1. In a disorder involving this structure, the loss of a namesake mental retardation protein prevents synapse maturation between neurons. Genetic imprinting plays a role in the deactivation of those that are paternally derived, which results in the condensation of this structure into a dark-staining Barr body. Turner's syndrome arises from an abnormal number of this molecular structure, and disorders such as red-green color blindness and hemophilia arise from recessive alleles on this structure. For 10 points, name this sex chromosome that pairs with the Y chromosome in males.
ANSWER: **X** chromosome

Bonus: In this type of congenital defect, an individual has three copies of a chromosome instead of two. For 10 points each:
[10] Name this type of defect, which is exhibited in Down Syndrome.
ANSWER: **trisomy**
[10] Trisomies occur due to this event, the failure of two members of a chromosome pair to separate during meiosis.
ANSWER: **nondisjunction**

2. This man's disciples included Theodore Beza, and during the Synod of Dordtrecht this man's views were attacked by the Dutch theologian Arminius. This man's theology was based on the "Five Points," which were outlined in *Institutes of the Christian Religion.* This man's views were carried to Scotland by John Knox, the founder of the Presbyterian Church. For 10 points, name this Swiss theologian from Geneva who believed in predestination and names a branch of Protestantism.
ANSWER: John **Calvin**

Bonus: England has its own church. For 10 points each:
[10] This is the highest religious office in the Anglican Church. It is currently held by Rowan Williams.
ANSWER: **Archbishop** of **Canterbury** [prompt on **Archbishop**]
[10] This American offshoot of Anglicanism began when its first bishop, Samuel Seabury, refused to swear an oath of allegiance to the king and merged it with a similar Scottish sect.
ANSWER: **Episcopal**ianism

3. This polity faced the Jelali revolts, and it was victorious at the Battle of Chaldiran. After a defeat by Jan Sobieski, this polity was forced to sign the Treaty of Karlowitz. One of its rulers won at Nicopolis before being captured by Tamerlane. In addition to Bayezid the Thunderbolt, other rulers of this empire were known as "the Grim" and "the Magnificent." Under Mehmet II, this empire conquered Constantinople from the Byzantines. For 10 points, name this empire that ruled from Turkey until its dissolution after World War I.
ANSWER: **Ottoman** Empire

Bonus: In its current form, it was mainly built by the Ming following their defeat at the Battle of Tumu. For 10 points each:

[10] Name this giant stone and brick structure intended to keep northerners out of a certain Asian country.

ANSWER: **Great Wall of China** [or **Wanli Changcheng**]

[10] This other Chinese technological marvel runs from Beijing to Hangzhou and was largely completed during the Sui dynasty.

ANSWER: **Grand Canal**

4. The first solution to this problem was published in the journal *Commentarii Academiae Scientiarum Imperialis Petropolitanae*, and that article's title indicated that its author was aware that its solution was independent of distance. Two of the namesake objects of this mathematical problem no longer exist, though it is still impossible for an Eulerian circuit to be traversed. For 10 points, name this problem that asks if it is possible for a traveler to cross each of the seven namesake objects exactly once and return to his starting point, answered by Leonhard Euler in the negative.

ANSWER: **Bridges of Königsburg** problem

Bonus: The point-set type of this branch of mathematics studies manifolds and metric spaces. For 10 points each:

[10] Name this general branch of mathematics, which studies the properties and deformations of algebraic and geometric shapes.

ANSWER: **topology**

[10] This non-orientable shape has only one side and can be formed by twisting a piece of paper and fastening the ends together.

ANSWER: **Möbius** strip [accept **Möbius** band]

5. Early in its history, this language group may have formed a sprachbund with the Iranian group, as they have similar words for god. This group's proto-language had ultra-short vowels, and languages in this branch of the Indo-European family frequently have palatalized consonants. Tribes who spoke languages from this group include the Wends. The Glagolitic alphabet was used to write the "Old Church" form of this language group, and the Bible was translated into this language group by St. Methodius using the alphabet named for St. Cyril. For 10 points, name this language group that includes Bulgarian, Polish, and Russian.

ANSWER: **Slavic** Languages [or **Slavonic**; prompt on "Balto-Slavic" or "Indo-European" until mentioned]

Bonus: Adam Smith divided this concept into effective and ineffective types, and it also has elastic and inelastic varieties. For 10 points each:

[10] Name this concept from economics, which represents how many people want a given good, and which helps determine prices.

