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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 3**  **First Period, Fifteen Tossups** |

1. This playwright wrote about the engine stoker Yank, who is killed by the title animal, in his play *The Hairy Ape.* Another of his plays is set at Harry Hope’s saloon and features Theodore “Hicky” Hickman. He created the morphine-addicted matriarch Mary in his play about the Tyrone family. For 10 points, name this American playwright of *The Iceman Cometh* and *Long Day’s Journey into Night.*

ANSWER: Eugene **O’Neill**

2. These numbers can be equivalently represented by taking the square root of the sum of the squares of their coefficients and multiplying by the exponential of the arctangent of the ratio of the coefficients, which process gives their polar form. A star or overhead bar is used to represent the conjugate of these numbers, which involves reversing the sign of a constituent of them. For 10 points, identify this set of numbers, originally called "fictitious," that are expressed as a plus b i and denoted C.

ANSWER: **complex** numbers [or **C** until it is read]

3. This character was kidnapped as a baby by Kamek on four separate occasions, and he was brainwashed to work for Count Bleck in another game. He tells stories of his adventure in the Waffle Kingdom, and he partners up with Nabbit in a Wii U game. In another appearance, this character uses the Poltergust 3000 to capture ghosts in his newly obtained mansion. For 10 points, name this green-clad Nintendo plumber who makes up a duo with his brother Mario.

ANSWER: **Luigi**

4. An essay on this poem subtitled “The Monsters and the Critics” was written by J.R.R. Tolkien. In this poem, the title character kills a dragon with the help of Wiglaf, the only one of his men not to abandon him. The protagonist of this poem travels to the hall of Heorot to aid King Hrothgar, whose men are being terrorized by a monster. For 10 points, name this Old English poem whose title character kills Grendel.

ANSWER: ***Beowulf***

5. After this man's death, a series of imposters such as Terentius Maximus claimed to be him. The general Corbulo fell on his sword when this ruler ordered him to commit suicide. This emperor escaped the Pisonian conspiracy and tried to use a collapsing boat to kill his mother Agrippina the Younger. He built the Golden House after a disaster which he blamed on Rome's secret Christian groups. For 10 points, name this cruel Roman emperor who succeeded Caligula and allegedly fiddled while Rome burned.

ANSWER: **Nero**

6. This state’s 2013 elections featured the successful recall of state legislators Angela Giron and John Morse, as well as five counties in its rural northeast symbolically voting to secede. Both of these measures were a response to gun control laws signed by Governor John Hickenlooper. Along with Washington, it passed a referendum in 2012 legalizing recreational marijuana. For 10 points, name this Western state whose capital is Denver.

ANSWER: **Colorado**

7. This man exiled a rival to manage a hydroelectric plant in Kazakhstan after being helped by war hero Gyorgy Zhukov to survive a coup attempt by Malenkov and Molotov, whom this man dubbed the “Anti-Party Group.” This leader denounced the personality cult of his predecessor in the Secret Speech and argued with Richard Nixon in the Kitchen Debate of 1959. Leonid Brezhnev replaced this leader shortly after the Cuban Missile Crisis. For 10 points, name this Soviet premier who succeeded Stalin.

ANSWER: Nikita **Khrushchev**

8. This biblical character marries a daughter of Jethro named Zipporah. This man was admonished for striking a rock instead of waiting for it to produce water. When this man asks God what his name is, God responds, “I Am that I Am.” This brother of Miriam and Aaron is raised by the Pharaoh’s daughter after being put in a basket in a river. For 10 points, name this prophet who led the Israelites out of Egypt and parted the Red Sea.

ANSWER: **Moses** [or **Moshe**]

9. The Hornby Vellard Project shaped this city by arranging the seven islands on which it is found. This city lies on the Ulhas River near the Arabian Sea, and contains a “Gateway” to its country commemorating George V’s visit to it. In 2008, this city’s Taj Mahal Hotel was the site of a terrorist attack. This capital of Maharashtra is home to the Bollywood industry. For 10 points, name this most populous city of India.

