1. Henry Bates's work on the butterflies of this river led to the theory of Batesian mimicry. Marajó (mah-rah-HO) Island is in the estuary of this river, which is known as the Solimões until it receives the Rio Negro. The species *Inia geoffrensis,* a namesake river dolphin, lives here. It was named when Francisco de Orellano (or-ey-AH-no) claimed to have fought women on its banks. For 10 points, identify this river which dominates a namesake South American rainforest.
ANSWER: **Amazon** River [or Rio **Amazonas**]

019-13-74-06101

2. In mathematics, this term refers to the subspace spanned by the linearly independent columns of a matrix, and is equivalent to the column-space. Extensions referring to this type of file include .crw and .bmp. In optics, if an object is placed between the center and the focus of a converging lens, this thing will be virtual and upright. Data representing these are usually stored as RGB values, representing colors. For 10 points, name this term which usually refers to a picture.
ANSWER: **image**s

190-13-74-06102

3. As a teenager, this man ran away from his family and spent three years living as a Cherokee under the name Black Raven. He was overthrown as governor in 1861 for opposing secession; earlier, he both preceded and followed Mirabeau Bonaparte Lamar as president. This former governor of Tennessee was the only person to be elected governor of two different states. He led victorious forces at San Jacinto in 1836, defeating Santa Anna. For 10 points, name this Texan independence leader and city namesake.
ANSWER: Samuel **Houston**

019-13-74-06103

4. This organelle requires the EF-TU and EF-G proteins to function. Antibiotics such as aminoglycosides (aa-meen-ohg-lie-KO-sidez) exploit the structural difference between its bacterial and eukaryotic versions. It contains an RNA that catalyzes peptidyltransferase (PEP-tidd-ul-TRANS-fer-eyz) activity. In eukaryotes, this organelle contains a 40S and 60S subunit, and t-RNA are responsible for bringing amino acids to it. For 10 points, name this organelle, responsible for translating mRNA into protein.
ANSWER: **ribosome**

048-13-74-06104

5. Conservation efforts in this country have failed to get people to stop frying the endangered ludong fish; other unique animals in this country include the monkey-eating eagle and the bleeding-heart pigeon. All of those species live along its Cagayan River. This country includes speakers of Ilocano and Cebuano, though is most prominent indigenous language is Tagalog. Mindanao and Luzon are among its major islands. For 10 points, name this Southeast Asian archipelago-state, the home of Quezon and Manila.
ANSWER: Republic of the **Philippines** [or Republika ng **Pilipinas**]

019-13-74-06105

6. One character in this book constantly brings up Charles I in his conversations. In this novel, Mr. Jorkins is the business partner of Francis Spenlow, for whom the protagonist works as an articled clerk. Ham and Little Em'ly are childhood playmates of this novel's protagonist, who is sent to Salem House after biting his stepfather's hand. The protagonist of this novel ultimately marries Agnes Wickfield and works as a novelist. For 10 points, name this semi-autobiographical novel by Charles Dickens.
ANSWER: *David Copperfield*

7. Ohelo berries were sacred to this goddess, who once fell in love with the mortal Lohiau (low-HEE-ow). This goddess used the stick Pa'oa to find and dig out a new home after she was exiled by her older sister Namaka. She spent too much time associating with Lono and accidentally set Tahiti on fire as a result, leading her to be cast out in a canoe. She was then believed to live in the crater of Kilauea. For 10 points, identify this patron of volcanoes in Polynesian mythology and most popular Hawaiian deity.
ANSWER: **Pele**

8. The local curvature of a multivariable function can be found using the Hessian one of these constructs. First-order derivatives are contained in the Jacobian one. If one of these is invertible, it can be multiplied by its inverse to yield an "identity" one of them. Multiplication of them is not commutative. The determinant is defined for these constructs, which are central to linear algebra. For 10 points, name these rectangular arrays of numbers organized into rows and columns.
ANSWER: **matrix** [or **matrices**]

9. One of these objects was part of a thought experiment used by Einstein to develop special relativity. The development of accurate maritime versions of these devices allowed sailors to easily calculate their longitude. The electronic transitions of cold cesium-133 and rubidium-87 are used in the atomic type of these devices. A crystal resonator made of quartz is used in another type of them, which must be very accurate for GPS to work. For 10 points, name these devices that keep track of time.
ANSWER: **clock**s [or **chronometer**]

