

1. In 1370, this country signed the Treaty of Stralsund to settle a war with the Hanseatic League. The daughter of that treaty's signer, Waldemar IV, engineered alliances with two other royal families in order to form the Kalmar Union. This country engaged in a lengthy diplomatic struggle with Prussia over the control of Schleswig-Holstein, eighty years before its king Christian X led its resistance to World War II occupation and German policy towards Jews. For 10 points, identify this country that, in 1979, granted home rule to Greenland.

ANSWER: Kingdom of **Denmark** [or Kongeriget **Danmark**]

019-10-21-06101

2. The second act of this musical features a picnic basket auction. The song "It's a Scandal! It's an Outrage!" is sung in this show after Will Parker's girlfriend is forcibly married to the Persian peddler Ali Hakim. After a climactic box social, Aunt Eller fires the villain Judd Fry. In it, Laurey and Curly sing such songs as "People Will Say We're In Love," "The Surrey With the Fringe on Top," and "Oh What a Beautiful Mornin'." For 10 points, name this Rogers and Hammerstein musical about a Southern state.

ANSWER: **Oklahoma!**

079-10-21-06102

3. One of these devices named for Buchner is often attached to a vacuum source. The Florence variety of this object is used for boiling and the Schlenk type features a side arm with a valve. One of these objects named for Dewar is notable for its effective insulation. One of the most popular varieties of these objects is sometimes known as the "E-spot" and is named for Erlenmeyer. For 10 points, name this multipurpose piece of glass laboratory equipment which can be used for measuring, mixing, or heating.

ANSWER: **flasks**

015-10-21-06103

4. This man named a place where he received a vision Bethel, and he sought refuge at Haran after fleeing his brother. This man worked for his uncle Laban for seven years to gain the hand of Rachel and then worked another seven years to gain the hand of Leah. This man reunited with his son Joseph in Egypt years after this man believed Joseph to be dead. For 10 points, name this Hebrew patriarch who envisioned his namesake ladder to heaven.

ANSWER: **Jacob** [or **Israel**]

030-10-21-06104

5. One of these objects is coordinate system invariant if its components contra-vary with the change of basis. Three of them form the standard basis for a three-dimensional Euclidean space. They can be added using the parallelogram rule, and the right-hand rule is used to determine the direction of the cross product of two of them. They also have a dot product, the result of which is a scalar. For 10 points, name these objects which have both magnitude and direction.

ANSWER: **vectors**

024-10-21-06105

6. This state was long represented by isolationist Senator William Borah, who had earlier prosecuted Big Bill Haywood for the assassination of this state's governor Frank Steunenberg. Later conflict in this state focused on racial extremists, including the Aryan Nations, whose headquarters were here, and Randy Weaver, who was involved in a shootout with the FBI at Ruby Ridge in 1992. For 10 points, name this state, whose most recent appearance in nationwide headlines came when its Senator Larry Craig was arrested in a Minnesota airport restroom.

ANSWER: **Idaho**

019-10-21-06106

7. Quine distinguished three types of them, including veridical and falsidical. Bell's theorem was a response to one of these named for Einstein, Podolsky and Rosen. The one named for Gibbs deals with an apparent violation of the second law of thermodynamics. One of these is concerned with a hotel with infinitely many rooms, and the one named for Russell is about the set of all sets that do not contain themselves. For 10 points, name these apparently contradictory statements.

ANSWER: **paradoxes**

024-10-21-06107

8. The protagonist of this film is referred to as a “warrior dreamwalker” and tames a flying beast called a Toruk. At one point in this film, the protagonist prays to the god Eywa through the Tree of Souls, which is guarded by the Omaticaya tribe. In this film, Sam Worthington plays a paraplegic marine named Jake Sully, who infiltrates the Na’vi on Pandora using the titular body. For 10 points, name this blockbuster film directed by James Cameron.

ANSWER: **Avatar**

080-10-21-06108

9. One person who plays this instrument was awarded the first Pulitzer Prize for Music for a jazz recording; that work is *Blood on the Fields* and was recorded by Wynton Marsalis. The Hot Five and Hot Seven were lead by a man who played this instrument, while another player of it wrote “A Night in Tunisia” and played a “bent” version. That man, Dizzy Gillespie, would also collaborate with a man who would play this instrument on *Sketches of Spain* and *Kind of Blue*. For 10 points, name this brass instrument played by Miles Davis and Louis Armstrong.

