



1. Taking derivatives of a quantity found in an equation named for this man gives the Christoffel (kri-STAH-ful) symbols; that quantity is the metric tensor, which is multiplied by lambda in this man's namesake field equations. He called the cosmological constant his greatest blunder, and one of his theories predicted the precession of the perihelion of Mercury. For 10 points, name this scientist, who posited that mass curves space in order to create gravity in his theory of general relativity.

ANSWER: Albert Einstein

048-13-95-03101

2. The oldest fire-resistant building still standing in America is located in this city. Gian Carlo Menotti established the Spoleto Festival in this city. This city is home to an array of vivid pastel-colored houses known as Rainbow Row, and the Wando and Stono Rivers empty into its coast. A namesake tune by James P. Johnson served as the basis for a wildly popular 1920s dance craze named for this city. For 10 points, identify this coastal South Carolina city.

ANSWER: Charleston

020-13-95-03102

3. The blind King John of Bohemia fought in this conflict, and John's motto was adopted by the winner of this war's Battle of Najera (nah-HER-uh). One side in this conflict lost most of its fleet in the Battle of Sluys (SLOYZ), and the Black Prince won at Poitiers (PWAH-tee-eh) in this war. It began with Edward III's claim on a throne occupied by the House of Valois (val-WAH). For 10 points, name this war during which Joan of Arc was burned at the stake, which was waged for roughly a century.

ANSWER: Hundred Years War [or Guerre de Cent Ans]

141-13-95-03103

4. Aphakia (uh-FAY-key-uh) is an absence of this structure, which is often displaced in a type of ectopia suffered by people with Marfan's syndrome. The hyaloid artery supplies this structure in infants, and its fibers contain alpha, beta, and gamma-crystallin. This structure is held in place by the zonule fibers, which attach to the ciliary muscle. It is responsible for accommodation when it is stretched and is clouded by cataracts. For 10 points, name this structure that focuses light in the eye along with the cornea.

ANSWER: crystalline lens [prompt on eye]

048-13-95-03104

5. Examples of this poetic form include a poem that repeats the line "I learn by going where I have to go." In addition to Theodore Roethke's "The Waking," another example of this poetic form ends with the line, "Rage, rage against the dying of the light." This poetic form exemplified by Dylan Thomas's "Do Not Go Gentle Into That Good Night" consists of five tercets and one quatrain structured around two lines that act as refrains. For 10 points, name this poetic form with a French name.

ANSWER: villanelle

134-13-95-03105

6. Diane and Mary save this character from starvation at the Moor House, and in return, this character refuses to marry their brother and move to India. Mr. Brocklehurst abuses this character at the Lowood Institute. She first comes to Thornfield Hall as a tutor for Adele Varens. This woman's marriage is interrupted by the revelation that Bertha Mason, a madwoman, lives in her employer's attic. For 10 points, name this woman who marries Mr. Rochester at the end of a novel by Charlotte Bronte.

ANSWER: **Jane** Eyre [or Jane **Eyre**]

190-13-95-03106

7. A song by Arthur Herzog and this singer notes that, "Them that's got shall get, Them that's not shall lose." Frank O'Hara wrote a poem about the day this singer died. This singer received her nickname from her frequent collaborator Lester Young. She sang about "Blood on the leaves and blood at the root" in a song by Abel Meropool that she popularized. For 10 points, name this jazz singer who was nicknamed "Lady Day," wrote *Lady Sings the Blues*, and sang the anti-lynching piece "Strange Fruit."

ANSWER: Billie **Holiday** [or Elinore **Harris**; prompt on **Lady** Day until it is read]

030-13-95-03107

8. In this symphony, the cellos and basses play a recitative-like passage unaccompanied. This symphony was one of the earliest to have its slow movement come after its scherzo movement, which is 6/8 and in the "Turkish style." Critics often note the resemblance in the finales of this symphony and Brahms's First. The final word "Gottterfunken" is from a part its composer wrote to complement Schiller's "Ode to Joy" in the fourth movement. For 10 points, name this symphony which uses voices, the last by Beethoven.

