



1. Basilar fractures of this structure often display Battle's sign. The calvarium is the top part of this object, which in infants displays gaps called fontanelles. This structure's coronal, lambdoid and sagittal sutures are responsible for holding together its parietal, occipital, and temporal bones. The hole in this structure's base is the foramen magnum, which is where the spine enters it. For 10 points, name this bone that protects the brain.

ANSWER: **skull** [prompt on **head**]

048-12-73-07101

2. This battle resulted in the scuttling of the HMS *Guadeloupe*. After this battle, Benjamin Lincoln accepted a sword from Charles O'Hara and drummers played the tune "The World Turn'd Upside Down." One side was defeated in this battle after a relief fleet lost to the Comte de Grasse and French warships at the Battle of the Chesapeake. For 10 points, name this 1781 battle in which Lord Cornwallis surrendered to George Washington, ending the American Revolution.

ANSWER: Battle of **Yorktown** [or Siege of **Yorktown**]

052-12-73-07102

3. The Cascadia margin is an example of a filled one of these features. These features are responsible for the slab-pull force. There are two main classes of these features: those associated with island arcs and those adjacent to continents. These features are the result of basaltic crust being subducted at its contact with granitic crust. For 10 points, identify these deep, elongated depressions that stretch below the abyssal plain, making them the deepest part of the ocean, as at the Marianas one.

ANSWER: oceanic **trenches** [prompt on **subduction zones**; prompt on **convergent** plate **boundaries**]

066-12-73-07103

4. In the aftermath of this event, the local coroner disagreed with Lord Widgery. This event began as a march to Guildhall Square organized by the Civil Rights Association. In 1998, a twelve-year inquiry into this event began, culminating with the 2010 Saville Report. This event happened in Londonderry on January 30, 1972, and led to a renewed wave of support for the IRA. For 10 points, name this incident in which twenty-seven unarmed demonstrators were shot by British soldiers in Northern Ireland.

ANSWER: **Bloody Sunday**

019-12-73-07104

5. The phase space for these objects shows a separatrix at pi. A spring and a disk are used in the torsion version of these devices. Chaotic systems are exemplified by a "double" one of them. The period of these objects is proportional to the square root of the length over gravitational acceleration for small displacements. One of these that demonstrates the rotation of the Earth is named for Foucault (foo-COH). For 10 points, name these simple harmonic oscillators that consist of a bob on the end of a string.

ANSWER: **pendulum**

048-12-73-07105

6. One member of this family gained national prominence for his "Tale of Two Cities" speech at the 1984 Democratic Convention and became known as "Hamlet on the Hudson" for his indecision on running for President. A third member of this family was Secretary of HUD under President Clinton and defeated Tea Party-backed Carl Paladino to win his current position. For 10 points, name this family, including former governor Mario and current governor Andrew, both of New York.

ANSWER: **Cuomo**

030-12-73-07106

7. This city is home to a sturdy bell tower that lost only a stone animal head during a 1976 earthquake. It isn't in Europe, but this city contains a beautiful lakeside Summer Palace. A landmark in this city contains the Gate of Divine Might and Meridian Gate at opposite ends and the Hall of Supreme Harmony inside. That landmark was not accessible to commoners without the emperor's permission. For 10 points, name this Asian metropolis, home to the Forbidden City.

ANSWER: **Beijing** [or **Peking**]

020-12-73-07107

8. This author published five short stories ostensibly told by various personages to the title landowner in his *The Tales of the Late Ivan Petrovich Belkin*. This author also created an iconic superfluous man whose dissatisfaction with being brought to Tatyana Larina's name day party leads to a duel in which he kills his best friend Vladimir Lensky. For 10 points, name this Russian poet of the novel-in-verse *Eugene Onegin*.

ANSWER: Alexander **Pushkin** [or Alexander Sergeyevich **Pushkin**]

014-12-73-07108

9. Laboratory apparatuses designed for use in this procedure include the Perkin triangle and Raschig rings. It is difficult to perform this procedure on volatile mixtures called azeotropes. Followed by cracking, the "fractional" variety of this procedure is used on a mass scale by oil refineries. For 10 points, name this procedure in which components of a mixture are separated by their boiling points.

