1. This author wrote a story in which a machine is supposed to inscribe the words "Be Just" on the Officer, who normally operates the machine to execute prisoners. Max Brod published this man's writings posthumously, which went against this author's instructions to burn them. This author of "In the Penal Colony" also wrote a story in which a father throws an apple that lodges into the back of his bug-like son. For 10 points, name this German-language author who created Gregor Samsa in his story *The Metamorphosis.*
ANSWER: Franz **Kafka**

023-13-96-02101

2. Spacecraft specifically investigating these phenomena include Hinode (HE-node-ay), Yohkoh, and RHESSI (RESS-ee). Nitrates and beryllium-10 persist in Greenland from an 1859 example of these phenomena called the Carrington event. They are classified as A, B, C, M, X, or Z depending on the peak flux. These events are similar to coronal mass ejections, and they can trigger geomagnetic storms with the potential to knock out power. For 10 points, name these events in which a large amount of energy enters the Earth's ionosphere, after being discharged from the Sun.
ANSWER: **solar flare**s [or **coronal mass ejections** until it is read; or **CME** until "coronal mass ejections" is read; or **geomagnetic storm**s until it is read; prompt on **flare**s]

020-13-96-02102

3. This politician's divorce and subsequent marriage to Margaretta "Happy" Murphy cost him votes in the 1964 Republican primaries. Opponents castigated this governor for refusing to talk to opponents at the 1971 Attica Prison riot. As Vice-President, he was dropped from the ticket in favor of the more conservative Senator Bob Dole. Under the 25th Amendment, he was named Vice-President by President Gerald Ford. For 10 points, name this Governor of New York during all of the 1960s, a member of the family who founded Standard Oil.
ANSWER: Nelson Aldrich **Rockefeller**

052-13-96-02103

4. In a device invented by Gaston Plante, this compound reacts to oxidize lead and reduce lead oxide. Since this compound is capable of dehydrating sugars, when mixed with sucrose, it forms pure black carbon. A superacid must have a lower pKa than this compound. This compound is formed industrially using a vanadium compound in the contact process. Of the common strong acids, it is the only one which is diprotic. For 10 points, name this acid found in car batteries with formula H_2SO_4.
ANSWER: **sulfuric acid** [or H_2SO_4 until it is read]

190-13-96-02104

5. This artist painted the interior of a building with a green roof and red walls, inside which a waiter stands next to a billiards table. The time this artist spent in Arles led to paintings such as *The Yellow House.* This artist painted a landscape dominated by large swirls in the center and a cypress tree on the left, both overlooking Saint-Remy. This artist of *The Night Cafe* depicted himself with a bandaged ear in his late self-portraits. For 10 points, name this post-Impressionist artist of *Starry Night.*
ANSWER: Vincent **van Gogh**

140-13-96-02105

6. Thales's (THAY-leez's) theorem describes this shape inscribed in a circle, with one side as a diameter to the circle. According to the exterior angle theorem, any exterior angle of this shape is greater than any remote interior angle. Two of these shapes may not be congruent in the ambiguous case, but they are congruent if they have side-angle-side or angle-side-angle equivalence. They can have at most one obtuse angle, since their internal angles sum to 180 degrees. For 10 points, name this polygon with three sides.
ANSWER: **triangle**

7. Several members of this party were implicated in scandals during the "Back to Basics" campaign. A leader of this political party was in power during Black Wednesday, when this party's country was kicked out of the Exchange Rate Mechanism. Michael Haseltine challenged another member of this party for leadership, eight years after that member of this party ordered an intervention in the Falkland Islands. For 10 points, name this British political party headed at different times by David Cameron and Margaret Thatcher, which opposes the Lib Dems and Labour.
ANSWER: **Conservative** party [or **Tories**]

8. The protein Cdc20 is not activated until the start of this stage. The cyclosome is also known as a complex that promotes this stage by breaking down securin. This stage occurs due to the removal of tubulin monomers from the "plus" end of a microtubule by the kinetochore (kin-ET-oh-core). Errors in this phase of mitosis can lead to Down's Syndrome and other nondisjunctions. For 10 points, name this stage of mitosis in which sister chromatids are segregated to opposite sides of the cell and which occurs between metaphase and telophase.
ANSWER: **anaphase** [prompt on **mitosis** until it is read]

