



1. Feynman and Gell-Man proposed a "vector minus axial vector" Lagrangian for this interaction to compensate for a consequence of the CKM matrix. Rubbia and van der Meer won the 1984 Nobel Prize in Physics for their work in discovering the particles which mediate this force, and Glashow, Salam, and Weinberg posited its unification with the electromagnetic force. This force is mediated by the W and Z bosons and is capable of changing the flavor of quarks. For 10 points, name this force which is not as strong as the strong force.

ANSWER: **weak** nuclear force [or **weak** interaction]

189-13-76-02101

2. This character introduces James Steerforth, a friend of his from Salem House, to Little Emily, the niece of the fisherman Dan Peggotty. This man marries Dora Spenlow, although he eventually marries a lawyer's daughter, Agnes Wickfield. He is eventually raised by his aunt Betsey Trotwood after growing up abused by his stepfather Mr. Murdstone. This character is patronizingly called "master" by his nemesis, Uriah Heep, and he is befriended by Mr. Micawber. For 10 points, name this title character of a novel by Charles Dickens.

ANSWER: **David** Copperfield [or David **Copperfield**; or **Trotwood** before it is read; or **Trot** before "Trotwood" is read]

052-13-76-02102

3. One of these events occurred when the tug *Scandia* became grounded on Moonstone Beach. Techniques that failed to stop another of these events included the "top kill," which involved pumping down heavy drilling mud, and the "junk shot." A 1990 Pollution Act was passed after one of these took place in Prince William Sound. For 10 points, name these disasters that release a liquid into the environment, including one that lasted for much of 2010 after an explosion on BP's *Deepwater Horizon* rig.

ANSWER: **oil spills**

023-13-76-02103

4. Neville Island is the largest island within this river by area, though the most populous island within it is a gambling mecca that is accessible by the Fort Henry Bridge. This river receives the Big Sandy and the Wabash as tributaries. Cairo, Illinois is located near its mouth, and its largest tributary is the Tennessee River. It is formed by the confluence of the Monongahela and Allegheny Rivers in Pittsburgh. For 10 points, name this river that flows through Louisville and is the largest tributary by volume of the Mississippi.

ANSWER: **Ohio** River

192-13-76-02104

5. The protagonist of this novella continually encounters disturbing red-haired men, such as a musician and a boatman who says, "You will pay." He also sees various warnings not to eat shellfish. This novella's main character eats some overripe strawberries and sits on the beach watching two boys fight. The protagonist becomes entranced by an adolescent boy named Tadzio. At the end of this novella, the protagonist is infected as a result of the cholera epidemic. For 10 points, name this Thomas Mann novella about Gustav von Aschenbach visiting the title Italian city.

ANSWER: ***Death in Venice*** [or ***Der Tod in Venedig***]

052-13-76-02105

6. During the aria "Zitti, Zitti," this character is blindfolded and unwittingly assists an abduction. This character closes out the opera by singing "La maledizione!" recognizing the curse which has been placed on him when he opens a sack to discover his dying daughter, Gilda. Earlier, this character sings "Pari siamo," pondering his similarity to the assassin Sparafucile (spah-RAH-foo-CHEEL-ay). This character frequently mocks the noblemen husbands of women that his master, the Duke of Mantua, lusts after. For 10 points, name this hunchbacked court jester, the title character of a Verdi opera.

ANSWER: **Rigoletto**

052-13-76-02106

7. The three-dimensional stability of these systems is governed by DLVO theory, and the electrokinetic potential at a particular double layer interface in these systems is called the zeta potential. These systems undergo flocculation and peptization, and in some cases, micelles can form in these systems. These substances have continuous and dispersed phases, and these systems scatter light in the Tyndall Effect. Examples of these systems include emulsions and aerosols. For 10 points, identify these specific types of mixtures, in which one component is completely and equally dispersed throughout another.

ANSWER: **colloids**

189-13-76-02107

8. A poem by Martial describes an encounter between two members of this profession named Priscus and Verus. Thousands of them were educated in the Ludus Magnus, which was built by Domitian. One group of them was led by the Gauls Crixus and Oenomaus. Members of this profession known as retiarii carried nets with them. A Jean-Leon Gerome painting popularized the notion that a thumbs up signal was used to let one of these people live. For 10 points, name these warriors, such as the rebel Spartacus, who fought animals and each other in the Coliseum.

