



1. This country's highest point is at Khan Tengri, which is in the Tian Shan mountain range near its border with Kyrgyzstan. It is home to the Baikonur Cosmodrome, the first and largest rocket launching facility. The Ili River feeds this country's largest lake, Lake Balkhash. This country is bordered by Turkmenistan, Uzbekistan and Kyrgyzstan to the south and by Russia to the north. For 10 points, name this massive former Soviet republic which has its capital at Astana.

ANSWER: **Kazakhstan**

015-11-44-04101

2. At low temperatures, phonon scattering causes this quantity to decrease as the fifth power of temperature. An increase in this temperature due to coupling with impurities is the Kondo effect. This quantity is the real part of the impedance. The power dissipated through a wire equals this quantity times the current squared. It is proportional to the ratio of the length of a wire to its cross-sectional area. It is equal to voltage over current by Ohm's Law. For 10 points, name quantity measured in ohms and denoted R.

ANSWER: **resistance** [prompt on **R**]

003-11-44-04102

3. This composer included movements titled "Dreams of a Winter Journey" and "Land of Desolation, Land of Mists" in his first symphony, nicknamed *Winter Daydreams*. This composer wrote a ballet in which Odile and Von Rothbart trick Siegfried into being unfaithful to Odette. This composer wrote music for another ballet that features the "Dance of the Reed Flutes" and the "Dance of the Sugar Plum Fairy." For 10 points--name this Russian composer of the ballets *Swan Lake* and *The Nutcracker*.

ANSWER: Pyotr Ilyich **Tchaikovsky**

088-11-44-04103

4. Until 1980, this country's politics were dominated by the True Whig Party. After deposing Samuel Doe in a civil war, one leader of this country became the primary backer of the Revolutionary United Front in Sierra Leone. That leader, Charles Taylor, was ousted by a 2003 United Nations Peacekeeping mission. This country is currently led by 2011 Nobel Peace Prize winner Ellen Johnson Sirleaf. For 10 points, name this West African country which was established as a colony for freed American slaves.

ANSWER: **Liberia**

015-11-44-04104

5. At constant temperature, the change in this quantity equal n times R times the natural logarithm of the ratio of volumes. It can be written as the sum of the probabilities of the microstates multiplied by Boltzmann's constant. It is linked to Q over T in several theorems. This quantity approaches zero as the temperature approaches absolute zero according to the Third Law of Thermodynamics. Enthalpy minus this quantity times the change in temperature equals the change in Gibbs free energy. For 10 points, name this quantity symbolized S , a measure of disorder in a system.

ANSWER: **entropy** [prompt on **S** before mention]

020-11-44-04105

6. This man argued that miracles could not occur because God would not defy his own laws. One of his works argues for a secular state with freedom of thought and claims the Torah had numerous authors. His major work describes how humans are tied down by passions in the section "Of Human Bondage." This author of the *Theologico-Political Treatise* drew accusations of pantheism for his major work, which uses the axiomatic approach of geometry. For 10 points, name this 17th century philosopher who wrote the *Ethics*.

ANSWER: Benedict de **Spinoza** [or Baruch **Spinoza**]

080-11-44-04106

7. Depending on their phase, these substances are termed homogenous or heterogeneous. Their efficiency is given by the turnover number. The activity of biological ones can be quantified by the Michaelis-Menten equation; those ones use the "lock and key" and "induced fit" models. These substances, which are never consumed by reactions, reduce the gap between reactants and transition states by lowering the activation energy. For 10 points, name these substances whose biological variety are enzymes and which speed up reactions.

ANSWER: **catalysts** [accept **enzymes** before mentioned]

020-11-44-04107

8. The protagonist of this work views a yellow envelope entrusted to him by another character as a sign of his superiority. He also uses his ability to frighten away a squirrel as justification for his own actions prior to meeting the "tattered soldier." After witnessing the death of Jim Conklin, the protagonist reunites with Wilson. This novel's title refers to the wound sustained by Henry Fleming when hit on the head with a rifle butt. For 10 points, name this Civil War novel by Stephen Crane.