9. One of these beings died in St. Thomas, Ontario, supposedly while trying to save his friend, Tom Thumb, from being hit by a train, and was stuffed and donated to Tufts University by his owner. One of these creatures at Luna Park was electrocuted in 1903, an event infamously caught on film by Thomas Edison. Another of these creatures, named Mary, was lynched after killing her abusive trainer at the Sparks World Famous circus. For 10 points, name this type of animal exemplified by P.T. Barnum's "Jumbo," which grew up in the African bush.
ANSWER: **elephant**

10. This man's son, who was known as "Castor," was probably poisoned by his wife, Livilla. This emperor eventually named Macro as the new head of the Praetorian Guard. This father of Drusus was in power when such people as Agrippina (ag-rip-EE-nuh) the Elder were purged by his scheming adviser, Sejanus (seh-JAH-nus). This emperor was the adoptive father of Germanicus and spent much of his later reign "retiring" on the island of Capri. During his reign, Jesus Christ was crucified. For 10 points, name this second Roman emperor, the stepson and successor of Augustus.
ANSWER: **Tiberius** Claudius Nero [or **Tiberius** Julius Caesar]

11. Lido is located off the coast of this city. Napoleon stole the "Triumphant Quadriga," bronze statues of four horses, from a basilica in this city. A bridge over the Rio de Palazzo in this city is named because, in medieval times, passersby could hear prisoners sighing as they went off to their deaths. Murano is the center of this city's famed glassmaking industry. A symbol of this city is the lion, an emblem of St. Mark. The Rialto Bridge spans this city's Grand Canal. For 10 points, name this city on the Adriatic Sea in Italy, famed for its gondolas.
ANSWER: **Venice**

12. This author wrote a novel in which Herbert Stencil becomes tormented by a passage in his deceased father's diary and attempts to search for the title mysterious woman. That novel of his features Benny Profane and the Whole Sick Crew. This author created Pierce Inverarity, whose death causes Oedipa Maas to descend into paranoia. This man also wrote about a V-2 rocket labeled 00000, which Tyrone Slothrop attempts to find. For 10 points, name this American author of *The Crying of Lot 49* and *Gravity's Rainbow*.
ANSWER: Thomas **Pynchon**

13. According to one story, this hero performed a katabasis (KAH-tuh-BAH-sis) by being eaten and regurgitated by a dragon. In another story, this hero attacked Iolcus (ee-OL-kus) with Peleus after his cousins were tricked into boiling his uncle, thinking that it would make him younger. This hero successfully yoked two fire-breathing bulls, and he lost a sandal while helping a disguised Hera cross a river. For 10 points, name this husband of Medea who led the Argonauts in their quest for the Golden Fleece.
ANSWER: **Jason**

14. This building is currently part of a historic site with the nearby Petersen House. Major Henry Rathbone was stabbed in this building by a knife-wielding assailant. Audience members laughed in this building after a line about a "sockdologizing old man-trap" was delivered. During a performance of the comedy *Our American Cousin* in this building, a man shouted "Sic semper tyrannis!" after jumping onto the stage. For 10 points, name this theater in Washington D.C. where John Wilkes Booth assassinated Abraham Lincoln.
ANSWER: **Ford's** Theatre

15. This author wrote a short story in which a captain agrees to hide Leggatt from the captain of the *Sephora.* This author of "The Secret Sharer" also created a narrator who thinks that a Russian man he meets looks like a harlequin. A frame narrative for a story by this author takes place aboard the *Nellie.* In that story by this author, The phrase "Exterminate all the brutes!" is found by Charles Marlow in a report written by Kurtz. For 10 points, name this Polish-born author of *Heart of Darkness.*
ANSWER: Joseph **Conrad** [or Jozef Teodor Konrad **Korzeniowski**]

1A. At what event does Jesus turn water into wine in the Gospel of John?
ANSWER: the **Wedding at Cana** [or the **Marriage at Cana**]

1B. What actor directed and starred in both *The Town* and *Argo*?
ANSWER: Ben **Affleck**

2A. What Greek letter denotes a change in a quantity as well as identifying functions named for Kronecker and Dirac?
ANSWER: **delta**

2B. What mayor of Toronto drew criticism in 2013 when a video showing him smoking crack surfaced?
ANSWER: Rob **Ford**

3A. This is a 20-second calculation question. The side lengths of an isosceles trapezoid are x, 2x, 3x, and 6. What is the largest possible perimeter of the trapezoid?
ANSWER: **42**

