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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 6**  **First Period, Fifteen Tossups** |

1. This person received a telegram about a meeting with Vincent Benedetti in a spa town. This man negotiated the Gastein convention and the Reinsurance treaty. This predecessor of Count Caprivi edited the Ems dispatch to start a war that his country won at the Battle of Sedan. This man orchestrated the May Laws as part of his anti-Catholic Kulturkampf program and led his country into a Seven Week war with Austria. For 10 points, name this chancellor who used realpolitik to unify Germany.

ANSWER: Otto von **Bismarck**

2. Charles Barkla showed that every element has a unique spectrum when this radiation is incident. Diffraction studies using this radiation are analyzed using Bragg's law. This radiation was discovered being emitted from a Crookes tube. The first use of this radiation for imaging showed a ring on the left hand of the wife of its discoverer, Wilhelm Roentgen. For 10 points, name this radiation whose wavelength falls between that of UVA and gamma rays and which is often used to image bones.

ANSWER: **X**-ray radiation

3. This nation’s minor parties include Left Ecology Freedom, as well the technocratic Civic Choice, which is in coalition with the ruling Renzi government. This nation’s populist Five Star Movement is led by comedian Beppe Grillo. A former Prime Minister in this nation was barred from holding office after a scandal involving his “bunga bunga” parties. For 10 points, tycoon Silvio Berlusconi used to lead what country?

ANSWER: **Italy** [or **Italian Republic**; or **Repubblica Italiana**]

4. In the Mushet method, manganese-containing ores like spiegeleisen are added to this material. To improve this substance's purity, air oxidizes silicon, forming a slag, in a pot lined with either clay or dolomite. The Siemens-Martin process manufactured this material using open hearth furnaces. It is produced from pig iron in the Bessemer process. For 10 points, name this strong alloy of iron and carbon, which also contains chromium in its "stainless" variety.

ANSWER: **steel** [prompt on pig **iron** until it is read]

5. This man popularized the ideas of Honore Blanc and Louis de Tousard. Matilda Gage claimed that Catherine Greene, the wife of general Nathanael Greene, assisted this man. This man dismantled and reassembled ten guns in front of Congress to demonstrate his idea of interchangeable parts. His most famous creation removed seeds from lint and revitalized slavery in the South. For 10 points, name this inventor of the cotton gin.

ANSWER: Eli **Whitney**

6. In one story, this character saves Helen Stoner from the “speckled band,” which is actually a venomous snake. Upon retiring, this character takes to beekeeping. He first appeared in the story “A Scandal in Bohemia.” This character was killed off in the story “The Final Problem,” falling over Reichenbach Falls while fighting Dr. Moriarty. For 10 points, name this master sleuth aided by Dr. John Watson, who was created by Arthur Conan Doyle.

ANSWER: Sherlock **Holmes** [or **Sherlock** Holmes]

7. This man created a riddle where the answer referred to honey found in a lion’s carcass. He destroyed fields by attaching torches to foxtails and he used the jawbone of a jackass to kill a thousand of his enemies. After being blinded, this man killed himself and many enemies by destroying the temple of Dagon, a Philistine god. This Nazirite lost his strength when his hair was cut. For 10 points, name this biblical strongman, who was seduced by Delilah.

ANSWER: **Samson**

8. This character was legendarily killed in 537 at the Battle of Camlann. He is raised alongside Sir Kay by Sir Ector. This man’s father disguised himself as Gorlois to enter the bedchamber of his mother, Igraine. This man, the son of Uther Pendragon, is married to Guinevere. For 10 points, name this mythical king of England, who pulled the sword Excalibur from the stone and leads the Knights of the Round Table.

ANSWER: King **Arthur**

9. A story by this author begins with the line, “It was one of those midsummer Sundays when everyone sits around saying, ‘I drank too much last night.’” In another of his stories, Irene Westcott realizes how unhappy her neighbors are by listening to them using the title device. He created Neddy Merrill, who decides to traverse all the local swimming pools on his journey home. For 10 points, name this American author of “The Enormous Radio” and “The Swimmer.”