ANSWER: **Mumbai** [or **Bombay**]

10. The song “Waist Deep in the Big Muddy” was co-opted to protest this war. A government during it promised to win the “hearts and minds” of the populace, but eventually it promoted a policy of “peace with honor” after mass drug use and low morale broke out among their soldiers. Second Lieutenant William Calley was court martialed for his actions in this war. During this war, American troops committed the My Lai Massacre. For 10 points, name this Southeast Asian conflict.

ANSWER: **Vietnam** War

11. Goya modeled his canvas *Charles IV of Spain and His Family* after this painting. In this painting, a woman wearing a nun's habit speaks with a bodyguard, and a chamberlain wearing black stands on stairs in the background. The artist painted himself into the left side of this painting with a red cross on his chest. A large dog sits in the bottom right of this painting in front of two dwarfs. For 10 points, name this painting of the Infant Margarita by Diego Velazquez.

ANSWER: *Las Meninas* [or *The* ***Maids of Honor***]

12. A method of measuring this organ’s functioning is spirometry, which includes parameters such as vital capacity and tidal volume. The chronic buildup of mucus in this organ is a symptom of cystic fibrosis. The destruction or damage of alveoli in this organ is part of emphysema, which can be a part of COPD. Transport into this structure takes place via the bronchioles. For 10 points, name this pair of organs whose inflammation leads to pneumonia and which performs gas exchange when you breathe.

ANSWER: **lung**s

13. The Reverend T. Lawrence Shannon leads a group of tourists in this country in Tennessee Williams's *The Night of the Iguana*. Ambrose Bierce's disappearance in this country inspired Carlos Fuentes's novel *The Old Gringo*. Cormac McCarthy's *The Crossing* describes cowboys who arrive in this country from Texas. For 10 points, name this country south of the United States.

ANSWER: **Mexico** [or **United Mexican States**, or **Estados Unidos Mexicanos**]

14. This city contains a building whose stylobate is raised towards its center to counter an optical illusion of the entire structure sagging. A temple in this city once had a chryselephantine statue of its dedicatee within it, and has metopes that display the slaughter of giants and centaurs. The Elgin marbles were taken from the best-known building in this city, part of a citadel located atop a rocky outcropping, known as the Acropolis. For 10 points, name this European city, home to the Parthenon.

ANSWER: **Athens**, Greece

15. In particle physics, this quantity is typically given in terms of giga-electron-volts divided by the speed of light squared. The "rest" version of this quantity is invariant in any reference frame and is zero for a photon. Linear momentum is the product of this quantity and velocity. Two values for this quantity are in the numerator of the law of universal gravitation. For 10 points, name this quantity measured in kilograms and multiplied by gravitational acceleration to give weight.

ANSWER: **mass** [or **m**]

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 3**  **Directed Round** |

1A. What musician, whose solo hits include "Fields of Gold" and "Desert Rose," was the lead singer of The Police?

ANSWER: **Sting** [or Gordon Matthew Thomas **Sumner**]

1B. What crescent-shaped lakes form when a meander in a river becomes cut off from the river?

ANSWER: **oxbow** lake

2A. What Indian-American author wrote the story collection *Interpreter of Maladies*?

ANSWER: Jhumpa **Lahiri**

2B. What Alfred Hitchcock thriller casts Jimmy Stewart as a wheelchair-bound photographer who discovers that his neighbor is a murderer?

ANSWER: ***Rear Window***

3A. This is a 20-second calculation question. What are the roots of the polynomial "*x* cubed plus 4 *x* squared plus 3*x*?"

ANSWER: *x* = **0**, *x* = **-1**, and *x* = **-3**

3B. This is a 20-second calculation question. A right rectangular prism holds exactly 200 milliliters of water. How much water could be held in a right rectangular prism that is similar to the first and is twice as high?

ANSWER: **1600** milliliters [or **1.6 liters**]

4A. The Treaty of Nystad ended what conflict between Russian under Peter the Great and Sweden under Charles XII?

ANSWER: The **Great Northern** War

4B. What Repuplican presidential candidate waas the target of the "Daisy" advertisement?

