



1. Cadmus was forced to serve this god for eight years after killing a dragon. This god was wounded by Diomedes during the Trojan War. He was accompanied by Phobos and Deimos, who represent Fear and Terror. He was trapped in a golden net by Hephaestus while sleeping with Aphrodite. He is the Greek analog of the Roman god Mars. For 10 points, name this son of Zeus and Hera, the Greek god of war.

ANSWER: Ares

015-12-70-08101

2. One type of these particles is the namesake of a type of tagging used in analysis of collider events. A bound state of two of these particles was discovered by Ting and Richter and was called J-psi. These particles cannot be isolated as singlets due to the property of confinement, and they also carry color charge. Within a hadron, they are held together by gluons, and their flavors include charm, strange, top, and bottom. For 10 points, name this fundamental particle posited by Gell-Mann, three of which make up protons and neutrons.

ANSWER: quark [accept more specific answers like strange quark]

048-12-70-08102

3. This emperor's tax hikes caused the Gallic revolt of Vindex. This ruler's death ended the Julio-Claudian dynasty and began a period of unrest known as the Year of the Four Emperors. This successor to Claudius probably poisoned his step-brother Britannicus. Some sources relate that this man's desire to build a new palace complex prompted him to start the Great Fire of Rome in 64 CE. For 10 points, name this Roman emperor famed for persecuting Christians and fiddling.

ANSWER: Nero Claudius Caesar Augustus Germanicus [or Nero Claudius Drusus Germanicus; or Lucius Domitius Ahenobarbus]

015-12-70-08103

4. This structure's potential, factoring in all relevant ions, can be found using the Goldman equation. G protein-coupled receptors are found in this structure. This biological structure contains "lipid rafts" according to the fluid mosaic model, and it is partly made of inward-facing hydrophobic fatty acid "tails" in a phospholipid bilayer. For 10 points, name this semi-permeable molecular structure which appears without a cell wall when surrounding animal cells.

ANSWER: cell membrane [or plasma membrane]

104-12-70-08104

5. This general was nearly forced to resign when the public learned that he had slapped Charles Kuhl with his glove. He was given command of the fictitious First US Army Group as part of a ploy to detract attention from Normandy. After leading the allied invasion of Sicily, this general was given command of the Third Army, which turned back the Germans at the Battle of the Bulge and liberated much of France. For 10 points, name this colorful American general known as "Old Blood and Guts."

ANSWER: George Smith Patton

015-12-70-08105

6. A crucial event in the independence of this country was the defeat of Leopold I and his Austrians at Morgarten Pass in 1315. This country was known as Helvetica by the ancient Romans. A group of "guards" from this country have historically protected the Pope. Huldrych Zwingli led the reformation of Zurich in this country. For 10 points, name this European country composed of regions called "cantons" that has maintained its policy of neutrality since 1815.

ANSWER: **Switzerland** [or **Swiss Confederation**; or **Schweizerische Eidgenossenschaft**; or Confederation **Suisse**; or Confederazione **Svizzera**; or Confederaziun **Svizra**]

015-12-70-08106

7. Of its country's 47 prefectures, it is the largest and the only one designated as a "circuit" type. This region's city of Hakodate is one terminus of the long Seikan Tunnel under the Tsugaru Strait. The La Perouse Strait separates Sakhalin Island from this region that is the primary home of the Ainu people. This island has held annual snow festivals and the 1972 Olympic Games in its capital city of Sapporo. For 10 points, name this second largest and most northerly of the main islands of Japan.

ANSWER: **Hokkaido** Prefecture [or **Hokkaido** Island; or **Northern Sea Circuit**]

153-12-70-08107

8. In 2005, this region experienced a magnitude 7.6 earthquake that killed 80,000 people and destroyed the town of Balakot. A state within this region has both summer and winter capitals, Jammu and Srinagar. This region is divided by both the "line of control" and the "line of actual control," which sets off its Aksai Chin region. This region contains part of the Karakorum range, including K2. For 10 points, name this region of the Indian subcontinent, which is disputed by India and Pakistan and which exports a characteristic type of wool.