ANSWER: **trumpet**

083-10-21-06109

10. In this novel's fifteenth chapter, a waitress sells a poor family two pieces of candy for a penny, causing two truckers to reward her kindness with a tip of a dollar. Later in this novel, Connie Rivers abandons his pregnant wife, who breastfeeds a sick man in this novel's final scene. Jim Casy is killed near the end of this novel, which chronicles the plight of the Dust Bowl on poor Oklahoma farmers during the Great Depression. For 10 points, name this novel about the Joad family written by John Steinbeck.

ANSWER: *The **Grapes of Wrath***

004-10-21-06110

11. One failed terrorist plot that involved the October 2010 shipment of packages of explosives to the U.S. originated in this nation, and one man who notably spent time in this nation developed ties to Anwar al-Awlaki, an alleged al-Qaeda recruiter based in this nation. That man was Umar Farouk Abdulmutallab, the "Underwear Bomber," while another notable attack based in this country saw explosives strike the USS Cole in the port of Aden. For 10 points, name this country on the Arabian Peninsula that saw a government crackdown on terrorism in its capital, Sana'a.

ANSWER: Republic of **Yemen**

081-10-21-06111

12. A major character in this novel chooses to have his right foot cut off instead of being castrated after he is caught attempting to escape for the fourth time. Another character in this novel becomes so good at training gamecocks that he is nicknamed "Chicken George." Subtitled "The Saga of an American Family," this novel begins with the capture and sale into slavery of Kunta Kinte. For 10 points, name this Alex Haley novel that fictionalizes several generations of his ancestors.

ANSWER: **Roots: The Saga of an American Family**

004-10-21-06112

13. This man refused to agree to a prisoner exchange of his son for Friedrich Paulus. This man's death halted the prosecution of the alleged conspirators in the Doctor's Plot. This ruler agreed to initiate an Eastern offensive to coincide with the opening of a Western Front at the Tehran Conference. The excesses of his rule were denounced in Nikita Khrushchev's "Secret Speech." This man saw to the expulsion of Leon Trotsky from the Soviet Union in 1929. For 10 points, name this Soviet leader during World War II.

ANSWER: Joseph **Stalin** [or Ioseb **Dzhugashvili**]

030-10-21-06113

14. The central coefficient in this law has dimensions of pressure divided by concentration and one can model the effects of temperature on this law's coefficient by integrating the van't Hoff equation. For ideal mixtures this law can be understood as a special case of Raoult's Law. For 10 points, name this eponymous law which relates the concentration and partial pressure of gas dissolved in a liquid, named after a British chemist.

ANSWER: **Henry's Law**

084-10-21-06114

15. One book published by this man is *The Lucifer Effect*, and after his most notable work this man went on to found the Shyness Clinic. In his most famous experiment, this man used a coin flip to divide his subjects into two different groups, and featured a solitary confinement cell. Half of the subjects in that experiment by this man began to exhibit sadistic tendencies, even though there had been no difference between the two groups at the outset of the study, and this man's experience with that experiment led him to testify in the aftermath of the Abu Ghraib prisoner abuse scandal. For 10 points, name this psychologist who most notably ran the Stanford prison experiment.

ANSWER: Philip **Zimbardo**

081-10-21-06115

1A. Which body of water, whose inflow includes the Ruzizi River from Lake Kivu, is drained by the Lukuga River and is the second deepest freshwater lake in the world?

ANSWER: Lake **Tanganyika**

1B. Which U.S. agency has recently implemented increased screening and full body pat-downs in an effort to increase airport security?

ANSWER: **TSA** [or **Transportation Safety Administration**; do not accept “Department of Homeland Security”]

2A. Name the Samuel Beckett play in which Vladimir and Estragon do not exit the stage despite saying that they should go, since the title character never arrives.

ANSWER: **Waiting for Godot**

2B. Pierre Choderlos de Laclos' novel *Dangerous Liaisons* and Jane Austen's novellas *Love and Friendship* and *Lady Susan* are two examples of which kind of novel told through the letters and correspondence of the various characters?

ANSWER: **epistolary** novels

3A. This is a 10-second calculation question. If box of treasure contains 16 gold pieces 12 diamonds, and 2 gold encrusted diamonds, what is the probability as a reduced fraction of selecting an item that contains a diamond.

