

1. Most industrial production of methyl methacrylate involves the reaction of cyanide with this compound, while the controversial plastic bisphenol A is formed by reacting two molecules of phenol with a molecule of this compound. Like phenol, this compound is typically produced by reacting benzene with propylene to give cumene, then oxidizing the cumene to give phenol and this compound. Replacing its central atom with a sulfur produces DMSO. One danger of a high fat, low carbohydrate diet is the possible production of this compound in the body, which can be found in the urine of diabetics. Older methods for producing this compound involved the oxidation of 2-propanol. For 10 points, name this common polar solvent, the simplest ketone.

ANSWER: **acetone** [or **propanone**; or **dimethyl ketone**; or **C3H6O**]

064-11-30-09102

2. This author wrote “Where’er Thou Sail’st Who Sailed with Me” to commemorate the death of his older brother John from lockjaw, though he quipped “My life has been the poem I would have writ” to explain his meager poetry output. The narrator of another work is tempted to kill and eat a woodchuck and reluctantly drinks some dirty water from the well of John Field in “Baker Farm.” He coined the term “Realometer” in another section of that work in which he quotes Cowper to proclaim, “I am monarch of all I survey.” This author's best-known work urges you to "simplify, simplify, simplify" and starts with sections titled "Economy" and “Where I Lived, and What I Lived For.” For 10 points, identify this American author who described his stay in the woods in *Walden*.

ANSWER: Henry David **Thoreau**

020-11-30-09103

3. This country’s economy tanked through the eighteen year corrupt rule of Siaka Stevens. In this modern-day country, Bai Bureh led a rebellion against British control in response to the Hut Tax. Valentine Strasser was responsible for the coup that overthrew this country's president Joseph Momoh. The Abudja and Lome agreements attempted to end one conflict in this country, in which British intervention in Operation Palliser defeated the RUF, once led by Foday Sankoh. That brutal civil war was notable for the RUF’s use of “blood diamonds” to gain funding. For 10 points, name this West African country that has its capital at Freetown.

ANSWER: Republic of **Sierra Leone**

080-11-30-09104

4. The Zipper-Rift model is one explanation for the formation of this material during one part of the Earth's history. Nye's equation gives the profile of aggregates of it. A tuya is a volcano underneath this. According to one hypothesis, the largest amount of this substance present on Earth was during part of the Neoproterozoic era. Since this has a high albedo, feedback loops involving this and reflected light are important in climate models. Information about past climates can be gleaned from trapped gases and pollen in cores of this. The last greatest extent of this material was about 20,000 years ago. For 10 points, name this material that makes up glaciers.

ANSWER: **ice** [or **frozen water**]

001-11-30-09105

5. In this work, the central character meets his wife Celia Mulcaster while in South America and earlier learns about another family after meeting Anthony Blanche. One character in this work lives with a man named Kurt in Morocco and later recovers from alcoholism after joining a monastery in Tunisia. The protagonist breaks off his first marriage so he can marry Julia, who herself had been previously married to the Canadian businessman Rex Mottram. At the beginning of this work, the protagonist meets Lord Sebastian Flyte, a member of the aristocratic Marchmain family. Charles Ryder's visit to the title residence occurs in, for 10 points, what novel by Evelyn Waugh?

ANSWER: **Brideshead Revisited**

064-11-30-09106

6. He wrote that the elite keep power in capitalism by providing the public with "goodies" in his work *Legitimation Crisis*. This author also wrote about the growth of a "literary" version of the title concept out of the "bourgeois" version in a work that discusses the emergence of the modern social welfare state. This man also challenged Max Weber's definition of rationalization in a work that defines aesthetic, therapeutic, and explicative discourse. That work claims that the goal of the title interaction is mutual understanding. For 10 points, name this author of *The Structural Transformation of the Public Sphere* and *The Theory of Communicative Action*.

