**VHSL Regionals 2016-2017 - Round 08 - First Period, Fifteen Tossups**

1. A solution of this color forms when mixing the chromate ion with water, and lead-two chromate is also this color. Methyl red turns this color in the presence of a base while bromothymol (BROE-moe-THIGH-mohl) blue turns this color in the presence of an acid. This color is indicative of explosive or reactive hazards on the NFPA Lab Safety Diamond, which is a compound's instability hazard. The dominant spectral line of helium is this color, and sodium burns this color in the flame test. For 10 points, give this color of fluorine gas and elemental sulfur.
ANSWER: **yellow**

2. One of this author's protagonists captains the *Bachelor's Delight* and sees the slave Babo accidentally cut his master while shaving him. A character created by this author causes the narrator to exclaim "Ah humanity!" and dies in prison after surviving on ginger nuts provided by his colleague. In that story by this author, the title character repeatedly states "I would prefer not to" while working as a law clerk. For 10 points, name this author of *Benito Cereno* and "Bartleby the Scrivener" who also created Captain Ahab in *Moby-Dick*.
ANSWER: Herman **Melville**

3. Mass protests took place in this country during the July Days. A revolution in this country effectively began with mass strikes and bread riots on International Women's Day. A Provisional Government here was led by Alexander Kerensky. Both the February and October Revolutions occurred in this country, which formed the Triple Entente (ONN-tont) with Britain and France. For 10 points, Nicholas II abdicated as ruler of what country during World War One?
ANSWER: **Russia** [or **Russian** Empire; or **Russian** Provisional Government; or **Russian** Republic; do not accept "Soviet Union"]

4. This adjective appears in the name of a blog run by George Mason economists Tyler Cowen and Alex Tabarrok. A revolution named after this concept was initiated by the research of Carl Menger and William Stanley Jevons. A monopolist will produce a quantity where this type of cost and this type of revenue are equal. For 10 points, identify this adjective that names the type of utility that a consumer can obtain by purchasing an additional unit of a good or service.
ANSWER: **marginal** [or **marginal** revolution; or **marginal** cost; or **marginal** revenue; or **marginal** utility]

5. This structure fuses with a double-membraned vesicle during autophagy (aw-TOFF-uh-jee) to recycle cell parts. This structure is the final destination of acid hydrolases (HY-dro-lazes) bound to mannose-6-phosphate receptors. After phagocytosis (fay-go-sy-TOH-sis) this organelle fuses with food vacuoles (VAK-yu-ohls) to digest their contents. It is defective in namesake storage diseases like Tay-Sachs. For 10 points, name this acidic organelle that degrades cellular materials and pathogens.
ANSWER: **lysosome**s [or endo**lysosome**s; prompt on endosome before it is read]

6. China invests billions of dollars into developing this country's port of Gwadar. This country's capital, which was developed in the 1960s, is home to a mosque named after Saudi Arabia's king Faisal. This country is connected to a smaller country to its west by the Khyber (KYE-burr) Pass. Ancient cities like Harappa and Mohenjo-daro are found in this present-day country. Urdu (OOR-doo) is spoken in this country's cities, including Lahore and Karachi. For 10 points, name this country that shares Punjab with its eastern neighbor, India.
ANSWER: **Pakistan** [or Islamic Republic of **Pakistan**; or Islami Jumhuriyah **Pakistan**]

7. This organelle releases COP-2-coated vesicles and performs N-linked glycosylation (gly-KOSS-uh-lay-shun). Barbiturates (bar-BIH-chu-ets) are detoxified by this organelle. IP3 is mainly targeted to this organelle to induce release of its calcium stores. Muscle cells contain its "sarcoplasmic" type. Ribosomes (RYE-bo-sohms) are attached to the "rough" form of this organelle. For 10 points, name this organelle that processes proteins before exporting them to the Golgi apparatus.
ANSWER: **endoplasmic reticulum** [or **ER**; or rough **ER**; or r**ER**; or smooth **ER**; or s**ER**; or **sarcoplasmic reticulum**; or **SR**; prompt on partial answers]

8. In this country, the Conservative Party won the Thousand Days' War at the beginning of the twentieth century. Tomas Herran's treaty with the United States was rejected by this country's Senate. After the 1948 assassination of Jorge Gaitan, a civil war known as "La Violencia" began here. A long-running guerrilla war in this country features the group known as FARC. It once owned the territory that became Panama. For 10 points, Pablo Escobar's cocaine cartel was based out of what South American country?
ANSWER: Republic of **Colombia**

