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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 17****First Period, Fifteen Tossups** |

1. This non-European country's capital is located between the rival cities of León and Granada. Bull sharks can migrate to this country's namesake lake through the San Juan River, which forms this country's southern border. With its northern neighbor, this country shares the Mosquito Coast. It is bordered by Honduras to its north, and by Costa Rica to its south. For 10 points, name this Central American country whose capital is Managua.

ANSWER: **Nicaragua** [Republic of **Nicaragua**] [or República de **Nicaragua**]

2. Early classic films from this country include *The Wind* and *The Phantom Carriage*, directed by Victor Sjöström (WEH-strum). A later director from this country depicted four family members deteriorating on an island retreat in *Through A Glass Darkly*, and showed a village decimated by the Black Death that returning Crusaders visit in a movie featuring a chess match with Death. For 10 points, name this country where Ingmar Bergman made *The Seventh Seal*.

ANSWER: **Sweden**

3. Anton Valukas’ report on this company said it contained “byzantine committee structures.” Barbara Boxer said “you don’t know anything about anything” during contentious Congressional hearings featuring this company’s current CEO, Mary Barra. At least thirteen deaths have been attributed to problems with this company’s products, which were plagued with faulty ignition switches. For 10 points, name this car company whose brands include Chevrolet and Buick.

ANSWER: **General Motors** [or **GM**]

4. Using a strategy called interning, only one copy of each unique example of these things is stored in memory. In Java, the compareTo and equals methods take as an input these things, which are thread-safe because they are immutable. C-style examples of this data type are null-terminated. In Java, the plus operator is overloaded so that it can concatenate these objects. For 10 points, name this data type in computer science that consists of a sequence of characters.

ANSWER: **string**s

5. Towards the end of this movie, a character reveals that her real name is Lucy. A unicorn in this movie is voiced by Alison Brie and lives in Cloud Cuckoo Land. Its protagonist attempts to find the Piece of Resistance to block the “Kragle,” which is actually a bottle of Krazy Glue. Will Ferrell voices this movie’s antagonist, Lord Business, who employs Emmet as a construction worker. For 10 points, name this 2014 film inspired by a block toy franchise.

ANSWER: *The* ***Lego Movie***

6. This is the largest degree for which there is a general formula to solve polynomials by the Abel-Ruffini theorem. All numbers which are the product of exactly two distinct primes have this many factors. Checking for divisibility by this number only requires looking at a number's last two digits. This number is the only even – and smallest – squared prime. For 10 points, name this number of faces of a tetrahedron and sides of a square.
ANSWER: **four**

7. Kurt Waldheim and Paul McCartney organized a series of concerts to benefit this country in 1979. The GRUNK was this country's government in exile during the 1970s, and it was earlier led by the Sangkum regime of Norodom Sihanouk. This country's notorious Killing Fields were established by “Brother Number 1” who led Democratic Kampuchea. For 10 points, name this country led by the Khmer Rouge under Pol Pot, whose capital is Phnom Penh.

ANSWER: **Cambodia** [or **Kampuchea** until mentioned]

8. This goddess aids a servant named Ottar in discovering his heritage so he can gain his inheritance. One of this goddess's possessions is the boar Hildisvini. This spouse of Odr has a chariot that is pulled by two cats. This goddess owned the necklace Brisingamen, which was taken by Loki. Her hall of Sessrumnir is found in Folkvangr, where she receives half of the dead. For 10 points, name this Norse goddess of beauty, the sister of Frey.

ANSWER: **Freya** [do not accept “Frey”]

9. During this poem's writing, its author apocryphally forgot many of its lines after being interrupted by a "person from Porlock." This poem's setting is "girdled round...with walls and towers" and contains "gardens bright with sinuous rills." The title character of this poem decreed "a stately pleasure-dome" in a land where the sacred river Alph ran. For 10 points, name this poem by Samuel Taylor Coleridge set in Xanadu and named for a Mongol-Chinese emperor.

ANSWER: "**Kubla Khan**"

10. Gary Sick claimed that George H.W. Bush prolonged this event as part of an “October surprise” campaign stunt. Operation Eagle Claw was a failed attempt at ending this event, but it was foiled due to faulty helicopters and a sandstorm. This event began to punish the United States for its support of the Shah, and it ended on the day of Ronald Reagan’s inauguration. For 10 points, name this event, in which over fifty Americans were held captive in Tehran for over a year.