ANSWER: Jurgen **Habermas**

095-11-30-09107

7. This book has been subjected to theological theories called the "framework interpretation," and the "omphalos hypothesis." This book relates the destruction of the Elamite king Chedorlaomer during a battle at the Vale of Siddim. In one story from this book, Simeon and Levi kill the men of Shechem to avenge the rape of their sister Dinah. It relates the story of God smiting Onan to punish him for spilling his seed. This book discusses the wandering of Hagar through the desert, the Curse of Ham, Jacob's Ladder, and the construction of the Tower of Babel. For 10 points, name this book which also discusses the cursing of Cain and the expulsion from the Garden of Eden, the first book of the Bible.

ANSWER: **Genesis**

015-11-30-09108

8. This composer expanded his early singspiel about the romantic exploits of Peter the Great into an opera about Frederick the Great's flute-playing career, *The North Star*. This composer's time at the Prussian court proved crucial to the career of Richard Wagner, as he pushed for the first performances of *Rienzi* and *The Flying Dutchman*. Ghosts of nuns rise from coffins and dance a ballet in another of his operas, which ends with Bertram failing to claim his title son's soul. In addition to that first "grand opera," he also wrote about Valentine and Raoul's love in an opera that ends with the St. Bartholomew's Day Massacre. For 10 points, name this composer of *Robert the Devil* and *Les Huguenots*.

ANSWER: Giacomo **Meyerbeer** [or Jakob Liebmann Meyer **Beer**]

019-11-30-09109

9. This mountain's unusual shape comes from the fact that it is a lava plug eroded by glaciers. Local tribes build their houses so that this mountain is visible from the door, because the god Ngai is said to live here. In 1888, the Hungarian explorer Count Teleki became the first European to attempt to climb this mountain, and also discovered nearby Lake Rudolf, now called Lake Turkana. This extinct stratovolcano dates to the opening of the nearby Great Rift Valley. The culture of the nearby Kikuyu tribe was described in a famous anthropology book about "facing" this mountain. For 10 points, name this second highest mountain in Africa, which shares its name with the home of Mombasa.

ANSWER: Mount **Kenya**

021-11-30-09110

10. This economist was also interested in neurology, and published a brain science book titled *The Sensory Order*. This economist's early work focused on how information was conveyed to consumers by the cost of goods, the price signaling mechanism, which this economist argued created a "spontaneous order." Late in his career, this economist argued that banks should be able to issue their own money, which he said would create a competition to create the best currency. This man's political views can be found in the book *The Constitution of Liberty*. His most famous book includes chapters like "why the worst rise to the top." For 10 points, name this Austrian economist who critiqued government central planning in *The Road to Serfdom*.

ANSWER: Friedrich August von **Hayek**

021-11-30-09111

11. The Lares revolt was an uprising that occurred in this location in 1868. The Jayuya Uprising resulted in the declaration of martial law here; the next day, two nationals of this territory tried to assassinate Harry S. Truman. Operation Bootstrap attempted to industrialize this location after World War II. This territory's first democratically elected leader was Luiz Muñoz Marín, and its first native governor, Jesús Toribio Piñero, succeeded Rexford Tugwell in that role. Under the Jones Act, all residents of this territory became citizens of its controlling nation, and it received a civilian government by the Foraker Act. For 10 points, name this island commonwealth of the United States.

ANSWER: Commonwealth of **Puerto Rico**

088-11-30-09112

12. The FACT complex assists in one phase of this process, and one protein that initiates this process is mutated in Spinocerebellar Ataxia 17, in which its poly-Q tract is expanded. This process is inhibited by actinomycin D. In bacteria, the rho factor can terminate this process, and sigma factors help initiate it. Roger Kornberg isolated the protein complex responsible for initiating this process, which assembles itself at the TATA box. RNA polymerase II binding starts this process, which creates its product from 5 prime to 3 prime. For 10 points, name this genetic process in which DNA is read and written to RNA.