3B. This is a 20-second calculation question. Find the exact solution of the equation $7 + 5e^x = 10$. ["seven plus five times e to the x equals ten"]
ANSWER: **ln 0.6** [or **ln 3/5** or **ln 3-ln 5**; or the **natural log of 3/5**; or the **natural log of 0.6**; or the **natural logarithm of 3/5**; or the **natural logarithm of 0.6**]

4A. What law states that an induced current will create a magnetic field opposed to the intial change in magnetic flux?
ANSWER: **Lenz**'s law

4B. What large lake in Siberia is the Earth's oldest freshwater lake and its deepest continental lake?
ANSWER: Lake **Baikal**

5A. What leader singer of Nine Inch Nails wrote film scores for *The Social Network* and *The Girl with the Dragon Tattoo?*
ANSWER: Trent **Reznor**

5B. Okonkwo is the protagonist of what Chinua Achebe novel about Umuofia (OOM-woh-FEE-uh)?
ANSWER: *Things Fall Apart*

6A. What Communist revolutionary unseated Fulgencio Batista and led Cuba from 1976 to 2008?
ANSWER: Fidel **Castro**

6B. What American architect built the Imperial Hotel in Japan and created a house called Fallingwater in Pennsylvania?
ANSWER: Frank Lloyd **Wright**

7A. What Austrian composer developed the twelve-tone technique and composed the string sextet *Transfigured Night*?
ANSWER: Arnold **Schoenberg**

7B. What Scottish mathematician developed logarithms and produced a number of tables with their values?
ANSWER: John **Napier**

8A. What ancient Greek tragedian wrote *Oedipus at Colonus* and *Oedipus Rex*?
ANSWER: **Sophocles**

8B. What instrument was played by Dizzy Gillespie, Miles Davis, and Louis Armstrong?
ANSWER: **trumpet**

9A. What small Ohio town became the center of a heated 2013 trial after football players Trent Mays and Ma'lik Richmond were accused of raping a classmate?
ANSWER: **Steubenville**

9B. What English verb is equivalent to the French "tomber" and the Italian "cadere" (cah-DEE-ree)?
ANSWER: to **fall**

10A. This is a 30-second calculation question. A normally distributed sample has a mean of 35 and a standard deviation of 6. Using the empirical rule, 95% of the data should lie between which two numbers?
ANSWER: **23** and **47**

10B. This is a 30-second calculation question. An ant, standing 35 feet away from a tree trunk, looks up at an angle of 60 degrees and can just see the treetop. How far away is the ant from the top of the tree?
ANSWER: **70** feet

1. The symbols I and K are used for a type of these things when it is present in the inner and outer core. The two most common surface types of these things are named for Rayleigh and Love. A shadow zone results from one type of these things not penetrating the outer core and another type of them being refracted by the core-mantle boundary. Those two types are P and S. For 10 points, identify these things whose travel time is used to determine an earthquake's hypocenter.
ANSWER: **seismic wave**s

066-13-96-02117

2. This region was the subject of a Marjory Stoneman Douglas book which referred to it as the "river of grass," and it contains the almost entirely uninhabited Ten Thousand Islands. The Tamiami Trail, eventually known as "Calle (KAI-yay) Ocho," runs through it. Over twelve hundred invasive Burmese pythons have been removed from this region since 2009. Napoleon Bonaparte Broward proposed draining it. This region is fed by the Kissimmee River, which empties directly into Lake Okeechobee. For 10 points, name this large tropical wetlands region in southern Florida.
ANSWER: **Everglades**

052-13-96-02118

3. This goddess pulled a handful of hair out of the chest of Brontes after he placed her on his knee. This goddess killed the giants Otus and Ephialtes by tricking them into throwing a spear at each other. This goddess sent a boar to rampage through Calydon. Actaeon was transformed into a stag after he witnessed her bathing in a stream, and Leto gave birth to this goddess on Delos with her brother. For 10 points, name this Greco-Roman goddess of the moon and the twin sister of Apollo.
ANSWER: **Artemis** [or **Diana**]

227-13-96-02119

4. On UML diagrams, these things are shown to have a "has a" relationship with a filled-in diamond. According to the book *Design Patterns*, a factory method is a common way to create them. In subtype polymorphism, one of these things can behave as though it belongs to different types. These things can be created by constructor methods. They can borrow attributes and behavior from their superclasses through inheritance. For 10 points, name these instances of classes, the namesake of a type of programming exemplified by C++ and Java.
ANSWER: **object**s