10. This thinker discussed the role of names as marks which aid one's memory in his *De Corpore*. His best-known book contains a chapter on the "Kingdom of Darkness." He delineated the concept of the "war of all against all." His magnum opus describes life as being "solitary, poor, nasty, brutish, and short." For 10 points, identify this English philosopher who advocated for absolute sovereignty in his *Leviathan*.
ANSWER: Thomas **Hobbes**

11. One drug used to treat this condition causes a namesake "fetal syndrome" including microcephaly and gum overgrowth; that drug is phenytoin. This condition, which, like bipolar disorder, can be treated by valproic acid, occurs because of aberrantly synchronous firing of neurons. This condition, which comes in juvenile myoclonic and childhood absence varieties, is diagnosed using an electroencephalogram. For 10 points, name this condition characterized by recurrent seizures.
ANSWER: **epilepsy** [or **seizure** disorder until it is read]

12. Some authorities assert that this object symbolizes the four exiles in Babylon, Persia, Greece, and Rome. It displays an acronym for the phrase "nes gadol hayah sham" (NESS gah-DOLE hi-AH SHAHM), meaning "a great miracle happened there." Depending on which letter is facing up, players of this object may contribute, do nothing, or take half or all of the pot. For 10 points, identify this top-like device which is used to play a traditional game on Hannukah.
ANSWER: a **dreidel**

13. The text of this speech was nearly lost when the carpet-bag containing it was tossed in a pile with dozens of others by an Indianapolis hotel clerk. This speech expressed support for the proposed Corwin Amendment. It concluded that "the mystic chords of memory" will be touched "by the better angels of our nature," after promising not to initiate war and denouncing secession as illegal. For 10 points, identify this speech, delivered in March 1861 following the swearing-in of the new President.
ANSWER: Abraham **Lincoln**'s first **inaugural** address

14. At the end of one of this author's stories, a baby carriage is thrown into a bonfire by a man who discovers the truth about his heritage via a letter from his mother. This author wrote of Armand Aubigny in the short story "Desiree's Baby," but she is better known for a novel in which the protagonist engages in affairs with Alcee Arobin and Robert Lebrun. That novel by this author is set in Grand Isle and follows Edna Pontellier. For 10 points, identify this author of *The Awakening*.
ANSWER: Kate **Chopin** [or Katherine **O'Flaherty**]

15. The phase diagram for this substance contains an eutectoid point where pearlite forms from austentite during cooling. A metastable, strong form of this substance is martensite. Calcium oxide and magnesium oxide are used to form this substance in the oxygen converter process. Impurities in this substance, which is made by removing carbon from pig iron, can be extraced using the Bessemer process. For 10 points, name this alloy commonly used in structural support for buildings, a combination of iron and carbon.
ANSWER: **steel**

1A. What mathematician's tomb supposedly bore an inscription of a cylinder and a sphere, two shapes whose relationship he investigated?
ANSWER: **Archimedes**

1B. A massacre on the Odessa Steps, the use of montage, and the hand-painting of the red flag of communism on individual frames of black-and-white prints were some of the cinematic landmarks found in what 1925 ode to a Russian naval rebellion directed by Sergei Eisenstein?
ANSWER: *The **Battleship Potemkin*** [or ***Bronenosets Potyomkin***]

2A. What document stipulated that no freeman would be tried outside the law of the land and was signed in 1215 at Runnymede by King John?
ANSWER: **Magna Carta**

2B. In December 2012, what country launched the satellite Bright Star 3 from the Unha-3 rocket, only to see the satellite tumble out of control immediately?
ANSWER: **North Korea** [or **DPRK**; or **Democratic People's Republic of Korea**; or **Choson minjujuui inmin konghwaguk**; do not accept or prompt on "Korea"]

3A. This is a 20-second calculation question. How many unique angles between 0 and 360 degrees have a reference angle of 30 degrees?
ANSWER: **4**

3B. This is a 20-second calculation question. Max's Pizzas makes 2 pepperoni pizzas, 3 mushroom pizzas, 1 anchovy pizza, 3 pepperoni and mushroom pizzas, 3 mushroom and anchovy pizzas, and 1 pizza with all three toppings. What is the median number of toppings on Max's Pizzas' pizzas?
ANSWER: **2** toppings