ANSWER: *The **Red Badge of Courage***

014-11-44-04108

9. The subjects of this experiment were broken down into BACs. Stock in this experiment fell when it was declared that its results could not be patented. One participant in this effort gained an advantage by using the shotgun technique and by incorporating the publicly available data of the side led by Francis Collins. The public side of this project used donated white blood cells, while Celera is rumored to have used Craig Venter's. For 10 points, name this effort to sequence homo sapien DNA.

ANSWER: **Human Genome Project** [or **HGP**]

105-11-44-04109

10. One work by this author warns against the obsession of educated Americans with traveling to Europe. He defined the title figure in the right state as "Man Thinking" in his speech "The American Scholar." In another work, he argued that originality is more important than content and stressed that "Nothing can bring you peace but yourself." For 10 points, name this Transcendentalist who wrote the essay "Self-Reliance" and influenced Henry David Thoreau.

ANSWER: Ralph Waldo **Emerson**

014-11-44-04110

11. This man, who depicted his wife Camille Doncieux in *Woman in the Green Dress*, was himself depicted painting outdoors in his garden at Argenteuil [ar-zhen-TWEE] by Auguste Renoir. While staying in London, this man created a series of paintings of the Houses of Parliament. He also painted several views of a Japanese bridge near Giverny. His painting of a harbor near Le Havre with a dark red sun gave a certain art movement its name. For 10 points, name this artist of *Water Lilies* and *Impression: Sunrise*.

ANSWER: Claude **Monet** [or Oscar-Claude **Monet**]

142-11-44-04111

12. This defeated William Carroll for the governorship of Tennessee, and in another post this figure had to stop the conflict between Moderators and Regulators. This man was accused of being in league with John Van Fossen and Robert Rose by William Stanberry, whom this figure subsequently caned on Pennsylvania Avenue. He forced another nation to sign the Treaty of Velasco after defeating an army in 18 minutes at San Jacinto. For 10 points, name this first President of the Republic of Texas.

ANSWER: Samuel **Houston**

048-11-44-04112

13. One character in this work is forced to read *Ivanhoe* to an old woman after decapitating her flowers. One character signing his name reveals that he is left-handed while being examined in a trial over the alleged rape of his daughter Mayella. In that trial, the protagonist's father defends Tom Robinson. Later, the children are protected from Bob Ewell by Boo Radley in a struggle in which Jem breaks his arm. For 10 points, name this novel featuring Scout and Atticus Finch written by Harper Lee.

ANSWER: **To Kill a Mockingbird**

014-11-44-04113

14. One of these edicts was overturned by Youngstown Sheet and Tube Co for not being based on established law, and another one created the Warren Commission. Harry Truman used one to desegregate the U.S. Army. One of these edicts set up institutions like Heart Mountain, Tule Lake, and Manzanar, and was challenged by *Korematsu v. U.S.* For 10 points, name these presidential edicts, the nine thousand and sixty-sixth one of which was passed by FDR to establish Japanese internment.

ANSWER: **executive orders**

048-11-44-04114

15. One work by this author lists thirteen virtues he settles upon in an attempt to achieve moral perfection. That work recalls his employment by the printer Keimer after being apprenticed to his brother James. In another work he coined the phrase "Early to bed and early to rise, makes a man healthy, wealthy, and wise." For 10 points, name this American author of *Poor Richard's Almanack* and an autobiography which briefly mentions his experiment using a kite in a thunderstorm.

ANSWER: Benjamin **Franklin**

014-11-44-04115



1A. This is a 10-second calculation question. An experiment involves flipping one coin one time. What is the sample space of that experiment?

ANSWER: **heads** and **tails** [or **H** and **T**; accept in any order]

1B. This is a 10-second calculation question. What is the second quadrant angle in the range 0 to 2π such that 3 times sine of x is equal to 1.5?

ANSWER: **$5\pi/6$** [or **five-sixths pi**]

2A. What African empire had its capital at Gao and was first led by Sunni Ali?

ANSWER: **Songhai** Empire [or **Songhay** Empire]

2B. The Pampas is a grassland found primarily in what nation whose cities include Rosario, Cordoba and Santa Fe?

ANSWER: **Argentina** [or **Argentine Republic**]

3A. Identify the kind of volcano that is formed from many small eruptions piling lava flows on top of each other and that includes Mauna Loa and Olympus Mons.

ANSWER: **shield** volcano

3B. The books of Nephi, Alma, and Ether are found in what religious text, which was believed to be written in Reformed Egyptian on golden plates and translated in New York in the 1820s?