ANSWER: **distillation**

014-12-73-07109

10. One song on this album includes the lyrics, "Spinnin' like a girl in a brand new dress, we had this big white city all to ourselves." Dubstep is used in a song on this album which includes the lyrics "Now I'm lyin' on the cold hard ground." This album includes a song in which the phrase "we called it off again last night" is repeated. The songs "I Knew You Were Trouble" and "We Are Never Getting Back Together" are found on, for 10 points, what Taylor Swift album named for a color?

ANSWER: **Red**

189-12-73-07110

11. One character in this work allows a battle to rage for three days before sending his son to singlehandedly defeat the enemy army. Another character declares, "Evil be thou my good," in a soliloquy in its fourth section. That character claims it is "better to reign in Hell than serve in Heaven" before assuming the form of a serpent to persuade Eve to eat from the Tree of Knowledge. For 10 points, name this epic poem by John Milton.

ANSWER: **Paradise Lost**

014-12-73-07111

12. One member of this family wrote the papal bull *Exsurge Domine* and excommunicated Martin Luther. In addition to Leo X, this family included a member who was one of the targets for assassination in the Pazzi conspiracy. That grandson of Cosimo was a patron of the arts called Lorenzo the Magnificent. For 10 points, name this banking family that, in 1434, began three centuries of rule in Florence.

ANSWER: de **Medicis**

121-12-73-07112

13. In the Benard configuration, this process occurs when the Rayleigh number is greater than 1700. This process is strong when high values for the ratio between viscous diffusion rate and thermal diffusion rate occur. The ratio of the Grashof number to the square of the Reynolds number determines if this process is free or forced. Occurring when flows are caused by temperature-driven differences in density, this process creates namesake currents in fluids. For 10 points, name this form of heat transfer that is not conduction.

ANSWER: **convection** [or **convective** flow]

149-12-73-07113

14. The Pierres du Niton are two prominent rocks that can be found in this city's harbor. The Jet d'Eau is located in this city and is the world's tallest fountain. Ariana Park is the location of this city's Palace of Nations, which serves as the headquarters of the ECE and IAEA. This city is located at the junction of the Rhone River and its namesake lake. For 10 points, name this Swiss city that is the home of the World Health Organization and the Red Cross.

ANSWER: **Geneva**

030-12-73-07114

15. During weddings celebrated by this people, several celery stalks are placed inside jars. Mustaches are forbidden among this group, which initiates the period of courtship with "rumspringa." This subgroup of the Mennonite church follows the "ordnung" guidelines. Primarily located in Pennsylvania, this group operates one-room schoolhouses and often travels in horse-drawn buggies. For 10 points, name this group that lives simply and eschews modern technology.

ANSWER: **Amish** [prompt on **Mennonites** until it is read]

020-12-73-07115



1A. What Chinese dynasty, which lends its name to the Chinese name for its majority ethnicity, lasted until 220 CE and succeeded the Qin (CHIN)?

ANSWER: **Han** Dynasty

1B. What physical quantity can be represented either as the cross product of displacement and force or as the time derivative of angular momentum?

ANSWER: **torque**

2A. Name the "mayor of the palace" whose victory at the 732 CE Battle of Tours earned him the nickname "the Hammer."

ANSWER: **Charles Martel** [or **Carolus Martellus**; or **Karl Martell**; prompt on partial answer]

2B. What former player for Olimpia Milano and coach of the New York Knicks replaced Mike Brown as the Lakers' head coach in 2012?

ANSWER: Mike **D'Antoni**

3A. Name the Swiss psychologist who founded analytical psychology and promoted such concepts as the collective unconscious and synchronicity.

ANSWER: Carl Gustav **Jung**

3B. What structure guarded by Heimdall is a rainbow that connects Midgard and Asgard in Norse myth?

ANSWER: **Bifrost**

4A. This is a 20-second calculation question. What is the largest possible area of a rhombus with side length 4 centimeters?

ANSWER: **16** square centimeters

4B. This is a 20-second calculation question. What is the smallest positive angle whose secant is undefined?

