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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 20****First Period, Fifteen Tossups** |

1. Two types of this mineral group combine to form perthite, and it makes up the bulk of anorthosite. Moonstoon's shine is a result of its layers of albite and another form of this mineral. The continuous right branch of Bowen's reaction series moves from a calcium-rich form of this mineral to a sodium-rich form. A subtype of this most common mineral group on earth has a Mohs hardness of six. For 10 points, name this mineral whose types include orthoclase and plagioclase.

ANSWER: **feldspar**s [or orthoclase **feldspar**s; or plagioclase **feldspar**s]

2. This novel opens with a woman reporting that Netherfield Park has finally found an occupant. Towards its end, the protagonist’s sister Jane marries the affable Charles Bingley. After turning down a marriage proposal from her cousin William Collins, this book’s main character falls in love with Mr. Darcy. For 10 points, name this novel about the Bennet family by Jane Austen.

ANSWER: ***Pride and Prejudice***

3. Wim Wenders's film *The End of Violence* features a live recreation of this painting. The far right side of this painting features a yellow door with no doorknob. In it, a blonde man in a white uniform looks up at a woman wearing a red dress, who is seated next to two large dispensers. This painting includes no apparent entrance to a diner which advertises Phillies cigars for only five cents on its roof. For 10 points, name this painting by Edward Hopper.

ANSWER: ***Nighthawks***

4. Attractions in this city include Gorky Park and the historic Bolshoi Theater. In 2018, this city’s renovated Luzhniki Stadium will host the finals of the World Cup. The onion domes of this city’s St. Basil’s Cathedral can be seen by tourists in Red Square, which is surrounded by the walls of the Kremlin. For 10 points, name this capital of Russia.

ANSWER: **Moscow**

5. This dynasty sent Zhang Qian on a great westward expedition that allowed it to expand its trade routes into Sogdiana and the Ferghana valley. Sima Qian completed the *Records of the Grand Historian* for this dynasty, which was founded by Liu Bang and led by Wudi. This dynasty established the silk road and was contemporaneous with Rome. For 10 points, name this Chinese dynasty that followed the Qin and gives its name to the major Chinese ethnic group.

ANSWER: **Han** [or **Han** Chao]

6. One folk hero from a myth in this language defeated a dragon called the Zmey. Myths in this language tell of a heroic group of wandering knights, the Bogatyrs, who include Ilya Muromets. Myths in this language often describe battles with Mongol invaders. Myths in this language tell of an evil woman who flies in a mortar and lives in a hut with chicken legs, Baba Yaga. For 10 points, name this language used for fairy tales in St. Petersburg and Moscow.

ANSWER: **Russian** [or **Ukrainian** until “St. Petersburg” is read; or **Old Church Slavonic**]

7. This city is the namesake of four styles of mural art identified by August Mau. Buildings in this city include the House of the Mysteries and the House of the Tragic Poet. A letter to Tacitus describes how a man left Misenum and went to this city via galley ship. Pliny the Younger's uncle died in this city. This city was located near Herculaneum and was destroyed during the reign of Titus by a natural disaster. For 10 points, name this Roman city which was buried in ash by the eruption of Vesuvius.

ANSWER: **Pompeii**

8. The growth of these organisms is controlled by the Spitzenkoerper. This taxon includes the biologically important *C. albicans* and *S. cerevisiae*. The cell wall of these organisms contains chitin. The main mode of growth for most of these organisms is the tubular, filamentous structure known as hyphae, which collectively form the mycelium. For 10 points, name this kingdom comprised of yeasts, molds, and mushrooms.

ANSWER: **Fungi**

9. This poet declared, “I come, my sweet, to sing to you” in his poem *Asphodel, That Greeny Flower.* This poet’s works include one in which the speaker admits, “I have eaten the plums that were in the icebox,” and another about an object “glazed with rain water beside the white chickens.” For 10 points, name this poet of “This Is Just to Say” and “The Red Wheelbarrow.”

