**Tossups**

1. In one poem, this author described the souls of two lovers enduring “not yet a breach, but an expansion, like gold to airy thinness beat.” In another poem by this author, a pair of lovers are “cloistered in these living walls of jet.” The lines “Thy firmness makes my circle just, and makes me end where I begin” conclude this poet’s analogy of a pair of lovers to the feet of a compass. This poet asked: “hast thou since purpled thy nail?” in a poem describing a creature that “sucked me first, and now sucks thee,” and contains the speaker and his lover’s “mingled blood.” For 10 points, name this metaphysical poet who wrote “A Valediction: Forbidding Mourning” and “The Flea.”

ANSWER: John **Donne**

1. The gradient of this quantity is greatest below a pycnocline. This quantity times the derivative of pressure with respect to this quantity gives the bulk modulus. Incompressible fluids have a constant value of it. For liquid water this quantity is maximized at 4 degrees Celsius. Every term in the Bernoulli equation except for the pressure is multiplied by this quantity. The pressure at the bottom of a pool is equal to the depth, times gravity, times this quantity. The ratio of this quantity for a given substance to that of water is the specific gravity. For 10 points, name this quantity, the ratio of mass to volume.

ANSWER: **density**

1. This author created a priest who bases his sermons on predictions in the Bristol Almanac. Another of his characters is a leader whose country is bankrupted, so he sells the sea and it is taken to Arizona in numbered sections. An orphan who carries her parents’ bones in a sack and who has the habit of eating dirt appears in a novel by this author, in which the government identifies some characters by their Ash Wednesday crosse. This author of “Leaf Storm” and *The Autumn of the Patriarch* wrote a novel in which the 17 Aurelianos are sons of a colonel whose father, José Arcadio Buendía, founded the town of Macondo. For 10 points, name this magical realist author of *One Hundred Years of Solitude*.

ANSWER: Gabriel **García Márquez** [prompt on partial answers]

1. A woman gazes at a cross while seated in front of a painting of the Crucifixion in this artist’s *Allegory of Faith*. A chandelier with a double-headed eagle hangs in front a large map in a painting by this artist. That painting by this artist includes a black and white tiled floor and a girl holding a trumpet. This artist of *The Little Street* depicted the Schiedam Gate in a painting that was painted with the help of a camera obscura. The subject of this artist’s most famous portrait wears a bright blue turban and a very large piece of jewelry. For ten points, identify this artist of who depicted a view of his hometown in *View of Delft* and painted *The Girl with the Pearl Earring.*

ANSWER: Jan **Vermeer**

1. This god was Skadi’s desired choice when choosing a husband based solely on the gods’ legs, but she accidentally picked Njord. The dwarf Litr was kicked into this god’s ship, Hringhorni, after it was set on fire. Vafthrúdnir recognized Odin when asked what Odin told this god after placing Draupnir on this god’s funeral pyre. The giantess Thökk refused to mourn for this god after Hermod rode to ask Hel to release this god from the underworld. This god died after his mother Frigg failed to make a certain plant promise not to kill him, and his death set in motion the events of Ragnarök. For 10 points, name this Norse god killed by mistletoe through a trick by Loki.

ANSWER: **Baldr**

1. He’s not Russian, but one of the largest ancient equestrian statues is a bronze statue of this emperor with his arm outstretched. This emperor fought a lengthy series of wars against the Quadi and Marcomanni tribes, during which he kept a detailed collection of his private thoughts. During this man’s rule, a plague sometimes named after Galen killed off millions of people, including his co-emperor Lucius Verus. This emperor, whose death in 180 AD marks the traditional end of the Pax Romana, ended the tradition of adopting a successor, instead choosing to give the crown to his son Commodus. For 10 points, name this author of the *Meditations*, the last of the Five Good Emperors.

ANSWER: **Marcus Aurelius** [do not accept or prompt on partial answer]

1. The proteins villin and supervillin bind this proteins. *Listeria* moves through cells by forming so-called rockets of this protein to propel itself. Cytochalasin and blocks its polymerization while phalloidin prevents its depolymerization. Nebulin binds monomers of this protein in the sarcomere. This protein forms the cleavage furrow that leads to cytokinesis. In muscle cells, binding of calcium to troponin moves tropomyosin allowing myosin to bind this protein. This protein’s monomeric globular form can polymerize to form its filamentous polymer form. For 10 points, name this protein that comprises microfilaments.