9. Despite numerical superiority, these people failed to take Rorke's Drift from invaders. A leader of these people developed a "bull horn" formation for combat. Their most successful victory was at Isandlwana (iss-OND-luh-WANNA), which occurred during the reign of King Cetshwayo (SESH-why-OH). These non-European peoples lost to the Boers at the Battle of Blood River and were conquered in an 1879 war with the British. For 10 points, what South African people were once led by Shaka?
ANSWER: **Zulu**s

10. Abderus was killed by a group of these animals whose individual names translate as "the swift," "the shining," "the terrible," and "the yellow." Two of these animals were Balius and Xanthus (ZAN-thiss). The eighth labor of Heracles involved stealing four of these animals that were notorious for eating humans and that belonged to Diomedes (die-AH-mid-eez). A winged example of this animal was captured and used by Bellerophon and was named Pegasus. For 10 points, name these animals that often pulled Greek chariots.
ANSWER: **horse**s [or **mare**s]

11. A character in this poem, Shingebis, is a diver who burns firewood and fights the North Wind in a wrestling match. A villainous character in this poem is the "mightiest of magicians," Pearl-Feather. A famous line in this poem mentions that the old woman Nokomis is standing "on the shores of Gitche Gumee (GITCH-ee GOO-mee)." This poem is set on the shore of Lake Superior and features a man who lives with Minnehaha (MIN-nee-ha-ha). For 10 points, name this epic poem by Henry Wadsworth Longfellow about the title American Indian warrior.
ANSWER: *The* ***Song of Hiawatha***

12. A clothed portrait by this artist was once attached to a pulley that, when pulled, revealed a nude portrait behind it; both of those paintings by him may depict the mistress of Manuel de Godoy. The now-demolished Quinta del Sordo once held this artist's paintings of a witches' sabbath and a Titan eating his child. This court painter of Charles IV made a series of "Black Paintings" and depicted a man with his arms raised facing Napoleon's firing squad. For 10 points, name this Spanish artist of *The Third of May 1808*.
ANSWER: Francisco **Goya** [or Francisco José de **Goya** y Lucientes]

13. This country is currently building a namesake "Grand Renaissance" Dam predicted to become the largest dam in Africa. During protests over the expansion of this country's capital, several members of the Oromo ethnic group were killed. Awareness of those protests increased after a gesture made by the silver medalist at the 2016 Olympic marathon, a native of this country. For 10 points, name this country home to the African Union's headquarters in its capital, Addis Ababa.
ANSWER: **Ethiopia** [or Federal Democratic Republic of **Ethiopia**]

14. This man noted at age fifteen his "heart was set on learning," but at seventy, he could finally "follow my heart's desire." When asked for a word to guide someone through life, this man replied "how about reciprocity?" He introduced the virtue of "ren," especially through filial piety or devotion to one's parents. This man was traditionally thought to have compiled the Five Classics, including the *Spring and Autumn Annals* and *I Ching*. For 10 points, what Chinese thinker's sayings are collected in the *Analects*?
ANSWER: **Confucius** [or **Kong** Qiu; or **Kong** Fuzi; or **Kongzi**]

15. Michael Keaton made his TV debut at this man's Pittsburgh studio. This man poured the one billionth Crayola crayon, and was told "Looks like you just earned the twenty million dollars" after testifying to the Senate in 1969 to defend funding for public broadcasting. This man portrayed King Friday XIII, who resides in the land of Make-Believe, and began his show by changing into sneakers and a sweater. For 10 points, name this host of a long-running PBS show where he asks viewers "Won't you be my neighbor?"
ANSWER: Mister **Rogers** [or Fred McFeely **Rogers**]

 **VHSL Regionals 2016-2017 - Round 08 - Directed Period**

1A. In 2016, Barack Obama apologized over a former American soldier's involvement in a murder in what Japanese prefecture, where 27,000 Americans are stationed?
ANSWER: **Okinawa** Prefecture

1B. What American composer featured classically trained African-American singers in his opera *Porgy and Bess*?
ANSWER: George **Gershwin**

2A. What form of movement across cell membranes either directly requires energy from ATP in its primary type or uses a gradient made by sodium-potassium ATP-ase in its secondary form?
ANSWER: **active transport** [prompt on partial answers]

2B. A dense population of black bears inhabits what park in Tennessee and North Carolina, which is the most-visited national park in the U.S.?
ANSWER: **Great Smoky Mountain**s National Park

3A. This is a 20-second calculation question. Find *all* solutions for x between zero and two pi of: the square of tangent of x equals three.
ANSWER: **pi/3** and **4pi/3** [do not prompt on partial answers] [In the first quadrant, tan pi/3 is equal to root 3, and tangent has 180-degree rotational symmetry for the second answer.]