ANSWER: Barry **Goldwater**

5A. What coordinate system identifies points in a plane by their distance from the origin, r, and an angle of rotation, theta?

ANSWER: **polar** coordinate system

5B. The Twitter hashtag "BringBackOurGirls" referred to kidnappings perpetrated in what African country?

ANSWER: Federal Republic of **Nigeria**

6A. What Roman Emperor was killed after besieging Ctesiphon and known as “the Apostate” for reintroducing paganism?

ANSWER: **Julian** the Apostate [or **Julian** the Philosopher; or Flavius Claudius **Julian**us Augustus]

6B. What character becomes “incapable of her own distress” and drowns herself after being told “Get thee to a nunnery” by Hamlet?

ANSWER: **Ophelia**

7A. What verb mood in French uses the endings (READ OUT LETTERS) "-e," "-es," "-e," "-ions," "-iez," and "-ent?"

ANSWER: **subjunctive** [or **subjonctif**]

7B. What Greek word from artistic theory denotes the function of art as a “representation” or “imitation” of nature?

ANSWER: **mimesis**

8A. This is a 30-second calculation question. Give all values between 0 and 2 pi, inclusive, that satisfy the equation cosine squared *x* plus 3 cosine *x* plus 2 equals 0.

ANSWER: *x* = **pi**

8B. This is a 30-second calculation question. A basketball team consists of 12 players. How many different starting lineups of 5 players can be selected, if the positions they play are unordered?

ANSWER: **792**

9A. What Roman authored the play *Hercules Furens* and the satire *The Pumpkinification of Claudius* before being implicated in the Pisonian conspiracy and forced to kill himself?

ANSWER: **Seneca** the Younger

9B. What third largest city in Sweden, the largest in the southern region of Scania, is connected to Copenhagen by the Oresund Bridge?

ANSWER: **Malmo**

10A. What Buddhist term describes enlightened beings who remain on earth to help others, as contrasted with arhats?

ANSWER: **Bodhisattva**s [or **Bodhisatta**]

10B. Which gland located above the kidneys and is responsible for producing aldosterone, cortisol, and norepinephrine?

ANSWER: **adrenal** gland [or **suprarenal** gland]

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 3**  **Third Period, Fifteen Tossups** |

1. A huge impact crater on this object is the South Pole–Aitken basin. The Oceanus Procellarum is the largest basaltic plain on this object. This object is thought to have formed after a Mars-sized object named Theia collided with its parent planet. Basaltic plains on this object are named mares and include the Sea of Tranquility, where Apollo 11 landed. For 10 points, name this only natural satellite of Earth, which is in part responsible for the tides.

ANSWER: the **Moon** [or **Luna**]

2. This author noted, “The Wind does not require the Grass to answer” in a poem beginning, “Why do I love You?” A poem by this writer describes “Winter Afternoons” in which “a certain slant of light” appears. The speaker of another of this poet’s works wears a Gossamer gown as she passes a schoolyard in a carriage containing herself and Immortality. For 10 points, name this Belle of Amherst who wrote “Because I could not stop for death.”

ANSWER: Emily **Dickinson**

3. This group inspired the second name of the Knights of the Golden Circle. This group fought the Battle of Golden Hill and was formed by the Loyal Nine. Under Abraham Whipple, some members of this group plundered the *HMS Gaspee* in Rhode Island. Members of this group erected namesake poles and dressed as Mohawks during a raid on ships in the Boston harbour. For 10 points, name this society of Patriots which resisted British laws prior to the American Revolution.

ANSWER: **Sons of Liberty**

4. Saul Kripke claimed that this man put forth a “rule-following paradox” in a work which explained two ways of seeing with a duckrabbit. He used the beetle-in-a-box thought experiment to argue against private language in *Philosophical Investigations*. He wrote an earlier work whose seventh and final proposition was “Whereof one cannot speak, thereof one must be silent.” For 10 points, name this philosopher who wrote *Tractatus Logico-Philosophicus*.