ANSWER: **90** degrees [or **pi/2** radians]

5A. What transcendental number is used as the base for natural logarithms?

ANSWER: **e** [or **Euler's** number; or **Napier's** number; prompt on **2.71828**]

5B. What British compiler of *A Dictionary of the English Language* had his life chronicled by James Boswell?

ANSWER: Samuel **Johnson**

6A. What jazz trumpeter recorded the albums *Birth of the Cool* and *Kind of Blue*?

ANSWER: Miles Dewey **Davis** III

6B. What form of poem, written by Catullus and Ovid in the ancient world, often gives voice to mourning and uses a namesake type of couplet?

ANSWER: **elegy** [or **elegiac** couplet]

7A. What term applies to ten or twenty times the base-10 log of the ratio of two power quantities and is a common quantifier of the "loudness" of a sound?

ANSWER: **decibels**

7B. What biblical character did Michelangelo depict seated with horns for the tomb of Pope Julius II?

ANSWER: **Moses**

8A. Name the novel by Zora Neale Hurston in which Janie Crawford falls in love with Tea Cake.

ANSWER: **Their Eyes Were Watching God**

8B. What country has paid attention to the cancer surgery in Cuba undergone by its president, Hugo Chavez?

ANSWER: Bolivarian Republic of **Venezuela** [or Republica Bolivariana de **Venezuela**]

9A. This is a 30-second calculation question. Mary's statistics class has seven quizzes, and a test. The test counts twice as much as a quiz. If Mary averaged 94 percent on the quizzes, what is the minimum score she can get on the test to average at least 90.0%?

ANSWER: **76** percent

9B. This is a 30-second calculation question. Solve the following system of equations. $3x+4y=26$ and $5x+2y=34$.

ANSWER: **x=6, y=2** [accept in either order]

10A. Name the French painter of water lilies and haystacks whose painting *Impression, Sunrise* gave Impressionism its name.

ANSWER: Oscar Claude **Monet**

10B. Caspases help drive what beneficial form of programmed cell death?

ANSWER: **apoptosis**



1. In Latin, the passive infinitive verbs of this tense are supines plus the word "iri." It's not a gerundive, but passive periphrastics of this type imply necessity. In Hebrew, third-person verbs of this type add a yud at the beginning. In Spanish, first person verbs of this type add an accented "é" (EY) to the end of infinitives, or a speaker can say "voy a" before a verb to indicate this tense. For 10 points, name this tense created in English by adding the auxiliary verb "shall" or "will."

ANSWER: **future** tense

104-12-73-07117

2. This group was revived by members of a similar organization called the Knights of Mary Phagan. That revival of this group was led by William J. Simmons at Stone Mountain in 1915. First led by Nathan Bedford Forrest, it was targeted by the 1870 Force Act. Membership in this group increased after *The Birth of a Nation* was released. For 10 points, name this white supremacist group led by a Grand Wizard whose members wear white robes and hoods.

ANSWER: **Ku Klux Klan** [or **KKK**]

052-12-73-07118

3. One character in this movie witnesses an assassination in Shanghai, then kills the assassin, Patrice. The main character of this movie is assisted by Kincade, who takes another character out of a house through a priest hole. The main character travels with Severine to an abandoned island, where she is killed by the rogue agent Raoul Silva. For 10 points, name this 2012 movie featuring Javier Bardem, who battles against the Daniel Craig-played James Bond.

ANSWER: **Skyfall**

023-12-73-07119

4. This author wrote about boxing in the stories "Fifty Grand" and "The Fighter." He wrote about a man named "the Swede" who calmly awaits his death in the short story "The Killers." In one of his novels, an insurgent force led by Pilar helps Robert Jordan blow up a bridge in Spain. He wrote another novel in which the elderly Santiago catches a great marlin. For 10 points, name this American author of *For Whom the Bell Tolls* and *The Old Man and the Sea*.

ANSWER: Ernest **Hemingway** [or Ernest Miller **Hemingway**]

015-12-73-07120

5. This composer required the right hand to reach intervals greater than two octaves in the space of a sixteenth note in his Paganini-inspired "La Campanella." One collection of pieces by this composer includes a tenth, subtitled Preludio; a fifteenth, the Rakoczy March; and a gypsy-inspired second, which appears in many cartoons. For 10 points, name this piano virtuoso and composer who used folk music from his home country as the basis for his *Hungarian Rhapsodies*.