3B. This is a 20-second calculation question. Giving your answer in the form y equals m x plus b, what is the equation of the oblique asymptote of the function f of x equals x squared divided by the quantity x minus two, end quantity?
ANSWER: **y equals x plus two** [Rewrite f(x) as (x^2-4+4)/(x-2)=(x^2-4)/(x-2)+4/(x-2)=x+2+4/(x-2). The oblique asymptote comes from the non-fractional part.]

4A. What city in Peru was the capital of the ancient Inca Empire?
ANSWER: **Cusco**

4B. Arkady Kirsanov (ar-KAH-dee KEER-suh-noff) and the nihilist Bazarov (buh-ZAR-off) appear in what novel by Ivan Turgenev (tur-GAIN-yef)?
ANSWER: ***Fathers and Sons*** [or ***Ottsy i Dety***]

5A. Ben Green and Terence Tao showed that the sequence of prime numbers contains arbitrarily long sequences of what type, in which the difference between consecutive terms is constant?
ANSWER: **arithmetic** sequences [or **arithmetic** progressions]

5B. What novel by Nikos Kazantzakis (NEE-kohs kah-zahnt-ZAH-kiss) centers on the development and management of a coal mine on the island of Crete?
ANSWER: ***Zorba the Greek*** [or ***Vios ke Politia tou Alexi Zorba***; or ***Life and Times of Alexis Zorbas***]

6A. What legendary college basketball coach at the University of Indiana once threw a chair across the court during a game?
ANSWER: Robert "Bob" **Knight** [prompt on the General]

6B. The principle stating "the hypothesis with the fewest assumptions should be selected" is usually known as what philosopher's "razor"?
ANSWER: William of **Ockham** [or **Occam's** razor; prompt on William]

7A. The Latin phrase "caveat emptor" is a warning to let what type of person "beware"?
ANSWER: the **buyer**

7B. What three-word literary term refers to a special type of narration that presents a character's running mental processes, as seen in the novels of Virginia Woolf and William Faulkner?
ANSWER: **stream of consciousness**

8A. This is a 30-second calculation question. What is the total surface area of a right circular cone with base radius six and height eight?
ANSWER: **96 pi** [The slant height is sqrt(6^2+8^2)=10, so the lateral surface area is (6/10)\*10^2\*pi=60pi. The base area is 6^2\*pi, so total surface area is 96pi.]

8B. This is a 30-second calculation question. What is the standard deviation of a random variable that takes the values 3, 5, and 10 with equal probabilities?
ANSWER: square **root of 26 over 3** [or square **root of 78, all over 3**] [the mean is 6, so the differences from the mean are 3, 1, and 4. The variance is (3^2+1^2+4^2)/3=26/3, and the standard deviation is the square root of that.]

9A. What charge does a hydroxide ion possess?
ANSWER: **minus one** [or obvious equivalents, such as **negative one**; do not accept "one" alone]

9B. What over 700-year period of warfare gradually saw the Muslims forced out of what they called Al-Andalus?
ANSWER: **Reconquista** (ree-CONE-kees-ta) [or **Reconquest**]

10A. In 1734, what German-American printer was acquitted of libel after printing articles critical of a governor, an incident that was an early victory for freedom of the press?
ANSWER: John Peter **Zenger**

10B. What British title of nobility is acquired by the "Little" Cedric Errol in a novel by Frances Hodgson Burnett?
ANSWER: Lord **Fauntleroy** [or *Little Lord* ***Fauntleroy***]

 **VHSL Regionals 2016-2017 - Round 08 - Third Period, Fifteen Tossups**

1. This novel's protagonist was once married to a Polish doctor's daughter named Valeria. In this book, the protagonist and the title character go to a hotel called the Enchanted Hunters. Its title character is really named Dolores Haze, whose mother, Charlotte, loves the scholar narrator. The protagonist of this novel murders an author named Clare Quilty and is obsessed with "nymphets," his term for prepubescent girls. For 10 points, name this Vladimir Nabokov novel about Humbert Humbert's obsession with the title girl.
ANSWER: ***Lolita***