ANSWER: John **Cheever**

10. This organization was galvanized by the murder of priest Jerzy Popieluszko. It was re-legalized in the Round Table Agreement and subsequently won all but one seat in the Senate. Its founder, an electrician, sent his wife to accept the 1983 Nobel Peace Prize on his behalf. This organization grew out of a 1980 strike in the Lenin Shipyard of Gdansk. For 10 points, Lech Walesa led what independent trade union that protested against the Communist government in Poland?

ANSWER: **Solidarity** [or **Solidarnosc**]

11. In one of this author’s novels, Juvenal Urbino dies pursuing a parrot in a mango tree. This author described the love between Fermina Daza and Florentino in one novel. Several of his works are set in the town of Macondo, including a novel that describes various generations of the Buendia family. For 10 points, name this Colombian author of *Love in the Time of Cholera* and *One Hundred Years of Solitude*.

ANSWER: Gabriel Garcia **Marquez**

12. This organ releases Anti-Mullerian hormone from its Sertoli cells. The pampiniform plexus and cremaster muscle regulate temperature in this organ and form part of a cord that also includes the ductus deferens. A duct system connects the epididymis to this organ’s seminiferous tubules, where spermatogenesis occurs. Its interstitial cells secrete testosterone. For 10 points, name this paired reproductive organ, the male gonad.

ANSWER: **testicle** [or **testes**; or **testis**]

13. The "Moten Stomp" was reworked into a piece named for this genre. Electric guitar, piano, double bass, and drums formed the classic strong rhythm section of bands that played this kind of music. A man nicknamed for this style of music gave a legendary 1938 concert at Carnegie Hall. Duke Ellington composed a standard titled "It Don't Mean a Thing" if it's not this style of music. This style of music was promoted by Benny Goodman, its "king." For 10 points, name this danceable kind of jazz music popular in the 1930s.

ANSWER: **swing**

14. LeBron James said that this school’s point guard should be the first player at his position chosen in the 2014 draft. A player for this team was named the National Defensive Player of the Year in 2008 and 2009, and was Hasheem Thabeet. Richard Hamilton led this team to its first NCAA championship in 1999, under coach Jim Calhoun. For 10 points, name this college basketball team, which is coached by Kevin Ollie and won the 2014 NCAA men's championship.

ANSWER: University of **Connecticut** Huskies [or University of Connecticut **Huskies**; or **UConn**]

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 6**  **Directed Round** |

1A. What entrepreneur was told by a childhood phrenologist that he was best suited to food service – only to later inaugurate the fast food industry by founding McDonald's?

ANSWER: Ray **Kroc**

1B. What modern language primarily spoken in northeastern Spain and southwestern France has not been shown to relate to any other known language?

ANSWER: **Basque** [or **Euskara**]

2A. Angle-side-side does NOT ensure what relationship between two geometric figures, in which they are of the same size and shape?

ANSWER: **congruency** [or word forms, such as **congruent**]

2B. What organ, absent in DiGeorge syndrome, is located beneath the sternum and is both the maturation site and namesake of T-cells?

ANSWER: **thymus**

3A. This is a 20-second calculation question. A store offers a 40% off sale on all of its items. If you pay 21 dollars for a math book, what was its original price before the sale?

ANSWER: **35** dollars

3B. This is a 20-second calculation question. Let A be the reference angle for an arc measuring 5 pi over 3 radians. What is the cosine of A?

ANSWER: **1/2** [or **0.5**]

4A. What Ohio city home to Goodyear was once called the “Rubber Capital of the World”?

ANSWER: **Akron**, Ohio

4B. What man of Irish and Spanish ancestry won the Battle of Maipú (my-POO) and became the father of independent Chile?

ANSWER: Bernardo **O'Higgins**

5A. What term is used to describe instances in which an entity is referred to by the name of a closely related entity, such as the use of the word “Washington” to refer to the American government?