ANSWER: The **Iran hostage** crisis

11. The two main constituents of this tissue are connected by pore-plasmodesmata units or PPUs. One of those main constituents of this tissue undergoes selective autophagy to lose its vacuole, ribosome, Golgi bodies, and nucleus and is the sieve element. Unlike a similar structure, it uses companion cells to execute unloading and loading mechanisms. This tissue transports nutrients like sucrose within a plant. For 10 points, identify this plant tissue that forms vascular bundles with the water-transporting xylem.

ANSWER: **phloem**

12. In a novel by this author, the ghost of Leon Trotsky Trout observes humans evolving into seals. In another novel by this author of *Galápagos,* the citizens of San Lorenzo worship the deity Bokonon and commit suicide with ice-nine. This author's recurring characters include Eliot Rosewater and Kilgore Trout. This author of *Cat's Cradle* wrote a novel in which the POW Billy Pilgrim becomes "unstuck in time." For 10 points, name this author of *Slaughterhouse-Five.*

ANSWER: Kurt **Vonnegut**

13. This planet's feature include the largest visible impact crater, Hellas Planitia. A 1977 image of this planet's Cydonia region appeared to show a human face. This planet is being explored by the Curiosity rover. Phobos and Deimos are the two moons of this planet, which has one of the tallest mountains in the Solar System in Olympus Mons. Its appearance is due to the high concentration of iron oxide on its surface. For 10 points, name this "red planet", the fourth from the sun.

ANSWER: **Mars**

14. This painter depicted two angels with chalices flying around Jesus to catch his blood. This student of Perugino painted baby Jesus reaching out to touch a bird in the hand of John the Baptist. This artist of *Mond Crucifixion* and *Madonna of the Goldfinch* painted a man who bends down to use a compass while being watched by a group of students. That painting features philosophers such as Plato and Aristotle. For 10 points, name this Italian artist of *The School of Athens.*

ANSWER: **Raphael**

15. The British naval anthem “Heart of Oak” celebrates successes in this war like Edward Hawke's victory over the fleet of Marshal Conflans at Quiberon Bay, which scuttled an invasion plan by the Duc de Choiseul. This war included battles at the Plains of Abraham and won Britain all of New France except Louisiana in the 1759 Treaty of Paris. For 10 points, identify this war named for its duration from 1756 to 1763, or for its North American phase that pitted colonists against France and its native allies.

ANSWER: The **Seven Years** War [or the **French and Indian** War]

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 17****Directed Round** |

1A. What seven-letter word beginning with “p” is often used to refer to water that is suitable for drinking?

ANSWER: **potable**

1B. In what Katherine Mansfield short story does Laura Sheridan become upset when she learns of Mr. Scott’s death during the title event?

ANSWER: “The **Garden Party**”

2A. What Richard Wagner opera about a pair of doomed Arthurian lovers opens with a namesake tonally-ambiguous chord?

ANSWER: ***Tristan and Isolde*** [or ***Tristan und Isolde***]

2B. What woman led the People Power Revolution in 1986, overthrowing the Marcos regime to become the first female president of the Philippines?

ANSWER: Corazon Aquino [Maria Corazon Sumulong “Cory” Cojuangco Aquino]

3A. This is a 20-second calculation question. What is the equation of the circle centered at the origin and containing the point (6,8)?

ANSWER: ***x*2 + *y*2 = 100** ("x squared plus y squared equals 100") [or ***x* squared over 100 plus *y* squared over 100 equals 1**; or ***x* over 10** quantity **squared** plus ***y* over 10** quantity **squared equals 1**]

3B. This is a 20-second calculation question. If sine of theta equals 2 square root of 2 over 3, and theta is a first-quadrant angle, then what is tangent of theta?

ANSWER: **2** times the square **root** of **2** [or **2** times **rad**ical **2**]

4A. What type of book did Samuel Johnson spend nine years singlehandedly compiling?

ANSWER: **dictionary**

4B. What woman from Aquitaine supported Young King Henry's revolt against her husband Henry II of England?