2. This state is home to a notorious tourist trap featuring giant jackalope and dinosaur statues, called Wall Drug. Every August, thousands of motorcyclists visit a rally in this state's town of Sturgis. This state is home to a massive unfinished monument dedicated to Crazy Horse, and is where Wild Bill Hickok was shot in Deadwood. Gutzon Borglum sculpted a memorial in this state that depicts the heads of four U.S. presidents. For 10 points, name this state where Mount Rushmore is located.
ANSWER: **South Dakota**

3. Astronomers have constructed a "cosmic ladder" to measure this quantity. By comparing a known luminosity of a standard candle to the brightness of an object, this quantity can be calculated via an inverse square law. Stars for which this value is low can be measured using the principle of parallax. Outside of the Solar System, the parsec is often used to measure this quantity. For 10 points, one astronomical unit describes what measure between the Earth and the Sun?
ANSWER: cosmic **distance** [or **length**; or obvious equivalents, such as how **far** away something is]

4. In a novel by this author, a coded message written in runes is deciphered when the main characters realize that it needs to be read backwards. A novel by this writer is narrated by Pierre Aronnax. He wrote a novel in which the main characters begin a voyage by traveling into an Icelandic crater. He also wrote a novel that includes a battle between a squid and the crew of the submarine *Nautilus*, which is helmed by Captain Nemo. For 10 points, name this author of *Journey to the Center of the Earth* and *Twenty Thousand Leagues Under the Sea*.
ANSWER: Jules **Verne**

5. According to the Abel-Ruffini theorem, there is no general algebraic solution to these objects when they are of order five or higher. A fraction containing one of these objects in the numerator or denominator is a rational expression. A shortcut for dividing one of these objects by a linear factor is synthetic division. They have at least one complex root according to the fundamental theorem of algebra. For 10 points, name these functions that raise variables to integer exponents, such as trinomials and binomials.
ANSWER: **polynomial**s [or **polynomial** functions]

6. These things almost killed a man named Butes (BEW-tayz), who was saved by Aphrodite. These things were defeated at Aptera and killed themselves after turning white when the Muses triumphed over them. Circe advises using beeswax to confound these creatures, who fail to defeat Odysseus (OH-diss-EE-uss). Orpheus used his lyre to drown out these creatures' voices. For 10 points, what creatures in Greek mythology would lure sailors to their doom with enchanting music?
ANSWER: the **Siren**s

7. During the 2014 playoffs, a local newspaper dubbed this player "Mr. Unreliable." This man, LeBron James, and Carmelo Anthony are the only teenagers to average at least 20 points in an entire season. He once gave an emotional speech saying his mother, Wanda, is the "real MVP." In 2015, this man and teammate Russell Westbrook both scored 40 points in one game. For 10 points, name this small forward who recently signed with the Golden State Warriors after spending years with the Oklahoma City Thunder.
ANSWER: Kevin **Durant** [prompt on KD]

8. This artist's moving sculpture *Rotary Glass Plates* nearly decapitated a fellow artist. This artist chose not to repair a crack in a piece divided into two sections depicting a "bride" and some "bachelors." This artist placed several sugarcubes inside a cage in an artwork named after his female alter ego, Rrose Sélavy. In 1917, the Society of Independent Artists rejected this artist's submission of a urinal signed "R. Mutt." For 10 points, name this Dadaist sculptor of *Fountain* and several "readymades."
ANSWER: Marcel **Duchamp** [or Henri-Robert-Marcel **Duchamp**]

9. A man in this position was killed by a group of four men including Hugh de Morville mainly due to his lack of support for the Constitutions of Clarendon. King John did not support the appointing of Stephen Langton to this position. Supposedly Henry II shouted "who will rid me of this troublesome priest?" when referring to a man in this position, which was held by Thomas Becket at the time of his death. For 10 points, what religious position is now held by the leader of the Church of England?
ANSWER: **Archbishop** of **Canterbury** [prompt on Archbishop]

10. A story about this city tells of the heroic defense of a bridge from the forces of the king of Clusium, Lars Porsena. This city's forces lost the Battle of the Allia, which led to its sacking at the hands of Brennus and the Gauls. A powerful group of priestesses in this city were the Vestal Virgins. The final king of this city, the arrogant Tarquin the Proud, was deposed by Lucius Junius Brutus, leading to the founding of a republic. For 10 points, what city was legendarily founded by Romulus?
ANSWER: **Rome**