ANSWER: **Transcription**

048-11-30-09113

13. This character meets an old Mexican woman whose only French consists of the phrase "tous les deux." He is last seen singing from Schubert's *Winterreise* on the battlefields of Flanders. Like his cousin Joachim Ziemssen, he is treated by Dr. Behrens, who gives him an X-ray of the married Russian woman Claudia Chauchat. This character is inspired by the vivacity of the Dutch farmer Mynheer Peeperkorn, and enjoys observing the endless debates between the Italian humanist Ludovico Settembrini and the apostate Jew Leo Naptha. For 10 points, name this character who spends seven years in at the International Sanatorium Berghof in Thomas Mann's *The Magic Mountain*.

ANSWER: Hans **Castorp** [or **Hans** Castorp]

015-11-30-09114

14. This artist painted his wife Georgette reclining nude with a conch shell on her stomach in *Olympia*. He painted a self portrait of himself looking at an egg and painting a bird, and another work in which a cage is filled with a giant egg. This artist depicted a copy of *Arthur Pym* on the mantle in his painting *Not To Be Reproduced*. He painted simple objects like a bow, a candle, and a mirror below the title figure of *The Reckless Sleeper*, and depicted a painting merging into the background in *The Human Condition*. He painted men falling from the sky in one work, and a train emerging from a fireplace in another. For 10 points, name this surrealist artist of *Time Transfixed* who painted an apple covering a face in *The Son of Man*.

ANSWER: Rene **Magritte**

015-11-30-09115

15. One model of these devices is known as the most exquisite model. An older method for making these is the double diffused epitaxial process. For one of these devices, the transport factor over one minus the transport factor is equal to the gain. Their modes of operation are cutoff, forward active, reverse active, and saturation. They are the subject of the Gummel-Poon and the Ebers-Moll models. The increase of a particular voltage in one causes an increase in current known as the Early effect. They can be of either pnp or npn form, and they consist of a collector, base, and emitter. For 10 points, name this type of transistor that contrast with field effect transistors.

ANSWER: **bipolar junction** transistor [or **BJT**; prompt on "transistor"]

001-11-30-09116

16. A general from this city named Pagondas led the victorious forces over Athens at the battle of Delium. This city allied with Sparta during the Peloponnesian War, partly because of the support Athens gave its regional rival Plataea. It later turned on Sparta, killing Lysander at the Battle of Haliartus. This city's victory over Sparta at Mantinea proved costly, as it lost Epaminondas, who had raised this city to new heights by winning at Leuctra and leading the Sacred Band. For 10 points, name this Boeotian city which was conquered by Philip of Macedon at Chaeronea and which was the mythological city founded by Cadmus.

ANSWER: **Thebes**

015-11-30-09117

17. During a 2008 conference in Trieste, this man jumped out from behind a column in an effort to surprise Angela Merkel. In 2009, this man was hit in the face with a model of a cathedral. He was criticized for complimenting Barack Obama's suntan, twice. He is currently in power as the head of the "People of Freedom" Party, which rules in a coalition with the Northern League. The Moroccan belly dancer Ruby Rubacuori alleged that this man liked to have "bunga bunga" parties at his private residence. This man is the owner of most of the television stations in his country, and is frequently opposed by Romano Prodi. For 10 points, name this Prime Minister of Italy.

ANSWER: Silvio **Berlusconi**

015-11-30-09118

18. This woman is often depicted with butterfly wings. An oracle told this woman's parents to abandon her on a rock to be married to a snakelike monster, but she was then rescued by Zephyr. This woman then lived in a house with invisible servants, where she accidentally spilled oil on her sleeping husband after her envious sisters urged her to look at him. The story of this woman first appeared in Apuleius' *The Golden Ass*. This woman separated grains with the help of some ants and also retrieved golden wool stuck to branches. After appeasing Venus, this woman became the goddess of the soul. For 10 points, name this wife of Cupid.

ANSWER: **Psyche**

105-11-30-09119

19. One of this composer's works has an epigraph from Henri de Regnier that describes a laughing river god; that piece is his *Fountains*. He paid homage to Schubert in his eight *Valses nobles et sentimentales*, and composed "Lever du jour," often translated as "Daybreak," for a ballet based on a book by Longus. He composed movements representing a mermaid, a guillotine, and a malevolent dwarf for a work inspired by three poems by Aloysius Bertrand. This composer of *Gaspard de la Nuit* also wrote an 1899 piano piece evoking a 17th century Spanish dance, which he titled *Pavane for a Dead Princess*. For 10 points, name this French composer of a repetitive work underpinned by a snare drum ostinato, *Bolero*.

