



1. The energy density of this quantity is given by one-half times permittivity times the magnitude of this quantity squared. The divergence of this quantity is equal to charge density over epsilon naught, according to the differential form of Gauss's Law. For two point charges, this value will be k times the charge q over the distance squared, as given by Coulomb's law. For 10 points, name this vector field, the force exerted by charged particles, which is represented in volts per meter.

ANSWER: the electric field [or E]

126-12-55-03101

2. During World War II, this was the only country whose officers Adolf Hitler allowed to keep their swords upon surrendering. The Battle of Navarino ended one war for this country, after which it was ruled by a Bavarian king named Otto. During that war for independence, people from this country were slaughtered on Chios (KEY-ohs) by Ottoman forces. For 10 points, name this country that in 2011 saw a debt crisis lead to the resignation of Prime Minister George Papandreu (pah-pahn-DRAY-oo).

ANSWER: Greece [or Hellenic Republic; or Ellas; or Ellada; or Elliniki Dhimokratia]

141-12-55-03102

3. The anterior origin of this river is the Lai da Tuma (LYE dah TOO-mah), and a secondary source of this river is the Paradies Glacier. The Teutoberg Forest massacre solidified it as the northern border of the Roman Empire. The Moselle flows into this river near Koblenz, and the Main flows into it near Bingen. Emptying into the North Sea at multiple points in the Netherlands, this river notably flows past the cities of Bonn, Basel and Cologne. For 10 points, name this important river of western Germany, an area sometimes called its "land."

ANSWER: Rhine River

141-12-55-03103

4. At its height, this city's might was opposed by Pope Julius II and the League of Cambrai. It was largely governed by the Council of Ten. This city's leader Enrico Dandolo diverted the forces of the Fourth Crusade to Constantinople. Known as the Most Serene Republic, this city was, like its rival Genoa, led by doges. This city was the center of a republic whose navy dominated the Mediterranean during the Renaissance. For 10 points, name this Italian city famed for its canals.

ANSWER: Republic of Venice

015-12-55-03104

5. Anisotropic (AN-iy-soh-troh-pick) materials in which this quantity changes along different directions are birefringent (buy-ree-FRIN-gent). This quantity was measured in the Michelson-Morley experiment, which showed that it is the same in all reference frames. According to special relativity, no object can exceed this value, though scientists at CERN claimed to observe neutrinos doing so in 2011. For 10 points, identify this speed denoted c , at which electromagnetic radiation such as visible and infrared rays travel.

ANSWER: the speed of light [or c before it is read]

132-12-55-03105

6. A series of early color photographs taken of this country's rural areas in 1909 depicts people such as the Khan of Khiva and a woman from Dagestan (DAH-guh-stahn). One federal subject of this country is the Krasnodar Krai, which is divided by the Kuban River. Other rivers that flow through this country include the Amur (AA-murr), the Yenisei (YEN-iss-ey), and the Lena. Countries bordered by this nation include Kazakhstan, Latvia, Norway, and North Korea. For 10 points, name this country, the physically largest in the world.

ANSWER: **Russian** Federation

088-12-55-03106

7. Some members of this phylum have bodies mostly composed of mesoglea (meh-soh-GLEE-uh). Dried colonies of one class in this phylum, Hydrozoa, are known as "air ferns." The Portuguese Man o' War is a member of this phylum which may contain a type of sensory cilia used as a triggering device. Many members of this phylum have nematocysts (neh-MAH-toh-sists) which inject venom into prey, and members of this phylum have the basic body forms of medusas or of polyps. For 10 points, identify this marine phylum which includes corals and jellyfish.

ANSWER: **cnidarians** (nih-DARE-ee-uhns) [or **ctenophores** or **Ctenophora** before "Hydrozoa" is read]

126-12-55-03107

8. This jurist's nomination to the Supreme Court was opposed by a heavily criticized TV ad featuring an abortion clinic director who was injured by the Eric Rudolph bombing in 1998. Before becoming a judge, he represented a number of states in the Microsoft anti-trust case. In 2009, he accidentally left out the word "faithfully" while administering the Presidential oath of office, leading to the ceremony being repeated in private. Earlier, he served as a law clerk for William Rehnquist, whose seat this man was appointed to by George W. Bush in 2005. For 10 points, name the current Chief Justice of the Supreme Court.