ANSWER: **demand**

[10] When a seller has a monopoly, he will set a higher price than if he had competitors, meaning that some people who would demand a good at the competitive price would no longer be willing to pay for it. That phenomenon is given this name.

ANSWER: **deadweight loss**

6. This man was suspected of murdering his nephew Arthur after a raid on Mirebeau, and allied against Frederick II in support of Otto IV as Holy Roman Emperor. Otto lost the Battle of Bouvines, effectively ending this king's war against his rival Philip II Augustus and confirming his loss of most of England's French possessions. That disaster also prompted English barons to force him to sign a document limiting his power. For 10 points, name this brother of Richard the Lionheart, who signed the Magna Carta in 1215.
ANSWER: **John** I of England [or **John Lackland**]

Bonus: It was prompted by the death of the childless Capetian king Charles IV, with England's Edward III disputing the succession of France's Philip VI of Valois. For 10 points each:
[10] Identify this fourteenth- and fifteenth-century conflict between England and France that witnessed the Battles of Poitiers and Agincourt.
ANSWER: **Hundred Years' War**
[10] Another major battle of the Hundred Years' War was this 1346 confrontation in which Edward the Black Prince used Welsh longbowmen to decimate the forces of Philip VI.
ANSWER: Battle of **Crecy**

7. At one point in this work, the narrator claims that his conception of a better world is a universe with no bells. In another scene, the narrator encounters Juliek, who gives a moving performance of Beethoven's violin concerto. The narrator grows up in the Transylvanian village of Sighet, where he develops a relationship with Moshe the Beadle. In this book, Akiba Drumer's request that the Kaddish be recited at his death is ignored, a sign that many, like Eliezer, have lost their faith in God. For 10 points, name this novel by Elie Wiesel about his experiences in Nazi concentration camps.
ANSWER: ***Night***

Bonus: This German playwright wrote the words for *The Threepenny Opera*. For 10 points each:
[10] Name this playwright who told of Anna Fierling's offspring, including Eilif and Swiss Cheese, in *Mother Courage and Her Children*.
ANSWER: Bertholt **Brecht**
[10] Brecht collaborated on *The Threepenny Opera* with this musician, who collaborated with Maxwell Anderson on *Lost in the Stars*.
ANSWER: Kurt Julian **Weill**

8. Clarice and Ecclitico are united in this composer's opera *The World in the Moon*, and he composed an opera after *Orlando Furioso* called *The Paladin Orlando*. His final piano sonata in E-flat major is often considered his greatest. His works are organized in the Hoboken catalogue, and he composed an oratorio after the book of Genesis called *The Creation*. A repetitive chord pattern appears in his hundred and first symphony, "Clock," and a shocking sforzando gives a nickname to his "Surprise" symphony. For 10 points, name this prolific Austrian composer known as the "father of the symphony."
ANSWER: Franz Joseph **Haydn**

Bonus: Songs from it include Pangloss' "Ringaroundarosy" and the finale "Make Our Garden Grow." For 10 points each:

[10] Name this operetta that also includes Cunegonde's aria "Glitter and Be Gay."

ANSWER: **_Candide_**

[10] This Jewish American composer wrote _Candide_, along with _Trouble in Tahiti_ and a "Kaddish" symphony.

ANSWER: Leonard **Bernstein**

Arts
Current Events
Geography
History
Literature
Math Calculation
Philosophy
Social Science

Arts
Current Events
Geography
History
Literature
Math Calculation
Philosophy
Social Science

9. Rh antigens regulate the movement of both carbon dioxide and this substance in and out of red blood cells. Production of this compound in some bacteria requires the proteins molybdoferredoxin and azoferredoxin. The anhydrous form of this substance is often stolen, as it is a critical ingredient for the production of methamphetamines, and it is often used in fertilizers. This input to the Ostwald process is industrially produced by the Haber-Bosch process. For 10 points, name this compound with formula NH_3 that reacts violently with bleach.
ANSWER: **ammonia** [accept early **NH_3**]