ANSWER: **gladiators**

015-13-76-02108

9. In a 2009 op-ed, Hendrik Hertzberg likened the current mayor of this city to Crassus because both men infantilized the public they ruled. This city's government partnered with Microsoft to develop the "Domain Awareness System," a massive camera surveillance project. Jimmy MacMillan has run for office several times in this city under the "Rent is 2 Damn High Party." The current mayor of this city launched a cash transfer program called "Opportunity," extended a public smoking ban, and banned large sodas. For 10 points, name this city, led by mayor Michael Bloomberg.

ANSWER: **New York** City [or **NYC**]

020-13-76-02109

10. This metal is bounded to two ethyl groups or coupled to copper in a reaction which ultimately yields cyclopropanes; that is the Simmons-Smith reaction. Its sulfide largely comprises its chief ore on earth, which is called sphalerite, and the "gag knuckle" and "treble clef" are two classes of its namesake "finger" domains. This element has an atomic mass of 65.38, and this d-block element has one less proton in its nucleus than gallium. It is colorless or blue-green in a flame test, and with copper, it forms the alloy known as brass. For 10 points, identify this metal with chemical symbol "Z-n."

ANSWER: **zinc** [accept **Zn** before mentioned]

189-13-76-02110

11. This character's accent was adopted from the photographer Weegee. He uses a slide rule to calculate that a female-dominated sample of the human race could emerge from a mine shaft after one hundred years. In the original screenplay, he was named "Von Klutz." Mr. Staines explains to General Turgidson why this character does not have a "Kraut name." He suffers from alien hand syndrome, and his last appearance is rising from his wheelchair, shouting "Mein Führer! I can walk!" For 10 points, name this Peter Sellers-played character who titles a 1964 Stanley Kubrick film about nuclear war.

ANSWER: Dr. **Strangelove**

019-13-76-02111

12. One of his poems is modeled as a letter signed, "Sincerely, GI Joe," and asks, "Will V-Day Be Me-Day Too?" This poet advised "hold fast to dreams" in another poem, while he described a man "down on Lenox Avenue" in a work about a pianist. He declared "my soul has grown deep" like the title geographical features of another poem, which include the Euphrates and the Congo. For 10 points, name this poet of "The Weary Blues" and "The Negro Speaks of Rivers," a major figure of the Harlem Renaissance.

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

192-13-76-02112

13. This god took the form of a turtle to stop a mountain from sinking into the sand during the churning of the milk ocean. In the form of a fish named Matsya, he saved the first man, Manu, from a flood. This god rides on the eagle Garuda and rests on the many-headed serpent Shesha. This deity's consort is the goddess of luck, Lakshmi. With Shiva and Brahma, this god makes up the Trimurti. For 10 points, name this Hindu preserver god whose avatars include Rama and Krishna.

ANSWER: **Vishnu** [or **Kurma** before "fish" is read]

080-13-76-02113

14. When this property is present in a molecule, one set of atomic orbitals are depicted at a higher energy on an MO diagram. This property occurs when two atoms have a difference of greater than 0.4 on the Pauling scale. Boron trifluoride does not possess this property because it has a trigonal planar geometry, so the moments cancel out. Carbon-hydrogen bonds don't have this property because they have very similar electronegativities. For 10 points, name this property in which a molecule has partially positive and partially negatively-charged regions because atoms in bonds aren't shared equally.

ANSWER: **polarity** [or word forms]

190-13-76-02114

15. In 1922, this man attempted to reconcile the Hussein-McMahon Correspondence with the Balfour Declaration by drafting his namesake "White Paper." This man had to resign from his post during World War I after the failure of the Gallipoli Campaign. This man declared he had nothing to offer but "blood, toil, tears, and sweat" in one speech; in another speech, he declared, "Never...was so much owed by so many to so few" with reference to the RAF's success in the Battle of Britain. For 10 points, name this prime minister who led Britain during World War II.

ANSWER: Winston Leonard Spencer **Churchill**

080-13-76-02115



1A. What name is given to the phenomenon in which an incoming tide forms a standing wave that travels against the current of a river or narrow bay?

ANSWER: tidal **bore**

1B. What Italian sociologist explained the "circulation of elites" theory in his book *Mind and Society* and names an "optimality" condition for economies, in which no person's standing can be improved without harming another's?

ANSWER: Vilfredo **Pareto**

2A. The Supreme Court case *Hammer v. Dagenhart* struck down the Keating-Owen Act, an attempt to limit what practice?

ANSWER: **child labor**

2B. What leader of the Second Viennese School developed the twelve tone technique?

ANSWER: Arnold **Schoenberg**

3A. This is a 20-second calculation question. What is the absolute difference of the mean and the median of the set {1, 2, 9}?

