

1. This politician decried the forced removal of Ali Maher as an attack on his nation's sovereignty. After his country's defeat in a war with Israel, this man united with Muhammad Naguib to lead the Free Officers movement in a rebellion against the monarchy. Later, his undertaking of the High Dam project in part caused the resulting reservoir to be named for him. His nationalization of a major waterway sparked the Suez Canal Crisis. For 10 points, name this Egyptian president and pan-Arab leader who was succeeded by Anwar Sadat.

ANSWER: Gamal Abdel Nasser

002-09-7-04101

2. This poet acknowledged that "if little by little you stop loving me I shall stop loving you little by little" in "If You Forget Me." This man noted "maybe January light will consume my heart" in his poem "I Do Not Love You Except Because I Love You." This poet wrote of a "body of a woman" with "white hills, white thighs" in the first of his *Twenty Love Poems and a Song of Despair*. He included the section "The Heights of Macchu Picchu" in his collection *Canto general*. For 10 points, name this communist Chilean poet.

ANSWER: Pablo Neruda [or Neftali Ricardo Reyes Basoalto]

015-09-7-04102

3. This hero killed a murderer who would chop off or stretch people's limbs to fit his bed. This man left Helen with Aethra when she was a girl, which required him to aid his companion in rescuing Persephone from the underworld. This companion of Pirithous left one lover on Naxos after she helped him navigate a certain area with a ball of string. This hero killed the Crommyonian sow and married the Amazoness Hippolyta, making her the queen of Athens. For 10 points, name this hero who navigated the labyrinth and killed the Minotaur.

ANSWER: Theseus

027-09-7-04103

4. The type of this enzyme obtained from the avian myeloblastosis (my-EE-lo-blass-TOE-sis) virus is less desirable than the type obtained from the Moloney (muh-LOH-nee) murine (myoo-RHINE) leukemia virus. This enzyme is used to synthesize and amplify complementary DNAs or cDNAs from edited RNAs in its namesake polymerase (puh-LIM-er-aze) chain reaction technique. For 10 points, name this enzyme isolated that is found in retroviruses like HIV and synthesizes DNA from an RNA template.

ANSWER: reverse transcriptase [prompt on RNA-dependent DNA polymerase]

058-09-7-04104

5. This entity's leader, Romanus IV Diogenes (dye-AH-juh-nee), was taken prisoner at the battle of Manzikert. Alexius Comnenus allowed the First Crusade to pass through the capital of this empire. Leo the Isaurian led a movement in this empire to destroy images of holy figures, called iconoclasm. This empire's last ruler, Constantine XI, was overthrown by Murad II when its capital fell in 1453 to the Ottomans. For 10 points, name this empire led from Constantinople.

ANSWER: Byzantine Empire [or Byzantium; or Eastern Roman Empire]

027-09-7-04105

6. Calculations involving these mixtures often involve rearranging an equation with negative log of the acid dissociation constant, or pKa [pee-kay-ay]. That Henderson-Hasselbalch equation can then be used to find the strongest point for these mixtures, which is often when pKa is equal to pH. These solutions are made by mixing together a weak base and its conjugate acid or a weak acid and its conjugate base. For 10 points, name this type of solution, that used in chemistry when adding acids or bases to a solution to make sure there is only a small change in pH.

ANSWER: **buffer** solutions

023-09-7-04106

7. Devadatta tried to kill this prophet, whose Fire Sermon preached that detachment liberates people from burning desires. He was disturbed by the sights of a dying man, a corpse, and an ascetic man, signs of the suffering he had been shielded from. After meditating under the Bodhi (BO-dee) tree for forty-nine days, this prophet became enlightened. For 10 points, name this prophet who taught the Eightfold Path and founded a religion based on achieving nirvana.

ANSWER: the **Buddha** [or **Siddhartha** Gautama]

004-09-7-04107

8. One poem by this author opens with orders to "pile the bodies high," and to "shovel them under," to let the title substance "work." That poem by this man is titled "Grass." Another work by this poet sees the title entity coming on "little cat feet." This poet described a "Player with Railroads and Freight Handler to the Nation" in a work that declares a certain location the "City of the Big Shoulders" and "Hog Butcher for the World." For 10 points, name this American poet of "Fog" and "Chicago."