ANSWER: **Kashmir** [or Jammu and **Kashmir**; or Azad **Kashmir**; prompt on **India**; prompt on **Pakistan**]

080-12-70-08108

9. One phylum of animals commonly denoted by this term has an a structure that ends in flame cells and is used to filter metabolic waste; that structure is the protonephridia. In computing, this term applies to malicious programs that don't attach themselves to programs but replicate and spread to other computers. Another phylum of animals denoted by this term possesses a coelem, setae and are segmented. For 10 points, identify these soft-bodied invertebrates that can be found in the phyla Platyhelminthes and Annelida.

ANSWER: **worm**

066-12-70-08109

10. The rightmost figure in this painting pinches his nose and raises his right hand while facing away from the central scene. On the left side of this painting, a blond-haired man waves goodbye through an archway while ascending a stone staircase behind two other figures. A dark-bearded man clutches the knee of the title character, who points upwards with his left hand while reaching for a cup of hemlock with his right. For 10 points, name this painting by Jacques-Louis David depicting the forced suicide of the title Greek philosopher.

ANSWER: *The **Death of Socrates*** [or *La **Mort de Socrate***]

014-12-70-08110

11. One law named for this man corrected for the fact that classical models of black bodies predict infinite energy at short wavelengths. The de Broglie wavelength is equal to this man's constant divided by linear momentum. He posited that electromagnetic energy could only be transmitted in multiples of the frequency times his namesake constant, symbolized h. For 10 points, name this German physicist whose constant is equal to approximately 6.62 times 10 to the minus 34 Joule-seconds.

ANSWER: Max Karl Ernst Ludwig **Planck**

048-12-70-08111

12. This element causes vesicles to fuse with the presynaptic membrane at the axon terminal when voltage-gated channels for its cation open. Troponin is activated by this element, which is released from the sarcoplasmic reticulum in its 2+ charged ionic form to induce muscle contraction. Vitamin D regulates blood levels of this metal, a key component of enamel whose deficiency is one cause of osteoporosis. For 10 points, name this alkaline earth metal present in bones.

ANSWER: **calcium** ion [or **Ca²⁺**]

104-12-70-08112

13. One scene in this novel describes a group of people licking wine off of the street after a cask is dropped and broken. The return of one character in this novel is signaled by the ambiguous message, "Recalled to life." In this novel, Miss Pross goes deaf from the noise of a gunshot in her struggle with the antagonist, and to save the happiness of Lucie Manette, Sydney Carton takes the place of his lookalike Charles Darnay at the guillotine. For 10 points, name this novel set during the French Revolution and written by Charles Dickens.

ANSWER: A ***Tale of Two Cities***

014-12-70-08113

14. This character dies at the siege of Maastricht after learning of his promotion to Marshal of France. In a crucial scene, this character recalls seeing a certain woman in Meung, thus identifying her as an enemy agent. This character dies at the end of *The Vicomte of Bragelonne*, and he is revenged for the poisoning of his love Constance when he arranges the execution of Milady de Winter. For 10 points, name this character who joins Porthos, Athos, and Aramis in Alexandre Dumas's *The Three Musketeers*.

ANSWER: **d'Artagnan** (dar-TAHN-yihn)

014-12-70-08114

15. This element is added and removed from an alkene to add a hydroxyl group in a namesake anti-Markovnikov addition. This element's plus one oxidation state is always found in a diatomic cation with a plus two charge. Vermillion pigment is produced from this element's ore, cinnabar. When mixed with other metals, this element forms amalgams, and it is also a component of the preservative thimerosal. Manometers typically use this element to measure relative pressures. Like bromine, this element is liquid at room temperature. For 10 points, name this element once used in thermometers with symbol Hg.

ANSWER: **mercury** [or **Hg** until it is read]

190-12-70-08115



1A. These features typically occur at convergent boundaries and can be thought of as the counterpart to mid-ocean ridges. What are these narrow, deep depressions in the seabed that include the Marianas one?

ANSWER: oceanic **trenches**

1B. Hans Selye was the first to demonstrate the existence of the biological form of this term. What is this quantity found divided by strain in the definition of Young's modulus?

ANSWER: **stress**

2A. What playwright wrote about a female Salvation Army worker and her industrialist father in *Major Barbara*?

ANSWER: George Bernard **Shaw**

2B. Name the Prussian king who gained control of Silesia after fighting against Maria Theresa in the War of the Austrian Succession.