ANSWER: William Carlos **Williams**

10. This song's use of the name "Robert" was accused of glorifying the Westroads Mall shooter. The singer of this song notices that "Dinner's in the kitchen and it's packed in ice." This song opens by describing a "quick hand" that "found a six-shooter gun." Its chorus is a warning "All the other kids" who wear the title objects. For 10 points, name this 2010 hit song by Foster The People.

ANSWER: "**Pumped Up Kicks**"

11. For a glass electrode, the Nernst equation can be used to calculate this quantity as a function of the cell potential. The isoelectric point is a measurement of this quantity at which a protein is neutral. This quantity equals the pKa plus the log of the ratio of two molarities in a buffer solution. In general, it equals the negative logarithm of the concentration of hydronium ions. For 10 points, name this quantity which is 7 for neutral species.

ANSWER: **pH** [or **power of hydrogen**]

12. Matthew 13:47 describes the kingdom of heaven as a tool used to gather these animals. After resurrecting from the dead, Jesus causes 153 of these animals to appear for his disciples. Along with loaves of bread, Jesus multiplied this type of animal in a miracle where he fed 5,000 people. Before following Jesus, Saint Peter worked as a man who caught this type of animal. For 10 points, name this type of animal, often described in the bible as living in the sea.

ANSWER: **fish**

13. Dean Acheson partnered with this man in a failed attempt to preserve the Bank for International Settlements. This man warned against the harsh provisions of the Treaty of Versailles in *The Economic Consequences of the Peace.* For 10 points, name this economist who proposed that growing aggregate demand through deficit spending could reverse recessions in his foundational *General Theory of Employment, Interest, and Money.*

ANSWER: John Maynard **Keynes**

14. This theory proposes a double-nappe cone where the portion above a plane represents the future and the portion below represents the past. The Minkowski space was defined for this theory. If the Lorentz factor is not equal to one, then this theory predicts that a rapidly-moving object will appear to contract in length, to maintain a constant speed of light. For 10 points, name this theory proposed by Albert Einstein in 1905, a decade before he generalized it to include gravity.

ANSWER: **special relativity** [prompt on **relativity**]

15. This man wore a large diamond on the front of his shirt and he was arrested thanks to the work of reformer Samuel Tilden. In a depiction, he leans on a ballot box and asks “as long as I count the votes, what are you going to do about it?” This man was once arrested because onlookers were familiar with his appearance due to his constant mockery in the cartoons of Thomas Nast. For 10 points, name this head of the Tammany Hall political machine, who was known as “Boss.”

ANSWER: William Magear **Tweed**

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 20****Directed Round** |

1A. What is the Spanish word translated as the English word "blue"?

ANSWER: "**azul**"

1B. "Jubilee Jim" Fisk and Jay Gould caused an 1869 financial crisis by trying to corner the market for what commodity?

ANSWER: **gold**

2A. What kind of competition inspired a philosophical debate between Hubert Dreyfus and Daniel Dennett after a 1997 victory for Deep Blue?

ANSWER: a **chess** match [prompt on general answers such as **board game**]

2B. Gerasim is a servant to the title character of what story by Leo Tolstoy, in which a court official perishes after he falls while hanging curtains?

ANSWER: *The* ***Death of Ivan Ilyich*** [or ***Smert’Ivana Ilyicha***]

3A. This is a 20-second calculation question. If sine of *x* is 3/4, what is the cosine of quantity pi over 2 minus *x*?

ANSWER: **3/4**

3B. This is a 20-second calculation question. If events X and Y are independent, the probability of X occurring is 0.1 and the probability of Y occurring is 0.6, then what is the probability that X and Y both occur?

ANSWER: **0.06** [or **6/100**; or **3/50**; or **6 percent**]

4A. What Seattle Seahawks cornerback made the game-saving deflection in the 2014 NFC Championship Game?

ANSWER: Richard **Sherman**

4B. What prodigious Indian mathematician realized that 1729 was a sum of two cubes in two different ways upon hearing the number of his mentor G.H. Hardy's cab?

ANSWER: Srinivasa **Ramanujan**

5A. What term describes the reactant in a chemical reaction that determines the amount of product you can make and is thus always completely consumed at the end of a reaction?