ANSWER: Carl **Sandburg**

002-09-7-04108

9. In this film, Oskar Steiger compares the title character to Don Quixote (kee-HOH-tay). Early in this film, the main character observes that Morocco is like "a cross between the Bible and Hollywood." Karl Malden portrayed Omar Bradley in this movie. Its iconic opening speech features the main character in front of a gigantic American flag. For 10 points, name this 1969 movie starring George C. Scott about the title American general, that includes a scene in which he slaps a battle-fatigued soldier.

ANSWER: **Patton**

030-09-7-04109

10. The protagonist of this work chooses to flee to Sweden after hearing about the survival of Orr. Another character in this novel was meant to be named Caleb but was instead named Major Major. This novel's namesake paradox is that a crazy man can be grounded, but any man who requests to be grounded due to insanity must be sane. This work's main character is stationed on the island of Pianosa and is a bombardier named Yossarian. For 10 points, name this book by Joseph Heller, the title of which denotes any no-win situation.

ANSWER: **Catch-22**

059-09-7-04110

11. Types of this material include chernozem (CHAIR-no-zem) and solonetz (so-low-NETS). The formation of this substance is known as pedogenesis (PEH-doh-JEN-uh-sis). A yellowish type of it is known as "loess" (LOW-us). Another type of this substance contains a high percentage of humus (HUE-muss), and is known as nutrient-rich loam. This material becomes saline, nutrient-poor, and dry during desertification. For 10 points, name this material made up of biodegraded substances and disintegrated rock.

ANSWER: **soil** [accept **earth**; do not accept "dirt" or similar answers]

024-09-7-04111

12. One battle in this conflict saw Antero Rubín's forces come close to defeating "Fighting Joe" Wheeler at Las Guasimas (gwah-SEE-mahs). Leonard Wood commanded the First Volunteer Cavalry in this conflict, which was dubbed a "splendid little war." This war included the Battle of San Juan Hill, in which Teddy Roosevelt led the charge of the "Rough Riders." For 10 points, name this war that was sparked by the explosion of the USS *Maine* and saw the U.S. gain influence over the Philippines, Puerto Rico, and Cuba.
ANSWER: the **Spanish-American** War

026-09-7-04112

13. This man painted boats at Le Havre (LAV-ruh) in a picture of a sunrise. He painted poppies near Argenteuil (ar-jen-TWEE) as a recurrent theme. One series of paintings by this man shows the Cathedral at Rouen at different times of day. He painted twenty-five images of haystacks at different times of the year. He painted his pond with a Japanese bridge at his estate in Giverny (zhee-VAIR-nee), as well as *Impression: Sunrise*. For 10 points, name this impressionist painter of the *Waterlilies* series.
ANSWER: Claude Oscar **Monet** [do not accept "Manet"]

027-09-7-04113

14. Miller's algorithm conditionally checks for this property, but Rabin modified that algorithm to make it probabilistic, like the Fermat test. The most computationally naive way to determine if a number n has this property is trial division which checks to see if no number less than n evenly divides it. For 10 points, name this property possessed by non-composite numbers whose only divisors are one and the number itself.
ANSWER: **primality** [or **prime**; or **primeness**; or any other word forms]

026-09-7-04114

15. Several years before this man targeted the Ottomans in the Night Attack, his brother Radu the Handsome converted to Islam at the Ottoman court. At three times, this man was voivode (VOH-yeh-vahd) of Walachia (vah-LAH-kee-uh). One of this man's bynames was derived from his father's membership in the Order of the Dragon, and another from his tactic of displaying thousands of dead bodies of enemies after battles. For 10 points, name this Romanian ruler who became notorious for driving stakes through his victims.
ANSWER: **Vlad the Impaler** [or **Vlad Tepes**; or **Vlad III**; or Vlad **Dracula**; prompt on **Vlad**; do not accept "Vlad Dracul"; do not accept "Vladimir" for "Vlad"]

019-09-7-04115

1A. What 1998 movie stars Tom Hanks and Meg Ryan as rival bookstore owners who fall in love via their online conversations?

ANSWER: *You've Got Mail*

1B. What artistic technique uses spatial arrangements of light and shadow to give the illusion of depth?

ANSWER: chiaroscuro (kee-AIR-us-KOO-row)

2A. "Bai" (BYE) means "yes" in what language spoken in the Pyrenees, which has no known relative?

ANSWER: Basque [or Euskara]

2B. Lake Mead and Lake Powell are reservoirs along the course of what river?

ANSWER: Colorado River

3A. What sixteenth-century Flemish-Italian anatomist wrote *On the Workings of the Human Body*, an anatomy text that corrected over two hundred errors made by Galen?

