benefactor, Abel Magwitch.

ANSWER: **Great Expectations**

[10] Maria Josefa, the mother of the title matriarch of this Federico Garcia Lorca play, escapes from her room wearing a wedding gown. At the end of this play, Adela hangs herself after Pepe El Romano is shot.

ANSWER: *The **House of Bernarda Alba*** [or *La **Casa de Bernarda Alba***]

[10] This morphine-addicted character enters the room with her wedding dress over her arm and begins to pray at the end of Eugene O'Neill's *Long Day's Journey Into Night*.

ANSWER: **Mary** Tyrone [prompt on "Tyrone"]



13. For 10 points each, name these Afro-American religions:

[10] This religion worships the chief god Bondye and spirits called *loas*, but is better known in pop culture for some namesake cursed dolls people stick pins into.

ANSWER: **Vodou** [or **voodoo** or **Vodun**]

[10] This religion's branches are known as mansions and has a diet centered around *Ital*. It worships Haile Selassie.

ANSWER: **Rastafarianism**

[10] This tradition derived from Igbo practices was opposed by the Myalists of Jamaica in the 19th century. Its form of witchcraft was frequently practiced by West Indies slaves against their masters.

ANSWER: **Obeah**

14. In September 2014, 43 students in Mexico's Guerrero state were the victim of this action. For 10 points each:

[10] Name this crime also perpetrated on 273 schoolgirls in Chibok, Nigeria in 2014 that involves being forcibly held in captivity.

ANSWER: **kidnapping** [accept equivalents like **abduction** or **taking** someone **captive/hostage** and word forms thereof]

[10] This country had a high-profile kidnapping in 2002 when Green Party presidential candidate Ingrid Betancourt was taken hostage by FARC rebels. She was released in Operation Jaque six years later.

ANSWER: Republic of **Colombia** [accept República de **Colombia**]

[10] This president of Colombia during the kidnapping of Betancourt pursued an aggressive offensive against FARC rebels. His government was dogged by accusations of complicity with right-wing AUC paramilitary atrocities in the "parapolitics" scandal.

ANSWER: Álvaro **Uribe** Vélez

15. This man used the pseudonym Charles D'Espeville in his correspondence with his opponent Michael Servetus. For 10 points each:

[10] Name this Reformation theologian and author of *Institutes of the Christian Religion*.

ANSWER: John **Calvin** [accept Jean **Calvin** or Jehan **Cauvin**]

[10] Calvin and his allies in the Consistory of this city ordered that all children be given biblical names. This Swiss city also names a series of agreements regarding, among other things, the rights of prisoners of war.

ANSWER: **Geneva** [accept **Genève**]

[10] Calvinism failed to gain a foothold in this country as a result of the Synod of Uppsala, which declared Lutheranism the state religion. The followers of Sten Sture the Younger were killed in a "bloodbath" named for this country's capital.

ANSWER: Kingdom of **Sweden** [accept Konungariket **Sverige**]

16. When this value for a substance is divided by its value for water, the result is the specific gravity of that substance. For 10 points each:

[10] Name this quantity equal to mass divided by volume and often symbolized rho.

ANSWER: **density**

[10] This equation can be used to find the pressure in a liquid as a function of depth. It sets that pressure equal to the density of the liquid, multiplied by the depth and the gravitational acceleration.

ANSWER: **Pascal's** law

[10] For a container of liquid of height  $h$ , this law predicts that the velocity of fluid flowing out of a hole at the bottom of the container will be directly proportional to the square root of  $h$ . It is a result of the application of Bernoulli's law.

ANSWER: **Torricelli's** law

17. One character in this play keeps his ward in one of his houses under the name *Monsieur de la Souche*. For 10 points each:

[10] Name this play which ends with that ward, Agnes, marrying Horace, rather than Arnolphe.

ANSWER: *The **School for Wives*** [or *L'**ecole des femmes***]

[10] The title character of this other work by the author of *The School for Wives* is a religious fraud who attempts to seduce Elmire, the wife of Orgon, while living in Orgon's house.

ANSWER: ***Tartuffe***, or *The Imposter*, or *The Hypocrite*

[10] *Tartuffe* is by this French playwright of *The Misanthrope*.

ANSWER: **Moliere** [or Jean-Baptiste **Poquelin**]

18. This collection's last piece, "Efterklang," reprises the melody of its first, "Arietta," in the form of a waltz. For 10 points each:

[10] Name this collection of sixty-six piano pieces, which include the "March of the Trolls" and "Wedding Day at Troldhaugen."

ANSWER: ***Lyric Pieces*** [or ***Lyriske stykker***]

[10] This Norwegian composer of incidental music to *Peer Gynt* wrote the *Lyric Pieces*.

ANSWER: Edvard **Grieg**

[10] A famously accelerating movement from *Peer Gynt* depicts the title character enter into the hall of this regal troll while in a dream state.

ANSWER: the **Mountain King** [or **Dovregubben**, accept **In the Hall of the Mountain King**]

19. Sometimes, only a German word will get the job done. For 10 points each:

[10] This German term describes a situation in chess when a player would rather pass than make a move.

ANSWER: **zugzwang** [do not accept "zwischenzug"]

[10] The German word *karst* terms a kind of topography rich with this sedimentary rock composed of different forms of calcium carbonate, like aragonite and calcite.

ANSWER: **limestone**

[10] A *Kunstlerroman* is a novel which depicts the growth of an artist, one example of which is *Cat's Eye*, a work by this Canadian author of *The Blind Assassin* and *Oryx and Crake*.

ANSWER: Margaret **Atwood**

20. During the Byzantine period, this city was known primarily for its production of silk. For 10 points each:

[10] Name this Greek city in Boeotia. Its central fortress was known as the Cadmea after its mythical founder, and its army was notably led by Epaminondas.

ANSWER: **Thebes**

[10] During the fourth century BCE, the Theban army included this elite unit composed of 150 pairs of homosexual male lovers.

ANSWER: **Sacred Band** of Thebes [or **Hieros Lokhos**]

[10] The Sacred Band of Thebes isn't to be confused with the Sacred Band of this other ancient city. This city was salted by the Roman army at the end of the Third Punic War.

ANSWER: **Carthage**