ANSWER: **actin**

1. This artist worked together with Barber of *Cave of the Heart* as part of this choreographer’s “Greek Cycle.” This choreographer collaborated with Balanchine on a ballet set to music of Anton Webern, *Episodes.* A spiraling torso and regimented breathing cycle form this artist's namesake technique. A Zoltan Kodaly piano piece was the basis for this artist’s *Lamentation*. One of this artist’s works, a meditation on Joan of Arc, had its set designed by Isamu Noguchi. This choreographer of *Seraphic Dialogue* cast Merce Cunningham as a preacher a work originally entitled “Ballet for Martha.” For ten points, identify this choreographer of *Appalachian Spring.*

ANSWER: Martha **Graham**

1. At the end of one song by this artist he receives a phone call from Gabe Tesoriero. Another song by this artist features a recording of a phone call from artist Max B who talks about the Silver Surfer. A third song by this artist begins with a woman asking “you want me to give you a testimony about my life / and how good he’s been to me.” Those three songs appear on this artist’s most recent album whose working names included *Swish* and *So Help me God.* That album’s final form has a first track that begins with the lines “I’m tryna keep my faith” and is titled *Ultralight Beam.* For 10 points, name this artist who, in February 2016, released *The Life of Pablo*.

ANSWER: **Kanye** West [accept Kanye **West**]

1. During this war, a group of black sailors chosen to undergo an accelerated officer training program were eventually commissioned and nicknamed the “Golden Thirteen.” A slogan during this war called for “victory at home, victory abroad” in the “Double V” campaign. Asa Philip Randolph threatened to lead a march on Washington to protest discrimination during this war. Three years after the conclusion of this war, the military was desegregated with Executive Order 9981, which was partly passed due to the gallantry of units such as the Tuskegee Airmen. For 10 points, name this war in which black servicemen fought in segregated regiments against enemies like Nazi Germany.

ANSWER: **W**orld **W**ar **II**

1. In this province, lava beds from Tseax Cone are featured in a provincial park jointly run by the Nisga’a Nation. The Haida people on Haida Gwaii off the coast of this province probably originated the practice of carving totem poles. Kicking Horse River runs through Yoho National Park in this province. The largest ski resort in North America is situated on Whistler and Blackcomb Mountains in this province and was the site of some events of the 2010 Winter Olympics. Its capital is at the southern end of an island named for its largest city, bordering the Strait of Juan de Fuca. For 10 points, name this western Canadian province whose capital is Victoria and largest city is Vancouver.

ANSWER: **British Columbia** [or **BC**]

1. In 2016 this man released an app called Pharos which ominously counted down to the listening party for his new album. This man got his stage name from a Wu Tang name generator. He released the movie “Mystery Team” as a member of Youtube comedy group Derrick Comedy. He portrays the socially awkward astrodynamicist Rich Purnell in “The Martian”. This man plays Earn, a Princeton dropout trying to help his cousin Paper Boi succeed in the rap game on his new TV show “Atlanta”. For 10 points, this artist who plays Troy Barnes on *Community* and released the albums *Camp* and *Because the Internet* as rapper Childish Gambino

ANSWER: Donald **Glover** [accept **Childish Gambino** before mention]

1. This poet compared the title season to a “perhaps hand”, arranging objects near a window “without breaking anything,” in the poem “Spring.” This poet wrote about a character whose death is largely ignored by “women and men” who “reaped their sowing and and went their came” in a poem that repeats the words: “sun moon stars rain.” The title character of another poem by this writer was a “conscientious object-or” whom the narrator describes as “more brave than me:more blond than you.” For 10 points, name this American poet of “anyone lived in a pretty how town” and “i sing of Olaf glad and big,” who eschewed proper grammar and punctuation.

ANSWER: e. e. **Cummings**

1. Sodium cyanoborohydride can be used to reductively replace carbonyls with this functional group. Fully substituted versions of this functional group can be eliminated to give the non-Zaitsev product in the Hoffman elimination. Primary versions of this functional group give two sharp peaks at 3300 - 3500 inverse centimeters in IR. These compounds can be prepared from alkyl halides by treatment with potassium phthalimide in the Gabriel synthesis. Aniline consists of benzene bonded to this functional group. This functional group can be reacted with carboxylic acids to yield amides. For 10 points each, name this functional group characterized by the presence of a nitrogen atom bonded to three other atoms.