10. This author wrote about the son of Albert Allmers, who is killed by the mysterious Rat Wife, in *Little Eyolf*. Irene and the sculptor Arnold Rubek are killed by an avalanche in this author's final play, *When We Dead Awaken*. He wrote a play in which Dr. Stockmann is ostracized after discovering that some baths are contaminated, *An Enemy of the People*, as well as a play about the wife of Abel Tesman, *Hedda Gabler*. For 10 points, name this playwright who wrote about Nora Helmer in *A Doll's House*.
ANSWER: Henrik **Ibsen**

11. The traditions of this culture say that the first member of this race, Kortar, was condemned to ferry dishonored warriors on the Barge of the Dead. Serpent worms called gagh are a mainstay of this culture's cuisine, and the House of Duras is a traitorous family of these peoples. Their homeworld is known as Kronos, and the destruction of the moon Praxis led to an uneasy peace between these peoples and the United Federation of Planets. For 10 points, Worf was a member of what militant race of the Star Trek universe, known for their ridged foreheads?
ANSWER: **Klingons**

12. Uncharacteristic of the techniques this artist adopted later in his career was his *The She-Wolf*, as was the predominantly yellow, orange, and blue *Moby-Dick*. He painted a work whose turquoise undertones are covered by a web of black interspersed with white and orange stripes, *Full Fathom Five*. His works have been found to display elements of self-similarity common to fractals and include *Lavender Mist*. For 10 points, name this artist, nicknamed Jack the Dripper for his innovative style of drip painting.
ANSWER: Jackson **Pollock**

13. The Dragoon and Mule Mountains are located in this state's southeast, and the Lukachukai and Carrizo Mountains are in this state's largest reservation. Cities on this state's western boundary include Ehrenberg and Parker, and forests in this state include the Tonto and Kaibab National Forests. Canyon de Chelly, Tuba City, and Kayenta are all located in this state's largest Indian reservation, which is also the nation's largest. For 10 points, name this state, home to Yuma and Tucson, with capital at Phoenix.
ANSWER: **Arizona**

14. This man's wife helped rescue Madame Lafayette from prison, and this man published *A View of the*

Conduct of the Executive, In the Foreign Affairs of the United States, which defended this man's opposition to Jay's Treaty while he served as minister to France. Along with Robert Livingston, this man signed the documents of the Louisiana Purchase, and his Secretary of State John Quincy Adams helped formulate a foreign policy named for this man. For 10 points, name this president who put forth a policy of non-interference of European powers in the affairs of the Americas, his namesake doctrine.
ANSWER: James **Monroe**

Arts: The Stravinsky fountain is near this building, whose mechanical ducts are exposed as colorful pipes on the external walls. For 15 points, name this Renzo Piano-designed building in the fourth arrondissement of Paris.
ANSWER: the **Pompidou Center** [or **Centre** Georges **Pompidou**]

Current Events: She helped engineer Israel's withdrawal from the Gaza strip in 2005 as one of Ariel Sharon's advisors, shortly before joining the Kadima Party, and has served as Foreign Minister since 2006. For 15 points, name this rival of Benjamin Netanyahu, a woman who served as acting prime minister of Israel in 2008.
ANSWER: Tziporah Malka "Tzipi" **Livni**

Geography: It is known in certain parts as the Kwarra or Joliba River, and the Benue is its largest tributary. For 15 points, name this West African river on whose banks lie the city of Onitsha and two West African capitals.
ANSWER: **Niger** River

History: During the 1930s, this country was ruled by Augustinas Voldemaras and his semi-fascist Iron Wolf Party. Earlier, this country signed the Union of Krewo and Union of Lublin. For 15 points, name this Baltic country that once formed a confederation with Poland.
ANSWER: **Lithuania** [or **Lietuvos**; or **Litwa**]

Literature: William's marriage eventually crumbles due to Isabel's vanity in this author's *Marriage à la Mode*. For 15 points, name this author of the story stories "Bliss" and "The Garden Party."
ANSWER: Katharine **Mansfield**

Math Calculation: For 15 points, calculate the greatest common factor of the smallest three-digit square number and the smallest three-digit triangular number.
ANSWER: **5** [greatest common factor of 100 and 105]

Philosophy: This work asks how synthetic a priori judgments are possible. For 15 points, name this work that outlines the distinction between noumena and phenomena, the first critique of Immanuel Kant.
ANSWER: *Critique of Pure Reason* [or *Kritik der Reinen Vernunft*]