ANSWER: Maurice **Ravel**

080-11-30-09120

20. This poet wrote "all the way, to guide their chime with falling oars they kept the time" in his poem "Bermudas." Images in another poem by this man include the "iron gate of life" and the "Humber." He noted "How vainly men themselves amaze to win the palm, the oak, or bays" in "The Garden." The narrator of another of his poems suggests rolling "all our strength, and all our sweetness up into one ball," but worries that "at my back I always hear time's winged chariot hurrying near." That work begins "Had we but world enough, and time." For 10 points, name this author of "To His Coy Mistress."

ANSWER: Andrew **Marvell**

088-11-30-09121

21. This poet claimed, "My word I poured" but the "steep encroachment of my blood left me / No answer" after asserting "I entered the broken world / To trace the visionary company of love." The speaker of one poem claims "Monody shall not wake the mariner" while another poem begins "The mind has shown itself at times / Too much the baked and labeled dough". This poet of "The Broken Tower" wrote about the "dice of drowned men's bones" in his poem "At Melville's Tomb" which appears in his collection *White Buildings*, while another work begins with a "Proem" and features a section spoken by Christopher Columbus. For 10 points, name this American poet who included the sections "Powhatan's Daughter" and "Cutty Sark" in his epic *The Bridge*.

ANSWER: Hart **Crane**

024-11-30-09122

22. This event caused Pope Gregory XVI to issue a document on civil disobedience entitled *Cum Primum*. Sometimes referred to as the Cadet Revolution since it started at a military academy, its members included the young Countess Emilia Plater. It saw one side decisively defeated at the Battle of Ostroleka and it opened with a failed assassination attempt on Grand Duke Constantine Pavlovich, who wanted to use troops to put down the July Revolution in France. Jan Skrzynecki led one side during this event, which hoped to topple the rule of Czar Nicholas I. For 10 points, name this 1830-1831 Polish uprising against Russian rule.

ANSWER: **November Uprising** [or **Cadet Revolution** before it is read]

064-11-30-09123

23. The existence of an "Axis of Evil" in the CMB may indicate that this process occurred in a certain direction, though the occurrence of this process would imply that the universe is isotropic. The occurrence of this process implies that the gravitational collapse of quantum fluctuations lead to the formation of large-scale structures, and the gravitational radiation produced by this process is encoded in the B-modes of the CMB. The original formulation of this process had a metastable supercooled state terminated by a process of bubble nucleation via quantum tunneling, though that model suffered from the graceful exit problem. Linde proposed a slow-roll version of this process, and it was originally postulated to solve the flatness, horizon, and monopole problems. Originally proposed by Alan Guth, for 10 points, name this process of rapid exponential expansion in the early universe, immediately after the big bang.

ANSWER: cosmic **inflation**

048-11-30-09124

1. Edward Fitzgerald's famous translation of this poem begins "Wake!" and notes "the Moving Finger writes; and, having writ, moves on." For 10 points each:

[10] Name this collection of quatrains by Omar Khayyam.

ANSWER: Rubaiyat of Omar Khayyam

[10] This Persian epic was written by Ferdowsi and is the national epic of Iran.

ANSWER: Shahnameh [or The Book of Kings]

[10] In one scene from the Shahnameh, the king Rostam accidentally kills this son of his.

ANSWER: Sohrab

015-11-30-09201

2. For 10 points each, identify these Roman poets.

[10] This author of *Ars Poetica* wrote a series of poems whose first part is "Qui fit Maecenas" titled *The Satires*.

ANSWER: Horace or Quintus Horatius Flaccus

[10] This Roman poet wrote 116 *Carmina*, many of which are addressed to the sister of Clodia including a famous poem about his lover's sparrow.