ANSWER: **amine**s

1. Thirty-eight members of the MacDonald clan were slaughtered in the Glencoe Massacre because they missed a deadline to swear loyalty to this king. The North American theater of the War of the League of Augsburg is named after this king, who landed at Brixham after he received an invitation from the Immortal Seven. Because this king could not produce an heir, the Act of Settlement selected Sophia of Hanover as heiress to the throne. This ruler won the Battle of the Boyne, which crushed any hopes of James II regaining the throne. For 10 points, name this king from the House of Orange, who acceded to the English throne in 1689 after the Glorious Revolution along with his wife Mary.

ANSWER: **William III** of Orange [or **William** of **Orange**; accept **William II** of **Scotland**; prompt on William; prompt on William and Mary; prompt on King William’s War; do not accept or prompt on just William II without mentioning “of Scotland”; do not accept or prompt on Mary]

1. The nineteenth century saw the popularity of a two-part form of this genre called the *cabaletta*. Beethoven’s *Ah! perfido* is one of these pieces meant to be performed in concert. One of these pieces is repeatedly interrupted by scales on a glockenspiel, which represents the pipes of a birdcatcher. A woman threatens to disown her daughter and describes hell’s vengeance boiling in her heart in a piece of this type known for its extremely high F notes. These pieces appear between less expressive passages called *recitative* [ruh-“see”-tuh-teev], and include “Der Hölle Rache,” sung by the Queen of the Night in *The Magic Flute*. For 10 points, name these solo numbers performed in operas.

ANSWER: **aria** [prompt on opera]

1. Ruby and Python use a system for these things that named for the aphorism "If it walks like a duck and talks like a duck, it must be a duck". Whether these things are checked at compile-time or run-time determines whether a language is statically or dynamically this term. Using the equal-equal operator lets JavaScript perform coercion on this category of things. In C, a special example of this category of things consists of a set of constants and is an enum (EE-numb). An example of this classification that was standardized by IEEE 754 is used to approximate real numbers. For 10 points, what term is applied to the classification of data and variables in a computer program, such as boolean, integer, and float?

ANSWER: data **type**s

1. The failed Bergmann Offensive attempted to breach this empire’s northern border. This empire gained the ships *SMS Goeben* and *SMS Breslau* after British ships failed to capture them, which this empire used to bombard targets in the Black Sea. This empire was partitioned in the secret Sykes-Picot Agreement. Tribes in the Hejaz region were encouraged to revolt against this empire, led by T.E. Lawrence. This empire was largely controlled by a ruling triumvirate of “Three Pashas,” who organized a genocide of its Armenian population. For 10 points, name this empire that fought on the side of the Central Powers during World War I, and was invaded in the Gallipoli Campaign.

ANSWER: **Ottoman** Empire [do not accept or prompt on Turkey—none of these clues pertain to the state of Turkey founded after World War I]

1. A book on the “philosophy” of the “classical” form of this religious practice by German scholar Georg Feuerstein states that it originated with two schools, one based on “action” and the other on the Eightfold Path. A set of sutras by Pananjali describe this practice as a “restraint of mental modifications” that allow a participant to attain *samadhi*. In many forms of this practice, the *ujjayi* technique is combined with *asanas*. Participants in this practice attempt an “extension” of a “life force” via *pranayama*, a set of breathing techniques. *Hatha* and *vinyasa* are types of, for 10 points, what Hindu spiritual practice that combines contemplative meditation with body-stretching poses?

ANSWER: **yoga** [accept hatha **yoga** or vinyasa **yoga** or raja **yoga** or ashtanga **yoga** or eight-limb **yoga** or kriya **yoga** or *The* ***Philosophy of Classical Yoga***]

1. Masabumi Hosono was publicly shamed for surviving this event, which was chronicled in a popular account by Archibald Gracie. A warning that could have prevented this event from occurring was given by the *SS Californian*, but was ignored by radio operator Jack Phillips. Molly Brown helped save survivors during this event, whose survivors were picked up by the *Carpathia*. Many people died in this event because only 20 lifeboats were available, despite the ship’s capacity demanding over three times that number to save everyone. For 10 points, name this April 1912 tragedy which killed more than 1,500 people in the Atlantic Ocean after an “unsinkable” ocean liner struck an iceberg and sank.