ANSWER: the **Book of Mormon**

4A. What NFL team traded for Donovan McNabb to replace the retiring Brett Favre and features star running back Adrian Peterson?

ANSWER: **Minnesota** Vikings [or **Minnesota** Vikings]

4B. What term describes words like "boom" and "meow" that imitate the sound they describe?

ANSWER: **onomatopoeia**

5A. This is a 20-second calculation question. What is the width of a rectangular prism with length 6, height 7 and surface area and volume equal?

ANSWER: **$21/4$** [or **5.25**]

5B. This is a 20-second calculation question. What is the prime factorization of 714?

ANSWER: **2** times **3** times **7** times **17** [accept in any order]

6A. Which Flemish artist of *Landscape with the Fall of Icarus* painted men returning to a wintery village with dogs in *Hunters in the Snow*?

ANSWER: Pieter **Bruegel** the Elder

6B. In Spanish, -ar verbs take on the ending -aba when they are conjugated in the first or third person in what form of the past tense?

ANSWER: **imperfect**

7A. Microphones and record players make use of what phenomenon, in which some crystals, such as Rochelle salts, develop opposite charges on either side when put under mechanical pressure?

ANSWER: **piezoelectricity**

7B. IEEE standard 802.3 defines what networking technology, which uses twisted pair cables to create local area networks and is the most common way to connect to a router using a wire?

ANSWER: **Ethernet**

8A. This is a 30-second calculation question. What is the interquartile range of the set generated by the function 2^x where x ranges from 0 to 12, inclusive.

ANSWER: **252**

8B. This is a 30-second calculation question. What are the two complex roots of the function $x^2 - 16x + 89$?

ANSWER: **8 plus 5i** and **8 minus 5i** [or **8 plus or minus 5i**; accept answers in any order]

9A. What simple sugar with formula $C_6H_{12}O_6$ is the body's main source of energy and combines with fructose to form sucrose?

ANSWER: **glucose**

9B. What useful value in chemistry is defined as the negative logarithmic value of the concentration of hydrogen ions?

ANSWER: **pH**

10A. Which composer's oft-excerpted piece "The Flight of the Bumblebee" comes from his opera *The Tale of Tsar Saltan*?

ANSWER: Nikolai Andreyevich **Rimsky-Korsakov**

10B. What three-digit tax reform plan advocated by Herman Cain was modified in October 2011 to include a poverty floor below which no income tax would be owed?

ANSWER: **"9, 9, 9"**



1. This character claims to know another character "excellent well; you are a fishmonger" and later claims that he is able to "tell a hawk from a handsaw." This character tells his love interest to "get thee to a nunnery," while later in the play in which he appears, he mourns the court jester Yorick while contemplating his skull. This character dies in the aftermath of a duel with Laertes and dies after he forces Claudius to drink from his own poisoned cup. For 10 points, identify this prince of Denmark, the protagonist of a Shakespeare tragedy.

ANSWER: Prince **Hamlet**

126-11-44-04117

2. This president's administration signed the Treaty of Washington with Great Britain to settle the Alabama Claims. The U.S. returned to the gold standard after he signed the Specie Resumption Act. His secretary Orville Babcock was indicted for the Whiskey Ring scandal, and this man's Vice President, Schuyler Colfax, accepted bribes from Congressman Oakes Ames in the Credit Mobilier scandal. For 10 points, name this President and general who accepted Lee's surrender in the Civil War.

ANSWER: Ulysses S. **Grant** [or Hiram Ulysses **Grant**]

079-11-44-04118

3. The title character of one of this author's novels marries the younger brother of a man who seduced her and eventually marries her own brother in Virginia. That character created by this author is born in Newgate and reunites with her Lancashire husband in prison. In addition to *Moll Flanders*, this author wrote about a man who raises goats and defeats cannibals to rescue a man whom he names Friday while living on an island after a shipwreck. For 10 points, name this British novelist of *Robinson Crusoe*.

ANSWER: Daniel **Defoe**

124-11-44-04119

4. One white friend of this tribe was Tom Jeffords, who was a blood brother to a chief from this tribe. Members of this tribe fought the Battle of Dragoon Springs. After success against the Sioux, George Crook and then Nelson Miles were sent to combat this tribe. This tribe's most famous leader led raids on Sonora and Chihuahua and that leader of this tribe's name was eventually adopted as an exclamation by American paratroopers. For 10 points, name this southwest American Indian tribe whose leaders included Cochise (co-CHEESE) and Geronimo.