190-13-96-02120

5. This poem's speaker asks a "mysterious priest" to "what green altar...lead'st thou that heifer lowing at the skies?" This poem's first stanza ends with seven consecutive rhetorical questions, including "What men or gods are these?" This poem's speaker says, "When old age shall this generation waste, thou shalt remain" of an object he initially addresses as a "still unravish'd bride of quietness." This poem ends with the assertion that "Beauty is truth, truth beauty." For 10 points, name this ode by John Keats addressed to a vase.
ANSWER: "**Ode on a Grecian Urn**"

190-13-96-02121

6. This man wrote a four thousand word love letter to the English artist Maria Cosway. He invented a revolving book stand that could hold five books at once, and, after the burning of Washington, he offered to sell his over six thousand books to the Library of Congress. At a private 1790 dinner, this man agreed to his rival's plan of federal assumption of war debts. This politician was accused of fathering children by his slave, Sally Hemings, who lived at his plantation, Monticello. For 10 points, name this author of the Declaration of Independence.
ANSWER: Thomas **Jefferson**

7. A poem by this writer describes a house that uses "the gambrels of the sky" for "an everlasting roof." The narrator of a poem by this writer heard a "blue, uncertain, stumbling buzz" before she "could not see to see." This poet also described a carriage ride taken with Immortality and with horses headed "toward eternity." For 10 points, name this poet of "I heard a fly buzz when I died" and "Because I could not stop for Death," which she wrote as a recluse in Amherst, Massachusetts.
ANSWER: Emily **Dickinson**

8. These structures are maintained by CLIP and CLASP proteins. Depending on the point of attachment, these structures are divided into astral and polar types. Their formation is inhibited by the anti-cancer drug paclitaxel. Kinesin (kin-EY-sin) proteins are used for transport along these structures. A protein subunit of these structures localizes to the centrosome and assists in the formation of the mitotic spindle at "organizing centers". For 10 points, identify these largest components of the cytoskeleton, usually pictured as long, hollow rods.
ANSWER: **microtubule**s [prompt on **mitotic spindle** or equivalents]

9. This author wrote a novel in which the title character accidentally causes Chicken Little to drown and becomes hated by everyone in a neighborhood called the Bottom. In another novel by this author, Stamp Paid takes a character across the Ohio River after she escapes from the Sweet Home plantation. That novel by this author describes how the mother of Denver killed her baby to save it from going back into slavery. For 10 points, name this American author of *Sula* who also created Sethe (SETH-uh) in *Beloved.*
ANSWER: Toni **Morrison** [or Chloe Anthony **Wofford**]

10. In diagramming a heat engine on a plot partially named for this value, it is generally shown along the y-axis. At a given mass, a gas that follows Gay-Lussac's (GEH LOO-sack's) law will have this value directly proportional to the gas's temperature. This value is kept constant for a gas when considering the relationship of Charles's Law between temperature and volume, and this value is also kept constant in an isobaric process. For 10 points, name this value measured in Pascals and calculated by taking force over area.
ANSWER: **pressure**

11. The ultimate origin of this word is the 2005 "Biz Cas Fri 1" episode of *Homestar Runner,* in which this name is applied to Strong Bad. Images described by this word usually depict Kabosu, a rescue adoption belonging to kindergarten teacher Atsuko Sato. This entity lends its name to a Bitcoin competitor with a hundred-billion-unit mining threshold that was introduced in December 2013. For 10 points, "much popularity, very meme (MEEM), wow" was achieved by what 2013 Internet fad in which enthusiastic phrases float around a picture of a Shiba Inu (SHEE-bah EE-noo)?
ANSWER: **doge** [or **Shibe** until "Shiba Inu" is read; or **doge**coin; "doge" can be pronounced like the "DOHJ" of Venice, like a "dog", or like a "doggie," all are correct]

12. This movement's leaders founded *The Dial,* a periodical edited by Margaret Fuller. Harvard Divinity School attacked this movement after its leader discounted the miracles of Jesus in his "Divinity School Address." That Unitarian minister from this movement was the author of "Self-Reliance." Hindu philosophy inspired a writer from this movement who wrote a book about "life in the woods" by the title pond. For 10 points, name this early American literary movement represented by Ralph Waldo Emerson and Henry David Thoreau.
ANSWER: **transcendentalism**

13. Kenneth Spence worked within this theory, and wrote on "discrimination learning" in its framework. Edward Tolman developed a "purposive" form of this school of thought, which was extensively applied to learning by Clark Hull. A psychologist from this school conditioned "Little Albert" to fear white rats, and another member of this school used operant conditioning to train pigeons to play table tennis. For 10 points, name this school to which John Watson and B.F. Skinner belonged, which denies the role of free will in its namesake phenomenon.
ANSWER: **behaviorism** [or **behaviorist** psychology, etc.]