ANSWER: **Frederick the Great** [or **Frederick II** of Prussia; or **Friedrich der Grosse**; prompt on **Frederick**]

3A. This is a 20-second calculation question. When randomly picking a playing card from a standard 52-card deck, what is the probability the card will be either a 3 or a spade?

ANSWER: **4/13** [prompt on **16/52**]

3B. This is a 20-second calculation question. In simplest terms, find the horizontal component of a 50 N force pointing up and to the right at a 45-degree angle.

ANSWER: **25 times root 2** N

4A. Shia Muslims believe the Caliphate's rightful line of succession passed through what son-in-law of Muhammad?

ANSWER: **Ali** ibn Abi Talib

4B. What French ballet term, meaning "to whirl," describes a dancer turning in place on one leg?

ANSWER: **pirouette**

5A. Antonio Vivaldi composed what set of programmatic violin concerti representing various times of the year?

ANSWER: *The* **Four Seasons** [or *Le* **Quattro Stagioni**]

5B. What Soviet novelist won the Nobel Prize in Literature after writing *Doctor Zhivago*?

ANSWER: Boris **Pasternak** [or Boris Leonidovich **Pasternak**]

6A. What star of *My Left Foot* played Bill the Butcher in *Gangs of New York* and will play Abraham Lincoln in a 2012 biopic?

ANSWER: Daniel **Day-Lewis** [do not accept or prompt on just "Lewis"]

6B. Name the French founder of sociology who advocated positivism and coined the term "altruism."

ANSWER: Auguste **Comte**

7A. This is a 30-second calculation question. What is the determinant of a two-by-two matrix whose entries are, from top left going clockwise, 3, 5, 4, and 1?

ANSWER: **7**

7B. This is a 30-second calculation question. Consider a square inscribed in a circle of area 72 pi. What is the perimeter of the square?

ANSWER: **48** units

8A. What British scientific society originated in 1660 and, at one point, was headed by Isaac Newton?

ANSWER: The **Royal Society** of London for Improving Natural Knowledge

8B. What is the term for the electrode of an electrochemical cell at which reduction occurs?

ANSWER: **cathode**

9A. Who oversaw the creation of the Ten Most Wanted Fugitives list as the director of the FBI, a position he held for 48 years?

ANSWER: John Edgar **Hoover**

9B. What is the name of the NASA Mars rover that touched down at the Bradbury Landing site on August 6th, 2012?

ANSWER: **Curiosity**

10A. Which American playwright wrote about Harry Hope's saloon in *The Iceman Cometh* and about the decay of the Tyrone family in *Long Day's Journey into Night*?

ANSWER: Eugene **O'Neill** [Eugene Gladstone **O'Neill**]

10B. What data structure is an ordered tree in which the keys of the parent nodes are always greater than, or always less than, the keys of the child nodes?

ANSWER: **heap**



1. Employees of one company of which this man is the CEO were accused of destroying evidence in the murder of Milly Dowler. This man is the CEO of a company that was tied to the British government when Andy Coulson became David Cameron's communications director. That company, led by this man, stopped issuing the paper *News of the World* in light of that phone-hacking scandal. For 10 points, name this chairman of Newscorp, an Australian media magnate who also founded the FOX network.

ANSWER: Rupert Murdoch

019-12-70-08117

2. This language uses measure words like "ge" in between numerals and nouns in phrases with meanings like "five cars" and "two knives." In this language, one sound can have 4 different meanings depending whether it is pronounced with a "high," "rising," "low," or "falling" tone. The Wade-Giles system was a romanization system for this language, though it is now largely supplanted by pinyin. This language, which competes with Cantonese, has the most native speakers of any in the world. For 10 points, name this language spoken in Beijing.

ANSWER: Mandarin Chinese [or Mandarin Chinese]

080-12-70-08118

3. This agent contains the gag and rev polypeptides, and its exterior expresses the gp120 glycoprotein. Chemokine antagonist treatment for this condition was devised by Robert Gallo, a ranking expert on it. This agent's progress is often shown by non-hereditary skin lesions from Kaposi's sarcoma. Azidothymine, or AZT, was an early treatment for this virus which attacks the body's T-cells. For 10 points, name this virus which damages the immune system, whose symptoms can progress to AIDS.