ANSWER: **Beethoven's Symphony No. 9 in D minor, Op. 125** [or **Beethoven's Ninth**; or **Choral Symphony**; accept **9** or **ninth** after the entire question has been read]

020-13-95-03108

9. One kind of this technique exposes the sample to a magnetic pulse and measures electron density on a plot with chemical shift versus absorption strength. Another kind of it measures the relaxation of vibrations within a molecule after excitation with light that has a wavelength longer than visible light. These techniques gather information about a molecule through interaction with light energy. For 10 points, identify this kind of laboratory technique which has NMR and infrared types.

ANSWER: **spectroscopy** [or **NMR spectroscopy**; or **nuclear magnetic resonance spectroscopy**; or **IR spectroscopy**; or **infrared spectroscopy**]

239-13-95-03109

10. In this play's fourth scene, a character tells a story about a magician who escapes a locked coffin without removing a nail. Another character in this play pretends that an inanimate object had an "operation" to make him feel "less freakish." In this play, Amanda, a Southern belle, persuades her daughter to accept a visit by Jim O'Connor, but during the visit, Jim breaks a unicorn figurine. For 10 points, name this play about Tom and Laura Wingfield, written by Tennessee Williams.

ANSWER: *The **Glass Menagerie***

190-13-95-03110

11. In 2012, this man ordered the bombing of a Sudanese arms factory. He has called Hassan Rouhani a "wolf in sheep's clothing" at the U.N. He gave a wildly applauded speech to the U.S. Congress in 2011 where he refused to accept the pre-1967 borders for his country. His government now includes Tzipi Livni, and his defense secretary is Ehud Barak of the Labor Party. For 10 points, name this Likud (lick-OD) Party leader and current Prime Minister of Israel.

ANSWER: Benjamin "Bibi" **Netanyahu**

027-13-95-03111

12. While riding in a taxi in this country, a character says “Isn’t it pretty to think so?” to his ex-lover. That novel set in this country features the former Princeton boxing champion Robert Cohn and the wounded war veteran Jake Barnes. In another novel, Robert Jordan goes to this country to blow up a bridge during a civil war. For 10 points, name this country that is the setting of *For Whom the Bell Tolls* and *The Sun Also Rises*, the latter of which prominently features bullfights.

ANSWER: **Spain**

052-13-95-03112

13. The Dvorak (div-ORE-ack) technique is used to measure the strength of these systems. A score of twelve or higher on the Beaufort wind scale is given to these systems. Rain bands extend out from the center of these systems. These systems rotate counter-clockwise in the Northern Hemisphere due to the Coriolis effect. For 10 points, identify these large storms that tend to batter the Gulf Coast and Eastern seaboard.

ANSWER: **hurricanes** [or tropical **cyclones**; or **tropical storms**; or **tropical depressions**; or **typhoons**; prompt on thunder**storms**]

239-13-95-03113

14. This man used the phrase "no controlling legal authority" to defend his attendance at a fundraiser at a Buddhist temple. This politician's wife joined Susan Baker to found the Parents Music Resource Center. He defeated Bill Bradley in the primaries of his Presidential campaign and picked Joe Lieberman as his running mate. He won a Nobel Peace Prize for exploring global warming in his book and film *An Inconvenient Truth*. For 10 points, name this man who was Bill Clinton's Vice President.

ANSWER: Albert "Al" **Gore** Jr.

052-13-95-03114

15. Originally, ninety-two metopes (meh-TOH-payz) in this building depicted the Gigantomachy, Amazonomachy, and Centauromachy. A festival procession focused on a robe called a peplos is depicted on this building's namesake frieze. The British Museum now houses many marble sculptures stolen from this building by Lord Elgin. For this building, Phidias sculpted a depiction of Athena, its dedicatee. For 10 points, name this temple on the Acropolis in Greece.

ANSWER: **Parthenon**

190-13-95-03115



1A. What third party ran Jill Stein in 2012 and Ralph Nader in the 1996 and 2000 Presidential elections?

ANSWER: Green Party

1B. What pop star released the 2013 singles "Wrecking Ball" and "We Can't Stop"?