ANSWER: **Apache** [or Chokoen **Chiricahua**]

052-11-44-04120

5. Mice with an excess of neuropeptide Y have high levels of it, and these compounds are broken down in a process called beta-oxidation. Lots of these compounds are localized in structures important for non-shivering thermogenesis, known as brown adipose tissue. Commercially, they are altered by changing some cis isomers to trans ones and by hydrogenating unsaturated ones. For 10 points, name these compounds including of triglycerides, a colloquial name for oils and lipids.

ANSWER: **fats** [accept **lipids**, **oils**, and **triglycerides** until mentioned; accept **waxes**; prompt on **fatty acid** s]

020-11-44-04121

6. The speaker of one of this man's poems claims that "the best lack all conviction" and knows "that twenty centuries of stony sleep were vexed to nightmare by a rocking cradle." Another poem by this man describes a form "set upon a golden bough to sing...of what is past, or passing, or to come." That poem states that "an aged man is but a paltry thing" and opens, "That is no country for old men." For 10 points, name this Irish poet of "Sailing to Byzantium" and "The Second Coming."

ANSWER: William Butler **Yeats**

105-11-44-04122

7. Mild forms of this disease are treated with desmopressin, and in emergencies cryoprecipitate is often given. One gene implicated in this disease has repeats in introns 1 and 22, which makes it susceptible to inversion. This disease can be confused with von Willebrand disease or a deficiency of Vitamin K. This disorder is most commonly caused by a lack of either factor IX or factor VIII. For 10 points, name this medical condition characterized by difficulty of the victim to form blood clots.

ANSWER: **hemophilia** [accept **von Willebrand** disease until "introns"]

088-11-44-04123

8. This hero was killed when Lycomedes, king of Skyros, threw him off a cliff. He defeated Sinis, who used to tie travelers to two pines and tear them apart. After defeating six bandits, including Procrustes, he went to Crete, where he was given a ball of string by a princess. This man forgot to replace the black sails on his ship with white sails, leading his father Aegeus to kill himself. For 10 points, name this Athenian hero who abandoned Ariadne and killed the Minotaur.

ANSWER: **Theseus**

080-11-44-04124

9. One poem by this author is set in "these deep solitudes and awful cells," where the speaker reflects on her illicit passion for the title philosopher. Another work by this author paraphrases Milton in seeking to "vindicate the ways of God to man." This poet of "Eloisa to Abelard" and *An Essay on Man* frequently used heroic couplets, as in his poem in which the sylph Ariel attempts to protect Belinda, but the Baron cuts off a piece of her hair. For 10 points, name this satirist and poet of the mock epic *The Rape of the Lock*.

ANSWER: Alexander **Pope**

080-11-44-04125

10. A cat must have two of these entities in order to have a tortoiseshell or calico color. One of each pair of these structures is randomly inactivated by the process of lyonization, which produces Barr bodies. An excessively repeated CGG sequence can make this structure "fragile," and an extra one causes Klinefelter's syndrome. These chromosomes carry genes for red-green color blindness and hemophilia. For 10 points, name this sex chromosome contained in every human egg, contrasted with the Y.

ANSWER: **X** chromosome

142-11-44-04126

11. The Penokee Mountains border the Chequamegon National Forest in this state. The town of Bayfield hosts an annual Apple Festival in this state where Madeline Island, one of the Apostle Islands, is located. Eau Claire, La Crosse, and Wausau are cities in this state, whose Door County juts into Lake Michigan. This state is home to namesake Dells. Fond du Lac and Oshkosh are located on Lake Winnebago in this state, whose largest city is Milwaukee. For 10 points, name this state with capital at Madison.

ANSWER: **Wisconsin**

124-11-44-04127

12. In one of this author's novels, a man in the Polish navy steals an Iron Cross from a U-boat Captain. In addition to creating Joachim Mahlke, this man wrote a novel in which the protagonist's father dies after swallowing a Nazi lapel pin. The protagonist of that novel, who shatters glass with his scream and stops growing at the age of three, is named Oskar Matzerath. For 10 points, name this German author who included *Cat and Mouse* in his *Danzig Trilogy*, which begins with *The Tin Drum*.

