

Cal Classic Questions by Amar and Jerry

1. He was the son of the keeper of the royal seal and trained as a lawyer, eventually rising to the position held by his father. In 1620, he wrote the *Novum Organum*, an attempted reorganization of the natural sciences, emphasizing the importance of experience and inductive thinking. FTP name this English philosopher and amateur scientist credited with inventing the scientific method.

Answer: Francis Bacon

2. It was called Trinacria in ancient times, because it resembled a triangle. It was also the site of a disastrous expedition by Athenian troops during the Peloponnesian War and an invasion site for the Carthaginians, Romans, Vandals, Arabs, Normans, Spanish, Italian nationalists, and Americans. FTP name this Mediterranean island southwest of the Italian peninsula with the capital Palermo, alleged birthplace of the Mafia.

Answer: Sicily or Sicilia

3. Last year, scientists at Celera Genomics led by J. Craig Venter and a government research consortium under Dr. Francis Collins had successfully sequenced it. Researchers discovered that its structure is much more simple than previously believed with at most 40,000 parts. FTP, name this genetic sequence, the fundamental set of instructions for human DNA.

Answer: The Human Genome

4. The most important contents of this structure are contained in vesicles and do their work in environments of high acidity. It has the ability to degrade many commonly used organic structures and even other organelles. FTP, name this cellular structure that degrades cell waste products and recycles them with the aid of powerful "primary" enzymes.

Answer: lysosome(s)

5. According to a 1997 article by psychologist Eva Cybulska, this composition exhibits "musical perseveration" (pur-SEV-uh-RAY-shun) due to a brain tumor that eventually killed its composer in 1937. When performed as a ballet, it features a female gypsy who excites the patrons of a Spanish tavern with her sensuous dancing. FTP, name this throbbingly repetitive composition by Maurice Ravel featured in the movie "10" and in ice skating routines by Torvill and Dean.

Answer: Bolero

6. It is the story of the events that lead to a meeting between 2 men: Dwayne Hoover, a manic-depressive Pontiac salesman whose wife commits suicide by drinking Drano; and Kilgore Trout, an obscure science fiction writer who receives an invitation from Eliot Rosewater to attend the Midland City Festival of the Arts. FTP, name this Kurt Vonnegut novel whose title is the same as the ad slogan for a box of Wheaties cereal.

Answer: Breakfast of Champions or Goodbye Blue Monday

7. Born in Massachusetts in 1767, he served as a diplomat in Europe before becoming Secretary of State under James Monroe and negotiating a critical treaty with Spain in Florida. In the 1824 election, he received fewer votes than Andrew Jackson, but won Henry Clay's support in the House of Representatives, which finally gave him the presidency. FTP, name this 6th President of the United States, the son of John Adams, nicknamed "Old Man Eloquent."

Answer: John Quincy Adams

8. In one of his poems, he uses the rhythms of the Finnish epic, the Kalevala (call-UV-all-UH), to tell the story of 2 Native American lovers. He also depicted the forced evacuation of Acadians from Canada in his poem "Evangeline." FTP, name this 19th century Massachusetts poet best known for "Paul Revere's Ride" and "the Song of Hiawatha."

Answer: Henry Wadsworth Longfellow

9. Homer and Hesiod described it as a place that only the special favorites of the gods could enter. Later, all who had lived righteously could live there after death. It was originally placed in the distant west, but later relocated to the underworld. FTP, name this Greek version of Heaven, the place where Aeneas visited his father Anchises in Virgil's Aeneid.

Answer: Elysium or the Elysian Fields

10. The *Iliad* states he is strong and colossal, second only to Achilles in bravery and strength. He engaged Hector in single combat and rescued the body of Achilles from the Trojans with Athena's help. He also competed with Odysseus for the armor of Achilles, but lost the armor and his sanity, then killed himself with the sword Hector gave him. FTP, name this Greek hero from Salamis who shares his name with a kitchen cleanser.

Answer: Ajax or Telamonian Ajax or Greater Ajax or any reasonable variant (accept Ajax of Salamis before "Salamis" is mentioned)

11. A corollary of this theorem is that any polynomial of nonzero degree can be uniquely factored into linear factors. Moreover, when the coefficients of the polynomial are real, its complex roots occur in conjugate pairs. FTP, the fundamental theorem for what branch of mathematics states that every polynomial equation with complex coefficients has a complex solution?

Answer: Fundamental Theorem of Algebra

12. Its chapters include: "Of Religion," "Of Commonwealth," and "Of the Liberty of Subjects." It argues that a monarch is not subject to the civil laws that he created and advocates a secular society based firmly in civil law. FTP, name this 1660 work by Thomas Hobbes.