ANSWER: Miley Cyrus

2A. What Shakespeare character's first soliloquy begins, "Oh, that this too, too solid flesh would melt, thaw, and resolve itself into a dew"?

ANSWER: Hamlet

2B. Clara Peggotty, Mr. Micawber, and Mr. Murdstone appear in what autobiographical Charles Dickens novel?

ANSWER: David Copperfield

3A. This is a 20-second calculation question. What is the sum of the roots of the equation $x^2 - 8x - 20 = 0$?

ANSWER: 8

3B. This is a 20-second calculation question. If secant of x is positive, and tangent of x is negative, in what quadrant does angle x lie?

ANSWER: Quadrant IV

4A. In Norse mythology, what eight-legged horse is ridden by Odin?

ANSWER: Sleipnir

4B. On *Seinfeld*, which of Elaine's bosses was inspired by a real-life clothing catalogue magnate and played by John O'Hurley?

ANSWER: J. Peterman

5A. What is the infinitive form of the German verb meaning "to be" in English?

ANSWER: sein

5B. What sixth-century Pope, known as "the Great," is the namesake of a type of chant?

ANSWER: Gregory the Great [or Gregory I]

6A. What doctor, nicknamed the "Angel of Death", performed experiments on prisoners in Auschwitz?

ANSWER: Josef Mengele

6B. What professional golfer nicknamed "Lefty" won the British Open in 2013?

ANSWER: Phil Mickelson

7A. What city's Potala Palace was the home of the Dalai Lama before he fled to India?

ANSWER: Lhasa

7B. What man called "El Libertador" freed Ecuador, Colombia, Venezuela, and other South American countries from Spanish rule?

ANSWER: Simon Bolivar

8A. What letter in biology is used to denote species which reproduce infrequently and live longer, and in physics to denote the constant in Coulomb's law?

ANSWER: K

8B. What Arthur Miller play depicts John Proctor's moral quandaries during the Salem Witch Trials?

ANSWER: *The **Crucible***

9A. This is a 30-second calculation question. What is the area of the quadrilateral formed by the points (0,0), (2,0), (4,5), and (0,7)?

ANSWER: **19**

9B. This is a 30-second calculation question. Each letter of the alphabet is written on ten balls, which are thrown into a hat. Out of the 260 balls, how many must you take to be sure that you grab one on which is written the first letter of your school's name?

ANSWER: **251**

10A. What Czech novelist wrote about Tomas and Tereza in *The Unbearable Lightness of Being*?

ANSWER: Milan **Kundera**

10B. The number of atoms in a mole is equal to 6.02 times 10 to the power of what integer, also the number of pairs of chromosomes in a human cell?

ANSWER: **23**



1. This system, which is alternatively named for Ronald Nyholm and Ronald Gillespie, fails to work for compounds with ionic bonds. This system classifies sulfur hexafluoride as having an octahedral structure, carbon dioxide as having a linear structure, and water as having a bent structure with a bond angle of 104.5. For 10 points, identify this system which characterizes the spatial geometry of molecules based upon electrostatic repulsion between the bonds of the molecule.

ANSWER: **VSEPR** theory [or **valence shell electron pair repulsion** theory]

239-13-95-03117

2. This man made a seemingly drunken visit to student protestors at the Lincoln Memorial, during which he recommended visiting Prague. A tape produced by this man's secretary Rose Mary Woods contained an eighteen-minute gap, and was released after John Sirica rejected his claims of executive privilege regarding his audio system. For 10 points, name this President who was overheard discussing the coverup of an office building burglary, part of the Watergate scandal that caused his resignation.

ANSWER: Richard Milhous **Nixon**

019-13-95-03118

3. One of these beings related the Five Treatises to Asanga. A sect believes that rebirth in the Pure Land is guaranteed by reciting the name of one of these beings named Amitabha (ah-mee-TAH-buh). Twenty-eight of these beings are listed in the Pali Canon. The most recent one of these discovered the Four Noble Truths under the Bodhi tree. For 10 points, name these enlightened people who include Siddhartha Gautama.