ANSWER: **limiting** reagent [or **limiting** reactant]

5B. Name the only completed opera of Modest Mussorgsky, in whose Coronation Scene the title tsar ascends to the throne.

ANSWER: ***Boris Godunov***

6A. What short Robert Frost poem ends with the speaker reflecting that he has “miles to go before I sleep”?

ANSWER: “**Stopping by Woods on a Snowy Evening**”

6B. What island, with capital at Oranjestad, is a Dutch possession and the first, alphabetically, of the ABC countries?

ANSWER: **Aruba**

7A. “Wends” is another term for the Polabian branch of what ethno-linguistic group that covers much of Eastern Europe and includes Russians, Poles, and Slovaks?

ANSWER: **Slav**s

7B. What Missouri town has seen intense conflict between its citizens and police force since the shooting of teenager Michael Brown in August of 2014?

ANSWER: **Ferguson**

8A. This is a 30-second calculation question. A bowl is represented by half of a sphere with radius 9 inches. If water leaks into the bowl at a rate of 24 pi cubic inches per hour, how long will it take to fill the whole bowl?

ANSWER: **20 hours 15 minutes** [or **20.25 hours**; or **1215 minutes**]

8B. This is a 30-second calculation question. Tickets for a school dance cost $8 in advance and $12 at the door. 100 people bought tickets in advance, there is only room for 500 people at the dance, and the school wants to sell at least $2000 total in tickets. Give a compound inequality representing D, the number of tickets that the school can sell at the door.

ANSWER: **100 less than or equal to D, less than or equal to 400** [or **D greater than or equal to 100 and less than or equal to 400**; or **D is between 100 and 400, inclusive**; or verbal equivalents to **100<D<400**]

9A. Which organ is the site of the sinoatrial and atrioventricular nodes, as well as the largest blood vessel in the body?

ANSWER: **heart**

9B. What British poet wrote *The Hawk in the Rain* and was married to Sylvia Plath?

ANSWER: Ted **Hughes**

10A. Toussaint L'Ouverture (TOO-sahn ver-TOR) led the only successful slave rebellion in Western Hemisphere history, precipitating the independence of what country?

ANSWER: **Haiti**

10B. William Jones was the first to hypothesize the existence of what language family, which includes Latin and Sanskrit as well as English?

ANSWER: **Indo-European**

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 20****Third Period, Fifteen Tossups** |

1. Stable equilibrium occurs when this quantity is locally minimized. This quantity for two charges is inversely proportional to their distance. This quantity, which is always measured relative to a reference point defined to be zero, is proportional to displacement squared for a spring. Its gravitational form is equal to mass times g times height. For 10 points, identify this quantity that is the energy stored in an object due to its position or configuration.

ANSWER: **potential energy** [or electric **potential energy**; or gravitational **potential energy**]

2. An event which rocked this country's political landscape in April 2014 led to the mysterious death of company owner Yoo Byung-eun in July. This country's prime minister announced plans to resign after that April tragedy, but Jung Hong-won remains in office. For 10 points, name this country where over three hundred students at Danwon High School died when the overloaded ferry *MV Sewol* collapsed off its coast.

ANSWER: **South Korea** [or **Republic of Korea**; or **Taehan-min'guk**; or **Han'guk**; or **ROK**; prompt on **Korea**]

3. In this play, a character complains, “she is a monster, without being a myth, which is rather unfair,” while talking about his friend’s domineering aunt. A character in this play invents a sick friend named Bunbury to avoid his social obligations. This play follows Algernon Moncrieff and Jack Worthing, both of whom try to have their names changed to please their beloveds. For 10 points, name this comedy by Oscar Wilde.

ANSWER: *The* ***Importance of Being Earnest***

4. This man conjectured that all numbers of the form two raised to the two raised to the n plus one were prime. A theorem named for this man states that any number raised to a prime p is congruent to itself modulo p, which is his "little theorem". Andrew Wiles proved a theorem named for this man which states that no positive integers can satisfy the equation a to the n plus b to the n equals c to the n for n greater than two. For 10 points, name this French mathematician who is most famous for his "last theorem".