Answer: Leviathan

13. Squire Allworthy adopts the title character and raises him with his grandson Blifil. Years later, Blifil gets the hero thrown out of Allworthy's house, because 2 men are both in love with Sophia Western. In the end, the hero learns he is Allworthy's first grandson, inherits granddad's fortune, and marries Sophia. FTP, identify this novel by Henry Fielding, the namesake of a lounge singer known for "What's New Pussycat?"

Answer: Tom Jones (also accept The History of a Foundling)

14. Classical physics could not explain this phenomenon, first observed by Heinrich Hertz in 1887, because the number of electrons released was proportional to the intensity, not the wavelength. Albert Einstein did not win a Nobel Prize for his theory of relativity, but for publishing his explanation of it in 1905. FTP, name this effect that occurs when electrons are released from a material when it absorbs light.

Answer: photoelectric effect

15. It was carried by Brother Maynard and it was used to defeat the rabbit of Caerbannog. Its instructions state, 'First shalt thou take out the Holy Pin, then shalt thou count to three, no more, no less. Three shalt be the number thou shalt count, and the number of the counting shalt be three. Four shalt thou not count, neither count thou two, excepting that thou then proceed to three. Five is right out.' FTP, what is this sacred weapon from *Monty Python and the Holy Grail*?

Answer: The Holy Hand Grenade of Antioch

16. Spurred by the threat of financial panics, the newly elected President Woodrow Wilson formed it with help from Republican Senator Carter Glass. Today, it maintains branches in 12 American cities, along with a Board of Governors in Washington D.C. FTP name this central bank of the United States, headed by Alan Greenspan.

Answer: the Federal Reserve System

17. Originally composed of 3 volcanoes, the discharges from the most active volcano engulfed the other two and created its distinctive symmetric shape. The last major volcanic activity occurred in 1707, but it is still considered an active volcano and its 12,380 foot peak makes it the highest point on the Japanese Islands. FTP name this snowcapped mountain southwest of Tokyo, revered as a symbol of Japan.

Answer: Mount Fuji, or Fujiyama

18. From 1942 to 1945 he served as an artillery captain in the Red Army, but when he criticized the Soviet regime, he was promptly sent to the labor camps. His experiences there led him to write, *One Day in the Life of Ivan Denisovich*, which was first published in 1962 with Khrushchev's permission. FTP, who is this dissident Nobel Prize winning author of *Cancer Ward*, *The First Circle*, and *The Gulag Archipelago*?

Answer: Alexander Solzhenitsin

19. Following the Eightfold Path with due diligence is considered the most direct way to achieve it. Siddhartha Gautama is believed to have experienced it while meditating beneath a sacred fig tree in northern India. FTP name this concept from Buddhism and Hinduism that refers to the emancipation of the soul from the cycle of reincarnation, not a grunge band from Seattle.

Answer: Nirvana or Samsara

20. Donatello's is approximately 5 feet 3 inches tall and was the first free-standing bronze nude since antiquity. Verrocchio's stands proudly, holding his sword in his right hand and his left hand on his hip. Bernini's is portrayed lunging forward to cast the fatal stone. The most famous, however, is undoubtedly Michelangelo's, who stands contemplative with one arm at his side, the other raised to his face. FTP, all of these artists sculpted a version of what Biblical slayer of Goliath and King of Judea?

Answer: David

21. Her mother separated her from her famous father only weeks after she was born, then trained her as a mathematician. She worked with Charles Babbage on his calculating machine and suggested a procedure for generating Bernoulli numbers, thereby becoming the first "computer programmer." FTP, name this daughter of Lord Byron, the namesake of a computer language developed by the Department of Defense.

Answer: Ada Byron or Ada Lovelace or Lady Lovelace

22. Alarmed at the increasing concentration of wealth, the elder one won the election for Tribune as a reformer in 133 B.C. When he tried to renominate himself, the Senate declared his action illegal and he was killed in riots the next day. The younger sought to continue his brother's reforms and was elected Tribune in 123 B.C. However, he lost the Tribunate to Marcus Drusus in 121 B.C. and died in a riot just like his brother. FTP, give the common last name of these 2 brothers, Tiberius and Caius.

Answer: Gracchus or Gracchi

23. Fought from 1700 to 1721, this war decided who would control the seaports on the shores of the Baltic and Black Seas. Military conflicts included Narva, Lesnaya, Severnaya Dvina, and the decisive battle of Poltava. FTP, name this war that pitted Peter the Great's Russia against Charles XII's Sweden, ended in 1721 by the Treaty of Nystad.