ANSWER: **buddhas**

237-13-95-03119

4. The line type of this operation is related to its double type by Green's theorem, which is a special case of Stoke's theorem. Another form of this operation can be simplified by applying the divergence theorem, and the Newton-Cotes formula and Simpson's rule approximate this operation. This operation can also be approximated by trapezoids and Riemann sums. For 10 points, identify this operation which usually returns the area under a curve, the opposite of differentiation.

ANSWER: **integration** [or **antidifferentiation** until "differentiation" is read]

234-13-95-03120

5. Towards the end of this novel, the protagonist kneels down in the middle of the street on his way to the police station, where he had earlier been interrogated by Porfiry Petrovich. In this novel, Luzhin's engagement with Dunya is broken off, and Marmeladov, the father of the prostitute Sonya, is killed in a carriage accident. This novel's protagonist murders a pawnbroker and her sister. For 10 points, name this novel about Raskolnikov written by Fyodor Dostoevsky.

ANSWER: **Crime and Punishment** [or **Prestupleniye i Nakazaniye**]

192-13-95-03121

6. A drunk one of these creatures named Eurytion (yur-IT-ee-ahn) tried to carry off the bride of Pirithous (pee-rih-THOO-us), which resulted in a losing fight against the Lapiths. Another one of these creatures was shot by a poisoned arrow when he tried to kidnap Deianira (DIE-uh-NAH-ruh). The teacher Chiron was one of these creatures. For 10 points, name these creatures from Greek mythology that had the upper body of a human but the four legs of a horse.

ANSWER: **centaurs** [or **kentauros**]

023-13-95-03122

7. This character asks why he should play the Roman fool and die on his own sword shortly before being killed. He notes that “tomorrow, and tomorrow, and tomorrow creeps in” a petty pace before comparing life to a tale “told by an idiot, full of sound and fury.” After winning an early victory, he is promoted to Thane of Cawdor, but is ultimately slain by an opponent “not of woman born” after murdering King Duncan. For 10 points, name this title Scottish king of a Shakespeare tragedy.

ANSWER: Macbeth

052-13-95-03123

8. Along with fluid velocity and characteristic length, this quantity makes up the inertial forces used to calculate Reynold’s number. The void ratio is necessary to finding the bulk type of this quantity. The specific gravity is determined by comparing this quantity between a substance and a reference. Multiplying this quantity by gravitational acceleration and volume gives the buoyant force on an object in a liquid. For 10 points, name this quantity symbolized rho that is defined as mass divided by volume.

ANSWER: density

140-13-95-03124

9. A brain-injured character in this novel frequently draws a T-shaped hammer on a slate, a summons for the servant who attacked her. Bentley Drummle is the romantic rival of this novel's protagonist, who thwarts the plans of Compeyson. This book begins in a swampy graveyard, where the protagonist brings food and a file to the convict Abel Magwich, his eventual benefactor. For 10 points, name this novel in which Estella rejects Pip, a bildungsroman by Charles Dickens.

ANSWER: Great Expectations

190-13-95-03125

10. This artist first attracted notice when sixteen of his paintings were shown at the Whitney Studio Club. A secretary rushes to pick up dropped papers in this artist's *Office at Night*, which along with his image featuring a single barber pole, *Early Sunday Morning*, captured the sense of urban isolation. In his most famous painting, a sign for Phillies cigars is displayed on the exterior of a late-night diner serving three people. For 10 points, name this American painter of *Nighthawks*.

ANSWER: Edward Hopper

004-13-95-03126

11. The inversion of a cardioid with respect to its cusp is one of these curves. This curve is obtained when using the parametrization x equals velocity times t times cosine of theta and y equals velocity times t times sine of theta minus half gravity times t squared. That parametrization can be used for the trajectory of a projectile. These curves have an eccentricity of one, and they are defined as a set of points equidistant from a focus and a directrix. For 10 points, name this conic section which is the graph of a quadratic equation.

ANSWER: parabolas [or parabolae; prompt on quadratic curve]

237-13-95-03127

12. Michael Heseltine resigned from this person's government over the future of the Westland Company. Patrick Magee used a time bomb to try to kill this person while she was staying in Brighton. This person became Prime Minister after the Winter of Discontent. As Prime Minister, this woman privatized Rolls-Royce, BP, and British Airways. For 10 points, name this "Iron Lady," Britain’s Conservative Prime Minister from 1979 to 1990.