ANSWER: Ludwig **Wittgenstein** [or Ludwig Josef **Johann Wittgenstein**]

5. Danish composer Niels Gade premiered this man's E minor Violin Concerto. This composer spearheaded a revival of Bach by conducting a major performance of *St. Matthew's Passion.* An A minor *saltarello* ends this composer's fourth symphony, the "Italian." This composer’s trip to Scotland inspired his third symphony and his *The Hebrides* overture. For 10 points, name this German composer who included a recessional wedding march in his incidental music to *A Midsummer Night’s Dream.*

ANSWER: Felix **Mendelssohn** [Jakob Ludwig Felix **Mendelssohn** Bartholdy]

6. The protagonist of this novel is terrified into intense religiosity by a lengthy fire and brimstone sermon delivered by Father Arnall. Later, he has an epiphany watching a young girl on the beach. As a boy, he is in the infirmary at Clongowes when he learns that Parnell has died. For 10 points, name this autobiographical novel about Stephen Dedalus written by James Joyce.

ANSWER: *A* ***Portrait of the Artist as a Young Man***

7. This organism is the subject of an experiment that Richard Lenski began in 1988 to observe long-term evolution. Lederberg and Tatum used this organism to demonstrate a process that requires possession of the F plasmid, conjugation. The Shiga-like toxin expressed by its O157:H7 serotype can cause food poisoning. For 10 points, name this Gram-negative bacterium that inhabits the large intestine and belongs to the same family as *Salmonella*.

ANSWER: ***E. coli*** [or ***Escherichia coli***]

8. One of these things made by Heinrich Bunting centers on a clover leaf design. Martin Waldseemuller is best known for creating one of these objects. The words "terra incognita" often appeared on these objects. Gerardus Mercator originated a commonly used method for producing these objects. Many of these objects were based on one created by Ptolemy for his book *Geographia*. For 10 points, name these visual representations of the Earth.

ANSWER: world **map**s [or obvious equivalents; prompt on charts; prompt on globes]

9. An experiment regarding this phenomenon involved people in elevators facing different directions. Another test for it, relyong on the autokinetic effect, asked people how far a light moved inside of a dark room. Alongside Muzafer Sherif, Solomon Asch tested this phenomenon and found about one-third of people incorrectly identified lines of the same length. For 10 points, under what psychological phenomenon will people change their behaviors to fit social norms?

ANSWER: **conformity**

10. The Phoenix Shot Tower in this city was the tallest building in America from 1828 to 1846. This city’s basilica, constructed under the guidance of Archbishop John Carroll, was designed by Benjamin Henry Latrobe. The Preakness Stakes are held at this city’s Pimlico Race Course. This city’s harbor is formed by the Patapsco River, which eventually flows into Chesapeake Bay. For 10 points, name this most populous city of Maryland.

ANSWER: **Baltimore**, Maryland

11. This man’s first award nomination was a Razzie for his work on the script for *Armageddon,* and through his company Bad Robot, he produced the film *Cloverfield.* He made his directorial debut in 2005 with *Mission Impossible III.* This man wrote and directed the 2011 film *Super 8,* and he also lied for months about the true identity of John Harrison. For 10 points, name this director of the 2009 *Star Trek* reboot, who is helming the next film in the *Star Wars* series.

ANSWER: JJ **Abrams** [Jeffrey Jacob **Abrams**]

12. X-rays emitted from these objects were shown to be correlated with their underlying properties by Moseley's law. J. J. Thomson proposed the plum pudding model for these objects. John Dalton presented the first modern scientific theory of these objects, in which they are indivisible and are identical in mass and properties for a given element. For 10 points, name these smallest units of matter, which consist of electrons orbiting a nucleus consisting of protons and neutrons.

ANSWER: **atom**s [prompt on **element**s]

13. A son of this god ruled Colchis and fathered Medea, and one of his daughters was the wife of King Minos. This father of Aeetes and Pasiphae was the son of Theia and Hyperion. This god's cult center was at Rhodes, where he was honored by a massive statue. This god gave the reins of his chariot to his son Phaeton, was killed by Zeus after nearly incinerating the earth. For 10 points, name this Greek god who drove his chariot westward across the sky each day while serving as the sun.