ANSWER: John Glover **Roberts, Jr.**

088-12-55-03108

9. Glands found in this organ include the crypts of Lieberkuhn (LEE-burr-koon) and Brunner's glands, and clumps of lymphoid tissue found in this organ include Peyer's patches. This organ's walls are lined with enterocytes (en-TEH-roh-sites), which support microvilli absorption of food. This organ is divided into the duodenum (doo-AH-deh-num), jejunum (jeh-JOO-num), and ileum (EE-lee-um), which is connected to the colon by the cecum (SEE-kum). For 10 points, identify this digestive organ which absorbs nutrients and is connected to the stomach.

ANSWER: **small intestines** [do not accept "large intestine"; prompt on **intestines**]

126-12-55-03109

10. Characters in this novel include the safecracker Jack Duane. In this book, Antanas drowns in front of his house, and the protagonist's inability to find a midwife for Ona leads to her death during the birth of their second child. Although intended to promote socialism, this 1906 novel about the Lithuanian immigrant Jurgis Rudkus helped pass the Pure Food and Drug Act. For 10 points, name this muckraking novel which exposed the Chicago meatpacking industry, a work by Upton Sinclair.

ANSWER: *The **Jungle***

088-12-55-03110

11. Ten of these substances cannot be synthesized by humans and must be supplied from the diet, making them known as "essential." An inability to metabolize one of these compounds leads to phenylketonuria (fee-noll-kee-toh-NEW-ree-ah). The only acidic ones are aspartic acid and glutamic acid. They were created using a group of simple organic compounds in the Miller-Urey experiment. One of sixty-four codons (CODE-onz) determines which one of these substances will be synthesized. For 10 points, name these compounds, the building blocks of proteins.

ANSWER: **amino acids**

131-12-55-03111

12. This author wrote one work about London and Jim Nolan, who are fruit workers striking for better conditions. In addition to writing *In Dubious Battle*, this author narrated one novel as the grandson of Liza and Samuel Hamilton. That novel features Caleb and Aaron, the sons of Adam Trask. Another of his novels features Jim Casy and centers on the Joad family as they are driven from Oklahoma by the Dust Bowl. For 10 points, name this American novelist of *East of Eden* and *The Grapes of Wrath*.

ANSWER: John Ernst **Steinbeck**

141-12-55-03112

13. A Saturday Night Live cold open saw this person pitch baby urine while interviewing Lindsay Lohan. In early 2011, this man lived with a pair of women he referred to as his "goddesses." A train accident led to the funeral of Charlie Harper, a character played by this man, opening the most recent season of a show created by Chuck Lorre. For 10 points, name this actor who, after a rash of bad publicity or "winning," was written out of *Two and a Half Men*.

ANSWER: **Charlie Sheen** [or **Carlos Irwin Estevez**; prompt on **Sheen**; prompt on **Estevez**]

002-12-55-03113

14. In one novel by this author, the protagonist flees to Canada with the manager of Fitzgerald and Moy's after becoming the mistress of the traveling salesman Charles Drouet. That protagonist finds a career on Broadway and abandons George Hurstwood. In another novel by this author, the protagonist works in his uncle's collar factory in Lycurgus, where he meets Roberta Alden, whom he drowns after she becomes pregnant. For 10 points, name this author of *Sister Carrie* who created Clyde Griffiths in *An American Tragedy*.

ANSWER: Theodore **Dreiser**

141-12-55-03114

15. This man was killed at the court of Cocalus (coh-CAH-lus) after issuing a challenge to thread a seashell. He employed Perdix's uncle at one point, but later imprisoned him in a tower. This man's daughter married Dionysus after being abandoned on Naxos. One structure owned by this husband of Pasiphae (PASS-ih-fay) was built by Daedalus and successfully traversed thanks to a thread that Ariadne gave Theseus. For 10 points, name this king of Crete whose labyrinth housed a namesake half-man, half-bull.

ANSWER: **Minos**

142-12-55-03115



1A. In what country did former revolutionary Dilma Rousseff succeed Lula da Silva as president on New Year's Day 2011?

ANSWER: **Brazil**

1B. What is the term for a collision in which kinetic energy is conserved?

ANSWER: **elastic**

2A. This is a 10-second calculation question. The point (a, b) is reflected about the y-axis and then rotated ninety degrees about the origin. In terms of a and b, what is the position of the new point?

ANSWER: **(-b, -a)**

2B. This is a 10-second calculation question. In simplest form and in terms of pi, what is the volume of a sphere with radius 3?

ANSWER: **36 pi**

3A. What psychological effect, hypothesized to explain the murder of Kitty Genovese, names the phenomenon of a person being less likely to help someone in need if there are more people around?

ANSWER: **bystander** effect

3B. What triple-meter dance is paired with a trio in a common musical form of the Classical period?