ANSWER: Günter **Grass**

079-11-44-04128

13. In the movie *Avatar*, Grace Augustine's avatar regularly wears clothing advertising this university. On *Grey's Anatomy*, Cristina Yang earned her M.D. from its medical school. At the beginning of the television show *Supernatural*, Sam Winchester attends this university. In the movie *Orange County*, it is Shaun Brumder's dream school. For 10 points, name this alma mater of Chuck Bartowski that is attended by Gabriella Montez in *High School Musical 3*.

ANSWER: Leland **Stanford** Junior University

003-11-44-04129

14. This author wrote a play in which Count de Nolli tries to cure his uncle of the delusion that he is a Holy Roman Emperor. Another of his plays begins with people rehearsing the play *The Rules of the Game*. This man created the brothel owner Madame Pace (PAH-chay), who employs the Mother and Step-Daughter. In that play by this author of *Enrico IV*, the Director stages the story of the title "unfinished" fictional personages. For 10 points, name this Italian author of *Six Characters in Search of an Author*.

ANSWER: Luigi **Pirandello**

052-11-44-04130

15. This city saw a fascist march turn into the so-called "Battle of Cable Street." The first public toilets, called "Monkey Closets," appeared in an exhibition held in this city. The Clean Air Act of 1956 was passed after this city's 1952 Great Smog killed at least 4,000 people. During the 1851 Great Exhibition, this city was the home to Joseph Paxton's Crystal Palace. For 10 points, name this British city that saw St. Paul's Cathedral suffer damage during its namesake "Blitz" in World War II.

ANSWER: **London**

052-11-44-04131



1. This man examined a practice in which marriage is only allowed outside of a group in *Totemism and Exogamy*. His *Folklore in the Old Testament* gave rise to the field of comparative religion. In his most famous work, he connected bonfires to the Norse legend of Balder and examined the Sacred King of the Wood. That work, which has chapters such as "The Corn-Spirit as Animal," is subtitled a "Study in Magic and Religion." For 10 points, name this anthropologist who wrote *The Golden Bough*.

ANSWER: James **Frazer**

127-11-44-04132

2. Coverage of this event was one of the earliest pre-recorded news broadcasts permitted on the NBC Red network, courtesy of Charles Nehlsen's Presto discs. It occurred at Lakehurst, New Jersey, where Herb Morrison was narrating a difficult mooring in a thunderstorm. Morrison lamented "oh, the humanity" as a hydrogen explosion caused dozens of fatalities in, for 10 points, what 1937 transportation calamity that signaled the end of transoceanic zeppelin travel?

ANSWER: **Hindenburg** disaster [or equivalent answers]

019-11-44-04133

3. A special mode in this game is a tower containing tree hundred levels with challenges such as "Test Your Strike" and "Test Your Sight." Finishing that mode unlocks a costume worn by a character in the *Flesh Pits*. Among the stages available are updates of the Living Forest and The Pit, and this game begins with one character sending a message to his past self, indicating that Shao Kahn must win. For 10 points, name this 2011 Midway fighting game which sees the return of characters like Raiden, Liu Kang, and Reptile.

ANSWER: **Mortal Kombat**

048-11-44-04134

4. The virial equation is written as one of them. Riemann's theorem relates the "conditional" and "absolute" versions of one of their properties. The Fourier (FOR-ee-ay) type can be used to decompose periodic functions into combinations of sines and cosines. The MacLaurin variant of them arises if a certain type is centered at zero. The power and Taylor varieties converge while others diverge. They are typically denoted with an an uppercase sigma. For 10 points, name these entities, the sum of the terms of a sequence.

ANSWER: **series**

020-11-44-04135

5. The bishop Macarius traced this ruler's descent to a brother of Augustus Caesar named Prus. This man created a force that used a severed dog's head as an insignia. That secret police created by this ruler was known as the Oprichniki. This man fought against Stephen Batory in the Livonian War. This ruler created a standing army known as the Streltsy and convened the first Zemsky Sobor. This man once beat his daughter-in-law so severely that she miscarried, and he killed his son with a spear. For 10 points, name this tsar known for his cruelty.

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

048-11-44-04136