



1. One experiment originally performed by this man was re-done by Claus Jönsson using electrons. He is the namesake of a value, symbolized E , which is calculated as tensile stress of tensile strain. This namesake of a modulus used in mechanics performed an experiment in which an interference pattern of alternating bright and dark bands was produced by the namesake setup. For 10 points, identify this physicist who showed the wave nature of light in his double-slit experiment.

ANSWER: Thomas **Young**

189-12-73-06101

2. This poet sees a man “by the pale dull pallor of an old gas-light” who “slept like a rock or a man that’s dead” after performing a “drowsy, syncopated tune” in one poem. He claimed “They’ll see how beautiful I am and be ashamed” in his “I, Too, Sing America.” This author of “The Weary Blues” inspired a Lorraine Hansberry title by asking, “Does it dry up like a raisin in the sun?” after asking, “What happens to a dream deferred?” For 10 points, name this Harlem Renaissance poet.

ANSWER: Langston **Hughes** [or James Mercer Langston **Hughes**]

104-12-73-06102

3. The first one of these events in Ireland took place at Rechru in 795. An agreement to prevent these events was the Treaty of Saint Clair-sur-Epte, which led to the foundation of a duchy by a leader of these actions, Rollo. An event of this kind destroyed the cover of the Lindisfarne gospels. These events often targeted the wealth of monasteries and were perpetrated from longboats. For 10 points, name these events that terrorized medieval societies and resulted in plunder being taken to Norway.

ANSWER: **Viking raids** [or obvious equivalents]

019-12-73-06103

4. An atom of this element is triple bonded to carbon in cyanides, while azides contain three atoms of it. Saltpeters are one source of this element. Hydrazine contains two atoms of this element. An industrial process involving this element uses an iron catalyst in a reaction that breaks a triple bond. This element is combined with hydrogen to form ammonia in the Haber process. Its diatomic form is the most common compound in the atmosphere. For 10 points, name this gaseous element with symbol N.

ANSWER: **nitrogen** [or **N** until it is read]

140-12-73-06104

5. The protagonist of this novel does not understand why Miss Caroline gives Walter Cunningham a quarter for lunch when he can never repay her. A persistent rumor holds that Truman Capote is its real author. In this novel, Boo Radley saves the protagonist when she is attacked by Bob Ewell. In its main plot, Tom Robinson is wrongfully accused of rape by Mayella Ewell. For 10 points, name this Harper Lee novel about the Maycomb resident Scout and her lawyer father Atticus Finch.

ANSWER: ***To Kill a Mockingbird***

015-12-73-06105

6. One type of this device was created using copper sulfate and zinc sulfate by John Frederick Daniell. In a different type of this device, two reactions are connected by means of a salt bridge. Some of these devices suffer from memory effect, although one reusable form of this device, without memory effect, works using lithium ions. For 10 points, name these devices that create energy between a cathode and an anode to produce electrical power.

ANSWER: **battery** [or **batteries**; or **Galvanic cells**; or **voltaic cells**; or **electrochemical cell**; prompt on **cell**]

023-12-73-06106

7. This school's football team claims retroactive national titles in 1919 and 1927, when they were coached by Dana X. Bible. In 2012, this team's defense was led by defensive end Damontre Moore. Under first-year coach Kevin Sumlin, this team claimed a 10-2 record in its first year in the SEC while quarterbacked by Heisman Trophy winner Johnny Manziel. For 10 points, name this university based in College Station, Texas, whose supporters may yell "Gig 'em Aggies!"

ANSWER: **Texas A&M** University Aggies [or **Texas Agricultural & Mechanical** University; prompt on **Aggies**; do not accept or prompt on "Texas"]

140-12-73-06107

8. Horace claimed that works in this genre should begin not "from the egg" but "in medias res." The *Pharsalia* is an example of this genre which describes the war between Caesar and Pompey. That work's structure is based on an earlier example of this genre about the forebears of Rome. Works in this genre often begin with invocations of the Muse. For 10 points, name this type of long narrative poem, classical examples of which include the *Iliad*.