ANSWER: Pierre de **Fermat**

5. Members of this denomination were massacred in Constantinople in 1182 over their control of Byzantine commerce. In Tokugawa Japan, mambers of this denomination rose up in the Shimabara revolt. The Exclusion Bill was passed after Titus Oates concocted a fake plot by members of this denomination to kill Charles II, the Popish Plot. For 10 points, name this denomination whose earthly authority occupies the chair of St. Peter and is known as the Pope.

ANSWER: Roman **Catholic**ism [or **Latin** Christianity; prompt on **Christian**ity or word forms but do not accept other denominations]

6. This show got a new theme song for its fourth season which features a line about its guests who “drink and stir and wear blue jeans,” and is sung by its host. The first guest on this series was Larry David, and it aired an episode during the 2014 Super Bowl featuring Jason Alexander. A DeLorean was used during Patton Oswalt’s appearance on this series. For 10 points, name this webseries in which Jerry Seinfeld drives around with his peers.

ANSWER: ***Comedians In Cars Getting Coffee***

7. At the end of a novel by this author, a woman breastfeeds a man who cannot digest solid foods. A novel by this man follows Pablo and Pilon’s friendships with Danny when he returns to Monterey after World War I. This author of *Tortilla Flat* wrote a novel in which the Joad family moves to California during the Dust Bowl. For 10 points, name this author of *The Grapes of Wrath.*

ANSWER: John **Steinbeck**

8. The primary alternative to the pathway that breaks down this compound is the pentose phosphate shunt. This compound is phosphorylated by hexokinases to produce G6P in the first step of a metabolic pathway that yields two molecules of pyruvate. This molecule forms a glycosidic bond with fructose to make the disaccharide sucrose. A low level of this monosaccharide in the blood is called hypoglycemia. For 10 points, name this primary source of energy, a six-carbon sugar.

ANSWER: **glucose**

9. This character’s duel with Colonel Stamp Proctor is interrupted by a Native American raid. He fires valet James Foster for bringing his shaving water at a wrong temperature. This man marries an Indian princess named Aouda whom he had saved from being burned alive. This man is mistaken as a bank robber by Inspector Fix. For 10 points, name this member of the Reform Club who travels around the world with Passepartout in a Jules Verne novel.

ANSWER: Phileas **Fogg** [or **Phileas** Fogg]

10. Later sources name Macaria as a daughter of this god, whose palace was guarded by Aeacus. This god possessed a helmet of invisibility and ruled an abode enclosed by the Phlegethon, Lethe, and three other rivers. This god carried off a daughter of Demeter, Persephone, and employed the ferryman Charon to take souls across the Styx. For 10 points, name this god, lord and namesake of the Greek underworld.

ANSWER: **Hades** [or **Pluto**]

11. In this city, Chief Daryl Gates directed Operation Hammer against gangs. A detective who worked here, Mark Fuhrman, investigated the murder of Nicole Brown Simpson. In 2013, Christopher Dorner, who was fired from this city’s employ, went on a shooting rampage. Police officers here were videotaped beating up the African-American Rodney King in 1991, which led to devastating riots here the following year. For 10 points, name this largest city in California.

ANSWER: **Los Angeles** [or **L.A.**]

12. This man called for gilded ropes to support an open-air ceiling in his design for the Sheldonian Theater. He added a brick cone to support the inner and outer layers of a dome in an improvement to the "Warrant Design" for a structure with a famous Whispering Gallery. This architect is buried in a building he designed, with the inscription “Reader, if you seek his monument, look around you.” For 10 points, name this English architect who designed the reconstruction, after the Great Fire of London, of St. Paul’s Cathedral.

ANSWER: Christopher **Wren** [Sir Christopher Michael **Wren**]

13. The detention of members of this group in Maze Prison caused the formation of the Anti-H-Block Party. A member of this group, Bobby Sands, began a much-covered hunger strike in pursuit of special treatment in prison. This group is affiliated with the political party Sinn Fein (shin FAYN), and since 1969 has called itself "provisional." For 10 points, name this group that disarmed in the Good Friday agreement and participated in The Troubles in Northern Ireland.

