



1. This composer created pieces called *Imaginary Landscape* that include a work for twenty-four performers on twelve randomly tuned radios. David Tudor gave the first performance of a three-movement work that this man composed. That performance of this man's work caused anger when Tudor did not play any music on the piano. For 10 points, name this American avant-garde composer of a piece that keeps its performer silent for four minutes and thirty-three seconds.

ANSWER: John Milton Cage, Jr.

023-12-73-08101

2. One of these creatures impersonates Jenny Calendar to get secrets about the Acatla statue, and another runs a detective firm opposed to Wolfram and Hart. The Initiative implants a microchip in a third one to stop him from harming humans. Drusilla, Angel, and the platinum-blond Spike are three of these creatures who visit the Hellmouth under Sunnydale, California in a Joss Whedon show. For 10 points, name these undead beings slain on a TV series by Buffy, who uses a wooden stake.

ANSWER: vampires

104-12-73-08102

3. This author wrote a novel in which Joseph Vaillant travels out of Ohio with his friend Jean Marie Latour to New Mexico. In another work by this author, the narrator goes to college near his friend Lena Lingard, who worked in the narrator's hometown of Black Hawk. That work by this author describes the feelings Jim Burden has for a member of the Shimerda family. For 10 points, name this American author of *Death Comes for the Archbishop* and *My Antonia*.

ANSWER: Willa Cather [or Wilella Sibert Cather]

023-12-73-08103

4. This compound is released from ocean floor clathrates. When this compound is added to excess chlorine gas, it can be triply halogenated to form chloroform. It reacts with water to form a mixture of carbon monoxide and hydrogen gas called syngas (SIN-gas). This is the simplest compound with an sp³-hybridized carbon and tetrahedral geometry. This greenhouse gas is the simplest alkane. For 10 points, name this compound which makes up natural gas, with formula CH₄.

ANSWER: methane [or CH₄ until it is read]

190-12-73-08104

5. This goddess is not Demeter, but she punished the maidservants of a queen who had interrupted this goddess' attempt to make that queen's son immortal by sticking him in a fire. This goddess' headdress is a throne. Ra's secret name was revealed to this goddess, who reassembled the body parts of her husband after Set threw them across the Earth. For 10 points, name this Egyptian goddess, whose marriage to Osiris produced Horus.

ANSWER: Isis

149-12-73-08105

6. In 1995, this country's Ellis Park hosted the Rugby World Cup, where the All-Blacks were defeated by this country's Springboks. This country's Witwatersrand (vit-VOT-erz-rond) is the source of the Limpopo River. This country's False Bay is so named because many sailors confused it for Table Bay. Bantu languages spoken in this country include Xhosa (ZOH-suh) and Zulu. For 10 points, name this country where Cape Town and Johannesburg are.

ANSWER: **South Africa**

149-12-73-08106

7. These proteins are bound by proteins containing bromodomains and chromodomains, and CENP-A is a variant of these proteins found near centromeres. These proteins, which are heavy in lysine and arginine residues, are methylated, acetylated, and phosphorylated in order to control gene expression. An octamer of these proteins forms a nucleosome, and moving these proteins together helps form condensed chromatin. For 10 points, name these proteins that DNA wraps around in the nucleus.

ANSWER: **histones** [or **nucleosomes** until it is read]

048-12-73-08107

8. This man sued Ralph Ginzburg for publishing an article questioning his mental state. Phyllis Schlafly wrote *A Choice, Not an Echo* about him, and Ronald Reagan supported him in the speech "A Time for Choosing." This man said "that extremism in the defense of liberty is no vice" in an acceptance speech. He lost an election in which the "Daisy Girl" ad connected him to nuclear war. For 10 points, name this Arizona Senator who lost to Lyndon Johnson in the 1964 presidential election.

ANSWER: Barry Morris **Goldwater**

052-12-73-08108

9. In German as an adjective, this four-letter word can mean either "blank" or "empty." In Spanish, this four-letter infinitive verb can be changed into a gerund by writing it as "leyendo." This four-letter infinitive in Spanish has a first-person singular form of "leo" (LAY-oh). For 10 points, give this four-letter word that is also present in English, where it means to look at something in a lascivious or malicious manner.