ANSWER: **sink**ing of the *RMS* ***Titanic***

1. A character created by this author befriends the poodle Ponto and is cheated on by a fellow cat named Miesmies. In one story by this author, a beautiful character who only ever says: “Ah, ah!” is revealed to be an automaton. At the climax of that story, Klara’s fiancee Nathanael shouts: “Ah, pretty eyes - pretty eyes!” before jumping off the town hall’s highest steeple. In another story by this author of *The Life and Opinions of Tomcat Murr,*  the tales of Madam Mouserinks and Princess Pirlipat are told to Marie by the clockmaker Drosselmeyer. For 10 points, name German-language Romantic author of the stories “The Sandman” and “The Nutcracker and the Mouse King.”

ANSWER: E. T. A. **Hoffmann**

**Bonuses**

1. A sister-wife named Awan gives birth to six children in this place. For 10 points each:

[10] Name this place to which Cain was banished by God after murdering Abel.

ANSWER: Land of **Nod** [or Eretz-**Nod**]

[10] The Land of Nod was said to be “east of” this lush biblical garden, from which Adam and Eve were banished after eating from the Tree of Knowledge.

ANSWER: Garden of **Eden** [or Gan **Eden**; accept “(on the) east of **Eden**” or qidmat-’**Eden**]

[10] Cain’s first child had this name, which inspired Cain to give this name to the first city in the Land of Nod. Another biblical man with this name was the father of Methuselah and lived for 365 years before he “walked with God, and he was no more; for God took him.”

ANSWER: **Enoch** [or **Hanokh**; or **Idris**]

1. The foot processes of podocytes wrap around the capillaries of this structure to regulate the passage of materials through its walls. For 10 points each:

[10] Name this structure, found in Bowman’s capsule, that filters blood before it enters the nephron. Its namesake filtration rate is equal to the “urine concentration, times the urine flow, divided by the plasma concentration”.

ANSWER: **glomerulus**

[10] The nephron is the functional unit of this organ, responsible for producing urine. This organ is responsible for regulating blood volume through the renin-angiotensin system.

ANSWER: **kidney**

[10] Blood pressure regulation by the kidneys occurs when insufficient fluid flow to the macula densa triggers release of this serine protease which cleaves angiotensinogen to angiotensin I.

ANSWER: **renin**

1. Tchaikovsky’s composition of this type was originally declared unplayable by Leopold Auer, who then changed his mind and made a revised edition that was harder. For 10 points each:

[10] Identify this type of orchestral composition often played by virtuosos such as Fritz Kreisler, Joseph Joachim, and Hilary Hahn.

ANSWER: **violin concerto** [prompt on concerto]

[10] This German composer of the *Academic Festival Overture* dedicated his Violin Concerto to Joseph Joachim. He also wrote a namesake “Cradle Song,” or lullaby.

ANSWER: Johannes **Brahms**

[10] This composer's Violin Concerto No. 1 in G minor is considered one of the five great romantic violin concerti. He also wrote *Kol Nidrei* and a *Scottish Fantasy* for solo violin and orchestra.

ANSWER: Max **Bruch** [or Max Christian Friedrich **Bruch**]

1. This phrase was coined by an English sociologist who wrote the books *System of Synthetic Philosophy* and *Social Statics*. For 10 points each:

[10] Give this four-word phrase often used to describe the theory of natural selection. Alfred Russel Wallace urged Charles Darwin to use this phrase in place of natural selection.

ANSWER: “**survival of the fittest**”

[10] This man coined the phrase “survival of the fittest.” This one-time editor of *The Economist* magazine is credited with creating the idea of Social Darwinism.

ANSWER: Herbert **Spencer**

[10] The term “Darwinism” was itself coined by this Englishman. In an 1860 debate at Oxford, Bishop Samuel Wilberforce asked this man whether he claimed descent from a monkey through his grandfather or his grandmother.

ANSWER: Thomas Henry **Huxley**

1. A character in this collection gets in trouble for saying that some wine is “good enough for Christ himself.” For 10 points each:

[10] Name this collection of 100 stories by Giovanni Boccaccio.