ANSWER: **2**

3B. This is a 20-second calculation question. x varies inversely with the square root of y . If $x = 20$ when $y = 40$, find x when $y = 10$.

ANSWER: $x =$ **40**

4A. In drama, what term denotes lines addressed by a character to the audience and not heard by the other characters?

ANSWER: **aside**

4B. Which tense in Spanish is used to describe events that occurred at a definite time in the past and are no longer ongoing?

ANSWER: **preterite** [or **preterito**]

5A. Jonny Lee Miller stars as a recovering drug addict named Sherlock Holmes in what CBS crime drama?

ANSWER: **Elementary**

5B. What Catholic priest and poet used sprung rhythm in such poems as "Pied Beauty" and "God's Grandeur"?

ANSWER: Gerard Manley **Hopkins**

6A. Pyrex was originally made of a glass compound of silica and the oxide of what nonmetal?

ANSWER: **boron**

6B. This leader made his countrymen adopt surnames as part of his secular Six Arrows Program put in place after securing Anatolia via the Treaty of Sevres.

ANSWER: Mustafa **Kemal** Pasa [or Kemal **Ataturk**]

7A. This is a 30-second calculation question. Consider a square and an isosceles triangle, each with area 4 square units, such that a side of the square is equal in length to the base of the triangle. What is the height of the triangle?

ANSWER: **4** units

7B. This is a 30-second calculation question. The sine of a certain angle is .4. Find the cosine of an angle twice as big.

ANSWER: **0.68** [or **68/100**; or **17/25**]

8A. What term is used in statistics to describe asymmetric probability distributions, and in geometry, refers to two lines which never intersect even though they aren't parallel?

ANSWER: **skew** [or word forms]

8B. What machine was first developed by Thomas Savery, to pump water out of mines, and was later improved upon by Thomas Newcomen and James Watt?

ANSWER: **steam** engine

9A. Which country claims Christmas Island and Norfolk Island, as well as several islands in the Coral Sea?

ANSWER: Commonwealth of **Australia**

9B. What molecule is the predominate constituent of the atmosphere of Saturn's largest moon, Titan?

ANSWER: **nitrogen** gas

10A. "Dig a Pony" and "The Long and Winding Road" are tracks off of what final studio album released by the Beatles?

ANSWER: ***Let it Be***

10B. What MLB team controversially traded away Mark Buehrle, Josh Johnson, and Jose Reyes after opening a new stadium in 2012?

ANSWER: Miami **Marlins** [or **Miami** Marlins; do not accept or prompt on "Florida Marlins"]



1. The founder of this denomination said "to let me be employed for you or laid aside for you" in his notable "Covenant Prayer." The Baltimore convention adopted the Twenty-Five Articles of Religion its founder wrote. This denomination's calendar includes a time called "Kingdomtide," which precedes Lent. It was named for its insistence on studying the Bible in a rigorously structured manner. For 10 points, name this Protestant denomination founded by George Whitefield and John Wellesley.

ANSWER: **Methodism** [or **Methodists**; or other word forms]

186-13-76-02117

2. This city's Great Strahov Stadium is located on its Petrin Hill. A giant functional metronome is located in this city's Letna Park. This city's Pisek Gate and Church of Our Lady Victorious are both located in its Lesser Town. Its Charles Bridge is located near Old Town Square. This city's St. Vitus' Cathedral stores its nation's crown jewels. This city is home to a work of Frank Gehry, Dancing House, and its New Town is home to Wenceslas Square. For 10 points, name this Bohemian city, the capital of the Czech Republic.

ANSWER: **Prague**

201-13-76-02118

3. After a great battle, this god defeated the "mist calf" and its creator, Hrungnir. In the Thrymskvida, this owner of Megingjard (muh-GIN-yard) dressed as a woman to regain a prized possession. This god rides on a chariot pulled by two goats, whose names mean "gap-tooth" and "tooth-grinder." This figure went fishing with Hymir, who cut his line before he could capture the Midgard Serpent. His wife Sif had her hair stolen by Loki. His hammer comes back to him whenever he throws it. For 10 points, name this owner of Mjollnir and Norse god of Thunder.

ANSWER: **Thor**

186-13-76-02119

4. This condition is sometimes treated with azelaic acid, and a namesake species of propionobacterium is associated with it. A common treatment for this condition often causes angular cheilitis of the mouth, and this condition is characterized by the formation of comedos. Isotretinoin is a common treatment for severe forms of this compound, which also can be treated using benzoyl peroxide. For 10 points, identify this skin disease which causes the formation of pimples.