Social Science: In 2003, Colin Renfrew proposed a Indo-Hittite revision to it, and it has generally been rejected in favor of the Kurgan hypothesis. For 15 points, name this theory that the speakers of the Proto Indo-European language spread out of modern-day Turkey during the Neolithic era.
ANSWER: **Anatolian** Hearth Hypothesis

15. The Delbrück school argued that this policy was destined to fail, and it was first articulated in the Denkschrift. It sought to bypass the fortresses of Liège and Namur in the Meuse valley, and Alfred von Waldersee proposed an alternative to this strategy. It was modified and employed by the younger Helmuth von Moltke, and the "race to the sea" was triggered by its failure after the First Battle of the Marne. For 10 points, name this plan in which a large force would move through Belgium and deliver a decisive blow to France's flank at the onset of World War I.
ANSWER: **Schlieffen** Plan

Bonus: Name these important concepts from thermodynamics for 10 points each.
[10] This states that the change in the internal energy of a system is the amount of heat added minus the work done by the system.
ANSWER: **first law of thermodynamics** [accept word equivalents]
[10] Give the name for thermodynamic processes in which the first quantity is zero; that is, no heat is transferred in or out of the system.
ANSWER: **adiabatic** [or **isocaloric**]
[10] This principle states that for adiabatic processes, the pressure of a gas is directly proportional to its temperature, assuming other quantities are fixed.
ANSWER: **Gay-Lussac's** law

16. In one of this author's plays, Zoo argues for the death of short-livers after the brothers Barnabas devise a way to live three hundred years, and in another, Larry Doyle and Tom Broadbent go to Ireland. In addition to *Back to Methuselah* and *John Bull's Other Island*, he wrote about Vivie's estrangement from her mother on learning she owns several brothels in *Mrs. Warren's Profession*. In another of his plays, Colonel Pickering wagers that a Cockney flower girl can't be taught to speak like a lady by Henry Higgins. For 10 points, name this British playwright of *Pygmalion*.
ANSWER: George Bernard **Shaw**

Bonus: Name these figures from mythology associated with killing their children, for 10 points each.
[10] After Jason cast her aside for Glauce, this woman killed her children with him as revenge. This sorceress had betrayed her father Aeetes to help Jason claim the Golden Fleece.
ANSWER: **Medea**
[10] Knowing that a son was prophesied to overthrow him, this Titan swallowed his children upon birth, though his wife Rhea saved Zeus by replacing him with a rock.
ANSWER: **Cronus** [or **Saturn**]
[10] In Welsh myth, after the handmaidens watching this woman's son Pryderi fell asleep and lost track of him, they convinced this wife of Pwyll that she had eaten the child.
ANSWER: **Rhiannon**

17. One of these concepts may be modeled as being equal to the universal gas constant multiplied by temperature and concentration, and was extensively studied by Harmon Morse. Solute effects on them are measured by the van 't Hoff factor, and Raoult's Law describes how one of them is affected by mole fractions of different solutes. For 10 points, name these properties that depend only on the number of solute particles in a solution and not the mass of those particles, examples of which include osmotic pressure and boiling point elevation.
ANSWER: **colligative** properties

Bonus: This writer imagined an object that grants wishes with the stipulation that it has to be sold for less than it was purchased for in "The Bottle Imp." For 10 points each:
[10] Name this author of the poetry collection *A Child's Garden of Verses*.
ANSWER: Robert Louis **Stevenson**
[10] This Stevenson novel follows Jim Hawkins in telling the story of a peg-legged cook named Long John Silver and his quest to find Captain Flint's gold.
ANSWER: ***Treasure Island*** [prompt on *The Sea Cook*]
[10] Stevenson wrote *Catriona* as a sequel to this novel about David Balfour's capture at sea.
ANSWER: ***Kidnapped***

18. This man's victory over Iole in an archery contest was short-lived, and he was forced to wear women's clothing while in the service of Omphale. After Laomedon reneged on a promise of horses, this figure slaughtered all his sons save Priam, and he killed a giant who got strength from touching ground by strangling him in midair, Antaeus. This husband of Megara and Deianira married Hebe on Mount Olympus. For 10 points, name this Greek strongman who counted cleaning the Augean Stables and retrieving the girdle of Hippolyta among his twelve labors.
ANSWER: **Heracles** [or **Hercules**]