ANSWER: HIV [or Human Immunodeficiency Virus]

104-12-70-08119

4. One character in this novel plots to seduce the protagonist as he watches her tend to an assistant who faints at the sight of blood named Justin. The protagonist borrows excessively from the merchant Monsieur Lheureux, incurring debts which ruin her when she is abandoned by her lover Rodolphe Boulanger, leading to her suicide by taking arsenic. For 10 points, name this novel about the adulterous wife of a country doctor written by Gustave Flaubert.

ANSWER: Madame Bovary

014-12-70-08120

5. This poem describes "bats with baby faces in the violet light" who "crawled head downward down a blackened wall." One section of this poem ends with the instruction to "Consider Phlebas, who was once handsome and tall as you." This poem's speaker states "These fragments I have shored against my ruins" near the end of its final section, "What the Thunder Said." For 10 points, name this long poem beginning, "April is the cruelest month," a work of T. S. Eliot.

ANSWER: "The Waste Land"

014-12-70-08121

6. A naval battle in this war began when the phrase "You may fire when ready, Gridley" was spoken by George Dewey. Support for this war was spurred by the "yellow journalism" of Joseph Pulitzer and William Randolph Hearst. One of its battles included a charge up San Juan Hill by the Rough Riders. This war began when the USS *Maine* was sunk in Havana harbor in 1898. For 10 points, name this war that resulted in the United States gaining Guam, Puerto Rico, and the Philippines.

ANSWER: **Spanish-American** War

015-12-70-08122

7. This artist included a childlike depiction of the sun and four windmills in the background of his black and white sketch of *Don Quixote*. He was influenced by African masks in painting five prostitutes in *Les Femmes d'Alger*. Often credited with founding a movement with Georges Braque, he respectively painted *Boy with a Pipe* and *The Old Guitarist* during his "rose" and "blue" periods. For 10 points, name this Spanish painter who pioneered cubism with *Guernica*.

ANSWER: Pablo **Picasso**

015-12-70-08123

8. This contest's logo has a heart that is filled in based on who is the host. The 2012 winning submission, "Euphoria", got more first-place votes than the highest scoring winning submission in the history of this contest, Alexander Rybak's "Fairytale" that won in 2009. Celine Dion and ABBA have both won this contest in which national broadcasters win hosting rights for the following year if their contestant wins. For 10 points, name this annual song contest held by the European Broadcasting Union.

ANSWER: **Eurovision** Song Contest [or *Concours Eurovision de la Chanson*]

153-12-70-08124

9. Positive integer powers of these numbers can be found using DeMoivre's theorem. The distance from the origin on the Argand plane is equal to the modulus of a number of this type. The product of a number of this type and its conjugate is a real number. A quadratic equation with a negative discriminant has two distinct solutions of this type. For 10 points, the real numbers and the imaginary numbers are subsets of which class of numbers which can be written in the form $a + bi$?

ANSWER: **complex** numbers [prompt on **imaginary** numbers before it is read]

131-12-70-08125

10. One story relates that this god instigated the death of the Theban king Pentheus by exposing him to some raving Maenads. According to another story, he fell in love with Ariadne (AY-ree-AD-nee) after she was abandoned by Theseus. After his mother Semele was killed by seeing Zeus in his godly form, this god was sewn into the thigh of Zeus. He is often depicted with grapes. For 10 points, name this equivalent of Bacchus, a Greek god of wine and madness.

ANSWER: **Dionysus** [or **Bacchus** until mentioned]

015-12-70-08126

11. In 1957, Lawrence Ferlinghetti was put on trial for publishing this poem. It includes the image of people "who chained themselves to subways for the endless ride from Battery to holy Bronx on benzedrine." This poem continually references the Ammonite god Moloch, and tells Carl Solomon "I'm with you in Rockland." For 10 points, name this poem which begins "I saw the best minds of my generation destroyed by madness," an exemplar of the Beat movement by Allen Ginsberg.

ANSWER: "**Howl**"

015-12-70-08127

12. These events are responsible for r-process nucleosynthesis. Perlmutter's observation of these events was used to show that the expansion of the universe is accelerating. One type of these events occurs after a core-collapse, while another type occurs when the Chandrasekhar (shan-druh-SAY-kar) limit is exceeded. The Crab nebula was created by one of these events observed in 1054. For 10 points, name these explosions that occur at the end of some stars' life cycles.