4A. Name the English poet who wrote *Aurora Leigh* and a poetry collection that includes "How do I love thee? Let me count the ways," the *Sonnets from the Portuguese.*
ANSWER: Elizabeth Barrett **Browning** [or Elizabeth **Barrett**]

4B. Name the musician who included three different songs with Greek letters in their titles on her 2011 album *Halfaxa* and received widespread critical acclaim for her 2012 release *Visions.*
ANSWER: **Grimes** [or Claire **Boucher**]

5A. What molecular geometry occurs in complexes with six ligands and no lone pairs?
ANSWER: **octahedral**

5B. What period of the calendar is known as "woryoil" (wul-yo-eel) in Korean, "al-ithnayn" (al-ith-NEIN) in Arabic, and "lunedi" (LOO-nay-dee) in Italian?
ANSWER: **Monday**

6A. The most prominent English-language opera in the first three centuries of the genre was what Virgil-inspired piece by Henry Purcell, that includes the aria "When I am laid in Earth?"
ANSWER: ***Dido and Aeneas***

6B. What American poet described "the roller of big cigars" in "The Emperor of Ice Cream" and set a scene "among twenty snowy mountains" in "Thirteen Ways of Looking at a Blackbird"?
ANSWER: Wallace **Stevens**

7A. This is a 30-second calculation question. What is the area of a regular octagon with side length 2?
ANSWER: **8 plus 8** times the square **root** of **2** [or **8 plus 8 rad**ical **2**; or **8 times** the quantity **one plus** the square **root** of **2** close quantity; or mathematical equivalents]

7B. This is a 30-second calculation question. Find the sum of the roots of the polynomial 2x^3 - 4x^2 - 10x + 12 (READ: "two x cubed minus four x squared minus ten x plus twelve").
ANSWER: **2**

8A. What school's recent basketball history includes the 2003 murder of Patrick Dennehy by teammate Carlton Dotson and its women's team winning the 2012 NCAA championship?
ANSWER: **Baylor** University

8B. Name the 2012 Best Picture nominee in which George Clooney plays a Hawaiian lawyer dealing with the consequences of his wife's death.
ANSWER: *The **Descendants***

9A. The K-T boundary marks the end of what period, following the Jurassic, in which dinosaurs became extinct?
ANSWER: **Cretaceous** period

9B. Name the former country that underwent the Velvet Revolution in 1989 and was forced to give up the Sudetenland under the terms of the Munich Agreement.
ANSWER: **Czechoslovakia** [or **Ceskoslovensko**]

10A. What phylum contains bivalve oysters, gastropods, and cephalopods such as squid?
ANSWER: **Mollusca** [or **mollusk**s]

10B. Name the war in which Protestant disasters included Frederick V of the Palatine's loss at White Mountain and Gustavus Adolphus's death at Lutzen.
ANSWER: **Thirty Years'** War

1. In 1910, a scandal erupted when Frederick Cook falsely claimed to have climbed this mountain. It is now summited by climbers of the West Buttress route who begin at the Kahiltna Glacier. Outdated names for it include Densmore's Mountain and the Russian name Bolshaya Gora. The first European to see this mountain was George Vancouver, who was sailing in Cook Inlet. For 10 points, identify this mountain located about halfway between Anchorage and Fairbanks, the highest in North America.
ANSWER: Mount **McKinley** [or **Denali**]

019-13-74-06117

2. The further adventures of this group are chronicled in *Twenty Years After* and *The Vicomte of Bragelonne.* They employ the servents Bazin, Grimaud, and Mousqueton. Each of these characters is challenged to a duel by the protagonist on the same day. They have the motto "all for one, one for all." This group's frequent adversaries include Milady de Winter and Cardinal Richelieu. For 10 points, name this group of soldiers that befriends D'Artagnan in an Alexandre Dumas novel.
ANSWER: the **Three Musketeers**

015-13-74-06118

3. The time-averaged power radiated by a dipole is inversely proportional to the third power of this value. One attempt to measure it used a rotating cog between a source and a detector, an apparatus named for Fizeau. This value is equal to one over the square root of the product of the permittivity and permeability of free space. This value is invariant in all inertial reference frames, according to special relativity. For 10 points, name this value equal to about three times ten to the eight meters per second.
ANSWER: **speed of light** [or **c**]