ANSWER: **epic** poem

121-12-73-06108

9. Members of this phylum possess a structure that generates mucus to aid in food transportation, called an endostyle. Many members of this phylum retain pharyngeal slits for their entire lives, particularly those dwelling in aquatic habitats. At some stage in their development, all members of this phylum possess a post-anal tail, and members of this phylum also have a dorsal, hollow nerve bundle. For 10 points, name this phylum including the vertebrates, such as fish, birds, and humans.

ANSWER: **Chordata** [or **chordates**]

014-12-73-06109

10. This author created a hypothetical sister of Shakespeare who is unable to express her literary genius in the essay *A Room of One's Own*. In the section "Time Passes" in one of her novels, the narrator describes the deaths of Andrew, Prue, and their mother, Mrs. Ramsey. In that novel, the Ramsays' vacation home in the Hebrides is near the title structure. For 10 points, name this author of *Mrs Dalloway* and *To the Lighthouse*.

ANSWER: Virginia **Woolf** [or Adeline Virginia **Stephen**]

121-12-73-06110

11. This man rhetorically asked "Must hope disappear? Is defeat final? No!" in a BBC radio address directed towards his countrymen. Jacques Massu threatened his country's capital with paratroopers unless this man were put in charge, which led to the creation of a new constitution under this man and the Fifth Republic. This man's general Phillipe Leclerc liberated Paris from the Germans in 1944. For 10 points, name this French president and World War II leader of the Free French.

ANSWER: Charles Andre Joseph Marie **de Gaulle**

121-12-73-06111

12. For a cumulative distribution function, this name is given to the value of the input for which the output equals one-half. The point of intersection of the segments of this name divides each one into segments whose lengths form a two-to-one ratio. That point of intersection in a triangle is called the centroid. This name is also given to the segment that connects the midpoint of a side of a triangle to its opposite site. For 10 points, give this term that names the second quartile, or "middle," of a data set.

ANSWER: **median**

131-12-73-06112

13. This architect engraved the motto "For the worship of God and the service of man" above the entrance to a Chicago church separated into two cubes, the Unity Temple. This architect designed the Robie House in Hyde Park, an example of his "Prairie Style." He named his studio and summer home after a Welsh bard, and he designed a heavily-cantilevered house for the Kaufmann family. For 10 points, name this American architect who designed Taliesin (tal-ee-EY-sin) and Fallingwater.

ANSWER: Frank Lloyd **Wright**

080-12-73-06113

14. The speaker of this poem asks, "What men or gods are these? What maidens loth? What mad pursuit? What struggle to escape?" Later, the speaker describes a love "forever warm and still to be enjoyed, forever panting, and forever young." At this poem's conclusion, the title object famously states, "Beauty is truth, truth beauty." For 10 points, name this John Keats poem about a certain piece of classical artwork.

ANSWER: "**Ode on a Grecian Urn**"

014-12-73-06114

15. The Moro Islamic Liberation Front has fought for independence on this country's island of Mindanao. One of the most active volcanoes in this country is Mount Mayon. One of the largest volcanic eruptions of the twentieth century occurred at this country's Mount Pinatubo. Its largest and most populous island is Luzon. The South China Sea separates this country from the mainland. For 10 points, name this island nation in southeast Asia, whose capital is Manila.

ANSWER: Republic of the **Philippines** [or Republika ng **Pilipinas**]

140-12-73-06115



1A. What ancient Persian prophet told of a cosmic struggle between the good Ahura Mazda and the evil Ahriman in his namesake religion?

ANSWER: **Zoroaster** [or **Zarathustra**; or **Zartosht**]

1B. What Representative of California's 8th district has served as House Minority Leader since 2011?

ANSWER: Nancy **Pelosi** [or Nancy Patricia **D'Alesandro**]

2A. This is a 20-second calculation question. The outside of a cube is painted just before it is cut into 27 new cubes, each of equal volume. How many total faces of the 27 new cubes are painted?

ANSWER: **54**

2B. This is a 20-second calculation question. What is the period of the function defined by $y = 3 + 2 \sin(4x + \frac{\pi}{6})$?

ANSWER: **$\frac{\pi}{2}$**

3A. What court painter to Charles IV of Spain created *The Naked Maja* and made the grim Black Paintings after going deaf?

ANSWER: Francisco Jose de **Goya** y Lucientes

3B. What precious metal did Loki use in Norse mythology to replace the hair he cut off of Thor's wife, Sif?