ANSWER: Andreas Vesalius

3B. What word is used to denote stimuli that are presented below the level of conscious perception, and is often used to describe hidden messages in advertising?

ANSWER: subliminal [or subthreshold]

4A. This is a 10-second calculation question. Find the greatest common divisor of 75, 63, and 42.

ANSWER: 3

4B. This is a 10-second calculation question. Multiply: $(x - 4)(x - 6)$.

ANSWER: $x^2 - 10x + 24$

5A. During DNA replication, what "fragments" are created on the lagging strand because DNA polymerase (puh-LIM-er-ase) only works in the five-prime to three-prime direction?

ANSWER: Okazaki fragments

5B. "The Octagon" is the competition area in what sport, which combines techniques from boxing, wrestling, and a variety of East Asian fighting styles?

ANSWER: mixed martial arts [or MMA; or Ultimate Fighting Championship; or UFC]

6A. This is a 20-second calculation question. A triangular garden has the longest side between twice as large as the shortest side, while the middle side is one and a half times as long as the shortest side. If the longest side is 24.8 feet, how long is the perimeter of the garden?

ANSWER: 55.8 feet

6B. This is a 20-second calculation question. Find the slope of the line through the points (9, -3) and (2, -6).
ANSWER: 3/7

7A. What is the vector analog of speed, whose time derivative is acceleration?
ANSWER: velocity

7B. A description of the poet Alfred de Vigny (vig-WEE) gave rise to what term of impractical architecture, that is often used to deride professors or politicians for being out of touch with the real world?
ANSWER: ivory tower

8A. In December 2009, a sign reading "Arbeit Macht Frei" (AR-bite macht FRAY) was stolen from what concentration camp in Poland?
ANSWER: Auschwitz

8B. What tori (TOR-eye) of charged particles surround the Earth and protect it from cosmic rays?
ANSWER: Van Allen radiation belts

9A. This is a 30-second calculation question. A survey of 16 students found that 3 of them were between 60 and 62 inches tall, 4 of them were between 63 and 65 inches tall, 7 of them were between 66 and 68 inches tall, and 2 of them were between 69 and 71 inches tall. Find the average height of these students.
ANSWER: 65.5 inches [or 65 and 1/2 inches]

9B. This is a 30-second calculation question. Triangle ABC is a right triangle with right angle at C. Side AC is 6 inches long, and the sine of angle A is 4/5. What is the perimeter of the triangle?
ANSWER: 24 inches

10A. What term is given to a line that a character in a play speaks to the audience while other characters on the stage pretend they cannot hear it?
ANSWER: aside

10B. What term is given to a biography that is written to demonstrate the virtues of its subject, often a saint?
ANSWER: hagiography

1. The components of this structure are rearranged by flippases (FLIP-aze-iz) and scramblases (SCRAM-blaze-iz). The sodium-potassium pump transports ions through it. The Davson-Danielli model of this structure was supplanted by the fluid mosaic model, which characterizes it as a phospholipid (foss-foe-LIP-id) bilayer embedded with proteins and other molecules. For 10 points, name this semi-permeable structure which surrounds cells.

ANSWER: cell membrane [or plasma membrane]

024-09-7-04117

2. This author's second known play, *The Babylonians*, earned him a prosecution for the way the leader of his city was depicted. That prosecution was referred to in this man's later play *The Acharnians*. This playwright depicted the danger of learning from Socrates in his work *The Clouds*. Another play by this man sees the women of Greece withhold themselves to bring about peace. For 10 points, name this Greek comedic playwright of *The Birds* and *Lysistrata*.

ANSWER: Aristophanes (ARR-is-TAH-fuh-neeZ)

062-09-7-04118

3. In one of this author's novels, the protagonist's prizewinning drawings win him the love of Miriam, but he is in love with the suffragette Clara. That man, Paul Morel, is the protagonist of this author's *Sons and Lovers*. This author of the short story "The Rocking-Horse Winner" also wrote a work set at an estate in Wragby, where Constance and the gamekeeper Oliver Mellors have an affair. For 10 points, name this author of *Lady Chatterly's Lover*.

ANSWER: David Herbert Richards Lawrence

032-09-7-04119

4. One way of approximating this method involves using graphed values to determine the midpoint of the height of a rectangle. A similar approximation of it can be done by setting equally spaced y-values of a graphed function as the heights of a trapezoid. When given upper and lower limits, this method is described as being definite. This operation's indefinite form is the same as the antiderivative. For 10 points, name this operation of calculus that can be represented by the area under a curve and which is the opposite of derivation.