ANSWER: **leer** [or all pronunciations including "lay-AR"; or the word spelled out]

023-12-73-08109

10. This procedure is used after cleavage by hydroxyl radicals in footprinting, and this procedure is also used to visualize RFLPs. Proteins subjected to this procedure are often treated with SDS to denature them. A "ladder" mixture is used as a marker in this procedure, which uses ethidium bromide for visualization. For 10 points, name this laboratory technique which uses an agarose or polyacrylamide matrix and an electric field to separate macromolecules, like DNA, by size.

ANSWER: gel **electrophoresis**

048-12-73-08110

11. Rudolf Vrba and Albert Wetzler delivered information on this place to an opposing army. One man who was canonized for being willing to save a stranger in this place was friar Maximilian Kolbe. In this place, twins were separated out and experimented on by doctor Josef Mengele. Rudolf Hoss fitted the iron gate to this place with the overhead inscription "Arbeit Macht Frei," or "Work makes one free." For 10 points, name this site in Poland, the largest death camp run by the Nazis.

ANSWER: **Auschwitz**-Birkenau [or **Oswiecim**]

104-12-73-08111

12. The end of this novel contains twenty-five poems including “Garden of Gethsemane” and “Hamlet” purportedly written by its title character. In this work, Misha Gordon sees a man jump out of a train. The title character of this novel joins the Forest Brotherhood and falls in love with a woman who shoots Komarovsky and is married to Pasha Antipov. In this novel, Lara falls in love with the title physician. For 10 points, name this novel by Boris Pasternak.

ANSWER: **Doctor Zhivago**

192-12-73-08112

13. In its natural form, this element is also called berthelite. The binary acid of this element is commonly used to pickle steel. It has the greatest electron affinity of any element. Bleach is the sodium salt of an anion containing this element and oxygen. The acid of this element is found with nitric acid in aqua regia. As a radical, it reacts with ozone in the stratosphere. At room temperature, it is a poisonous yellow-green gas. For 10 points, name this halogen found with sodium in table salt.

ANSWER: **chlorine** [or **Cl**; do not accept "chloride"]

190-12-73-08113

14. Over one character's shoulder in this painting sit a geranium and a mother-in-law's tongue. This work's creator was inspired by a house in Eldon. One of the people in this painting was Byron McKeeby, who stands next to the artist's sister Nan. McKeeby holds a three-pronged hay fork in his right hand in this painting. For 10 points, name this painting of two dour-looking farmers in Iowa painted by American artist Grant Wood.

ANSWER: **American Gothic**

023-12-73-08114

15. In one poem, this man describes men and women who “are more curious to me than you suppose” after beginning, “Flood-tide below me! I watch you face to face.” In another poem, he declares, “I sound my barbaric yawp over the roofs of the world,” and opens by stating, “I celebrate myself.” For 10 points, name this American poet of *Leaves of Grass*, which includes “Song of Myself” and “O Captain! My Captain!”

ANSWER: Walt **Whitman** [or Walter **Whitman**]

014-12-73-08115



1A. What Mesopotamian city was ruled by the code-creating king Hammurabi?

ANSWER: Babylonia

1B. Name the slave whose 1831 rebellion in Southampton County resulted in around 60 white people being killed.

ANSWER: Nat Turner

2A. What process can be performed on a hard drive to reduce the number of regions over which files are stored?

ANSWER: defragmentation [or word forms]

2B. What woodwind instrument was primarily played by jazz musicians Sonny Rollins and John Coltrane?

ANSWER: tenor saxophone

3A. This is a 20-second calculation question. Two socks are randomly selected, without replacement, from a drawer with six black socks and four white socks. What is the probability that the two socks are the same color?

ANSWER: 7/15 [or 42/90]

3B. This is a 20-second calculation question. A pool is in the shape of a rectangular prism with width 8 meters, length 100 meters, and depth 4 meters. If the pool is empty and water flows in at a rate of 200 cubic meters per hour, how long will it take to fill the pool?