ANSWER: Gaius Valerius Catullus

[10] This author wrote *Liber Spectaculorum* but is better known for a work of short witty poems called *Epigrams*.

ANSWER: Marcus Valerius Martialis

064-11-30-09202

3. A poor man in this play is told by the title character that two boys are "foes to my rest, and my sweet sleep's disturbers." For 10 points each:

[10] Tyrrell murders the Princes of the Tower by the orders of the title monarch in what Shakespeare play, opening with the title character saying "Now is the winter of our discontent made glorious summer by this sun of York?"

ANSWER: Richard III

[10] Prior to its appearance in the First Folio, *Richard III* appeared in this format, which is one book size shorter.

ANSWER: quarto

[10] Only the quartos contain this play written either by Fletcher or by Shakespeare. It was adapted from "The Knight's Tale" and includes a tournament fought for the hand of Emilia by Palamon and Arcite.

ANSWER: The Two Noble Kinsmen

020-11-30-09203

4. Gian Carlo Menotti wrote the libretto for this man's opera *Vanessa*. For 10 points each:

[10] Name this American composer who was inspired by *Prometheus Unbound* to write *Music for a Scene from Shelley*.

ANSWER: Samuel Barber

[10] Barber is best known for this piece, which was premiered by Toscanini with the NBC Symphony Orchestra and played at the funeral of FDR.

ANSWER: Adagio for Strings

[10] Eleanor Steber commissioned this Barber work for soprano and orchestra which was inspired by the writing of James Agee.

ANSWER: Knoxville: Summer of 1915

015-11-30-09204

5. At one end of this structure is the helicotrema, which connects the scala tympani and scala vestibuli. For 10 points each:

[10] Name this snail-shaped organ in the inner ear, which contains the Organ of Corti.

ANSWER: **cochlea**

[10] The Organ of Corti contains a single row of these primary sense transducers, which convert mechanical shear force into electrical impulses. They get their name from the tufts of stereocillia on their apical surface.

ANSWER: **hair cells**

[10] Transduction of sound into the cochlea is done by the foot-plate of this bone, the third of the small bones in the inner ear.

ANSWER: **stirrup** [or **stapes**]

003-11-30-09205

6. Book IV of this work sees a discussion about the nature of substances between its two central characters, Philaethes and Theophilus. For 10 points each:

[10] Identify this philosophical work, a response to a similarly titled text by John Locke.

ANSWER: **New Essays on Human Understanding**

[10] The *New Essays on Human Understanding* were written by this German philosopher, the co-inventor of calculus.

ANSWER: Gottfried Wilhelm **Leibniz**

[10] In this philosopher's preface to Leibniz's *Monadology*, he asked, "Can you really believe that a drop of urine is an infinity of monads?" He wrote himself about the idea of neutral monism in works like *The Analysis of Matter* and "On Denoting".

ANSWER: Bertrand Arthur William **Russell**

094-11-30-09206

7. This painting was influenced by the city grid of Manhattan. For 10 points each:

[10] Name this painting, which shows a series of red, yellow, and blue squares on a white background.

ANSWER: **Broadway Boogie-Woogie**

[10] *Broadway Boogie-Woogie* is a painting by this Neo-Plasticist artist.

ANSWER: Piet **Mondrian** [or Pieter Cornelis **Mondrian**]

[10] Mondrian founded the De Stijl school of art with this artist whose works include *Arithmetic Composition*.

ANSWER: Theo **van Doesburg**

088-11-30-09207

8. This man's sister became Empress of Mexico, and through maneuverings he gained a personal African colony which he governed with the Force Publique. For 10 points each:

[10] Name this Belgian monarch who ruled the Congo Free State.

ANSWER: **Leopold II**

[10] Leopold hired this explorer to establish his Congo colony. As a journalist, this man had found Livingstone in Africa.

ANSWER: Henry Morton **Stanley**

[10] This Irishman published a namesake report detailing this horrors of the Belgian Congo. He was arrested and executed as a conspirator after the Easter Rising.