ANSWER: **metonymy**

5B. Name the physicist whose namesake "scattering" is responsible for the blue color of the sky.

ANSWER: Lord **Rayleigh** [or John William **Strutt**]

6A. What Michael Bay-directed 1995 film stars Martin Lawrence and Will Smith as narcotics detectives in Miami?

ANSWER: ***Bad Boys***

6B. What French dynasty solidified its hold on power after Clovis defeated Alaric II's Visigoths at the Battle of Vouille in 507 CE?

ANSWER: **Merovingian**

7A. Don Pedro arrives in Messina at the beginning of what Shakespeare comedy, in which the argumentative pair Beatrice and Benedick fall in love?

ANSWER: ***Much Ado About Nothing***

7B. What contemporary American novelist wrote *Blood Meridian,* *No Country for Old Men,* and *All the Pretty Horses*?

ANSWER: Cormac **McCarthy**

8A. This is a 30-second calculation question. The chance of rain tomorrow is 60% if it rains today and 20% if it does not. If the chance that it rains today is 80%, then what is the probability that it rains tomorrow?

ANSWER: **52%** [or **0.52**; or **13/25**]

8B. This is a 30-second calculation question. What is the perimeter of the triangle whose vertices are at (8,5), (3,5), and (3,-7)?

ANSWER: **30** units

9A. What British philosopher, whose preserved corpse still sometimes attends board meetings at University College London, is regarded as the founder of utilitarianism?

ANSWER: Jeremy **Bentham**

9B. At the end of what Luigi Pirandello play does The Boy kill himself after his family interrupts The Director’s staging of *The Rules of the Game*?

ANSWER: ***Six Characters in Search of an Author*** [or ***Sei personaggi in cerca d'autore***]

10A. Name the former House Majority Leader and Virginia Congressman who resigned after a stunning primary loss to Tea Party candidate David Brat.

ANSWER: Eric **Cantor** [Eric Ivan **Cantor**]

10B. Name the art movement whose prominent practitioners include David Hockney and Jasper Johns.

ANSWER: **pop** art

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 6**  **Third Period, Fifteen Tossups** |

1. This activity is the subject of Jan Tinbergen's "gravity model" and the Linder hypothesis, which posits that its direction is based almost entirely on demand. Both of those approaches seek to resolve the Leontief paradox about this activity, which observes that the U.S. does not obey the Hecksher-Olin theory on this activity's flow from resource- to capital-intensive countries. For 10 points, name this subject of the law of comparative advantage, an activity liberalized by NAFTA.

ANSWER: international **trade** [or **import**ing; or **export**ing; or word forms]

2. This country was home to a religious movement called “eastern learning” whose followers started an 1894 revolt. Miura Goro ordered the assassination of this country’s Queen Min. The seikanron was a debate concerning a proposed invasion of this country. The Treaty of Shimonoseki ceded the Pescadores and Taiwan and declared autonomy for this country. This country ruled by the Joseon dynasty was split into two occupation zones after World War II. For 10 points, name this Asian peninsula.

ANSWER: **Korea** [or **Hanguk**; or **Choson** or **Joseon** until “Joseon” is read]

3. After this man won a battle with his lieutenant Crixus, he forced prisoners to fight to the death on top of a pyre. This man's troops used vines to rappel down cliffs and ambush Claudius Glaber's army. Armed with kitchen implements, this person and seventy followers escaped a ludus and camped on Mount Vesuvius. This Thracian was eventually defeated by Crassus and crucified on the Appian way alongside his followers. For 10 points, name this gladiator who led a slave revolt against Rome.