ANSWER: **Helios**

14. This country’s capital was moved to Thonburi by King Taksin, who was killed after going insane. TAnna Leonowens spent time in the court of its king Mongkut. This country was led by the Chakri dynasty. This country fought an 1893 war with France, and was forced to cede most of Laos. This modern-day country had its political center at Ayutthaya, until its defeat by Burma led to the creation of a new capital on the Chao Praya River. For 10 points, name this country, formerly known as Siam, whose capital is Bangkok.

ANSWER: **Thailand** [or **Siam** until it is read]

15. A constant representing this process equals Boltzmann's constant times temperature times motility. The flux from this process is proportional to the gradient of concentration by Fick's First Law. This process takes place via random walk in Brownian motion. When it occurs across a semipermeable membrane, it's called osmosis. For 10 points, name this net movement of molecules from areas of high to low concentration.

ANSWER: **diffusion** [or **osmosis** until it is read]

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl**  **Regular Season 2014**  **Round 3**  **Tiebreaker/replacement questions** |

1. In theoretical physics, this term is used to describe short-distance or high-energy cutoffs imposed on some theories. The incorrect short-wavelength predictions of the Rayleigh-Jeans blackbody radiation law were described as this type of "catastrophe." This type of radiation is not energetic enough to be ionizing, but it may cause cancer or excite unwanted biological reactions. For 10 points, name this type of radiation mostly filtered out by the ozone layer and whose wavelength is just shorter than visible light.

ANSWER: **ultraviolet** [or **UV**]

2. Felix Frankfurter championed this amendment’s “silver platter” exception, which was overturned in *Elkins v. U.S.* The judgment that this amendment did not protect Colorado abortion provider Julius Wolf was overturned in a 1961 case involving pornographic material found in a Cleveland residence. *Katz v. U.S.* extended this amendment to wiretapping of pay phones. For 10 points, name this amendment central to *Mapp v. Ohio*, which protects against unreasonable searches and seizures.

ANSWER: The **Fourth** Amendment

3. This knight was conceived when his mother used a magic ring to take on the appearance of Queen Guinevere. He was the only knight allowed to sit in the Siege Perilous. This knight healed the Maimed King at castle Corbenic during a quest that he completed with Percival and Bors. For 10 points, name this perfect knight from Arthurian legend who ascended to heaven after attaining the Holy Grail.

ANSWER: Sir **Galahad**

4. This country celebrates the new year on Enkutatash, which begins a thirteen-month calendar. It contains Africa’s longest system of caves, the Sof Omar Caves. The Oromo people constitute this country’s largest ethnic group. This country’s city of Bahir Dar, found in its Amhara region, is near its largest lake, Lake Tana, which is the source of the Blue Nile. For 10 points, name this eastern African country whose capital is Addis Ababa.

ANSWER: **Ethiopia** [Federal Democratic Republic of **Ethiopia**]

5. This man created an elderly man named Demos to symbolize the Athenian populace in his play *The Knights*. This playwright wrote a play in which Strepsiades desires to enroll his son in the Thinkery, which is led by Socrates. This author described the slave Xanthius’s trip to the underworld with his master Dionysus in a play whose title amphibians say “Brekekekex-koax-koax.” For 10 points, name this Greek playwright of comedies like *The Clouds* and *The Frogs*.

ANSWER: **Aristophanes**

What 1819 Supreme Court case saw Daniel Webster defend a New England college from William Woodward's attempts to revoke its charter?

ANSWER: ***Dartmouth*** *v.* ***Woodward***

What are the Cartesian coordinates of the point on the unit circle that corresponds to an angle of pi over three radians with respect to the x-axis?

ANSWER: (**1/2**, square **root** of **3** **over 2**) [or (**1/2**, **radical 3 over 2**); or (**1/2**, square **root** of **3** **divided by 2**); or answers that include **0.5** instead of "1/2"; or answers that include square **root** of **three-fourths** instead of "square root of 3 over 2"]