ANSWER: *The* ***Decameron***

[10] The storytellers in the *Decameron* are holed up in a villa outside Florence on account of this historical event, and while away their time telling tales.

ANSWER: the **Black Death** [or the **Black Plague**]

[10] Dioneo is the only one of the storytellers exempt from this requirement. Aside from the first and ninth days, every day of storytelling is subject to this requirement.

ANSWER: every story has to conform to a specific **topic** [accept clear-knowledge equivalents]

1. Fort Montgomery was built on Island Point after it was ceded to the United States in this agreement. For 10 points each:

[10] Name this 1842 agreement that fixed the border between Maine and New Brunswick, which was the point of contention in the Aroostook War.

ANSWER: **Webster-Ashburton** Treaty

[10] The Webster-Ashburton Treaty was signed during the presidency of this man, who was called “his Accidency” after succeeding to the presidency after the death of William Henry Harrison.

ANSWER: John **Tyler**

[10] Late in his term as president, Tyler approved the annexation of this state, which existed as an independent republic for 10 years after winning its independence from Mexico. At the time of annexation, its capital was Austin.

ANSWER: **Texas**

1. The bond order of a molecule can be calculated by taking half of the difference of the number of bonding electrons and the number of antibonding electrons in these diagrams. For 10 points each:

[10] Name these diagrams that use a linear combination of molecular orbitals to understand bonding.

ANSWER: **molecular orbital** diagrams [accept **MO** diagrams]

[10] When given two orbitals of equal energy and two electrons, one electron is placed in each orbital because of this principle, which states that electrons are placed in orbitals to maximize spin multiplicity.

ANSWER: **Hund**’s rule

[10] Constructing an MO diagram for a molecule with more than two atoms first requires sorting the molecule into one of these classifications that group molecules by their symmetry elements.

ANSWER: **point group**s

1. A painting by Ilya Repin shows a group of these people crafting an obscene reply to the Ottoman sultan. For 10 points each:

[10] Name these people, which included rebels Stenka Razin and Yemelyan Pugachev. These people, whose subdivisions include the Zaporozhian and the Don, were used extensively as soldiers and policemen in Imperial Russia.

ANSWER: **Cossack**s [accept Don **Cossack**s; accept Zaporozhian **Cossack**s; accept *Reply of the Zaporozhian* ***Cossack****s*]

[10] This tsar faced the revolt of Stenka Razin. Under this son of Michael, the Russian Orthodox Church introduced reforms which were bitterly opposed by the Old Believers.

ANSWER: **Alexis**

[10] Alexis was the second tsar from this Russian royal house first started by his father Michael. It lasted until it was overthrown in the February Revolution in 1917.

ANSWER: House of **Romanov**

1. This character initially breaks off her engagement to Captain Wentworth at age 19. For 10 points each:

[10] Name this character, who later renews that engagement with Wentworth a while after he returns from the Napoleonic Wars.

ANSWER: **Anne** **Elliot**

[10] Anne Elliot’s marriage to Frederick Wentworth occurs at the end of this Jane Austen novel.

ANSWER: ***Persuasion***

[10] A smorgasbord of marriages happen at the end of this other Austen novel, including one between Edward Ferrars and Elinor Dashwood, and between Colonel Brandon and Elinor’s sister Marianne.

ANSWER: ***Sense and Sensibility***

1. This artist’s *Funerary Monument to Sir John Hawkwood* was commissioned for the Florence Cathedral. For 10 points each:

[10] Identify this Italian artist. This artist depicted Niccolò da Tolentino among many soldiers with lances in his masterpiece *The Battle of San Romano.*

ANSWER: Paolo **Uccello**

[10] Part of *The Battle of San Romano* is housed in the Uffizi Gallery, which was designed by this man. This author of *Lives of the Most Eminent Painters, Sculptors, and Architects* is considered to be the first art historian.

ANSWER: Giorgio **Vasari**

[10] The Uffizi Gallery contains a Raphael portrait of one of these people dressed in red robes. Michelangelo depicted a horned Moses on a tomb for one of these people, who was nicknamed “The Warrior.”