Bonus: This organization's first leader was Uriah Stephens. For 10 points each:
[10] Name this organization, whose Grand Master Workman Terence Powderly led strikes against the Wabash and Union Pacific Railroads in the late nineteenth century.
ANSWER: **Knights of Labor** [or The **Noble and Holy Order of the Knights of Labor**]
[10] This other nineteenth-century labor group was founded by Oliver Hudson Kelly. It supported the rights of farmers against grain warehouses, and was supplanted by the later Farmers' Alliances.
ANSWER: The **Grange** [accept **Grangers**]
[10] The Grange scored a key victory in this 1876 Supreme Court case, which ruled that states could regulate private businesses within their borders. It concerned a warehouse firm that had illegally fixed rates for grain elevators.
ANSWER: **Munn** v. Illinois

19. One character in this story describes a sound that arises "from the bottom of the soul when overcharged with awe." That character's thumb slips from the lantern on the eighth night in this story. Its central action was not motivated by passion or object, and its speaker's senses are sharpened by "disease." Due to his intolerance of an old man's vulture eye, its narrator smothers another character with his bed and hides his body under the floorboards, only to be tormented by the beating of the title object. For 10 points, name this short story by Edgar Allen Poe.
ANSWER: "The **Tell-Tale Heart**"

Bonus: These objects, which come in electron, muon, and tau varieties, were demonstrated to have mass, contrary to the predictions of the standard model. For 10 points each:

[10] Name these chargeless leptons.

ANSWER: **neutrino**s

[10] The existence of neutrinos was first postulated by this scientist, who showed that no two fermions could occupy identical quantum states in his namesake exclusion principle.

ANSWER: Wolfgang **Pauli**

[10] Many discoveries concerning neutrinos were found at this facility designed for the purpose in Japan. A massive, underground, stainless steel tank, it contains fifty thousand tons of water.

ANSWER: **Super-Kamiokande** [accept **Super-K**]

20. An operatic adaptation of this play contains the "Walk to the Paradise Garden" and ends with the deaths of Sali and Vrenchen. A ballet named for this play includes the frequently excerpted "Dance of the Knights" and was composed by Sergei Prokofiev. The English horns begin the "love theme" of a fantasy-overture named for this play by Tchaikovsky. A Berlioz symphony inspired by this play includes the Queen Mab scherzo and ends with a recitative by Friar Lawrence after the death of the two title characters. For 10 points, name this Shakespeare play about star-crossed lovers.

ANSWER: ***Romeo and Juliet***

Bonus: It dropped the word "Socialist" from its official name after its 1992 breakup, though that state broke up after a 2006 referendum. For 10 points each:

[10] Give the common name of these former countries that at one time included such present-day countries as Croatia, Macedonia, Serbia, and Montenegro.

ANSWER: Socialist Federal Republic of **Yugoslavia**

[10] The Socialist Federal Republic of Yugoslavia was led for almost thirty years by this dictator and co-founder of the Non-Aligned Movement.

ANSWER: Josip Broz **Tito**

[10] The Federal Republic of Yugoslavia was led until 2000 by this man, who was found dead in his cell in 2006 during his trial on charges of war crimes and crimes against humanity.

ANSWER: Slobodan **Milosevic**

21. The last name's the same. One man with this surname, a senator from Minnesota, prompted Lyndon Johnson to decline to seek a second term due to his strong performance in the 1968 New Hampshire primary. Another man with this last name claimed that Secretary of the Army Robert Stevens attempted to cover up evidence of espionage. That man's downfall was caused in part by Joseph Welch's questioning of this man before a congressional hearing, as well as Edward Murrow's exposé on this man on the television show *See it Now*. For 10 points, give the last name of the senator from Wisconsin who led an anti-communist crusade in the early 1950s before being censured by the Senate.