14. A battle fought near this city shortened the reign of a native monarch, causing the bestowing of the nickname "The Winter King." In this city, Frederick V was crowned a year before losing outside its walls at White Mountain to Holy Roman Emperor Ferdinand II. Protestants in this city said that a pile of manure saved two regents and a secretary after they fell from its chancellery tower in 1618. For 10 points, name this historical capital of Bohemia, where the Thirty Years's War was sparked by a defenestration.
ANSWER: **Prague** [or **Praha**]

15. This molecule is the most common source of the donor group in kinase-mediated transfer reactions. Fatty acid oxidation that does not take place in the peroxisome is coupled to the production of this molecule. The enzyme that produces this molecule has F sub zero and F sub one regions and is a synthase embedded in the mitochondrial membrane. Glycolysis produces two molecules of NADH (N A D H) and two molecules of this compound. For 10 points, name this molecule that is the energy currency of the cell.
ANSWER: **ATP** [or **adenosine triphosphate**]

![hsapq logo]

1. This man created a character who writes poems about "the groan of a gravelled grouse" and a poem on Peace that begins with the line, "When the widgeon westward winging." In another story by this creator of Reginald, Conradin escapes his strict guardian by worshiping the ferret Sredni Vashtar. The protagonist of another story is horrified to see Mr. Stapleton and his friends returning home after a girl told him they had died years ago. For 10 points, name this author of "The Open Window."
ANSWER: **Saki** [or Hector Hugh **Munro**]

121-13-96-02132

2. At constant temperature, this process occurs in a direction that minimizes chemical potential by maximizing entropy. An equation governing this process sets its rate inversely proportional to the square root of molar mass. This process is governed by Fick's Laws and Graham's Law. When it occurs through a semipermeable membrane, it is called osmosis. For 10 points, name this random movement of particles from areas of high concentration to areas of low concentration.
ANSWER: **diffusion** [prompt on **effusion**; prompt on **osmosis** until it is read]

190-13-96-02133

3. Mikhail Chumakov led a Research Institute focusing on this disease in the Soviet Union. Two of the men who studied how to cure this were the scientists H.R. Cox and Hilary Koprowski. In trying to stop this disease, Thomas Francis Jr. directed a nationwide field trial that involved nearly two million children. This disease was the original focus of the March of Dimes, and it led to many patients being place in "iron lungs." This disease had two different vaccines developed in the 1950s. For 10 points, name this disease that was rampant before the oral and injected vaccines were created by Albert Sabin and Jonas Salk.
ANSWER: **polio**myelitis [or **infantile paralysis**]

023-13-96-02134

4. This author wrote a story in which Mrs. Pike recognizes Mr. Petrie as a fugitive rapist from California. This author of "Petrified Man" also created a character named Sonny, who helps the protagonist after his car falls in a ravine. Phoenix Jackson travels to Natchez in order to pick up medicine for her grandson in this author's "A Worn Path," and she wrote a story in which Stella-Rondo brings home Shirley T. on Independence Day. For 10 points, name this American author of "Why I Live at the P.O."
ANSWER: Eudora **Welty**

227-13-96-02135

5. An outgroup is typically used to root these objects. Like cladograms, these objects are used to visualize relationships in the field of systematics. These objects can be used to determine whether a group of organisms is monophyletic, paraphyletic, or polyphyletic. Branch points on these objects represent the point at which two lineages split from a common ancestor. For 10 points, identify these "trees" that show the evolutionary relationships between species or other taxons.
ANSWER: **phylogenetic tree**s [or **evolutionary tree**s; or **phylogeny**; prompt on **cladogram**s until it is read; prompt on **tree of life**; prompt on **dendrogram**s; prompt on **phylogram**s; prompt on **chronogram**s]

066-13-96-02136

This is a calculation question. An ordered data set consists of the numbers 3, 8, 15, 20, 21, 35. What is the interquartile range of the data?
ANSWER: **13**

What scientific theory proposes the lithosphere is broken up into large moving units that float on the asthenosphere?
ANSWER: **plate tectonics**