ANSWER: **popes**

1. This phenomenon can only occur when neta intra-specific competition in a system exceeds net inter-specific competition. For 10 points each:

[10] Name this phenomenon that is at the core of G. Evelyn Hutchinson’s “paradox of the plankton”, which asks how this phenomenon can occur in a set of ecologically identical species.  
ANSWER: **coexistence** of multiple species  
[10] The early coexistence theoretician Robert MacArthur worked with to E.O Wilson develop a theory of the biogeography of these types of systems. The distance from these systems to the mainland helps determine diversity on these systems.

ANSWERS: **island**s [or the “theory of **island** biogeography”; accept **archipelago**s]

[10] E.O. Wilson has spent most of his career working with these eusocial insects. Bites from “fire” versions of these insects can sting due to formic acid, and leaf-cutting versions of these have mutualisms with fungi.

ANSWER: **ant**s

1. With his frequent collaborator, this man developed the framework of historical materialism. For 10 points each:

[10] Name this philosopher who wrote, “Philosophers have only interpreted the world; the point is to change it.” That quotation appeared in a precursor to his posthumously published work *The German Ideology*.

ANSWER: Karl **Marx**

[10] The previous quotation was the last of eleven theses on this philosopher. Marx criticized this philosopher’s materialism for being too idealist, rather than being based on historical trends.

ANSWER: Ludwig **Feuerbach** [or Ludwig Andreas von **Feuerbach**]

[10] In his *Critique of Hegel’s Philosophy of Right*, Marx criticizes this institution for creating a false sense of community based on equality. That function is eventually taken on by the state as well after the decline of this institution.

ANSWER: **religion**

1. Answer the following about execution methods throughout history, for 10 points each.

[10] Socrates was condemned to die by drinking the toxic juice of this plant.

ANSWER: **hemlock**

[10] Louis XVI and Marie Antoinette, along with thousands of others during the Reign of Terror, died via this “national razor,” which was intended to be a more humane form of execution.

ANSWER: **guillotine** [prompt on beheading]

[10] In order to prevent the spilling of royal blood, the last Abbasid caliph was put to death in this manner after Hulagu Khan sacked Baghdad.

ANSWER: rolled up into a carpet and **trampled** to death

1. Along with the Erinyes and the Meliae, these creatures were born when Ouranos’ blood dripped onto the earth after he was castrated. For 10 points each:

[10] Name these creatures that tried to storm Mount Olympus in the Gigantomachy, though the cause of that war is unclear. It was prophesied that they would only be defeated with the help of Heracles.

ANSWER: **Giant**s [prompt on ***Gigantes*** or ***Gigas***]

[10] While on his way to retrieve the apples from the Garden of the Hesperides, Heracles defeated this giant by holding him up, since this giant received his strength from Gaia whenever he touched the ground.

ANSWER: **Antaeus**

[10] This separate group of three one-eyed giants helped the Olympians during the Titanomachy after being freed from Tartarus by forging Zeus’ thunderbolts, Poseidon’s trident and Hades’ helmet of invisibility.

ANSWER: **Cyclopes** [or **Cyclops**]

1. This author wrote an approximately 111 stanza poem that is considered to be the prototypical work in the “Sandesa Kavya” tradition. For 10 points each:

[10] Name this Classical author. In his “Meghaduta”, an exiled yaksa describes the journey that a cloud would take from his exiled location to his wife’s location at Mount Kailasa.

ANSWER: **Kalidasa**

[10] Kalidasa used this Classical Indian language to write “Meghaduta”, or “The Cloud Messenger” as well as *The Recognition of Shakuntala*.

ANSWER: **Sanskrit**

[10] In *The Recognition of Shakuntala*, Dushyanta finds one of these types of objects inside a fish. In Plato’s *Repulic*, Glaucon posits that a Just man who finds one of these objects that granted invisibility would behave in the same way as an unjust man.

ANSWER: a **ring** [accept **signet ring**; accept **Ring of Gyges**]

1. Answer the following about sculptures of the Bonaparte family, for 10 points each.

[10] Both the somewhat controversial *Pauline Bonaparte as Venus Victrix* and the gigantic *Napoleon as Mars the Peacemaker* were sculpted by this Italian Neoclassicist.

ANSWER: Antonio **Canova**

[10] The even more controversial *Princess X*, an extremely phallic depiction of Napoleon's great-grandniece Marie Bonaparte, was created by this Romanian sculptor more famous for *The Endless Column* and *Bird in Space*.