048-13-74-06119

4. This character makes a false confession to tearing an anatomy book in order to spare his love interest. He is frequently tapped on the head with a thimble while being compared unfavorably to his brother Sid. After exposing the real killer of Dr. Robinson, this character sees a stray dog baying at Muff Potter anyway. This Missouri resident has a crush on Becky Thatcher, is raised by his Aunt Polly, and is often up to no good alongside Joe Harper and Huck Finn. For 10 points, name this Mark Twain character.
ANSWER: Tom **Sawyer** [or **Tom** Sawyer]

019-13-74-06120

5. When these entities are paired with free variables bound in their environment, they are known as closures. Evaluation strategies for them include call-by-need and call-by-reference. Many languages require you to declare their prototype, which includes their argument and return types. Variables created inside of them have a local scope. For 10 points, name these entities in computer programming that consist of a block of code that performs a specific task.
ANSWER: **function**s [or **method**s; or sub**routine**s; or **procedure**s; or **subprogram**s]

201-13-74-06121

6. This composer utilized maracas and bongos in his *Cuban Overture.* A fisherman named Jake sings "A Woman is a Sometime Thing" in an opera by this composer, which includes an aria about a time "when the livin' is easy." His most famous composition, which premiered during the "An Experiment in Modern Music" concert, opens with a seventeen-note clarinet glissando. For 10 points, identify this American composer of *Porgy and Bess* and *Rhapsody in Blue.*
ANSWER: George **Gershwin**

7. This writer argued that Leo Tolstoy despised Shakespeare because of a distrust of enjoyment in his essay "Lear, Tolstoy, and the Fool." He wrote a memoir about how Stalinist interference doomed the Socialist effort in the Spanish Civil War, *Homage to Catalonia.* This literary critic's other nonfiction includes an essay about his service in the police in Burma, where he shot an elephant. For 10 points, name this essayist, who also created the pig Snowball in *Animal Farm.*
ANSWER: George **Orwell** [or Eric Arthur **Blair**]

8. This man used his father as a model for the doctor in his early painting *Science and Charity.* He designed the sets and costumes for Erik Satie's avant-garde ballet *Parade.* He used African masks as the heads of prostitutes from a Barcelona street in *Les Demoiselles d'Avignon.* With Georges Braque, he founded a new genre which used geometric forms to depict many points of view at once. For 10 points, name this expatriate Spanish-born co-founder of Cubism, who also painted *Guernica.*
ANSWER: Pablo Ruiz y **Picasso**

9. One group advocating this cause published the periodical *Our Union* and was led by Frances Willard. This cause was advocated by several demonstrations of the Women's Crusade movement, leading to the formation of the WCTU. It was violently enforced by Carrie Nation, who used a hatchet to attack establishments not aligned with this cause. The Volstead Act enforced the Eighteenth Amendment, instituting, for 10 points, what policy in the United States, also known as temperance?
ANSWER: alcohol **prohibition** [or **temperance** until it is read]

10. This politician's PAC funded ads in another party's primary against John Brunner and Sarah Steelman. In 2004, this politician won a primary against incumbent governor Bob Holden but was defeated in the general election by Republican Matt Blunt. In 2006, she unseated Senator Jim Talent. She won re-election in 2012 following widespread condemnation of her opponent's comments on "legitimate rape." For 10 points, name this victor over Todd Akin in the 2012 Missouri Senate race.
ANSWER: Claire **McCaskill**

11. One of this man's characters is nicknamed "Samsonite" because of his habit of using a stapler on hands. Odili, a teacher, appears in another of his novels, whose title character is Chief Nanga. This author of *A Man of the People* and *Anthills of the Savannah* wrote a novel in which the protagonist is exiled for killing Ezeudu's son, after he kills his own foster son, Ikemefuna (IK-ey-muh-FOO-nuh). For 10 points, name this Nigerian author who wrote about Okonkwo in *Things Fall Apart.*
ANSWER: Chinua **Achebe** [or Albert Chinualumogu **Achebe**]

12. This concept was extended into the ERG paradigm by Clayton Alderfer. The developer of this concept studied the lives of individuals including Eleanor Roosevelt and Frederick Douglas during its development. This concept implies that a person's sense of safety should be satisfied before they should be concerned with developing their self-esteem. This concept was diagrammed using a pyramid, at the top of which exists "self-actualization." For 10 points, identify this paradigm developed by Abraham Maslow.
ANSWER: Abraham Maslow's **hierarchy of needs**