ANSWER: Roger **Casement**

015-11-30-09208

9. One character repeatedly comments on how certain bathroom graffiti is both a misquote and a misattribution and also discusses a fictional sci-fi novel about a hero named Alex Thomas. For 10 points each:

[10] Name this novel in which Iris Chase Griffin describes the events leading up to her sister Laura's suicide.

ANSWER: *The **Blind Assassin***

[10] This other character describes her new life in the theocratic Republic of Gilead as the title handmaid in *The Handmaid's Tale*.

ANSWER: **Offred** [or **June**]

[10] This Canadian author of *Oryx and Crake* and *Alias Grace* wrote both *The Blind Assassin* and *The Handmaid's Tale*.

ANSWER: Margaret Eleanor **Atwood**

003-11-30-09209

10. Some functions these things perform include function inlining. For 10 points each:

[10] Name these devices that convert "high level" languages into machine code.

ANSWER: **compilers**

[10] Many high level languages are usually converted into a low level language through one of these devices, that analyzes a sequenced of tokenized text to determine its structure.

ANSWER: **parsers**

[10] This way of representing context free grammars is often used to describe CFG's that parse high level languages. It consists of a symbol, vertical bars, and nonterminals and expressions on another side.

ANSWER: **Backus-Naur** form

033-11-30-09210

11. Echo was scattered around the earth after she was pursued by this god. For 10 points each:

[10] Name this Greek god of shepherds.

ANSWER: **Pan**

[10] This was the name of the nymph transformed into a set of water reed pipes by Pan.

ANSWER: **Syrinx**

[10] In yet another story, Pan engaged Apollo in a music contest judged by this son of Ares and god of the mountains.

ANSWER: **Tmolus**

064-11-30-09211

12. One example of this type of equation is Pell's equation. For 10 points each:

[10] Give this term for a polynomial equation whose solutions are required to be integral.

ANSWER: **Diophantine** equation

[10] An example of a Diophantine equation is  $a$  to the  $n$  plus  $b$  to the  $n$  equals  $c$  to the  $n$ , which, according to this theorem, has no solutions if  $n$  is greater than two. It was proven by Andrew Wiles.

ANSWER: **Fermat's last** theorem

[10] An important breakthrough in solving Fermat's last theorem was the proof that all rational curves of this type are modular. These cubic curves are non-singular and of genus one.

ANSWER: **elliptic** curve

024-11-30-09212

13. This river runs into the Chesapeake Sea, and its namesake aqueduct was built by Montgomery C. Meigs to provide water to Washington D.C. For 10 points each:

[10] Name this major river of northern Virginia and Maryland.

ANSWER: **Potomac** River

[10] This town sits on the Potomac River in Jefferson County West Virginia. It changed hands eight times during the Civil War.

ANSWER: **Harper's Ferry**

[10] Harper's Ferry is built on the confluence of the Potomac with this principal tributary.

ANSWER: **Shenandoah** River

015-11-30-09213

14. This war was ended by the Moscow Peace Treaty. For 10 points each:

[10] Name this war, fought after Russia breached the Mannerheim Line.

ANSWER: **Winter** War

[10] Russia fought this country in the Winter War, and again in the Continuation War.

ANSWER: **Finland**

[10] This prime minister of France, who had been a negotiator at Munich, resigned in March of 1940 after he proved unable to organize French military aid to Finland as promised during the Winter War.

ANSWER: Edouard **Daladier**

081-11-30-09214

15. This book contains the story of the Holy Spirit filling the believers on Pentecost and the conversion of Paul. For 10 points each:

[10] Name this fifth book of the New Testament.

ANSWER: **Acts** of the Apostles

[10] Consensus holds that Acts was written by this apostle. He was thought to be a doctor and the author of the longest of the gospels.

ANSWER: **Luke** the Evangelist

[10] The "two source" hypothesis holds that the gospels of Matthew and Luke were both written from the book of Mark and this hypothetical source.