Answer: Great Northern War (accept Second Northern War)

24. It has four parts and contains over 200 musical leitmotifs. The first work in the series is *Das Rheingold*, while the other 3 parts deal with the Walsung family, which includes Siegfried, who kills the dragon Fafner. FTP, what is the collective name given to this series of 4 operas by Richard Wagner, which also includes *Die Walkure*, *Siegfried*, and *Gotterdammerung*?

Answer: The Ring Cycle or The Ring of the Nibelung or Der Ring des Nibelungen

25. Every other glucose molecule is rotated 180 degrees, and together they form a chain of interwoven glucose residues. These glucose chains are formed into the microfibrils that give the structure its most characteristic form. FTP name this polymer with composition $C_6H_{10}O_5$, a principal component of plant cells and the most common organic compound in nature.

Answer: Cellulose or $C_6H_{10}O_5$ before it is mentioned.

Bonuses

1. Identify these laws about gases FTPE.

This law states that the volume and temperature of a gas are directly related, when pressure stays constant.

Answer: Charles' Law or Gay-Lussac's Law or the Law of Charles and Gay-Lussac

This law states that equal volumes of gases at the same temperature and pressure contain the same number of molecules.

Answer: Avogadro's Law

This law states that the pressure of a gas at constant temperature is inversely proportional to the volume of the gas.

Answer: Boyle's Law

2. On February 6, a federal judge imposed an injunction on a popular music website. FTPE:

Name this website, which allows users to swap music files over the Internet:

Answer: Napster or Napster.com

Name the then-19 year old student who developed Napster and became president of the company:

Answer: Shawn Fanning

Name the lawyer hired to defend Napster in its suit against the Recording Industry Association of America, also prominent in the case of Bush vs. Gore and his successful prosecution of the Microsoft antitrust trial.

Answer: David Boies

3. Identify these places from ancient history FTPE:

Sir Arthur Evans first excavated this city on the island of Crete and discovered evidence of an advanced Bronze Age civilization, which he named "Minoan".

Answer: Knossos

This ancient town was located on the steep lower slope of Mount Parnassus. It was the site of the most important oracle of Apollo

Answer: Delphi

Located just southwest of Cairo, the Great Pyramid of Khufu stands here.

Answer: Giza

4. Evaluate each of the following expressions and give the exact answer FTPE:

(10) 1 minus the square of the quantity sine pi over 4

Answer: $\frac{1}{2}$

(10) the limit as x goes to zero of sine x divided by x

Answer: 1

(10) the limit as x goes to infinity of the quantity 1 plus the reciprocal of x raised to the x power

Answer: e (accept Euler's number)

5. For 15 points each, answer the following questions about industrial developments in Europe during the 19th and early 20th centuries.

Steam engines had been developed previously by Thomas Newcomen, but this man refined Newcomen's basic engine and promoted its use in coal mining.

Answer: James Watt

Named for the Englishman who developed it, this process for producing steel from pig iron uses additional oxygen to superheat components in specially designed converters. This process has since been superseded by the open-hearth furnace and the basic-oxygen process.

Answer: Bessemer process

6. Name these rivers of New York from descriptions of their courses FTPE:

It rises in the Adirondacks and flows south past Albany to the Atlantic Ocean through New York Harbor.

Answer: Hudson River

It rises near Utica and flows east to a junction with the Hudson River near Albany. It shares its name with a Native American tribe and a style of haircut.

Answer: Mohawk River

It carries the waters of Lake Erie north to Lake Ontario, marking much of the border between New York and Ontario, Canada. It shares its name with a series of famous waterfalls.

Answer: Niagara River

7. Answer the following questions about immigration to the United States FTPE:

This island in New York harbor would serve as the most famous entry point for European immigrants of the late 19th and early 20th centuries.

Answer: Ellis Island

This island in San Francisco Bay was used as a detention center for Asian immigrants from 1910 to 1940.

Answer: Angel Island

Large numbers of Chinese immigrants were imported during the 1860's and 70's to construct this segment of the transcontinental railroad that ran from Sacramento to Promontory Point, Utah.

Answer: the Central Pacific Railroad

8. Identify these various people and things related to *The Hitchhiker's Guide to the Galaxy* FTSNOP:

5) Who wrote *The Hitchhiker's Guide to the Galaxy*?

Answer: Douglas Adams

5) Who is Arthur Dent's companion, who hails from Betelgeuse 7 where there is no sarcasm? His Earth name is the same as a brand of car, because he thinks it makes him more inconspicuous.