ANSWER: **Eleanor** of Aquitaine

5A. What New York banker organized the intervention that stopped the Panic of 1907 and founded a namesake company that later merged with Chase Manhattan?

ANSWER: John Pierpont **Morgan**

5B. What Pauline Epistle claims that "the wages of sin is death?"

ANSWER: Epistle to the **Romans**

6A. What statistical quantity, equal to the square of the standard deviation, measures how widely a set of data is spread around the mean?

ANSWER: **variance**

6B. What superhero persona does Dick Grayson adopt to patrol the city of Bludhaven after abandoning the identity of Robin?

ANSWER: **Nightwing**

7A. Michael Faraday names a law for what phenomenon in which a changing magnetic field produces an electric field?

ANSWER: electromagnetic **induction**

7B. Which invertebrate phylum includes organisms that use book lungs and Malphigian tubules?

ANSWER: **arthropod**s [or **Arthropoda**]

8A. This is a 30-second calculation question. It costs 80 dollars to manufacture 10 widgets and 200 dollars to manufacture 50 widgets. If there is a linear relationship between the number of widgets manufactured and the cost to manufacture them, how much does it cost to manufacture 100 widgets?

ANSWER: **350** dollars

8B. This is a 30-second calculation question. Pablo is working for Mr. Jones's campaign. He asks a random sample of 2400 voters in his district and finds that 40% would vote for Mr. Jones. Give a 95% confidence interval for the true proportion of voters in the district that would vote for Mr. Jones.

ANSWER: **0.38 to 0.42** [or **(0.38, 0.42)**; or **0.3804 to 0.4196**; or **(0.3804, 0.4196)**; or **38 to 42 percent**; or **38.04 to 41.96 percent**; or **0.4 plus or minus 0.02**; or **0.4 plus or minus 0.0196**; or **40 plus or minus 2 percent**; or **40 plus or minus 1.96 percent**]

9A. What South American capital features a National Congress Building along its Monumental Axis, and was designed by Oscar Niemeyer and Lucio Costa in the shape of an airplane?

ANSWER: **Brasilia**

9B. What tense should be used in Spanish to recall what time it was, talk about a repeated or incomplete action in the past, or describe an action that "set the stage" for a subsequent event?

ANSWER: **imperfect** tense [or **imperfecto**]

10A. Name the current Prime Minister of India, who was elected in a landslide in early 2014.

ANSWER: Narendra **Modi** [Narendra Damodardas **Modi**]

10B. What hero from American history is the subject of a Longfellow poem beginning, “Listen, my children, and you shall hear”?

ANSWER: Paul **Revere**

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 17****Third Period, Fifteen Tossups** |

1. This man wrote about Mabel Dunham, who falls in love with Jasper Western and spurns the title character in his book *The Pathfinder.* Hawkeye rescues the Munros in a novel by this man, whose title character is Uncas, the son of Chingachgook. This author wrote several books about Natty Bummpo, who appears in his series of "Leatherstocking Tales." For 10 points, name this author of *The Last of the Mohicans.*

ANSWER: James Fenimore **Cooper**

2. In the Lorentz factor, the square of this quantity is divided by the speed of light squared. For an oscillating spring, this quantity is equal to zero at maximum displacement. Distance traveled equals the product of the initial value for this quantity and time plus one-half acceleration times time squared. The value of this quantity required to escape the gravitational pull of a body is its "escape" form. For 10 points, identify this vector quantity that is the rate of change of position.

ANSWER: **velocity** [or **v**; prompt on **speed**]

3. During this man’s career in the House of Representatives, he advocated for the creation of the Smithsonian. He argued a Supreme Court case on behalf of slaves who revolted aboard a Spanish schooner, the Amistad. As Secretary of State, he formulated the Monroe Doctrine, and his choice of Henry Clay as his own Secretary of State led to charges of a “corrupt bargain” from his opponent Andrew Jackson. For 10 points, name this sixth President of the United States.

ANSWER: John **Q**uincy **Adams** [prompt on **Adams**; do not accept "John Adams"]

4. A poem by this author begins, “What passing-bells for these who die as cattle?” Another of his poems describes being “bent double, like old beggars under sacks” as he and his companions curse through sludge. He borrowed a Latin quotation from Horace to title his poem about a gas attack. For 10 points, name this British poet who described his World War I experiences in such poems as “Anthem for Doomed Youth” and “Dulce et Decorum Est.”