ANSWER: **acne** vulgaris [or cystic **acne**]

189-13-76-02120

5. Supporters of the Holy Roman Empire were barred from holding office in this city by the Ordinances of Justice. The Ciompi Revolt was an uprising of wool workers in this city. This city was home to the pro-Pope Guelphs and the Holy Roman Empire-supporting Ghibellines. The Pazzi conspiracy attempted to overthrow two members of this city's ruling family. The Dominican friar Savonarola burned several works of art in this city during the Bonfire of the Vanities. For 10 points, name this Italian city ruled by the Medici family.

ANSWER: **Florence** [or **Firenze**]

079-13-76-02121

6. One poet from this nation wrote the lines "Before you, mother Idoto, naked I stand," in his work "Heavensgate." A playwright from this nation described the contest between Lakunle and Baroka for Sidi's hand in marriage in *The Lion and the Jewel*. That playwright described Olunde's suicide in *Death and the King's Horseman*. Ikemefuna dies in a novel from this country that centers on Okonkwo. For 10 points, name this country home to Christopher Okigbo, Wole Soyinka, and the author of *Things Fall Apart*, Chinua Achebe.

ANSWER: **Nigeria** [or Federal Republic of **Nigeria**]

192-13-76-02122

7. This man painted a rifleman with a deer pelt in the Adirondacks in his *A Huntsman and Dogs*. One of his paintings depicts the battlefield of Petersburg in the background as Brigadier General Francis Channing Barlow reviews the title figures. Several boys link arms to play the title game in another painting by this artist of *Prisoners from the Front*, who showed a lone black man sitting in a capsizing boat that is surrounded by sharks. For 10 points, name this American painter of *Snap the Whip* and *The Gulf Stream*.

ANSWER: Winslow **Homer**

030-13-76-02123

8. A significant impetus for the idea behind this experiment and the explanation of its results were provided by Walter Elsasser. An oven was used in this experiment after the unintended formation of oxide film, and the results of this experiment were consistent with the predictions of Bragg's Law. This experiment used a setup involving the firing of electrons at a crystalline nickel target, and it was performed at Bell Labs. An important conclusion was drawn following the experimental observation of an intensity peak at certain scattering angles for the electron beam. For 10 points, name this experiment confirming the de Broglie hypothesis of wave-particle duality.

ANSWER: **Davisson-Germer** Experiment

189-13-76-02124

9. A hero of this movement known as "the Engineer" was killed in 1996 while talking on his cell phone, which was rigged with RDX explosives. In 2011, this organization negotiated the release of over a thousand prisoners in exchange for turning over kidnapped soldier Gilad Shalit. This target of Operations Pillar of Defense and Cast Lead has a military wing, the Izz ad-Din al-Qassam Brigades, that habitually fires rockets into Israel. For 10 points, name this Islamist organization that governs the Gaza Strip.

ANSWER: **Hamas** [or **Harakat al-Muqawamah al-Islamiyyah**; or the **Islamic Resistance Movement**; prompt on the Izz ad-Din al-**Qassam** Brigades until it is read; do not accept or prompt on "PLO," "Fatah", "Hezbollah," or other wrong answers]

080-13-76-02125

10. This organ overproduces mucus in Menetrier's disease, while the Roux-en-Y procedure works on it. One part of this structure is the fundus, and the folds of this organ are called rugae. The pyloric sphincter originates in it. This organ's contents are often called chyme, and are broken down by a mixture including hydrochloric acid. For 10 points, name this organ in the digestive system which receives food from the esophagus.

ANSWER: **stomach**

192-13-76-02126

11. This author wrote about a perfume shop employee whose body is fished out of the Seine River. He also created a character who accidentally kills a woman when trying to shave her. In one of this author's stories, the Minister D steals the title compromising document and hides it in plain sight. He pioneered the mystery story with a work in which two killings are committed by a sailor's orangutan. For 10 points, name this American author who featured detective C. Auguste Dupin in the stories "The Purloined Letter" and "The Murders in the Rue Morgue."

ANSWER: Edgar Allan **Poe**

052-13-76-02127

12. Elements can be extracted from this data structure in a process called slicing. When most of the values are zero, this data structure is said to be sparse. A hash table is the most common way to implement the associative type of this data structure, which associates an arbitrary key with a value. These data structures are indexed according to pointer arithmetic. When one-dimensional, these data structures are called vectors, and they usually contain elements of only one data type. For 10 points, identify these data structures analogous to matrices that store data in a contiguous address space.