ANSWER: 16 hours

4A. What Kelsey Grammer-voiced villain framed Krusty the Clown for armed robbery and has repeatedly failed in his attempts to kill Bart Simpson?

ANSWER: Sideshow Bob [or Robert Underdunk Terwilliger]

4B. What fundamental force is caused by exchange of W and Z bosons and is responsible for beta decay?

ANSWER: weak nuclear force [or weak interaction]

5A. What large sea is enclosed by Europe to the north and North Africa to the south?

ANSWER: Mediterranean Sea

5B. What Augustinian monk and father of genetics formulated the laws of segregation and independent assortment?

ANSWER: Gregor Johann Mendel

6A. Name the German author who wrote *The Road Back* as a sequel to his book about Paul Baumer, *All Quiet on the Western Front*.

ANSWER: Erich Maria Remarque

6B. What UN Secretary General in March 2012 gave "The Time Has Come" speech fighting homophobia?

ANSWER: Ban Ki-moon

7A. What state is home to Mesa Verde National Park and Rocky Mountain National Park?

ANSWER: Colorado

7B. Name the "Lady with the Lamp" who served tirelessly as a nurse during the Crimean War.

ANSWER: Florence Nightingale

8A. What metrical scheme consists of five feet per line in which each foot is composed of an unstressed syllable followed by a stressed one?

ANSWER: **iambic pentameter**

8B. Sigmund Freud identified incest and patricide as the two universal kinds of what societally-prohibited and feared practices?

ANSWER: **taboos**

9A. What Japanese author wrote *Snow Country*?

ANSWER: Yasunari **Kawabata**

9B. What religion is divided into “sky-clad” and “white-clad” sects and was founded by the last tirthankara (TERT-unk-ah-ruh), Mahavira?

ANSWER: **Jainism**

10A. This is a 30-second calculation question. Multiply the quantity x plus 5 times the quantity x squared plus 4. Express your answer as a single polynomial.

ANSWER: **$x^3 + 5x^2 + 4x + 20$ [or x cubed plus five x squared plus four x plus twenty]**

10B. This is a 30-second calculation question. If cosine theta equals three-fourths, what is cosine of two theta?

ANSWER: **1/8**



2013 VHSL Districts
Round 8
Third Period, Fifteen Tossups

1. This state's 2012 Senate election was won by John Flake, who replaced retiring Minority Whip John Kyl. One law passed in this state had three of its provisions struck down by the Supreme Court in June 2012. That law in this state was signed by its governor Jan Brewer, and was called the Support Our Law Enforcement and Safe Neighborhoods Act, or SB 1070. For 10 points, name this Southwestern state that passed a very strict anti-illegal immigration act in 2010.

ANSWER: Arizona

023-12-73-08117

2. Animals in warm climates maximize this quantity with respect to body weight according to Bergmann's Rule. In chemistry, powdered substances react more quickly than chunks because they have a greater value for this quantity. Villi maximize this quantity, to maximize absorption, in the intestines. For a sphere, this quantity equals four pi times the radius squared. Cells are limited in size by the ratio of this quantity to volume. For 10 points, name this quantity, the exposed area of an object.

ANSWER: surface area [prompt on area]

190-12-73-08118

3. At the end of this novel, one character says that there is not much difference between the living central family and their relatives in the graveyard. A major turning point occurs in this novel with the accidental breaking of the pickle-dish prized by the title character's wife. The title character and his wife's cousin, Mattie Silver, are crippled by an abortive attempt at suicide by crashing a sled. For 10 points, name this short novel by Edith Wharton.

ANSWER: Ethan Frome

014-12-73-08119

4. The first team to detect this particle was led by Cowan and Reines. The discovery of flavor oscillations resolved a deficit in the amount of one type of these particles coming from the Sun. All leptons have a corresponding type of this particle. Wolfgang Pauli proposed these particles to resolve how the conservation of momentum, energy and spin could be obeyed by beta decay. For 10 points, name these nearly massless neutral particles.