ANSWER: Wilfred **Owen**

5. In the 1980s, a wall in this city was filled with lyrics from Beatles songs and is now known as the John Lennon Wall. This city’s St. Vitus Cathedral was constructed under the orders of Charles IV, whose namesake Charles Bridge crosses over the Vltava River in this city. This city’s namesake hrad, or castle, was once the residence of the kings of Bohemia. For 10 points, identify this capital of the Czech Republic.

ANSWER: **Prague**

6. The spirit of Asha is nurtured by priests at temples to this thing, the major worship centers of Zorastrianism. The Buddha used this phenomenon to personify the sense and feeling that leads to suffering in a “Sermon” named for this subtance. Agni is the Hindu god of this thing, which is circled in traditional Hindu weddings. Mount Horeb was home to some vegetation that displayed this phenomenon to Moses. For 10 points, name this thing that Prometheus stole for mankind.

ANSWER: **fire**

7. This goddess turned Lamia into a monster after murdering her children. Zeus created a cloud in the shape of this goddess known as Nephele, and Ixion was punished for attempting to woo her. Gaia gifted this goddess a golden apple tree in the garden of the Hesperides. This goddess sent a gadfly to torment Io until she reached Egypt, and she placed the eyes of Argus on the feathers of her sacred peacock. For 10 points, name this wife of Zeus.

ANSWER: **Hera**

8. The role of physical location in influencing a person's decision to perform this action is the classic example of Hotelling's law. The fact that people doing this action in the insurance market often have asymmetric information leads to a moral hazard problem. A market with only one effective actor doing this action is known as a monopsony. For 10 points, identify this action which, when done to high-ticket items, may cause a person to suffer namesake "remorse."

ANSWER: **buying** things [or **purchasing** or other synonyms/word forms]

9. He’s not Emile Zola, but this man published editorials supporting Albert Dreyfus in his newspapers *Justice* and *The Dawn.* In 1907, this man renegotiated the entente cordiale with Britain. This man insisted that Germany pay harsh reparations at the end of World War I, and that the peace treaty be signed at Versailles. For 10 points, name this two-time Prime Minister of France nicknamed “the Tiger,” who represented the country at the Paris Peace Conference.

ANSWER: Georges **Clemenceau** [prompt on the **Tiger** until it is read]

10. Passing steam over a bed of coal generates hydrogen gas and this compound, a mixture called water gas. Nickel is purified in a reaction with this compound. This compound is isoelectronic to cyanide and nitrogen gas, since it has a single triple bond. Incomplete hydrocarbon combustion makes it and water. This compound has a high affinity for hemoglobin, which makes it very toxic. For 10 points, name this "silent killer" gas with formula CO.

ANSWER: **carbon monoxide** [or **CO** until it is read]

11. This man overcame Vitor Belfort and Glover Teixeira in his record seven title defenses. This man’s only professional loss was a disqualification against Matt Hamill for illegal elbows. He was due to fight Daniel Cormier at UFC 178, but a knee injury delayed the fight until January 2015. This athlete defeated Shogun Rua in 2011 to claim his current title. For 10 points, name this UFC Light Heavyweight Champion.

ANSWER: Jon **Jones** [Jonathon Dwight **Jones**]

12. This author created a character that is able to see an apparition of the milkmaid because he is born on a Sunday. That character fascinates the old man Jacob Hummel, who instructs him to attend a performance of *The Valkyrie.* This author wrote a play featuring a forbidden affair between valet Jean and an aristocratic lady, who kills herself at the end with a shaving razor. For 10 points, name this Swedish playwright of *The Ghost Sonata* and *Miss Julie.*

ANSWER: August **Strindberg**

13. This man was forced to testify against Clodius Pulcher, and later delivered the “Pro Milone” after Pulcher was murdered by supporters of this man's ally, Milo. Fulvia supposedly received the head of this man as revenge for his attacks on Marc Antony. Allobrogian Gauls supplied this man with letters proving a conspiracy he quashed as consul by delivering the Catiline Orations. For 10 points, name this author of *De Oratore*, considered the greatest Roman orator.