ANSWER: **gold**

4A. What term in mathematics denotes the point "zero, zero" in the Cartesian coordinate system?

ANSWER: the **origin**

4B. What theory of Sigmund Freud is a psychological issue in which boys vie with the father for the exclusive love of their mothers?

ANSWER: **Oedipus** complex

5A. What European country is changing its stance on abortion in the wake of the October 2012 death of Savita Halappanavar?

ANSWER: **Ireland** [or **Eire**]

5B. A read-write head running along an infinite tape makes up a "machine" which can simulate any algorithm and is named for what English computer scientist?

ANSWER: Alan **Turing**

6A. Which Sioux chieftain outlived his major Sioux ally Crazy Horse, with whom he fought at Little Bighorn?

ANSWER: **Sitting Bull** [or **Tatanka Iyotake**]

6B. The kingdom of Ghana became rich by managing the trade of gold from its south for what other resource from its north?

ANSWER: **salt**

7A. Name the company that created the *New 52* event to relaunch titles such as *Detective Comics*, *Action Comics*, and *Justice League of America*.

ANSWER: **DC** Comics, Inc. [or **DC** Entertainment; prompt on **Warner** Bros. Entertainment; prompt on Time-**Warner** Inc.]

7B. What type of cloud, with a characteristic anvil-shaped appearance, can evolve into supercells and form squall lines?

ANSWER: **cumulonimbus**

8A. This is a 30-second calculation question. The Cardinals need to win at least two of their last three games to make the playoffs. If their true probabilities of winning those games are 80%, 50%, and 40%, respectively, what is the probability that they make the playoffs?

ANSWER: **0.6** [or **60%**]

8B. This is a 30-second calculation question. A boat makes a 96-mile journey downriver in 4 hours and travels back upstream in 6 hours. What is the speed of the boat in still water?

ANSWER: **20** miles per hour

9A. What English scientist estimated the age of the Earth with heated cannonballs and created a temperature scale that starts at absolute zero?

ANSWER: William **Thomson** [or Lord **Kelvin**; or Baron **Kelvin**]

9B. What term denotes an operation used to determine whether or not an object is chiral, as well as the way light bounces off a mirror, in optics?

ANSWER: **reflection**

10A. What innovative French author wrote the seven-volume novel *In Search of Lost Time*?

ANSWER: Marcel **Proust**

10B. What is the most populous city in Oregon?

ANSWER: **Portland**



1. This playwright depicted the title conqueror's love for Zenocrate in the two-part play *Tamburlaine the Great*. In another of his plays, Ferneze turns a trap involving a boiling cauldron on its deviser, Barabas. In his most famous play, the title character asks, "Was this the face that launched a thousand ships?" and sells his soul to Mephistopheles. For 10 points, name this playwright of *The Jew of Malta* and *Doctor Faustus*.
ANSWER: Christopher **Marlowe**

014-12-73-06117

2. Early in his career, this President was given the epithet "Napoleon of the Stump" for his skills as an orator. He was the first "dark horse" candidate to become President. This politician's election campaign was associated with the slogan "Fifty-four forty or fight!" During his presidency, the United States acquired vast territories through the Treaty of Guadalupe Hidalgo. For 10 points, name this President who oversaw the Mexican-American War.
ANSWER: James Knox **Polk**

014-12-73-06118

3. Because relative permeability is usually one, this quantity can be approximated as the square root of relative permittivity. This quantity can be negative in artificial metamaterials. The arctangent of the ratio of this quantity for two different materials yields Brewster's angle. This quantity is 1.33 for water, and it is calculated as the ratio of the speed of light in a vacuum to the speed of light in a substance. For 10 points, identify this quantity appearing in Snell's law, which is symbolized n .
ANSWER: **index of refraction** [or **refractive index**; prompt on **n** until it is read]

189-12-73-06119

4. In this language, the pluperfect tense is formed with verb endings that include the letters "era." This language features a form of subordinate clause that uses an infinitive main verb next to verbs of saying or thinking, and absolute clauses where a participle and a noun are both in the ablative case. Nominative second declension masculine nouns in this language end in "-us." For 10 points, name this language whose ecclesiastical or "Church" form survived the Roman Empire.
ANSWER: **Latin**