ANSWER: **Spartacus**

4. This artist used the same model and location for his companion paintings *The Geographer* and *The Astronomer.* Another painting by him shows a woman in yellow pouring the title liquid from a jug to a bowl. This artist of *The Milkmaid* painted people standing at the banks of a river in a depiction of his hometown of Delft. For 10 points, name this Dutch artist who painted a woman looking over her shoulder wearing the title piece of jewelry in *Girl With a Pearl Earring.*

ANSWER: Jan **Vermeer** [Johannes **Vermeer**]

5. The title object of this poem "makes gaps even two can pass abreast" in a place where "there are no cows." The narrator of this poem describes a man as "all pine" and himself as "apple orchard," later concluding, "Spring is the mischief in me." This poem is set on a day when the narrator and a nearby resident "meet to walk the line" to fix the title stone structure. For 10 points, name this poem by Robert Frost that ends, "Good fences make good neighbors."

ANSWER: "**Mending Wall**"

6. This object was used by Heracles to accidentally kill Linus. Another was used by a member of the Argonauts to keep the group from sailing toward the Sirens. Orpheus used this object as he passed through the underworld to retrieve his wife Eurydice, and upon his death, this object became a constellation. Hermes first created this object using the cattle he stole from another god. For 10 points, name these musical instruments often associated with Apollo.

ANSWER: **lyre**

7. The city’s downtown is on the banks of former Town Lake, which was formed by damming a lesser-known Colorado River and is now Lady Bird Lake. Its suburbs include San Marcos, Leander, and Round Rock. A slogan adopted by independent businesses exhorts people to “keep” this city “weird”, and it is home to the music and film festival South by Southwest. For 10 points, name this state capital, home to the University of Texas.

ANSWER: **Austin**, Texas

8. This value, for a hypergeometric distribution is equal to the sample size times the number of successes over the population size, while it is equal to lambda for a Poisson distribution. Raising the product of n numbers to one over n gives the geometric form of this quantity. Often denoted by x-bar, this quantity is synonymous with the expected value. For 10 points, name this statistical quantity that is often found by adding up the numbers in a sample and dividing by the sample size.

ANSWER: **mean** [or **average**; or arithmetic **mean**]

9. A poem by this author begins, “Between my finger and my thumb the squat pen rests, snug as a gun.” That poem of his compares his writing to the title action performed by his grandfather. This poet included “Digging” in his first and most famous collection, *Death of a Naturalist.* For 10 points, name this recently deceased Irish poet who also made a notable translation of *Beowulf.*

ANSWER: Seamus **Heaney**

10. A protein that provides the foundation of these structures is rich in acetylated lysine residues, and is called a histone. Barr bodies are deactivated examples of them, while counting and analyzing the shape of these structures is called karyotyping. Down syndrome is caused by an extra partial or full copy of the twenty first of these, and humans have a total of twenty three. For 10 points, name these structures that are made from tightly wound DNA.

ANSWER: **chromosome**s [or X **chromosome**s; or **chromatin**]

11. In a song from this band’s most recent studio album, the singer declares that he’d “trade all of his tomorrows for just one yesterday.” In a song by this band, the singer declares that he is “wishing to be the friction in your jeans.” This band released the album Save Rock and Roll in 2013 and is named for Radioactive Man’s sidekick. For 10 points, name this Pete Wentz-fronted band whose album *From Under the Cork Tree* contains “Sugar, We’re Going Down.”

ANSWER: **Fall Out Boy** [prompt on **FOB**]

12. Erasmus Reinhold used a theory of this scientist to calculate his *Prussian Tables*. The *Commentariolus* of this scientist was an early draft of a theory by him and was well-received by Pope Clement VII. The publication of this scientist's *De revolutionibus orbium coelestium* sparked a revolution named for him that replaced Ptolemy's geocentric system. For 10 points, name this Renaissance scientist who formulated a heliocentric theory of the Solar System.

ANSWER: Nicolaus **Copernicus**

13. In a late film, this man plays a bank teller who supports his wife by marrying and murdering a series of widows. A Millionaire lends this man a thousand dollars in a film in which he befriends a blind Flower Girl. This actor, who was acquitted for violating the Mann Act, dances with a globe to music from Wagner and persecutes an unnamed ghetto-dwelling barber in his role as Adenoid Hynkel. For 10 points, name this silent film actor who played the Tramp in films such as *City Lights*, and skewered Hitler in his film *The Great Dictator*.