ANSWER: **supernova** [accept more specific answers like **type Ia supernova**; accept **supernova remnants**]

048-12-70-08128

13. The protagonist of this novel ends up starting a business sewing and selling pants. This novel takes the form of ninety letters written to God. In this novel, Sofia marries Harpo and is sentenced to twelve years working as the mayor's maid. The protagonist of this novel escapes her abusive father and husband by starting a relationship with the singer Shug Avery. For 10 points, name this novel about Celie and her sister Nettie, a work of Alice Walker.

ANSWER: *The **Color Purple***

015-12-70-08129

14. Thomas Walker forged one path through this mountain range. The Transylvania Company later hired Daniel Boone to explore and expand the path into the Wilderness Road, which goes through the Cumberland Gap in this range. The Proclamation of 1763 prevented settlement beyond it, angering colonists in Virginia and Pennsylvania. For 10 points, name this mountain range in the eastern United States that includes the Smokies and the Blue Ridge.

ANSWER: **Appalachian** Mountains

121-12-70-08130

15. One character in this work delivers a speech asking, "What though the field be lost?" and determines to follow "study of revenge, immortal hate, and courage never to submit or yield." At the end of this work, two characters observe the waving of a flaming sword over their former home. Those characters have a lengthy discussion with the messenger Raphael before being banished for eating the fruit of the Tree of Knowledge. For 10 points, name this epic poem about the fall of man by John Milton.

ANSWER: **Paradise Lost**

014-12-70-08131



1. This empire's decline was marked by the Tuareg seizure of Walata. This empire, which developed from the state of Kangaba, started after the defeat at the Battle of Kirina of the Susu chief Sumanguru. The empire's most powerful ruler patronized Egyptian scholars and embarked on a lavish pilgrimage to Mecca. Famously ruled by Mansa Musa, this empire was founded by Sundiata Keita. For 10 points, name this African trading empire that in the fourteenth century absorbed the cities of Gao and Timbuktu.

ANSWER: Mali Empire

014-12-70-08132

2. In November 2010, this team scored 54 points in the second quarter against the Denver Nuggets, winning the game 144 to 113. In the 2012 offseason, this team acquired Ian Mahimni from the Dallas Mavericks for Darren Collison and Dahntay Jones and Kevin Pritchard replaced David Morway as general manager. After a season in which this team lost to the Miami Heat in the Eastern Conference semifinals, two former players were inducted into the Basketball Hall of Fame. For 10 points, name this NBA Eastern Conference team, whose 2012 Hall of Fame inductees were ABA star Mel Daniels and NBA star Reggie Miller.

ANSWER: Indiana Pacers [or Indiana Pacers]

194-12-70-08133

3. This poet claimed "I have outwalked the furthest city light" in "Acquainted with the Night." He wrote that "some boy too far from town to learn baseball" could entertain himself by swinging on the title trees in "Birches." This poet recalled a "yellow wood" where one path "was grassy and wanted wear" and lay in "leaves no step had trodden black." For 10 points, name this New England poet who wrote that he "took the one less traveled by, and that has made all the difference" in "The Road Not Taken."

ANSWER: Robert Frost [or Robert Lee Frost]

015-12-70-08134

4. Heterogenous varieties of these substances commonly require a support, and one type of them uses phase transfer. These substances may be "poisoned" to make them more selective. One example of these substances consists principally of iron and functions by allowing gases to adsorb to its surface. Metals like palladium and nickel usually serves as these species in hydrogenation reactions. In general, these substances lower the activation energy for a reaction, but aren't consumed in the process. For 10 points, name these substances which speed up the rate of chemical reactions.

ANSWER: catalysts

190-12-70-08135

5. This city was site of the 1893 Columbian Exposition. The 1968 Democratic National Convention, which caused major protests, took place in this city. John Dillinger was shot in this city, which has long been run by the Daley family. Legend holds that in 1871, Mrs. O'Leary's cow knocked over a lantern, which started a fire that burned this city to the ground. For 10 points, name this Illinois city that is currently led by Rahm Emanuel.

ANSWER: Chicago

015-12-70-08136

This is a calculation question. If you roll a standard six sided die, what is the probability that cube of the number you roll is greater than 10?

ANSWER: 2/3 [prompt on 4/6]

In a 1961 speech, FCC chairman Newton Minnow referred to what medium as “a vast wasteland”?

ANSWER: **television**