ANSWER: Constantin **Brancusi**

[10] Statues of Napoleon top the Vendome Column and the Column of the Grande Armee, both of which were modeled on this Roman monument, which was built to celebrate its namesake emperor's victories over the Dacians.

ANSWER: **Trajan**'s Column [or the Colonna **Traian**a]

1. Answer the following about the history behind *Liberty Leading the People*. For 10 points each:

[10] The painting is set during the July Revolution, which replaced Charles X with this “Citizen-King,” who reigned until he was toppled in 1848.

ANSWER: **Louis-Philippe**

[10] The central woman—Liberty—holds aloft this object. Due to its three vertical stripes of blue, white, and red, it’s often known as the *tricolour*.

ANSWER: **flag** of **France** [prompt on flag]

[10] Liberty stands on a barricade, which were often used by revolutionaries as blockades. However, this man’s renovation of Paris included wide boulevards, which were intended to hamper the construction of barricades.

ANSWER: Baron **Haussmann** [or Georges-Eugene **Haussmann**]

1. In a story set in this place, Father Peregrine and Father Stone investigate mysterious “Fire Balloons” floating around in the sky. For 10 points each:

[10] Identify this location, the setting of the stories “Ylla” and “Usher II.” Those stories appear in a collection titled for this place that includes the story “There Will Come Soft Rains.”

ANSWER: **Mars**[accept “*The* ***Martian*** *Chronicles*”]

[10] *The Martian Chronicles* was written by this prolific American author of *Fahrenheit-451.*

ANSWER: Ray **Bradbury**

[10] In *Fahrenheit-451,* Captain Beatty sends one of these ruthless tracking machines in pursuit of Guy Montag. These robotic beasts subdue their prey by injecting them with procaine.

ANSWER: **Mechanical Hound**s

1. The equations central to magnetohydrodynamics are derived by combining these equations with Maxwell’s equations. For 10 points each:

[10] Name this set of notoriously hard-to-solve differential equations that describe the movement of viscous fluids.

ANSWER: **Navier-Stokes** equations

[10] An open problem in physics asks if given a set of initial conditions, whether or not the Navier-Stokes equations always have a solution of this type. This property is analogous to the number of continuous derivatives that a function has.

ANSWER: **smooth**ness

[10] Another unsolved question resulting from the Navier-Stokes equations is the existence of this type of flow, contrasted with laminar flow, in which a fluid experiences chaotic changes in velocity and pressure.

ANSWER: **turbulence**

1. Answer the following about historical Sergei Eisenstein films, for 10 points each.

[10] Perhaps the most famous Eisenstein film depicts a mutiny aboard the battleship *Potemkin*, which occurred during this year. Russia lost a war against Japan in this year, which contributed to strikes and protests like Bloody Sunday.

ANSWER: **1905**

[10] Eisenstein’s *Alexander Nevsky* shows the Teutonic Knights being decisively defeated by forces under Nevsky at this 1242 battle fought over a frozen Lake Peipus.

ANSWER: Battle on the **Ice**

[10] The life of this Russian czar was chronicled in an unfinished trilogy by Eisenstein. This first Czar of all the Russias also terrorized people with the *oprichniki* secret police, with which he committed the Novgorod Massacre.

ANSWER: **Ivan** the **Terrible** [or **Ivan IV**; or **Ivan Grozny**; prompt on Ivan]

1. A strain of this virus native to the Philippines spread through a Macaque population in a research facility in Reston, Virginia in the 1980s. For 10 points each:

[10] Name this zoonotic filovirus that recently had a devastating outbreak in western Africa. Infection from this virus generally results in severe hemorrhagic fevers.

ANSWER: **Ebola** [accept **Ebola** virus disease; or **Ebola** hemorrhagic fever]

[10] A novel coronavirus was shown to cause this syndrome which had a massive 2003 outbreak in Hong Kong. A syndrome similar to this one but named for its origin in the Middle East had a 2015 outbreak in South Korea.

ANSWER: **SARS** [or **severe accute respiratory syndrome**; do NOT accept “MERS” or “Middle East respiratory syndrome”]

[10] These animals are the likely intermediate hosts between bats and humans for Nipah virus, which has frequent outbreaks in South-East Asia. The common name of H1N1 influenza references its normal infection of these animals

ANSWER: **pig**s [or **swine**; accept **swine flu**]