104-12-73-06120

5. The protagonist of this work orders his daughter to dig up her *iyi uwa*, believing her to be a spirit who is born and dies to re-enter her mother's womb. The protagonist of this work is banished to his mother's village after his gun explodes during a festival. His other bad luck includes having to kill his foster son, Ikemefuna (IK-ey-muh-FOO-nuh). This novel tells of the decline of a wrestler named Okonkwo. For 10 points, name this novel by Chinua Achebe.
ANSWER: **Things Fall Apart**

080-12-73-06121

6. A scaled-down replica of the Statue of Liberty is in this city's "Isle of the Swans." The Boulevard Périphérique (PER-uh-FER-eeek) runs along its border. This city is divided into twenty administrative units which spiral out from the center and are called arrondissements (ah-RON-diss-montz). The Boulevard Saint-Germain (son jur-MON) runs through its Latin Quarter and was built during Baron Haussmann's renovation. For 10 points, name this city that contains the Arc de Triomphe and Eiffel Tower.
ANSWER: **Paris**, France

121-12-73-06122

7. This phenomenon will occur spontaneously when Z squared over A is greater than 49, according to the semi-empirical mass formula. That occurs when electrostatic repulsion overcomes the attractive strong force. In this phenomenon, delayed neutrons are released from daughter nuclides through beta decay. Above the critical mass, this process occurs as a chain reaction, necessitating the use of control rods. For 10 points, name this process used in most nuclear reactors, in which an atom is split.

ANSWER: nuclear **fission** [do not accept "fusion"]

190-12-73-06123

8. This artist sang about migrant farm workers dying in a plane crash en route to being deported to Mexico in his song "Deportee." Billy Bragg and Wilco recorded an album of his previously unrecorded music entitled *Mermaid Avenue*. He removed a verse decrying private property from his most famous song, which mentions an "endless skyway" above a "ribbon of highway" and concerns the area "from California, to the New York Island." For 10 points, name this folk musician who wrote "This Land is Your Land."

ANSWER: Woodrow "Woody" **Guthrie**

030-12-73-06124

9. One holder of this office resigned to serve as ambassador to England in the face of impeachment in 1932. That man, who earlier formed the Union Trust Company with Henry Clay Frick, was Andrew Mellon. The longest this position has been held was thirteen years by Albert Gallatin. The first holder of this office feuded with Secretary of State Thomas Jefferson and was killed in a duel by Aaron Burr. For 10 points, name this position held under George Washington by Alexander Hamilton.

ANSWER: **Secretary of the Treasury** [or **Treasury Secretary**]

014-12-73-06125

10. This author described one place as "next to smallest" in a work that features a kimono-wearing uncle who enjoys sleeping in hammocks. Shirley-T is in that work by this author, who also described Phoenix Jackson's journey down "A Worn Path" in her collection *A Curtain of Green*. "Sister" moves to the title location because of Stella-Rondo's mischief in one work by this author. For 10 points, name this Mississippian author of *Delta Wedding* and "Why I Live at the P.O."

ANSWER: Eudora **Welty**

149-12-73-06126

11. This man played the New Penzance police captain in *Moonrise Kingdom*. At the end of another movie, his character learns that he was dead for almost the whole film and helps Cole adjust to his sixth sense. In the first film of a series, he defends Nakatomi Plaza against a group of terrorists led by the Alan Rickman-played Hans Gruber. For 10 points, name this actor who plays John McClane in the *Die Hard* series.

ANSWER: Bruce **Willis**

121-12-73-06127

12. Supposedly, prior to a battle at this location, Moses Rose was the only man to not cross a line in the sand. James Fannin failed to join the losing side at this location, which led to his troops being massacred at Goliad. Troops at this location were led by William Travis. Both Davy Crockett and James Bowie died defending this location, which was "remembered" by Sam Houston's troops at San Jacinto. For 10 points, Santa Anna captured what San Antonio mission during the Texas Revolution?

ANSWER: Battle of the **Alamo**

149-12-73-06128

13. This disease's pathogenesis is linked to a 42-amino acid cleavage product of a protein that can be cleaved into 37 to 49 amino acid products. This disease is caused by buildup of beta-amyloid plaques and by hyper-phosphorylation of the microtubule-associated protein tau. In its later stages, verbal skills and loss of long-term memory occurs. For 10 points, name this neurological disease which causes dementia and memory loss, named for a Frenchman.