ANSWER: **7/15**

3B. This is a 10-second computation question. If the sample size is 4, the standard deviation 32, the sample mean 80, and mu not 40, what is the z statistic?

ANSWER: **2.5**

4A. Name the Scottish proponent of Hutton's uniformitarianism that wrote *Principles of Geology*.

ANSWER: Sir Charles **Lyell**, Baronet

4B. What fictional black storyteller created by Joel Chandler Harris told tales about Brer Rabbit?

ANSWER: Uncle **Remus**

5A. This is a 20-second computation question. If a circle of radius 10 totally encloses a circle of circumference six pi, how large is the area that is in the larger circle but not in the smaller circle? Express your answer in terms of pi.

ANSWER: **91 pi**

5B. This is a 20-second computation question. What is the tangent of 75 degrees?

ANSWER: **2 plus square root 3**

6A. In what kind of collision are both momentum and kinetic energy conserved?

ANSWER: **elastic** collision

6B. Name the British painter of *The Hay Wain*.

ANSWER: John **Constable**

7A. This is a 30-second computation question. Solve for x in $x - 2y = 13$, $z + 3x = 6$, $y + z = 20$. Express your answer as a reduced fraction.

ANSWER: $x =$ **-41/5**

7B. This is a 30-second computation question. Solve for z in the system of equations $5x + y = 10$, $x + z = 4$, and $y - z = 12$. Express your answer as a reduced fraction.

ANSWER: $z = \frac{11}{2}$

8A. Discovery of the cosmic microwave background radiation provided strong evidence for what theory, which replaced steady-state theory as the dominant explanation of the size of the universe?

ANSWER: **Big Bang** theory

8B. What objects form through recrystallization of snow that moves forward under its own weight and form oval hills called drumlins?

ANSWER: **glaciers**

9A. What invention by Eli Whitney made it much easier to remove the seeds from its namesake plant, causing a huge influx in the slave trade in the first half of the nineteenth century?

ANSWER: **cotton gin**

9B. Which painting by Edvard Munch depicts three figures on a bridge and a blood-red sky supposedly inspired by the eruption of Krakatoa?

ANSWER: *The **Scream*** [or ***Skrik***; accept *The **Cry***]

10A. What university made the 2006 Final Four despite having to play its first round game without Tony Skinn, who was suspended for punching a Hofstra player during the CAA semifinals?

ANSWER: **George Mason** University

10B. What curve shows the total amount of real goods and services produced in an economy at a given price level?

ANSWER: **aggregate supply** curve

1. The Steinhart-Hart equation models differences in this property at different temperatures. Materials that exhibit this property have a large "band gap" between the valence band and an upper band. Electrical components that vary in this property can be distinguished by a series of striped bands on the component. This quantity across a conductor equals voltage divided by current. The AC equivalent of this property is symbolized "Z," and is called impedance. For 10 points, name this property related to voltage and current by Ohm's law, which has units of ohms and measures opposition to the flow of direct electrical current.

ANSWER: **resistance** [accept **insulator** or word forms before "striped bands"]

026-10-21-06117

2. A steamboat named for this man won a celebrated 1870 race down the Mississippi against the *Natchez*. He lost one battle due to his plans being wrapped around a lost cigar and found by the opposing army, though he later achieved a lopsided victory at Cold Harbor. Previously, he had opposed John Brown at Harpers Ferry. This commander of the Army of Northern Virginia won at Fredericksburg and Chancellorsville but still had to surrender at Appomattox. For 10 points, name this Confederate General who was defeated by Grant's armies in the Civil War.

ANSWER: Robert Edward **Lee**

019-10-21-06118

3. Leukotrienes C4 and D4 stimulate the release of this. The proteins associated with this have regions of tandem repeats of serine and threonine and also have membrane bound family members. It can expand upon leaving cells by calcium ions masking charges on the molecules in it. This is associated with the immunoglobulin class IgA. This is created by goblet cells and proteins in it are heavily glycosylated and have many disulfide bridges allowing a gel to form. The stomach secretes this with bicarbonate as a barrier. It usually includes lysozyme and lactoferrin which impart anti-microbial abilities. Cilia help move this. Hagfish notably make this to evade predators and cystic fibrosis sufferers have problems stemming from production of a notably thick form. For 10 points, name this thick liquid excreted by parts of the body for protective purposes as seen during allergies.