ANSWER: **arrays**

066-13-76-02128

13. One poem by this author discusses a figure who "scraped life with a fine-tooth comb," and "bore two babies under her maiden name." That figure is contrasted with her educated sister in "Sadie and Maud." This poet wrote of "plain chipware on a plain and creaking wood" in her "The Bean Eaters," and won a Pulitzer Prize for her *Annie Allen*. This woman's most famous poem concerns "The Pool Players. Seven at the Golden Shovel," and states, "We jazz June. We die soon." For 10 points, identify this African American poet known for her short poem "We Real Cool."

ANSWER: Gwendolyn **Brooks** [or Gwendolyn Elizabeth **Brooks**]

189-13-76-02129

14. While at Coldwater II near this location, David Johnston became the first person to report an event here, radioing "This is it!" before his death. Reid Blackburn, a photographer for National Geographic, was eight miles away from this location when that event occurred. The Toutle River was filled with sediment after this peak's north face fell away early in the morning on May 18, 1980. For 10 points, name this volcanic peak that erupted and killed 57 people in the state of Washington.

ANSWER: **Mount Saint Helens**

023-13-76-02130

15. This character has to evade some housepainters after distracting a woman with a tightly wrapped silver cigarette case. He hears a prostitute reading a section from the Gospel of John about the raising of Lazarus and has a hallucination about a policeman beating his landlady. Earlier, he has a dream about being seven years old and seeing a man beating a horse. After comparing himself to Napoleon, this character goes to the pawnbroker Alyona Ivanovna, then kills her and her sister. For 10 points, name this protagonist of *Crime and Punishment*.

ANSWER: Rodion Romanovitch **Raskolnikov** [or **Rodion** Romanovitch Raskolnikov; or **Rodya**]

019-13-76-02131



1. The events of this election year prompted the formation of the Commission on Party Structure and Delegate Selection. George Romney dropped out of this election's primaries after saying that he was "brainwashed" into supporting the Vietnam War. In this year, a pig was nominated outside the DNC, where Chicago mayor Richard M. Daley suppressed riots. This election marked a political realignment of the formerly "Solid South," and it was the last time a third party candidate won a state. George Wallace and Hubert Humphrey lost to Richard Nixon in, for 10 points, what year?

ANSWER: Election of **1968**

079-13-76-02132

2. A disease related to a malfunction in this object dramatically affects eye movement and is called Kearns-Sayre syndrome. Its inner membrane is composed of large amounts of cardiolipin. According to the endosymbiotic theory, this organelle originated from proteobacteria. This organelle contains namesake DNA which are only inherited from the mother. Its internal compartments called cristae are studded with proteins. For 10 points, name this ATP generating organelle described as the "power plant" of the cell.

ANSWER: **mitochondria** [or **mitochondrion**]

052-13-76-02133

3. Throughout this play, the noise of a foghorn is heard, which is judged to be "like a banshee." Its characters include Eugene, who died of measles years earlier after being infected by his brother. The only secondary character to appear on stage in this play is the Irish summer maid, Cathleen. Another character refuses to believe her son Edmund has contracted tuberculosis. Heavily autobiographical, this play features the drunken actor James and his morphine-addicted wife Mary. For 10 points, name this play chronicling a day in the life of the Tyrone family, a work of Eugene O'Neill.

ANSWER: ***Long Day's Journey into Night***

052-13-76-02134

4. When multiplied on both sides by a matrix A, the matrix denoted by "pseudo-" this term is equal to A. In traditional logic, it is a conditional sentence that is the contrapositive of the converse. When applied to the output of a function f, a function of this type yields the argument to f. It is the element of a set that yields the identity of that set, giving zero and one for addition and multiplication, respectively. For 10 points, name this operation usually signified by a superscript negative one.

ANSWER: **inverse**

066-13-76-02135

5. The speaker of this poem complains, "I mete and dole unequal laws unto a savage race, that hoard, and sleep, and feed, and know not me." Its last stanza begins with the observation, "There lies the port; the vessel puffs her sail." This poem's speaker describes himself "yearning in desire to follow knowledge like a sinking star." The speaker concludes by affirming that he and his old mariners are "strong in will to strive, to seek, to find, and not to yield." For 10 points, name this dramatic monologue by Lord Tennyson spoken by the hero of the *Odyssey*.

ANSWER: "**Ulysses**"

014-13-76-02136

What type of heat is released or absorbed by an object that is undergoing a process whereby its temperature doesn't change?

ANSWER: **latent** heat

This is a calculation question. The long diagonal of a cube has length 6. Find the volume of the cube.

ANSWER: **24** times the square **root** of **3** [or **24 radical 3**; or **8 radical 27**; or numerical equivalents]