13. This author based a character on her abusive first husband, Berrien Upshaw. Her most successful novel was titled after a line from the Ernest Dowson poem "Cynara." This author destroyed her novel *Big Four* and died thirty-five years before the publication of her romance *Lost Laysen.* Her major work includes the deaths of Frank Kennedy and Bonnie Blue and follows the owner of Tara. For 10 points, name this author who created Scarlett O'Hara in *Gone with the Wind.*
ANSWER: Margaret **Mitchell** [or Margaret Munnerlyn **Mitchell**]

14. These objects gain their most notable property due to their outer layer of doubly ionized helium expanding, becoming less opaque, then collapsing due to gravity; that occurs in the kappa mechanism. While doing work on the Magellanic Cloud, Henrietta Leavitt discovered the intrinsic relationship between these objects' period and luminosity, which allows them to be used to determine distances. For 10 points, name these variable stars that are often used as standard candles.
ANSWER: **Cepheid** variables [prompt on **variable**s stars]

15. One participant in this election was eighty-five-year old reformer Peter Cooper, who ran as the candidate of the Greenback Party. Another candidate in this election had gained fame by exposing the Canal Ring and ran against a reformist ex-governor of Ohio. Disputes over the validity of electors from Oregon and the South led this election to be decided by the following year's compromise, which ended Reconstruction. For 10 points, name this election in which Samuel Tilden lost to Rutherford B. Hayes.
ANSWER: United States Presidential election of **1876**

1. This character easily straightens a metal poker bent by Dr. Grimesby Roylott, in a story where a trained Indian snake turns out to be the title "speckled band." In another story, he saves Sir Henry from a "family curse" by fending off a monstrous pet trained by Jack Stapleton. His creator brought him back for the novella *The Hound of the Baskervilles* after having him jump off Reichenbach Falls with Professor Moriarty. For 10 points, name this detective created by Arthur Conan Doyle.
ANSWER: Sherlock **Holmes** [or **Sherlock** Holmes]

080-13-74-06132

2. The groove ventral to these structures is covered by the flexor retinaculum. These structures include the trapezium and triquetrum. One of these, which has a hook, forms a boundary of Guyon's canal along with the pisiform. They include the lunate, hamate, and scaphoid, the last of which articulates with the radius. The median nerve can be compressed in the "tunnel" named for these entities in a namesake syndrome. For 10 points, name this set of eight bones that form the wrist.
ANSWER: **carpal**s [prompt on **bones**; prompt on **bones of the hands**; prompt on **bones of the wrist**s; do not accept "metacarpals"]

048-13-74-06133

3. This author's daughter Catherine published his unfinished novel *The First Man,* which was found in manuscript form at the site of his fatal car accident. In another of his novels, Amsterdam resident Jean-Baptiste Clamence is haunted by the sound of laughter. He wrote an essay that compares man's daily struggle to the task of rolling a rock up a hill. This author of *The Fall* and "The Myth of Sisyphus" created Meursault. For 10 points, name this French author of *The Stranger.*
ANSWER: Albert **Camus** (al-BAIR kah-MOO, though accept phonetic pronunciations)

015-13-74-06134

4. One type of these compounds works by making ionic molecules soluble in an organic phase. These substances are categorized by the turnover frequency. Heterogenous ones can work by providing a surface for adsorption of reactants, while homogenous ones share the phase with the reactants. These compounds work by decreasing the activation energy of a reaction, thereby increasing the rate constant. For 10 points, name these substances that speed up chemical reactions.
ANSWER: **catalyst**s

048-13-74-06135

5. In this country, certain Church lands were confiscated by the Lerdo Law. The Cristero War was fought in this country over anti-Church laws during the Maximato period. Dispute over the fate of Catholicism in this country also caused the War of the Reform. Catholics in this country venerate the Virgin of Guadalupe (gwah-dah-LOO-pay). For 10 points, name this country where leaders such as Plutarco Calles (KAI-yase) and Benito Juarez opposed the political influence of the Church.
ANSWER: **Mexico** [or **Estados Unidos Mexicanos**; or **United Mexican States**]

019-13-74-06136

This is a calculation question. What is the mode of the following sample: 3, 3, 4, 5, 5, 4, 3, 2, 1, 1, 2, 3, 3, 2, 2?
ANSWER: **3**

What range of mountains in Northern Africa runs through Morocco and includes the peak Toubkal?
ANSWER: **Atlas** Mountains