ANSWER: **mucus**

001-10-21-06119

4. This author wrote a poem beginning with the lines "I shot an arrow into the air / It fell to earth, I knew not where." He exclaimed "Life is real! Life is earnest! / And the grave is not its goal" in his poem "A Psalm of Life," and used the meter of the *Kalevala* to write an epic poem set "by the shores of Gitchee Gumee." Another of his poems created the myth of a silversmith warning "One if by land, and two if by sea" during the American Revolution. For 10 points, name this American poet of *The Song of Hiawatha* and "Paul Revere's Ride."

ANSWER: Henry Wadsworth **Longfellow**

004-10-21-06120

5. All three of this composer's symphonies were premiered by conductor Serge Koussevitzky (cow-seh-VIT-ski), including the third, which adds a woodwind duet to an earlier piece celebrating American soldiers in World War II. This student of Nadia Boulanger used a hymn celebrating simplicity and freedom in a ballet he collaborated on with Martha Graham; that work joins *Billy the Kid* and *Rodeo* among this composer's ballets and is called *Appalachian Spring*. For 10 points, name this American composer of *Fanfare for the Common Man*.

ANSWER: Aaron **Copland**

019-10-21-06121

6. One encounter involving this character sees him followed home by a poodle which ends up in his study, and the brother of this character's love interest is Valentin. That love of this character is a woman who kills her illegitimate child by this man, Gretchen, whom this man seduces after signing a contract in blood. Offered everything he wants in exchange for eternal servitude, for 10 points, who is this character who makes a deal with the devil, notably depicted in a Goethe work?

ANSWER: **Faust**

081-10-21-06122

7. In a novel by this author, humanity is decimated by "black smoke" launched from tripods. In another of this author's books, the narrator is unable to save Weena from the Morlocks after discovering the Eloi. This author's works of speculative fiction include a book about the Martian invasion of Earth and a book about a scientist who builds a device for travelling through time. For 10 points, name this author of science-fiction classics such as *The War of the Worlds* and *The Time Machine*.

ANSWER: Herbert George **Wells**

004-10-21-06123

8. The organism that causes this disease has a toxicity related $px01$ plasmid. The British conducted experiments on this disease on Gruinard Island. Historical names for this disease have included ragpickers' and woolsorter's disease. This causative agent of this disease makes use of protective antigen, edema factor, and lethal factor. The bacteria makes use of macrophages to spread and the common laboratory test strain of it is the Ames strain. It comes in cutaneous, inhalation and gastrointestinal forms. Patients with this infection are given Cipro and the bacteria that causes it can survive through endospores. The spores of this disease are often found in the soil, but it is primarily known as a biological weapon. For 10 points, name this disease that was used in a 2001 terror incident.

ANSWER: **Anthrax** [or **Bacillus anthracis**]

001-10-21-06124

9. One work by this man features Gregers, who believes in always telling the truth rather than preserving the "life-lie," and ends with Hedvig's suicide. This author of *The Wild Duck* also wrote a work in which Nora Helmer walks out on her husband, and another based on folklore in which the title son of Ase wanders the earth and is eventually reunited with Solveig. For 10 points, name this Norwegian playwright of *A Doll's House* and *Peer Gynt*.

ANSWER: Henrik **Ibsen**

082-10-21-06125

10. One measurement for this property utilizes the reciprocal of atomic volume and can be used to calculate molecular geometries, which is named after Sanderson. Another measurement of this property named after Allen uses the average energy of the valence electrons, and on that scale Neon has the highest value. The most common scale used to measure this property increases as one goes up and to the right of the periodic table and is named after Linus Pauling. For 10 points, name this property of atoms that describes the ability for an element to attract electrons.

ANSWER: **electronegativity**

084-10-21-06126

11. This man oversaw the creation of a new, freely elected parliament called the Congress of People's Deputies, which discussed his policies, including the liberalization of markets known as *perestroika* (PEH-res-TROY-kuh). This successor of Konstantin Chernenko also relaxed controls on free speech in *glasnost* and survived a 1991 coup by Communist hard-liners. For 10 points, identify this leader who left office shortly before the breakup of the USSR, and was instantly recognizable due to the large birthmark on his head.

ANSWER: Mikhail Sergeyevich **Gorbachev**

019-10-21-06127

12. One important metabolic pathway named for a compound containing this element generates ornithine and its namesake substance, urea. Pyrimidine and purine bases, such as adenine and thymine, are often given a name that reflects their containing this element. Bacteria fix this element by forming ammonia. For 10 points, name this element found in the amino group of amino acids, whose diatomic form is an inert gas.