ANSWER: integration [or integrals]

023-09-7-04120

5. This ruling was presaged by a case arising out of Texas four years earlier, *Sweatt v. Painter*. The question "Show me the doll that is the nice doll" was included in one of the arguments in this case. It was followed a year later by an order that "all deliberate speed" be employed to implement its decision. The namesake of this case was the father of a third-grader who had to cross railroad tracks each morning. For 10 points, name this 1954 Supreme Court case, which ruled segregated public schools unconstitutional.

ANSWER: Brown v. Board of Education of Topeka, Kansas [or Board of Education of Topeka, Kansas v. Brown]

019-09-7-04121

6. In this work, Bertran de Born is seen carrying his own head, and both Mohammed and Ali (AH-lee) are seen being split in half. This work begins on the night before Good Friday, "halfway along our life's path," indicating that the narrator is 35 years old. An entrance in this work has a sign reading "abandon all hope, ye who enter here." At the end of this work, the narrator, while being guided by Virgil, encounters Brutus, Cassius, and Judas next to Satan. For 10 points, name this first part of the *Divine Comedy* by Dante Alighieri.

ANSWER: *The **Inferno*** [or **Hell**; accept *The Divine **Comedy*** or *La **Commedia*** before "Virgil" is read]

064-09-7-04122

7. Leaders of this party included Kentucky governor James Greene Hardy and gangster William Pool. This party arose from organizations including Charles Allen's Order of the Star Spangled Banner. This party ran Andrew Jackson Donnelson along with Millard Fillmore in the election of 1856. It drew nativist support for its anti-Catholic and anti-immigration views. For 10 points, name this political party which took its name from the response members were supposed to give when asked for information.

ANSWER: **Know-Nothing** Party [or the **Know-Nothings**; or the **American** Party]

015-09-7-04123

8. This poet, at age four, supposedly had a vision where God "put his head to the window." While working as an engraver, this writer developed his own mythological system centered on the deity Urizen (oo-RYE-zen). This author repeatedly asked "who made thee?" in one poem. Another poem by this man is about a creature "burning bright, in the forest of the night" and asks, "What immortal hand or eye could frame thy fearful symmetry?" For 10 points, name this poet whose *Songs of Innocence and of Experience* contains both "The Lamb" and "The Tyger."

ANSWER: William **Blake**

045-09-7-04124

9. The largest city of this nation is the site of the Askari Monument. The region of Arusha in this country contains Mount Meru and the Ngorongoro (ENG-guh-RAHN-guh-ro) Crater, as well as the Olduvai Gorge. This country is the site of the highest peak in Africa, Mount Kilimanjaro. Along with its western neighbors Burundi and Rwanda, it made up the colony of German East Africa. For 10 points, what country, whose capital is Dodoma and economic center is Dar es Salaam, was formed by the union of Zanzibar and Tanganyika?

ANSWER: The United Republic of **Tanzania** [or Jamhuri ya Muungano wa **Tanzania**]

034-09-7-04125

10. This composer used the viola d'amore in *Juditha Triumphans*, one of his three oratorios. He composed a set of twelve concerti including *The Hunt* and *Storm at Sea*, which was entitled *The Contest Between Harmony and Invention*. His most famous works are accompanied by sonnets that feature a "lamenting shepherd," "chattering teeth" and imitation bird calls. That work has four concertos, including *La Primavera* and *L'inverno* (lin-VAIR-no). For 10 points, name this Baroque Italian creator of the *Four Seasons*.

ANSWER: Antonio **Vivaldi**

063-09-7-04126

11. Alfred Milner came to power in this modern-day country after railway price tampering led to its Drifts Crisis. Despite the Sand River Convention, one man in this country ordered a group of policemen to instigate rebellion amongst the Uitlanders (ATE-lan-derz). This site of the failed Jameson Raid also saw a massive exodus known as the Great Trek, which led to the founding of the Orange Free State and Transvaal. For 10 points, name this country which also experienced two wars between the British and the Boers.

ANSWER: Republic of **South Africa**

015-09-7-04127

12. An actor elected in 1998 as president of this country was jailed for corruption in 2007. A mayor in the south of this country proclaimed that, "only death can stop [him] from running" for governor, after gunmen killed his family, and over fifty other people, in a 2009 ambush. 2009 also saw the death of the woman who, in 1986, toppled the regime of Ferdinand Marcos in this country. For 10 points, name this island nation which is home to current president Gloria Arroyo and recently deceased activist Corazon Aquino (core-uh-ZONE ah-KEE-no).