ANSWER: Margaret Thatcher

149-13-95-03128

13. This mountain range mythically takes its name from a woman who was eaten by wild beasts after giving birth to a serpent. A gap in it was legendarily cut open by a hero with his sword Durendal. The highest mountain in this range was the site of a Muslim victory at the Battle of Roncevaux Pass. Andorra is located in this range, and the kingdoms of Aragon and Navarre extended on both sides of it. For 10 points, name this mountain range that effectively separates France and Spain.

ANSWER: **Pyrenees**

052-13-95-03129

14. This man labeled his chief theory "genetic epistemology" and conducted experiments to test abilities such as "conservation" using liquid in two glasses. He believed that the processes of assimilation and accommodation construct knowledge as information is organized into schemes. According to his theory, object permanence is developed during the sensorimotor stage. For 10 points, name this Swiss psychologist who studied the development of reasoning in children.

ANSWER: Jean **Piaget**

142-13-95-03130

15. In a 2000 Supreme Court case, this organization was allowed to expel New Jersey leader James Dale. This organization, one of the few Congressionally chartered groups in America, expanded during the conservationist era under the leadership of Daniel Carter Beard and Ernest Thompson. As of 2014, it has retreated from a policy prohibiting gay members, but has not changed its stance on leaders. For 10 points, name this organization which teaches outdoor skills and patriotism.

ANSWER: **Boy Scouts** of America

019-13-95-03131



1. An antagonist of this compound, metoclopramide, is used to treat nausea. Bromocriptine is an agonist for one of its receptors, which inhibits prolactin release. The release of this compound from the ventral tegmental area is important in the reward pathway. This molecule is released from the pars compacta of the substantia nigra, whose degeneration causes a disease characterized by rigidity in Parkinson's disease. For 10 points, name this neurotransmitter formed by the decarboxylation of L-DOPA.

ANSWER: dopamine

048-13-95-03132

2. One of this author's speakers promises that "the deepest secret nobody knows" is that he carries his lover's heart in his own heart. Another poem by this author ends with the refrain "sun moon stars rain." This poet drew upon his experiences as a World War I ambulance driver to write *The Enormous Room*. The phrase "with up so floating many bells down" follows the first line of his poem "anyone lived in a pretty how town." For 10 points, name this American poet who avoided capitalization.

ANSWER: E. E. Cummings

190-13-95-03133

3. The natural log of the reaction quotient Q in this equation is multiplied by the negative of the gas constant times temperature over the product of the Faraday constant and the number of moles transferred in the redox reaction. When using this equation, the half reactions are identified and used with a table containing standard cathode potentials. For 10 points, identify this equation key to electrochemistry that relates the reduction potential of a cell to the concentration of its reactants.

ANSWER: Nernst equation

239-13-95-03134

4. This man owned a fake ID card with the name "Alek James Hidell." He married a teenager named Marina after renouncing his citizenship and moving to the Soviet Union. This person was photographed with a rifle and Marxist newspapers before killing police officer J.D. Tippit. He was lurking in a Book Depository when he wounded Governor John Connally, and was later killed himself by nightclub owner Jack Ruby. For 10 points, name this man who assassinated John F. Kennedy.

ANSWER: Lee Harvey Oswald

052-13-95-03135

5. For a dielectric, the Clausius-Mossotti relation can be used to compare this quantity to the polarization density. A non-conservative type of this quantity will form as a result of an induced emf according to Faraday's Law. This quantity's flux is related to the permittivity of free space by Gauss's Law. For a point charge, this quantity simply depends on the strength of the charge, and it has an inverse square relationship with the radius. For 10 points, name this quantity symbolized E , the electric force per unit charge.

ANSWER: electric field [or E until it is read]

140-13-95-03136

What DNA base forms namesake dimers when exposed to UV light and is replaced by uracil in RNA?

ANSWER: thymine [or T; or thymidine]

This is a calculation question. If sine of x is three-fifths, what is the absolute value of the sine of $2x$?

ANSWER: 24/25