ANSWER: **Quelle** source

015-11-30-09215

16. Pius IX threatened this monarch with excommunication, and his rise is generally credited with his decision to let Count Cavour run his government. For 10 points each:

[10] Name this first king of a unified Italy.

ANSWER: **Victor Emmanuel II** [prompt on **Victor Emmanuel**; do not accept or prompt on a single name only]

[10] Victor Emmanuel was a member of this Italian house whose member Amadeo I briefly ruled Spain.

ANSWER: House of **Savoy**

[10] This son of Victor Emmanuel II ruled Italy until he was assassinated by Gaetano Bresci in 1900 for supporting the Bava-Beccaris massacre.

ANSWER: **Umberto I**

015-11-30-09216

17. This character is given a magic cream that transforms her into a witch allowing her to flood the apartment of the vindictive literary editor Latunsky. For 10 points each:

[10] Name this character who becomes the hostess of Satan's Ball where she drinks Baron Meigel's blood before reuniting with her beloved, who wrote a novel about Pontius Pilate.

ANSWER: **Margarita**

[10] This Russian author wrote about Satan assuming the guise of Professor Woland in his novel *The Master and Margarita*.

ANSWER: Mikhail **Bulgakov**

[10] Most critics argue this character is the real protagonist of the novel. He is put in an asylum after witnessing the supernatural death of Berlioz and at the end of the book he decides to give up poetry to become a historian.

ANSWER: **Homeless** [or Ivan **Bezdomny**; or Ivan Nikolayevich **Ponyryov**]

015-11-30-09217

18. Name these works of Frank Lloyd Wright, for 10 points each:

[10] Wright designed this house in Mill Run, Pennsylvania for the Kaufmann family. This house is built directly over a waterfall.

ANSWER: **Fallingwater**

[10] This hotel survived the 1923 Great Tokyo earthquake; it includes a reflecting pool and is shaped like a "H" being cut through by an "I."

ANSWER: **Imperial** Hotel

[10] This building in Scottsdale Arizona houses both the Frank Lloyd Wright School of Architecture and the Frank Lloyd Wright Foundation.

ANSWER: **Taliesin West**

088-11-30-09218

19. The first of these says that a planetary orbit around the sun is elliptical and the second says that the planet will sweep out equal area in equal time. For 10 points each:

[10] Name these three laws proposed by a Seventeenth century astronomer to explain the motion of planets.

ANSWER: **Kepler's laws** of planetary motion

[10] In two body systems obeying an inverse square law, this vector quantity in addition to energy and angular momentum must be conserved. Its equals angular momentum cross velocity minus a vector valued function of the force and position.

ANSWER: Laplace **Runge-Lenz** vector

[10] The Runge-Lenz vector points in the direction of the perihelion and has magnitude equal to this. It is equal to distance between the foci divided by the largest distance across the orbit.

ANSWER: **eccentricity** [prompt on **e**]

001-11-30-09219

20. This law was widely blamed for the St. Valentine's Day Massacre. For 10 points each:

[10] Name this Amendment to the Constitution that was repealed by the Twenty-First after banning intoxicating liquors for over thirteen years.

ANSWER: **Eighteenth** Amendment

[10] This law named for the Chair of the House judiciary Committee enabled the Eighteenth Amendment by defining "intoxicating liquor" and listing the penalties for breaking the law.

ANSWER: **Volstead** Act

[10] The Volstead Act was drafted by Wayne Wheeler, the head of this pro-temperance organization founded by Howard Hyde Russell.

ANSWER: **Anti-Saloon League**

015-11-30-09220

21. The Wolff theorem provides constraints on their formations and transformations. For 10 points each:  
[10] Name these materials with a repeating regular form such as calcite or halite.

ANSWER: **crystal**

[10] These are deviations from regular crystal structure, examples of which include Schottky and Frenkel types.

ANSWER: crystal **defects** [or point **defects**]

[10] The magnitude of the Burgers vector is directly proportional to the length of this smallest repeating unit in a lattice, which determines which of the seven crystal systems a crystal belongs to.

ANSWER: **unit cell**

003-11-30-09221