ANSWER: Republic of the **Phillipines** [or Republika ng **Pilipinas**]

002-09-7-04128

13. This ruler was betrayed by Andrei Kurbsky in the Livonian War, leading to a fear of aristocrats that encouraged him to form a secret police, whose insignia was a dog's head and broom, called the Oprichniki (OP-reech-NEE-kee). This man's murder of Dmitri ended the Rurik line and resulted in the Time of Troubles. Initially the Grand Prince of Moscow, he was the first man to take a broader title. For 10 points, name this first tsar of Russia, who was known for his iron-fisted rule.

ANSWER: **Ivan the Terrible** [or **Ivan IV** Vasilyevich; or **Ivan Chetvyorty**; or **Ivan Grozny**; prompt on **Ivan**]

022-09-7-04129

14. This particle's namesake mechanism purports to explain how W and Z particles acquire mass through spontaneous symmetry breaking. Its namesake field is thought to impart mass to the particles of the Standard Model. Known as the "God particle," it is one of the particles being sought using the Large Hadron Collider. For 10 points, name this type of boson that is the only particle in the Standard Model which has yet to be observed.

ANSWER: **Higgs** boson

024-09-7-04130

15. While staying in Midian, this figure protected seven shepherdesses from rude shepherds and won the hand of Zipporah. This figure quelled unrest by ensuring a steady supply of quail and manna. This figure once made water appear by striking a rock with his staff, which he gained after observing God in a burning bush and killing a cruel slave overseer. This brother of Aaron received the tablets of the Ten Commandments after warning Pharaoh of the ten plagues. For 10 points, name this central figure in the book of Exodus.

ANSWER: **Moses** [or **Moshe** Rabbeinu]

020-09-7-04131

1. This composer was inspired by a John Clanvowe poem to write his organ concerto "The Cuckoo and the Nightingale." This composer of such keyboard suites as "The Harmonious Blacksmith" commemorated the end of the War of Austrian Succession by writing his *Music for the Royal Fireworks*. This composer wrote a piece that was premiered on the barge of King George I. This man's most famous work includes parts such as "For Unto Us a Child Is Born" and a "Hallelujah Chorus." For 10 points, name this composer of *Water Music* and *Messiah*.

ANSWER: George Frideric **Handel**

015-09-7-04132

2. In this novel, Demoiselle Alisande la Carteloise (car-tel-WAH) goes by the name Sandy. Hugo is saved from imprisonment in this novel and joins the Man Factory. Its central character is given the title "The Boss." Early in this work, the main character meets the page Clarence. Its title character is saved from execution by accurately predicting a solar eclipse. For 10 points, name this novel about Hank Morgan's adventures after an industrial accident transports him back in time to Camelot, written by Mark Twain.

ANSWER: A **Connecticut Yankee in King Arthur's Court**

030-09-7-04133

3. Debye (DEB-yay) fixed the maximum phonon frequency for a theory of this, which works better at low temperatures than the Einstein model. It is equal to three times the gas constant divided by the molar mass according to Dulong-Petit law. The calorie is defined in terms of this for water, which is about 4.186 kilojoules per kilogram kelvin. 10 points, name this amount of energy to raise a unit amount of a material by one degree.

ANSWER: **specific heat** capacity

001-09-7-04134

4. Some chenopods (KEE-no-pods) exhibit a unique mechanism for this process. This mechanism's central reaction forms oxaloacetate (ox-AL-oh-ASS-uh-TATE) and is catalyzed by PEP carboxylase (car-BOX-uh-laze). This mechanism uses spatial separation to prevent photorespiration (FO-tow-RES-pur-AY-shun), and it is often named for its discoverers, Hatch and Slack. For 10 points, name this carbon fixation mechanism named for the additional atom in the initial fixation product.

ANSWER: **C4** photosynthesis [or **Hatch-Slack** pathway before it is read]

022-09-7-04135

5. The LIBOR (LYE-bor) is a common international standard for these entities. In the United States, these entities come in forms such as the "discount" one. When these are too lax, monetary policy becomes ineffective due to the "liquidity trap." Their value is inversely related to the level of investment. Consumers often deal with values set in relation to the "prime" one. For 10 points, identify this economic quantity which denotes the price of borrowing money.

ANSWER: **interest** rates [prompt on **rates**]

019-09-7-04136