ANSWER: **McCarthy**

Bonus: She was hired by the Farm Security Administration, and the subject of her most famous work was a woman named Florence Thompson. For 10 points each:
[10] Name this American photographer of Great Depression subjects, including *Migrant Mother*.
ANSWER: Dorothea **Lange**
[10] This other American photographer and journalist captured the poverty of the tenements in articles like "Flashes from the Slums" and his book *How the Other Half Lives*.
ANSWER: Jacob **Riis**
[10] This husband of Georgia O'Keeffe established the journal *Camera Work* and founded the Photo-Secession movement.
ANSWER: Alfred **Stieglitz**

22. One theorem by this name states that the virtual work done by a force acting on a rigid body is zero when a small virtual displacement occurs. Another theorem with this name implies a relationship between cross-sectional area and pressure that results in the Venturi Effect. It explains the Magnus Effect and states that the sum of the kinetic energy, gravitational potential energy, and pressure of a fluid is constant. For 10 points, name this theorem that states that the mechanical energy of laminar fluid flow is conserved, the namesake of a Swiss mathematician.
ANSWER: **Bernoulli** Principle [accept **Bernoulli**'s Theorem]

Bonus: Knighted by George III, this portrait painter delivered the lectures *Discourses on Art*. For 10 points each:
[10] Name this painter, to whom Boswell dedicated the *Life of Samuel Johnson*. He also depicted *Mrs. Siddons as the Tragic Muse*, in addition to *Heads of Angels* and *Age of Innocence*.
ANSWER: Joshua **Reynolds**
[10] This Reynolds rival is best remembered for a portrait of Jonathan Buttall entitled *Blue Boy*. He also painted *The Painter's Daughters Chasing a Butterfly*.
ANSWER: Thomas **Gainsborough**
[10] This earlier painter created several series of paintings, some of which only exist today as engravings, including *A Harlot's Progress*, *Marriage à la Mode*, and *The Rake's Progress*.
ANSWER: William **Hogarth**

1. The first name is the same. Under the influence of Juliana Krudener, one man of this name created the Holy Alliance, and another man of this name introduced the zemstvo system. That man was assassinated by Ignatei Grinevitski, a member of People's Will, and another man of this name checked the expansion of the Livonian Knights at the Battle of Lake Peipus. For 10 points, three tsars of Russia and a certain Nevsky all shared what common first name?
ANSWER: **Alexander** [or **Alexander Nevsky**; or **Alexander I**; or **Alexander II**; or **Alexander III**]

2. Members of this phylum have two-layered body walls with an inner filling called the mesoglia. A model organism for the study of bilateral symmetry, the hydra, is a member of this phylum, as is coral. Most species in this phylum have a life-cycle consisting of an asexual polyp and a sexual medusa stage. Formerly called coelenterata, for 10 points, identify this phylum named for a type of stinging cell, which contains such creatures as anemones and jellyfish.
ANSWER: **cnidaria**ns [accept **coelenterata** before read]

3. One group heavily influenced by this artistic movement included Fitz Hugh Lane and John Frederick Kensett and was known as Luminists. *The Savage State*, *The Pastoral State*, and *Destruction* were part of a series of paintings by one member of this school, and another painting by a member of this group shows William Cullen Bryant and another man in the Catskill Mountains. The creators of works such as *The Course of Empire* and *Kindred Spirits*, for 10 points, belong to what artistic movement that included Asher Durand and Thomas Cole, named for a river in New York?
ANSWER: **Hudson River** School

Extra 20-point bonus:
Materials that possess this property display hysteresis when a field is applied and subsequently removed. For 10 points each:
[10] Name this property that disappears at the Curie point and is naturally present in materials such as lodestone and iron.
ANSWER: **ferromagnetism** [prompt on **magnetism**]
[10] When the Curie point is exceeded, only this type of magnetism remains. Element and compounds that posses this type of magnetism typically have unpaired electrons.
ANSWER: **paramagnetism**

Extra 30-point bonus:

At the end of this poem, the title object becomes a new constellation. For 10 points each:

[10] Name this Alexander Pope mock epic that sees Belinda lose the titular object to a young baron, who removes it with some scissors.

ANSWER: The **Rape of the Lock**

[10] In *The Rape of the Lock*, Belinda is guarded by this chief of the sylphs, who shares his name with a poetry collection by Sylvia Plath.

ANSWER: **Ariel**

[10] The third canto of *The Rape of the Lock* includes an account of this card game between the Baron and Belinda, opening with the play of Spadillo, the best card in the game.

ANSWER: **Ombre**