ANSWER: **minuet**

4A. Name the syncretic monotheistic religion, which preaches tolerance and the continuation of Islamic prophecy beyond Muhammad, and was founded in nineteenth-century Iran by Bahauallah (BAH-hah-OO-luh).

ANSWER: **Bahai** Faith

4B. What national park in southwestern Utah is famed for its spire-like protrusions called "hoodoos?"

ANSWER: **Bryce Canyon** National Park

5A. Name the political philosopher who described the "experience machine" in his response to John Rawls, *Anarchy, State, and Utopia*.

ANSWER: Robert **Nozick**

5B. What two letters denote the sex-determining chromosomes of birds, as well as the bosons that carry the weak nuclear force?

ANSWER: **W and Z** [accept in either order]

6A. This is a 20-second calculation question. If you are rolling two fair dice and are given that the first die shows a 1, what is the probability that the sum of the two dice will be an integer power of 2?

ANSWER: **1/3** [or **0.33** repeating]

6B. This is a 20-second calculation question. Solve for x and y in the system of equations $3x + 5y = 7$, $11x + 13y = 17$.

ANSWER: **x = -3/8, y = 13/8**

7A. In October 2011, Stephen Tulloch of the Lions performed what action, which involves kneeling in prayer on a football field, after scoring a sack on its namesake?

ANSWER: **Tebowing**

7B. What Chinese language is primarily spoken in Southern China, such as in Guangzhou (gwang-JOE) and Hong Kong?

ANSWER: **Cantonese** [or **Yueyu**]

8A. This is a 30-second calculation question. If an African swallow flies 30 miles into the wind in 2 hours and returns with a tailwind in 90 minutes, what is its speed in the absence of any wind? Express your answer as a decimal to the tenths place.

ANSWER: **17.5 miles per hour**

8B. This is a 30-second calculation question. In simplest terms, what is the variance of the numbers {4, 6, 6, 7, 10, 11, 19}?

ANSWER: **152/6** [or **25 1/3**]

9A. Name the German emperor who removed Bismarck from power at the start of his reign and was forced to abdicate in 1918.

ANSWER: **Wilhelm II** [or **Friedrich Wilhelm Viktor Albert**; prompt on **Wilhelm**]

9B. What event, researched at locations like the Chicxulub (CHIK-shoo-loob) crater, resulted in the extinction of the dinosaurs 65 million years ago?

ANSWER: **K-T extinction** event [or **Cretaceous-Tertiary extinction** event; or **Cretaceous-Paleogene extinction** event]

10A. What means of putting a computerized list in order has "quick" and "bubble" types?

ANSWER: **sort**

10B. What French composer is best known for writing the operas *Manon*, *Thais* (TYE-iss), and *Werther* (VER-tur)?

ANSWER: Jules **Massenet**



1. One character in this work who enjoys catching raindrops in her mouth is forced to see a psychiatrist. That character talks to the protagonist of this work about dandelions and is later hit by a car. After a discussion of imminent war in this novel, a reading of "Dover Beach" shocks Mildred's friends. The protagonist of this work escapes from the Mechanical Hound with the help of the retired English professor Faber. For 10 points, name this novel about the book-burning fireman Guy Montag, written by Ray Bradbury.

ANSWER: *Fahrenheit 451*

105-12-55-03117

2. In one story by this man, an unusual copy of the *Anglo-American Cyclopaedia* turns out to be the work of a secret society devoted to inventing an entire idealist world. That story, "Tlön, Uqbar (OOK-bar), Orbis Tertius," appeared in the same collection as a story whose narrator learns the title location is actually a "chaotic novel" his ancestor wrote. In that story, sinologist Stephen Albert is shot by the spy Yu Tsun. For 10 points, name this Argentinian author of "The Garden of Forking Paths."

ANSWER: Jorge Luis Borges (HOR-hay loo-EES BOR-hays)

121-12-55-03118

3. This artist painted two portraits of *The Honorable Mrs. Graham* and painted *Cornard Wood*, which came to be known as this artist's "forest." A dog sniffs a musket held by a figure who leans on a bench, where a woman sits in a light blue dress, in another painting by this artist. For 10 points, name this artist who painted *Mr. and Mrs. Andrews* and *The Blue Boy*.

ANSWER: Thomas Gainsborough

124-12-55-03119

4. In this novel, Hippolyte (ipp-oh-LEET) suffers from gangrene after a failed attempt to treat his clubfoot. Monsieur Lheureux (loo-ROE) orders the seizure of the title character's property after she cannot repay her debts to him. Leon Dupuis (doo-PWEE) and Rodolphe Boulanger (BOO-lahn-ZHAY) both have affairs with the title character of this novel, who commits suicide by taking arsenic. The title character of this novel is bored by her marriage to the incompetent country doctor, Charles. For 10 points, name this novel about an adulteress by Gustave Flaubert (floe-BAIR).