Answer: Ford Prefect or Ix

(10) What is the most popular alcoholic drink in the Galaxy? If you drink it, it feels like being hit on the head with a slice of lemon wrapped around a large gold brick.

Answer: Pan Galactic Gargle Blaster

(10) These are the only two words in the Hitchhiker's Guide entry for the planet Earth. It is also the title of the fifth book in the *Hitchhiker's* trilogy.

A) Mostly Harmless

9. Identify the opera from plot for 15 pts. each, 5 if you need the composer:

15) U.S. Navy Lieutenant Benjamin Pinkerton marries a Japanese Geisha, Cio-Cio-San, but later breaks his Japanese marriage contract and marries an American actress. Cio-Cio-San kills herself out of shame and despair.

5) Giacomo Puccini

Answer: Madame Butterfly

15) Radames is an Egyptian prince in love with the title character, a slave of the King's daughter Amneris. When he is discovered plotting to escape with his love to Ethiopia, he is sentenced to death by being buried alive. The title character slips into the tomb at the last moment to die with her lover.

5) Giuseppe Verdi

Answer: Aida

10. 30-20-10, identify the scientist from clues

30) He was born in 1791 and worked as an apprenticed bookbinder when he was 14. He wrote a letter to Sir Humphrey Davy asking for a job and Davy made him a laboratory assistant at the Royal Institution.

20) He was a gifted analytical chemist and in 1825 he discovered benzene.

10) He is most famous for his work with electricity and magnetism and, in 1831, he invented the first electric generator. The generator he produced was possible because of his law of electromagnetic induction.

Answer: Michael Faraday

11. Name the work of Ernest Hemingway, given a short list of characters:

Rinaldi, Catharine Barkley, Frederic Henry

Answer: A Farewell to Arms

Robert Cohn, Brett Ashley, Jake Barnes

Answer: The Sun Also Rises (or Fiesta)

Manolo, Santiago

Answer: The Old Man and the Sea

12. Identify each of these buildings given the architects and the city in which they are located for 15 points, 5 points if you need an easier clue:

15) Designed by Iktinos and Kalikrates it is located in Athens.

5) It was commissioned by Pericles and housed statues by the Greek sculptor, Phidias.

Answer: Parthenon

15) Designed by Giovanni del Dolci for Pope Sixtus IV, it stands in the Vatican.

5) Michelangelo's *Last Judgement* is painted on the west wall.

Answer: Sistine Chapel

13. Answer the following questions about the search for El Dorado, on a 5, 10, 15 basis.

5) El Dorado was believed to exist on this continent

Answer: South America

10) This character who studied under Dr. Pangloss met the King of El Dorado with his aide Cacambo. Before he returned to his search for Cunegonde, he used sheep to transport some of El Dorado's riches for himself.

Answer: Candide

15) This eminent German naturalist visited Lake Guatavita, which allegedly contained the wealth of El Dorado, and estimated the potential wealth underneath its waters at more than 300 million dollars. He is also known for his explorations throughout the Orinoco and Amazon River basins, as well as Russia.

Answer: Alexander von Humboldt

14. FTPE, name these small political entities in East Asia that experienced remarkable economic growth during the latter half of the 20th century.

Located on a series of small rocky islets and peninsulas off the southern coast of China, it became a major port under British control, then reverted to China in 1997.

Answer: Hong Kong

Much of the economic growth in this nation was stimulated by the large industrial conglomerates known as *chaebol* (JEH-bull), which include Hyundai and Samsung. Its invasion in 1950 by North Korea led to United Nations intervention.

Answer: South Korea

It rose to prominence after 1949, when Nationalist refugees from mainland China settled here after the success of the Maoist revolution. It suffered heavy damage in a deadly September 1999 earthquake that severely hurt its export-focused computer manufacturing industry.

Answer Taiwan, or The Republic of China

15. The rise of Hitler in Europe caused an exodus of famous scientists and thinkers from Europe to the United States in the 1930's and 1940's. Identify the following refugees FTPE:

This German physicist wrote to President Roosevelt alerting him to the potential of nuclear weapons, but he is most known for his equation relating energy and the speed of light, $E=mc^2$.

Answer: Albert Einstein

This Italian physicist fled for the United States after receiving a 1938 Nobel Prize in Physics, because his wife was Jewish. He created

the first self-sustaining atomic chain reaction and a lab in Batavia, Illinois is named after him.