ANSWER: Franz **Liszt** [or Ferenc **Liszt**]

023-12-73-07121

6. In one type of this ceremony, possession of the the "mahr" is transferred. That Islamic ceremony for this is followed by a "walima" and is itself called "nikah." People walk seven times around the Holy Fire in the Saptadari, a part of this ritual in Hinduism. In Jewish traditions, it occurs under a canopy called a chuppah (HOO-puh), and the destruction of the Temple is remembered by breaking a glass. For 10 points, name this religious ceremony during which vows are exchanged.

ANSWER: **wedding** [or **marriage** ceremony until "marriage" is read]

121-12-73-07122

7. On UNIX systems, sed and grep tools are used to work with files as if they were instances of this data type. In programming languages like Java, the split method will break apart one of these into an array of these. In C, these structures are null terminated. These objects can be matched or searched using regular expressions. Individual units in this data type are encoded in ASCII (ASS-kee) or Unicode. For 10 points, name this data type that is a sequence of characters.

ANSWER: **string** [or **text** until it is read]

001-12-73-07123

8. This poem describes "Five-Nines that dropped behind" before describing "an ecstasy of fumbling." One character in this work has a "hanging face, like a devil's sick of sin," which appears out of "thick green light, as under a green sea." It begins as the narrator is among a group "bent double, like old beggars under sacks." This poem's title comes from the Latin quotation, "It is sweet and right to die for one's country." For 10 points, name this poem by the World War I poet Wilfred Owen.

ANSWER: "**Dulce et Decorum Est**"

192-12-73-07124

9. This is the name of a two zinc atom-binding zinc finger domain commonly found in E3 ubiquitin ligases. In math, one of these is formed when an abelian group is given a second closed, associative, distributive operation. The Cassini division is a break between two astronomical sets of these. The bands formed from interference between light on a flat piece of glass and a spherical glass are called Newton's this. For 10 points, give this term for the the circular bands of ice around Saturn.

ANSWER: **rings**

001-12-73-07125

10. The title character of this play cries, "I am a man more sinned against than sinning," before taking shelter from a storm in the hovel of a man disguised as Tom o' Bedlam. In a violent scene from this play, Cornwall shouts "Out, vile jelly!" as he rips out the eyes of the Duke of Gloucester. This play begins as the title character demands his daughters express their love for him while he divides his kingdom, but Cordelia refuses and is banished. For 10 points, name this Shakespeare tragedy.

ANSWER: **King Lear**

080-12-73-07126

11. A scientist with this last name, along with Frederic Joliot, won the Nobel Prize in Chemistry for turning boron into nitrogen. Another scientist with this last name created a sensitive electrometer with his brother, Jacques. Scientists with this last name name a non-SI unit of radioactivity that is equal to 37 gigaBecquerels. It is also the last name of the only person to win two Nobel Prizes in the sciences. For 10 points, what last name was shared by the husband and wife co-discoverers of polonium and radium?

ANSWER: **Curie** [or Marie **Curie**; or Pierre **Curie**; or Irene Joliot-**Curie**]

149-12-73-07127

12. One cartoon about this event shows a cannon labeled "Congress" being pointed at Lorenzo Thomas. For his party-defying vote during this event, Edmund Ross was praised in John F. Kennedy's book *Profiles in Courage*. This event was instigated by one man's violation of the Tenure of Office Act by removing Secretary of War Edwin Stanton. For 10 points, name this 1868 event in which Radical Republicans sought to remove a President who was opposed to their plans of Reconstruction.

ANSWER: **impeachment of Andrew Johnson** [or **trial of Andrew Johnson**]

052-12-73-07128

13. This author wrote a story in which Abner Snopes plans arson against his employer, Major de Spain. In another of his stories, the decomposed corpse of Homer Barron is found on the bed of the deceased title character. This author of "Barn Burning" and "A Rose for Emily" set many of his stories in Yoknapatawpha (YOK-nuh-puh-TAW-fuh) County. He wrote novels about the Sutpen family and the Compson family. For 10 points, name this author of *Absalom, Absalom!* and *The Sound and the Fury*.