ANSWER: *Madame Bovary*

080-12-55-03120

5. In one of this man's works, the shooting of workers by the army is cross-cut with the slaughter of cattle. In addition to *Strike*, he directed a film that was praised for its portrayal of the title character, who must contend with his aunt Efrosinia. In another work, the Teutonic Knights are defeated at the Battle of the Ice. Imperial soldiers massacre civilians as they march down the Odessa steps in one of this man's most famous movies. For 10 points, name this Russian director of *Alexander Nevsky*, *Ivan the Terrible*, and *Battleship Potemkin*.

ANSWER: Sergei Eisenstein

127-12-55-03121

6. In one novel by this author, Lukashka and Olyenin compete for the love of Maryanka. This author of *The Cossacks* also wrote about a man who looks to Gerasim for comfort as he slowly dies after injuring himself while hanging curtains. In another novel by this author, Count Vronsky joins the army after the death of his lover, who throws herself in front of a train. For 10 points, name this Russian writer of *The Death of Ivan Ilyich* and *Anna Karenina*.

ANSWER: Leo **Tolstoy** [or Lev Nikolayevich **Tolstoy**]

088-12-55-03122

7. The *Magellan* probe mapped the surface of this planet, which includes regions called tesserae (TEH-sah-ray). Its highest point, Maxwell Montes, is found in the Ishtar Terra region. There is no evidence for plate tectonics on the young surface of this planet, which exhibits retrograde motion. High amounts of sulfuric acid and carbon dioxide in its atmosphere cause a strong greenhouse effect, which gives it the highest surface temperatures in the solar system. For 10 points, name this second planet from the sun.

ANSWER: **Venus**

079-12-55-03123

8. Jane Austen's early work *Lady Susan* is written in this form. In the eighteenth century, popular examples of this form included the much-parodied Samuel Richardson works *Clarissa* and *Pamela*. *Dracula* is written in this form, although that work also utilizes ship's logs, while *Frankenstein* is an example of it because the story is told through the correspondence of Captain Robert Walton. For 10 points, identify this type of novel where the story is told through a series of letters.

ANSWER: **epistolary** novel [prompt on **novel**; prompt on **novella**]

052-12-55-03124

9. During this election, Lenora Fulani ran for the New Alliance Party and was the first woman to have ballot access in every state. Jesse Jackson finished second in the Democratic primaries, but Lloyd Bentsen was chosen as a running mate instead. During the Vice Presidential debate, Bentsen told his opponent, "you're no Jack Kennedy." This election was a Republican landslide, with Michael Dukakis as the loser. For 10 points, name this presidential election won by George Bush, Sr.

ANSWER: United States Presidential Election of 1988

127-12-55-03125

10. One of this writer's sonnets compares him to "some watcher of the skies when a new planet swims into his ken." Another begins with the line, "Bright star! Would I were steadfast as thou art." This poet of "On First Looking into Chapman's Homer" addressed a "season of mists and mellow fruitfulness" in his poem "To Autumn." Another of his poems addresses a "still unravish'd bride of quietness" which claims that "beauty is truth, truth beauty." For 10 points, identify this British Romantic poet of "Ode on a Grecian Urn."

ANSWER: John **Keats**

126-12-55-03126

11. One of these companies was controlled by "the Associates," who included Collis Huntington and Leland Stanford. Eugene Debs led an industry-wide strike of these companies' workers in solidarity with Pullman employees. One of these companies hired Oakes Ames to distribute stock for the puppet construction company *Crédit Mobilier*. For 10 points, name these companies that included Union Pacific and which theoretically connected the East and West Coasts with a golden spike at Promontory Point.

ANSWER: **railroad** companies [or **railway** companies; or obvious equivalents such as **railroad corporations**]

121-12-55-03127

12. In one of this man's works, the protagonist abandons Isabel Bradley and works with the coal miner Kosti. In addition to that novel about Larry Darrell, he wrote about Charles Strickland's decision to leave his wife to become a painter. This author of *The Razor's Edge* and *The Moon and Sixpence* also wrote a novel in which the clubfooted protagonist has an affair with the waitress Mildred before marrying Sally Athelny. For 10 points, name this British novelist who created Philip Carey in *Of Human Bondage*.