ANSWER: Charlie **Chaplin** [or Sir Charles Spencer **Chaplin**]

14. This group was falsely claimed to be the creators of a coloring book that depicted the shooting of pig-like cops. This group issued a manifesto called the Ten Point Program. A member of this group, Fred Hampton, was shot in his bed by the FBI. The memoir *Soul on Ice* was written by a leader of this group, Eldridge Cleaver. This group was founded by Bobby Seale and Huey Newton. For 10 points, name this militant civil rights organization named for a large cat.

ANSWER: **Black Panthers** [**Black Panther** Party for Self-Defense; or **BPP**]

15. The best evidence for this substance is studies of gravitational lensing in the Bullet Cluster, which likely debunks modified Newtonian dynamics. This substance was first proposed by Fritz Zwicky to explain discrepancies in the Coma cluster. This substance cannot be detected by standard astronomical techniques, which on the existence of an electromagnetic interaction. For 10 points, name this "invisible" mass that accounts for a lot of gravitational effects and is often paired with a similarly named "energy".

ANSWER: **dark matter**

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 6**  **Tiebreaker/replacement questions** |

1. Along with China and Taiwan, this country claims the Paracel Islands. Until the 19th century, this country wrote its language in a Chinese character-inspired script called Chu nom. This country is where the Red River flows into the Gulf of Tonkin and where the Mekong River flows into the South China Sea. For 10 points, name this southeast Asian country, whose southern city of Saigon was renamed for Ho Chi Minh.

ANSWER: **Vietnam** [Socialist Republic of **Vietnam**]

2. The protagonist of this novel falls in love with Constance Bonacieux, who dies after being poisoned. In this novel, Milady de Winter’s identity is revealed by the discovery of a fleur-de-lis on her skin. This novel has the sequels *Twenty Years After* and *The Vicomte of Bragelonne*. This novel opens with d’Artagnan looking to join the royal guard. For 10 points, name this novel by Alexandre Dumas, whose title characters are Athos, Porthos and Aramis.

ANSWER: *The* ***Three Musketeers*** [or *Les* ***Trois Mousquetaires***]

3. One of these gods with the power to control thunder was known for eating the bellybuttons of children. Another of them killed an eight-headed snake with the sword “grass-cutter.” The best-known of these gods hid in a cave when she was angry at her brother but was lured out by a dance from Uzume. They include Raijin, Susano’o, and Amaterasu. For 10 points, name these divine spirits from Shintoism.

ANSWER: **kami** [or **Shinto god**s]

4. Peukert's Law gives the capacity of these devices. The ideal type of these objects have zero internal resistance. These devices are represented by alternating short and long bands in a circuit diagram. Alessandro Volta invented these objects by soaking stacks of copper and zinc in an electrolyte. Dry cell ones use a conducting paste to connect the terminals. For 10 points, name these devices that supply potential difference to a circuit and come in sizes like AA and AAA.

ANSWER: **batteries** [or word forms; or **voltaic pile**s; or **voltaic cell**s; prompt on **power source**]

5. This family's distinctive prognathism (prog-NAH-thiz-um) came to an extreme in the man who "baffled all of Christendom by continuing to live," sickly emperor Charles II. This family's extinction in Spain triggered the War of the Spanish Succession, and their later rulers elsewhere included "enlightened despot" Joseph II, who freed serfs. For 10 points, name this royal house which was the only dynasty of the Austro-Hungarian Empire and included Charles V of Spain.

ANSWER: **Hapsburg**s [or **Habsburg**-Lorraine]

What Elizabethan nobleman wrote the prose romance *Arcadia* and the sonnet sequence *Astrophil and Stella*?

ANSWER: Philip **Sidney**

Find all real solutions to the equation *x* minus 2 plus square root of *x* equals 0.

ANSWER: x = **1** [do not accept additional answers]