ANSWER: neutrino

066-12-73-08120

5. The speaker of one of this man's poems "tasted all the summer's pride" as he "roamed from field to field." A poem by this man inquires if the subject knows who "gave thee life, and bid thee feed." Another of this man's poems asks "what shoulder, and what art, could twist the sinews of thy heart." That poem by this man describes a creature who is "burning bright in the forests of the night." For 10 points, what English poet wrote "The Lamb" and "The Tyger?"

ANSWER: William Blake

149-12-73-08121

6. Impedance is always inversely proportional to this quantity. This quantity's inverse is elastance. It is multiplied by one half voltage squared to obtain the energy stored in its device. It is equal to permittivity times area over distance. This quantity adds in parallel, unlike resistance and inductance. For 10 points, identify this quantity that characterizes a device consisting of a pair of conducting plates separate by a dielectric, and which is measured in Farads.

ANSWER: **capacitance**

066-12-73-08122

7. One class of drugs that treats this disease has the unusual side effect of causing necrosis of the jaw; those drugs are bisphosphonates. Like trauma, this condition can cause dowager's hump. A DEXA scan with T-score below negative 2.5 is indicative of this disease, which becomes common after menopause and is staved off by calcium supplements. For 10 points, name this condition in which bones become brittle and easily broken, which usually affects older women.

ANSWER: **osteoporosis**

048-12-73-08123

8. One English king of this name was close to Hugh le Despenser and Piers Gaveston, drawing accusations of homosexuality. The first numbered king of this name expelled England's Jews and was called "Longshanks." A sainted king of this name who died in 1066 was called the "Confessor." A royal son of this name won at Poitiers and Crecy during the Hundred Years' War. For 10 points, give this name of six English kings and the "Black Prince."

ANSWER: **Edward** [or **Edward** II; or **Edward** of Caernarvon; or **Edward** I; or **Edward** Longshanks; or **Edward** the Confessor; or **Edward** the Black Prince; or **Edward** of Woodstock]

104-12-73-08124

9. This god fetched a giant cauldron on a trip in which he killed a large ox for bait and went fishing at sea with the giant Hymir. This god failed to pick up a cat at Utgard-Loki's request, and he asked questions until the sun came up to a dwarf named Alvis, who then turned to stone. He disguised himself as Freya to retrieve a weapon with which he is destined to fight the Midgard Serpent. For 10 points, name this wielder of the hammer Mjolnir (mee-OL-near), the Norse god of thunder.

ANSWER: **Thor** [or **Donar**; or **Donner**]

104-12-73-08125

10. Two matrices A and B have this property if there exists a matrix P such that P equals C times P times the inverse of P. Objects that display the "self-" form of this property include the Sierpinski triangle and the Mandelbrot set; those objects are called fractals. Two triangles have this property under the AA, SSS, or SAS conditions. For 10 points, name this property that holds for any two polygons that have congruent corresponding angles and proportional corresponding side lengths.

ANSWER: **similarity**

131-12-73-08126

11. In a movie by this director, Henriette Girard is sent to the guillotine by Robespierre. This director of *Orphans of the Storm* depicted the St. Bartholomew's Day Massacre, the fall of Babylon, and the death of Christ in a movie he made to rebut criticism, *Intolerance*. That starred his favorite actress Lillian Gish, much like his movie, based on a Thomas Dixon novel, in which the Ku Klux Klan is portrayed heroically. For 10 points, name this director of *Birth of a Nation*.

ANSWER: D.W. **Griffith** [or David Wark **Griffith**; or **Orphans of the Storm** until "director" is read]

030-12-73-08127

12. This character gets a job looking grief-stricken at the funerals of children while he is apprenticed along with Noah Claypole to the mortician Mr. Sowerberry. This character is revealed to be the child of Edwin Leeford and Agnes Fleming, and thus the half-brother of his nemesis Monks. This character is taken to meet the Jewish criminal Fagin by the Artful Dodger, and he asks for more gruel while at a workhouse. For 10 points, name this orphan, the title character of a novel by Charles Dickens.