ANSWER: William Somerset **Maugham**

131-12-55-03128

13. One song by this band is an instrumental named after the town where the songwriter's friend was serving a prison sentence; that song is "Lisbon, OH." Another of their songs has lyrics such as "with all your lies, you're still very loveable" and begins "So apropos, saw death on a sunny snow." That song was the title track of an album, also including the song "Skinny Love," which was recorded in a Wisconsin barn over the course of one winter. For 10 points, name this band, primarily composed of Justin Vernon, who released *For Emma, Forever Ago* in 2008.

ANSWER: **Bon Iver**

141-12-55-03129

14. The presence of these objects prevents interconversion between cis and trans isomers (ICE-oh-merz). Their presence is the defining feature of most unsaturated fatty acids. Phosphoric acid has one of them between the hydrogen-less oxygen atom and the phosphorus atom. To form them, a pi interaction must be formed from two overlapping p orbitals. This kind of bond is found in carbon dioxide, as well as molecular sulfur and oxygen. For 10 points, name these covalent bonds in which four electrons are shared.

ANSWER: **double** bonds [prompt on **covalent** bonds or **pi** bonds before they are mentioned]

132-12-55-03130

15. One character in this work is abandoned after Molly Farren overdoses on opium, and the death of the horse Wildfire triggers another major event in this novel. The protagonist of this work left Lantern Yard after accusations of stealing. In this novel, Nancy Lammeter marries Godfrey Cass after Godfrey's brother Dunstan steals the title character's gold. For 10 points, name this work in which the title weaver adopts Godfrey's daughter Eppie, a short novel by George Eliot.

ANSWER: **Silas Marner**

131-12-55-03131



1. When this case was reargued, one side's representation switched from the named defendant to Bob Flowers. This case started when the plaintiff received help from the lawyers Sarah Weddington and Linda Coffee. The plaintiff in this case was Norma McCorvey, who filed suit against Dallas County district attorney following a failed attempt to lie about being raped to receive a medical procedure. For 10 points, name this 1973 Supreme Court case that established a woman's right to an abortion.

ANSWER: **Roe v. Wade** [or **Wade v. Roe**]

141-12-55-03132

2. Planes flown by this pilot included a yellow Kinner Airster nicknamed "The Canary." This aviator helped found the Ninety-Nines. This pilot made an attempt to fly around the world with Fred Noonan that got lost near Howland Island in the pair's Lockheed Electra 10E. For 10 points, name this American aviator who disappeared in 1937 and whose crossing of the Atlantic Ocean made her the first woman to fly solo across it.

ANSWER: Amelia Mary **Earhart**

088-12-55-03133

3. In polar coordinates, this curve is given by an equation that is inversely proportional to 1 over quantity 1 plus cosine of theta. If an object with this shape is mirrored, it will redirect parallel rays of light to its focus point. In rectangular coordinates, the slope of a tangent line of this curve at x is 2 times x . All points on this shape are equidistant from the focus point and the directrix line. For 10 points, name this curve, which in rectangular coordinates is produced by the equation y equals x squared.

ANSWER: **parabola**

121-12-55-03134

4. This ruler gave the city of Tiberias to Joseph Nasi as a center of Jewish emigration. His attempt to protect John Zapolya against Hapsburg claims led to the first siege of Vienna. The admiral Barbarossa conquered Tripoli for this ruler, who added Belgrade, Rhodes, and Hungary to his empire. This son of Selim the Grim greatly expanded the Ottoman Empire in the sixteenth century. For 10 points, name this sultan who thus earned the byname "magnificent."

ANSWER: **Suleyman** I [or **Suleyman** the Magnificent; or **Suleyman** the Lawgiver; or **Suleyman** Muhtesem; or **Suleyman** Kanuni]

019-12-55-03135

5. The most commonly used Lewis acid contains three atoms of this element bonded to aluminum. Compounds containing this element, fluorine and carbon were banned by the Montreal Protocol for causing ozone depletion. In gaseous form, it was used as a chemical weapon before mustard gas. It is used to purify drinking water and has the highest electron affinity. For 10 points, name this second-lightest halogen that is found in table salt and has chemical symbol Cl.

ANSWER: **chlorine** [accept **Cl** before it is read]

066-12-55-03136

This is a calculation question. Find the equation of the line perpendicular to $y = 3x + 7$ that passes through the point (6,2).

ANSWER: **$y = -1/3 x + 4$** [or **y equals negative one-third x plus four]**

066-12-55-03137

What constant is equal to Faraday's constant divided by the charge of an electron?

ANSWER: Avogadro's number [or Avogadro's constant; prompt on N_A]

066-12-55-03137