ANSWER: **IRA** [or Provisional **Irish Republican Army**]

14. A transform named for this body of water forms the boundary between the African and Arabian plates. A hill on the shores of this body of water, Jebel Udsum, is made almost completely of sodium chloride and is better known as Mount Sodom. The only major river flowing into this lake is the Jordan River. For 10 points, name this saltwater lake between Jordan, Palestine, and Israel, so named for its harsh conditions for animal life.

ANSWER: **Dead** Sea [or **Salt** Sea until “saltwater” is read; or **Yam Hamelah**; or **al-Bahr al-Mayyit**]

15. Like Elgar, this composer honored his friends in a set of pieces, except his was all solo piano and was titled *Visions fugitives.* His film music includes the score to *Alexander Nevsky* as well as a suite which includes a winter-themed “Troika,” titled *Lieutenant Kije.* This composer also wrote a piece for children in which a duck, represented by the oboe, is eaten by the title animal, played by a quartet of French horns. For 10 points, name this Soviet composer of *Peter And The Wolf.*

ANSWER: Sergei **Prokofiev** [or Sergei Sergeyevich **Prokofiev**]

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| High School Academic Pyramid Questions | **VHSL Scholastic Bowl****Regular Season 2014****Round 20****Tiebreaker/replacement questions** |

1. During this decade, the so-called "Second Battle of Hastings" was a riot between two youth subcultures, the "mods" and "rockers." This decade featured a non-German "Night of the Long Knives" during which the Cabinet was purged, a year before Christine Keeler's relationships triggered the Profumo affair. For 10 points, name this decade in British history in which Harold Macmillan resigned as Prime Minister and the "British invasion" of American music began.

ANSWER: 19**60**s

2. This artist’s book *Jazz* employed his late-in-life technique of making collages with paper cut-outs. He painted a collection of his then-recent artworks in a monochromatic room, as well as a painting called *The Dessert* also nicknamed for that same color. Another of his paintings depicts five nude women performing the title action in a circle, on a simple blue and green background. For 10 points, name this Fauvist painter of *The Red Studio,* *The Red Room,* and *The Dance*.

ANSWER: Henri **Matisse** [or Henri-Émile-Benoît **Matisse**]

3. A man in this play demands “more weight” as he is being pressed to death with stones. Prior to the action of this play, Reverend Parris sees a group of girls dancing in the forest with the slave Tituba. In this play, the false accusations of Abigail Williams lead to the execution of John Proctor. For 10 points, name this play about the Salem witch trials by Arthur Miller.

ANSWER: *The* ***Crucible***

4. A contract signed just before this event is known as the "ketubah" (kih-TOO-buh) and may involve the allotment of money known as "mohar" (MOE-harr). To reverse this event, one must obtain a "get." This event is conducted underneath a canopy known as a "chuppah" (HOO-puh) and often involves breaking a glass by stomping on it. For 10 points, identify this kind of event at which followers of the Torah are joined into a couple by a rabbi.

ANSWER: Jewish **wedding** [or **marriage**, etc.]

5. A method of approximating this function of *x* iteratively takes the average of a guess and *x* divided by that guess. The derivative of this function is one all over two times this function. It is denoted by an exponent of one-half, and "rationalizing" refers to removing one of these from the denominator of a fraction. It produces an imaginary number when its input is negative. For 10 points, identify this function which is the inverse of squaring.

ANSWER: **square root**

What woman, who supported the idea of a “covenant of grace,” was banished from the Massachusetts Bay Colony, and helped to form Rhode Island?

ANSWER: Anne **Hutchinson** [or Anne **Marbury**]

All face cards and aces are removed from a standard deck of 52 cards, leaving only numbered cards. Four cards are drawn with replacement and the mean number shown on the four cards is recorded. What is the mean value of this sample mean?

ANSWER: **6**