ANSWER: Marcus Tullius **Cicero** [or Marcus **Tullius**]

14. Rhodamine and fluorescein are often used in a "fluorescence" form of this technique. A pinhole cap may be placed on an Abbe condenser to align optical axes in this technique. In this procedure, the diaphragm beneath the stage varies the diameter of light projected onto a sample mounted on a slide. For 10 points, name this lab procedure that uses objective lenses such as 10x and 40x to magnify images.

ANSWER: light **microscopy** [or optical **microscopy**; or fluorescence **microscopy**; or confocal **microscopy**; or brightfield **microscopy**; or compound **microscope**s; do not accept "electron microscopy"]

15. Mahler's fifth symphony begins with a solo for this instrument, which joins the English horn in Aaron Copland’s *Quiet City*. It also poses the five-note query in Charles Ives’s *The Unanswered Question*. Jeremiah Clarke wrote a "voluntary" for this instrument. This cylindrical-tubed instrument isn’t a flute, but its piccolo version is used to play Baroque repertoire originally written for its valveless “natural” type, and it normally transposes to B flat. For 10 points, name this high-pitched brass instrument.

ANSWER: **trumpet**

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 17****Tiebreaker/replacement questions** |

1. This author wrote a novel that begins with the crew of the skyship *Inconvenience* traveling to the 1893 Chicago World’s Fair. This author of *Against the Day* also wrote about the death of Pierce Inverarity, which is investigated by his ex-girlfriend Oedipa Mass. He created a character whose sexual exploits correspond to the detonation of V-2 rockets. For 10 points, name this postmodern American author who wrote *The Crying of Lot 49* and *Gravity’s Rainbow.*

ANSWER: Thomas **Pynchon**

2. This man painted several diamond-shaped canvases in the 1920s entitled “lozenges,” and refused to use green. He described his style as “neoplasticism” and co-founded a movement with Theo van Doesburg. One of his late canvases was inspired by jazz and Manhattan’s street grid, and employs his trademark straight lines and primary colors. For 10 points, name this Dutch member of De Stijl who painted *Composition in Red, Blue, and Yellow* and *Broadway Boogie Woogie.*

ANSWER: Piet **Mondrian** [or Pieter Cornelis **Mondriaan**]

3. In audio, the ratio of loudspeaker impedance to source impedance is called this behavior’s "factor." A value for this behavior, usually denoted zeta, can be measured experimentally by finding the logarithmic decrement. This phenomenon is represented by a dashpot in a mass-spring system. This behavior occurs in "under", "over", and critical forms. It can be based on the dissipation of energy by things like electrical resistance or the drag force. For 10 points, name this behavior that reduces oscillations in a system.

ANSWER: **damping** [or word forms; or under**damping**; or over**damping**; or critical **damping**; or **damping** ratio; or **damping** factor]

4. A period named for this object included a victory over Russia at the Prut River and was the Ottoman renaissance under sultan Ahmed III. A revolution named for this object removed Askar Akayev (AHK-eye-ev) from power in Kyrgyzstan in 2005. This object was first brought to northern Europe by Carolus Clusius, and reached prices as high as twelve hundred guilders for a single bulb. For 10 points, identify this object which names a "mania" that afflicted Holland.

ANSWER: **tulip**

5. This city’s neighborhood La Boca is home to a large proportion of people of Genoese descent. The president lives in a structure found on this city’s Plaza de Mayo, the Pink House. Residents of this city are often called “portenos.” The Riachuelo River flows into the Rio de la Plata near this city, close to its country’s eastern border with Uruguay. For 10 points, name this capital of Argentina, whose name translates as “fair airs.”

ANSWER: **Buenos Aires**, Argentina

What man, one of the original Mercury Seven astronauts, became the first American to travel into space in 1961?

ANSWER: Alan **Shepard** Jr.

For what values of *x* between 0 and pi, inclusive, is the sine of 2*x* strictly greater than the square root of 3, over 2?

ANSWER: *x* is strictly **greater than pi over 6 and less than pi over 3** [or **(pi/6, pi/3)**; or **between pi over 6 and pi over 3**, exclusive]