ANSWER: **nitrogen** [or **N**]

022-10-21-06128

13. In German, weak types of this kind of word end with either an -en or -n in all cases except for one. When writing these words in German, they are always capitalized. Words of this type in German that end in -ik are usually feminine and those that end in -er are generally masculine. In addition to being feminine and masculine in German, these words can also be neuter. For 10 points, name this type of word that describes a person, place, or thing.

ANSWER: **nouns**

023-10-21-06129

14. This location's namesake railroad is the only American commuter line that operates on a 24/7 basis. This landmass's eastern half extends to Montauk Point and is comprised of Nassau and Suffolk counties. Its west includes Flushing Bay and Rockaway Beach. This island is separated from Connecticut by a namesake "sound." For 10 points, identify this island which extends from the mouth of the Hudson into the Atlantic Ocean and is home to millions of people in Queens, Brooklyn, and eastern New York suburbs.

ANSWER: **Long** Island

019-10-21-06130

15. In one story, this figure tested his favorite mortal king Geirrod by visiting him in the guise of Grimnir. With the help of his brothers Vili and Ve, this figure killed the primordial giant Ymir. Master of the ravens Hugin and Munin, this figure will kill and be killed by the Fenris Wolf at Ragnarok. He gave up an eye to drink from the well of Mimir, and he is also called the "Allfather." For 10 points, name this supreme deity of the Norse Pantheon.

ANSWER: **Odin** [or **Wotan**]

080-10-21-06131

1. This founder of the Republican People's Party became a celebrity when his pocket watch saved him from a flying piece of shrapnel at Gallipoli, where his defense against ANZAC forces earned him a promotion to colonel. In a later role, his "Six Arrows" replaced Arabic letters with the Latin alphabet, banned polygamy, and ordered the fez replaced with European-style hats, as part of his drive to secularize the remnants of the Ottoman Empire. For 10 points, identify this man who was thus given a name meaning "father of the Turks."

ANSWER: Ataturk [or Mustafa Kemal Pasha Ataturk; prompt on Mustafa]

019-10-21-06132

2. Much information about this man's motivations comes from journals kept by his attorney, T.R. Gray. He first struck at Joseph Travis after receiving a sign in the form of a solar eclipse. He then set out towards Jerusalem, where his army of seventy-five men was stopped at Parker's Farm after claiming about sixty victims. He was captured at Cabin Pond and put to death in Southampton County. For 10 points, identify this man who, in 1831, led the most effective slave revolt in Virginia history.

ANSWER: Nathaniel Turner

019-10-21-06133

3. One protagonist in this novel spends a summer with the wife of Colonel Forster, and that character's aunt and uncle have the surname Gardiner. One character in this novel initially rejects a marriage proposal by Mr. Collins, while her sister is romanced by Mr. Bingley, and another romance in this novel is initiated by the master of Pemberley, Mr. Darcy. For 10 points, name this novel about the sisters of the Bennet family, one of whom is Elizabeth, by Jane Austen.

ANSWER: Pride and Prejudice

081-10-21-06134

4. Grover's algorithm performs this action on a database in big O to the one-half N time. This action can be performed on a graph using a depth-first or breadth-first algorithm. Red-black trees are considered one of the self-balancing binary types of trees that perform it. One website that accomplishes it uses PageRank and recently introduced a new Instant service. For 10 points, name this action possibly performed by using a Boolean query and pressing the "I'm Feeling Lucky" button on an engine such as Google.

ANSWER: searching

079-10-21-06135

5. The Haber process, which is used to produce ammonia, is carried out under high pressures to compensate for the fact that its products are not favored at the high temperatures at which it is performed, an application of this concept, and another application of this concept involves adding an inert gas to a system. It applies to changes in concentration, pressure, and temperature of a system. For 10 points, name this principle that the position of equilibrium of a solution changes in response to environmental changes, named from a French chemist.

ANSWER: Le Chatelier's Principle

085-10-21-06136

What villanelle by Elizabeth Bishop claims that "the art of losing isn't hard to master"?

ANSWER: "One Art"

085-10-21-06137

This is a 30-second calculation question. What is the ratio of the volume of a sphere of radius 9 to the area of a circle of radius 9?

ANSWER: **12 to 1**

085-10-21-06137