Answer: Enrico Fermi

This Hungarian mathematician could perform such legendary feats as dividing eight-digit numbers in his head, but he is better known as the inventor of game theory.

Answer: John Von Neumann

16. Identify the plant on a 30-20-10 basis:

30) Celtic priests would gather it with a golden sickle or burn it during midsummer rituals. It is sometimes called the "vampire plant," because it attaches itself to other plants and drains water from their roots.

20) In Norse mythology, Balder dies when Loki tricks his brother into throwing this plant, which pierces Balder's heart.

10) It is considered good luck to kiss somebody under this plant at Christmastime.

Answer: mistletoe (also accept phoradendron)

17. FTPE, identify the 18th century philosophers who wrote the following works, given the title and the year in which it was published:

1) *The Social Contract*, 1762

Answer: Jean Jacques Rousseau

2) *A Treatise of Human Nature*, 1739

Answer: David Hume

3) *Critique of Pure Reason*, 1781

Answer: Immanuel Kant

18. Answer the following questions about a famous North Carolina author, for 15 points each.

Much of this Asheville native's writing was controversial because of the heavy influence editor Maxwell Perkins exerted over his finished work by cutting thousands of pages of manuscript.

Answer: Thomas Wolfe

Name his first and perhaps best-known work, which chronicled the youthful adventures of the dreamer Eugene Gant and his dysfunctional family.

Answer: Look Homeward, Angel

19. Identify these computer programming languages FTPE:

1) Created by Kernighan and Ritchie at AT&T's Bell Labs, this is one of the most common languages in use today. The Unix operating system is written primarily in this language. Its name is extremely similar to an object-oriented programming language that uses the double-plus sign as an increment.

A) C (do not accept C++)

2) Its full name is "Formula Translator" and it was designed to make writing programs that use mathematical calculations easier. It is still in wide use today in the scientific community.

A) FORTRAN

3) It was created by Larry Wall and designed for operations on strings, which makes the language useful for CGI scripting and Web programming.

A) Perl

20. For 15 points each, answer the following questions about Soviet-American relations during the Cold War

This policy would become the central idea influencing American attempts to counter Soviet power. It was based upon the idea that the United States must surround the Soviet Union with American military and political support in order to prevent Communism from spreading. Some conservatives claimed this policy did not go far enough and supported a policy of rollback instead.

Answer: containment

This American diplomat and scholar sent a long telegram to Washington from Moscow in 1946, outlining his ideas about the Soviet Union and articulating the basis for the policy of containment. He is also known for a famous article he wrote in Foreign Affairs magazine under the pseudonym, Mr. X.

Answer: George F. Kennan

21. Identify these famous battles in European history, F15PE:

15) Admiral Horatio Nelson defeated the combined fleets of France and Spain at this naval encounter in 1805. A famous square in London is named after this battle.

A) Battle of Trafalgar

15) Tennyson's *The Charge of the Light Brigade* commemorates a real charge that took place during this battle of the Crimean War which ended in a disastrous defeat for the British.

A) Battle of Balaclava

22. Identify these literary works FTPE:

Written by Albert Camus, it is the story of Meursault, who kills a man in Algeria and is subsequently imprisoned for the murder, tried, and sentenced to death by guillotine.

Answer: The Stranger

Written by Franz Kafka, it is the story of K, who comes to the titular location as a new surveyor, but runs into incredible hostility from the townspeople and becomes embroiled in the intrigues of the town, all the while trying to gain admittance to the title building.

Answer: The Castle

This aptly titled Fyodor Dostoyevsky work is about the murder of Alyona Ivanovna by Raskolnikov and the consequences of that act.

Answer: Crime and Punishment

23. Answer some questions FTPE about that great classic saga, *The Lord of the Rings*.

1) In *The Fellowship of the Ring*, Gandalf falls to his apparent doom while battling this monster in the mines of Moria.

A) (the) Balrog

2) He forged the One Ring in the forges of Mount Doom, and his domain is Mordor, where the shadows lie.

A) Sauron

3) Sauron forged nine lesser Rings of Power and gave them to various powerful men, who were corrupted by them and turned to his service. What is the collective name given to this group of men, who ride black winged steeds and chase Frodo across the Shire?

A) Nazgul or Ringwraiths

24. Answer these questions about an important rule of population biology on a 15-15 basis:

This law states that given some important assumptions, frequencies of alleles and genotypes will remain constant between generations within a population of diploids.

Answer: The Hardy-Weinberg Law

State the Hardy Weinberg Law in a situation with 2 alleles and 1 locus:

$$p^2(AA) + 2pq(Aa) + q^2(aa) = 1$$