ANSWER: **Oliver** Twist [or Oliver **Twist**; or Oliver **Leeford**]

080-12-73-08128

13. In 2011, this athlete fell five yards short of breaking a team record held by Herman Moore, which he beat in 2012. This player tied Pat Studstill's league record of having five straight games with at least 125 yards. Roy Williams gave this player his nickname "Megatron." On December 22, 2012, this player broke the single-season record of 1,848 yards set in 1995 by Jerry Rice. For 10 points, name this wide receiver who catches passes from Matt Stafford for the Detroit Lions.

ANSWER: Calvin **Johnson**, Jr.

023-12-73-08129

14. This man wrote that he thought "we should be men first, and subjects afterwards" and used the analogy of returning a plank to a drowning man, in an essay which connected his payment of taxes to the Mexican War and the perpetuation of slavery. Another work by this author describes how he built a cabin to live two years near a pond on land owned by his friend Ralph Waldo Emerson. For 10 points, name this American Transcendentalist who wrote "Civil Disobedience" and *Walden*.

ANSWER: Henry David **Thoreau**

023-12-73-08130

15. Shortly after this event, Ronald Madison was shot by the police at Danziger Bridge. In a speech about this event, one man said "God is mad at America" because "of us being in Iraq under false pretenses." In that speech, Ray Nagin discussed a "chocolate city." This event resulted in the resignation of Michael Brown from FEMA and a claim by Kanye West that George W. Bush didn't "care about black people." For 10 points, name this 2005 natural disaster that resulted in mass flooding in New Orleans.

ANSWER: Hurricane **Katrina**

052-12-73-08131



1. One group of these animals evolved from the cethotherium, and one group of these animals have teeth with cementum on the surface. These animals are divided into the mysticeti and odontoceti suborders, the latter of which is distinguished by its teeth. The baleen variety of these animals filters plankton from the environment for sustenance. For 10 points, name these mammals, which along with dolphins and porpoises comprise the order cetacea, and whose varieties include the blue and the humpback.

ANSWER: whales [or cetaceans until it is read]

048-12-73-08132

2. Two brothers with this last name created a set of equations explaining the Meissner effect. An interaction with this name is greatest for large, easily polarized molecules and creates instantaneous dipoles. In addition to this being the name of some dispersion forces in chemistry, this is the name of a city in which Photo 51 was taken by a team including Rosalind Franklin and Maurice Wilkins. For 10 points, name this city in which the double-helix structure of DNA was discovered at King's College.

ANSWER: London

190-12-73-08133

3. Foliation is caused by the preferred orientation of these things. The most common group of them has a silicon-oxygen tetrahedra for a building block and is the silicates. Although not rocks, when important metals are found in them, they are called ore. Common examples include plagioclase and orthoclase feldspar and quartz. Their properties include fracture, cleavage, luster and streak. For 10 points, identify these naturally occurring inorganic solids that possess a definite chemical structure.

ANSWER: minerals [prompt on crystals]

066-12-73-08134

4. The losing side's forces in this war were attacked while retreating on the Highway of Death. The leader of the losing country in this war said it would be "the mother of all battles." Depleted uranium was incorrectly proposed as a reason for a syndrome suffered by veterans fighting in it. This was the first war to utilize the U.S. Patriot missile. The winning side's forces were commanded by Norman Schwarzkopf. For 10 points, name this 1990 to 1991 war waged by a U.S.-led coalition after the invasion of Kuwait.

ANSWER: First Persian Gulf War [or Desert Storm; or First Iraq War]

052-12-73-08135

5. In one poem by this author, the speaker expects to see the title character "squattin' on the coals" in Hell. That speaker tells that water boy, "You're a better man than I am." In another poem, this poet advises the addressee to "meet with Triumph and Disaster and treat those two imposters just the same," concluding, "you'll be a man, my son!" For 10 points, name this British poet of "Gunga Din" and "If--" who also wrote about Mowgli in *The Jungle Book*.

ANSWER: Rudyard Kipling [or Joseph Rudyard Kipling]

014-12-73-08136

This is a calculation question. A circle has an area of 16 pi. Find the area of a square inscribed in that circle.
ANSWER: 32

What traveler meets giants in Brobdingnag and tiny people in Lilliput in a Jonathan Swift novel?

ANSWER: Lemuel Gulliver [or Lemuel Gulliver]