ANSWER: William **Faulkner** [or William Cuthbert **Faulkner**]

015-12-73-07129

14. Anticlus almost revealed the secret of this object after a woman imitated several voices. One person who was suspicious of this object proclaimed "Timeo Danaos et dona ferentes" (tim-EY-oh dah-NAH-ohs et DOH-nah feh-RENT-eyz). Laocoon (lay-AH-co-awn) was killed by serpents after denouncing this object, which was presented by Sinon. It was built by Epeius at the urging of Odysseus, after ten years of war. For 10 points, identify this large wooden animal which secretly contained Greek soldiers.

ANSWER: **Trojan Horse**

019-12-73-07130

15. This quantity is equal to the reduced Planck's constant divided by the product of rest mass, speed of light, and fine structure constant in the Bohr model. Lanthanides defy the expected trend in this quantity because their atomic number outrips the shielding ability of the 4f electrons. Helium has the smallest known value for this quantity, which increases down a column and decreases across a row in the periodic table. For 10 points, name this quantity, a measure of the size of an atom.

ANSWER: atomic **radius** [or Bohr **radius**]

020-12-73-07131



1. This policy was implemented through John DeWitt's Public Proclamation Number 1. In a book comparing it to a twenty-first-century policy, Michelle Malkin defended it. This policy resulted in the creation of Tule Lake and Manzanar in California. Authorized by Executive Order 9066, its legality was upheld in *Korematsu v. United States*. For 10 points, name this World War II-era policy that resulted in the relocation of many Asian-Americans.

ANSWER: **Japanese internment** [or **internment of Japanese** Americans]

052-12-73-07132

2. Two cyclopentadienyl (SIKE-lo-pent-uh-die-EE-nul) rings coordinated to this element result in a very stable organometallic compound. For all elements before this element, nuclear fusion releases energy, resulting in its namesake peak. In the most common form of the thermite reaction, aluminum reacts with an oxide of this element. Like nickel and cobalt, it is permanently magnetized. The conversion of this element's +2 ion to +3 happens in rusting. For 10 points, name this element with symbol Fe.

ANSWER: **iron** [or **Fe**]

020-12-73-07133

3. At the beginning of this play, one character arrives on a ship called the *Amelia*. That woman is a member of the League of Humanity. At this play's conclusion, Helena and Primus declare their love for each other, which leads Alquist to call them the new Adam and Eve. Dr. Gall and Fabry are engineers that create the title characters at a factory which is overseen by Domin. For 10 points, name this Karel Capek play which introduced the word "robot."

ANSWER: **R.U.R.** [or **Rossum's Universal Robots**]

192-12-73-07134

4. The axons of this nerve terminate in the layers of the lateral geniculate nucleus, and inflammation of this nerve can be diagnosed by fundoscopic exam. This nerve is the site of damage in a mitochondrial disorder named for Leber. Large tumors of the pituitary impinge on this nerve's chiasm, which causes bitemporal hemianopia. This nerve is formed from the axons of the ganglion cells of the retina. For 10 points, name this cranial nerve that carries signals from the eye.

ANSWER: **optic** nerve [or cranial nerve **II** or **two**]

048-12-73-07135

5. This character borrows a horse from the old farmer Hans Van Ripper, with whom he is temporarily lodging. He develops a rivalry with Brom Van Brunt after both of them vie for the hand of the beautiful Katrina Van Tassel. This man is never seen again after he is chased by what he thinks to be the ghost of a Hessian soldier, but what turns out to be a rider with a pumpkin. For 10 points, name this schoolteacher who encounters the Headless Horseman in "The Legend of Sleepy Hollow."

ANSWER: **Ichabod** Crane [or Ichabod **Crane**]

015-12-73-07136

This is a calculation question. What is the base 2 logarithm of 256?

ANSWER: **8**

The natural acidity of rainwater is mostly due to what dominantly emitted greenhouse gas?

ANSWER: **carbon dioxide** [or **CO₂**]