ANSWER: **Alzheimer**'s disease

048-12-73-06129

14. This composer wrote a work concluding "O Death, How Bitter is the Remembrance of Thee" on the occasion of his friend Clara Schumann's death. This composer of *Four Serious Songs* wrote a work that begins with the line "Blessed are they that mourn." He included the student song "Gaudeamus Igitur" in a work composed to commemorate his honorary doctorate from the University of Breslau. 10 points, name this German composer of the *Academic Festival Overture* and *German Requiem*.

ANSWER: Johannes **Brahms**

030-12-73-06130

15. This male god had Coronis killed for cheating on him, and he accidentally killed a different lover, Hyacinthus, with a discus. In one myth, his newborn brother Hermes stole some of his cattle and covered their tracks. This god slew the Python that had guarded Delphi. Daphne turned into a laurel to escape this god's advances. This god was the twin of Artemis and the father of Orpheus. For 10 points, name this son of Zeus and Leto who was the Greek god of light and music.

ANSWER: **Apollo**

030-12-73-06131



1. The protagonist of this novel is surprised when Mrs. Phelps breaks down in tears after he reads her a poem. It ends after that protagonist goes off to join a group of hobos led by Granger. This novel is divided into the sections "The Hearth and the Salamander," "The Sieve and the Sand," and "Burning Bright." The protagonist of this novel kills Captain Beatty after Professor Faber and the teenaged Clarisse startle him from his complacency. For 10 points, name this Ray Bradbury novel about Guy Montag.

ANSWER: **Fahrenheit 451**

015-12-73-06132

2. An example of this law in action occurs during breathing when the diaphragm raises and lowers. This law is sometimes named for a Frenchman who also discovered it, named Edme Mariotte. This law can be described by the equation " pV equals k ," with k representing a constant for a given temperature. For 10 points, name this gas law that states pressure is inversely related to volume, and which forms the combined gas law with Charles's law and Gay-Lussac's law.

ANSWER: **Boyle's law** [or **Boyle-Mariotte law**]

023-12-73-06133

3. Eleanora Gonzaga commissioned the baroque Schonbrunn palace in this city while married to the ruling Holy Roman Emperor, Ferdinand II, who lived in it. The Polish king Jan III Sobieski defended one attack on this city, which withstood 1683 and 1526 sieges by the Ottoman Empire. Castlereagh and Talleyrand met with Klemens von Metternich during an 1814 to 1815 Congress in this city. For 10 points, name this Habsburg capital in Central Europe.

ANSWER: **Vienna** [or **Wien**]

104-12-73-06134

4. This author wrote about the theft of the veil of Tanit in *Salamambo*. Vargas Llosa's *Bad Girl* is a retelling of a work by this author. In that work by this author, the pharmacist Homais and the title character's spouse Charles botch the surgery of the club-footed Hippolyte. The title character of that work by this man has an affair with Leon and Rodolphe, whose refusal to give her money causes her to ingest arsenic. For 10 points, name this French author of *Madame Bovary*.

ANSWER: Gustave **Flaubert**

149-12-73-06135

5. Psilocybin, the active compound in hallucinogenic mushrooms, works by binding to the receptors of this compound. This compound is released by carcinoid tumors, and in the brain it is primarily secreted by the raphe nucleus. Also known as 5-hydroxy-tryptamine, this neurotransmitter is created from tryptophan. A common class of antidepressants selectively inhibits the reuptake of this neurotransmitter. For 10 points, name this monoamine neurotransmitter important in controlling sleep and mood.

ANSWER: **serotonin** [or **5-hydroxytryptamine** until it is read; or **5-HT** until "5-hydroxytryptamine" is read]

048-12-73-06136

This is a calculation question. What is the median of the following set of numbers: 2, 6, 8, -5, -2, 1, 7, 1, 0?

ANSWER: **1**

On September 11, 2001, United Airlines Flight 93 crashed in a field in what state as passengers attempted to take control of the jet from hijackers?

ANSWER: **Pennsylvania**