11. In a play, this type of creature is driven absurdly jealous by his companion's changeling page, leading him to instruct his subordinate to retrieve a flower called Love-in-Idleness. A female creature of this type awakens and sees a man whose head was transformed into a donkey, but she falls in love with him anyway. The king of these creatures undoes a chaotic love quartet between Demetrius, Lysander, Helena, and Hermia. For 10 points, Titania and Oberon are what type of creature in *A Midsummer Night's Dream*?
ANSWER: **fae**ries

12. Bisphenol A is so named because it is synthesized from two phenol groups and this compound. The smell of this compound on a person's breath is indicative of keto-acidosis (key-TOE-ass-UH-doe-SIS). This compound consists of two methyl groups, formula C H 3, whose carbons are bound to the carbon in a carbonyl, formula C O, giving it the overall formula (C H 3)2 C O. It is the simplest ketone (key-TONE). For 10 points, either ethyl acetate or what organic compound are the most common active ingredients in nail polish removers?
ANSWER: **acetone** [or **2-propanone**]

13. During this election's primaries, former NBA player Bill Bradley failed to earn the Democratic nomination. The loser of this election mentioned in debates that he would keep Social Security in a "lockbox." During this election, people claimed they had accidentally voted for Pat Buchanan due to a confusing "butterfly ballot." This election featured a Supreme Court decision halting recounts of ballots in Florida. For 10 points, name this presidential election in which George W. Bush controversially defeated Al Gore.
ANSWER: Election of **2000**

14. The centripetal force on an object undergoing circular motion is equal to mass times radius times this quantity squared. For rotational motion, this quantity is the time integral of the quantity symbolized alpha and the time derivative of the quantity symbolized theta. Angular momentum is defined as the moment of inertia multiplied by this quantity, which is the rate of change of angular displacement and is measured in radians per second. For 10 points, what vector quantity symbolized omega defines the speed and direction of rotation?
ANSWER: **angular velocity** [or **omega** until it is read; do not accept "velocity"]

15. Galatea does this action as the title character of Odilon Redon's painting *The Cyclops* watches. In a 1781 painting, a horse's head emerges from the darkness as an incubus sits on a woman doing this action. Giorgione's painting of Venus shows her doing this action. A Gypsy woman does this action while a lion lurks beside her in a painting by Henri Rousseau. William Blake depicted a vision of a "ladder" that Jacob saw while doing this action. For 10 points, identify this action depicted in Henry Fuseli's *The Nightmare*.
ANSWER: **sleep**ing [or **dream**ing; or word forms]

 **VHSL Regionals 2016-2017 - Round 08 - Tiebreaker Questions**

1. This poem describes a sound that will "begin, and cease, and then again begin, with tremulous cadence slow" to bring in the "eternal note of sadness." Observing a world that seemed "so various, so beautiful, so new," the final stanza of this poem implores, "Ah, love, let us be true to one another!" This poem, which is set at a time when "the tide is full" and "the moon lies fair," begins, "The sea is calm tonight." For 10 points, name this poem titled for a stretch of the English coast written by Matthew Arnold.
ANSWER: "**Dover Beach**"

2. This composer prominently featured sleigh bells in the "Troika" movement of a suite compiled from his score to the film *Lieutenant Kijé* (kee-ZAY). The "Dance of the Knights," also known as the "Montagues and Capulets," is an excerpt from this composer's ballet *Romeo and Juliet*. This composer wrote a children's piece in which instruments such as the clarinet, flute, and bassoon represent a cat, a bird, and the grandfather of the title boy. For 10 points, name this composer of *Peter and the Wolf*.
ANSWER: Sergei **Prokofiev** [or Sergei Sergeyevich **Prokofiev**]

3. Around the time of this world leader's death, his country lost an African possession in the Green March. During a war, he emerged as the main leader of his faction after both Emilio Mola and Jose Sanjurjo (san-YUR-oh) died in plane crashes. In 1937, this man fused the Carlist parties and the Falange (fuh-LONJ) into a party under his rule that won a civil war with Nazi support against the Republic. He restored the monarchy by naming Juan Carlos I as his successor. For 10 points, name this right-wing leader of Spain from 1936 to 1975.
ANSWER: Francisco **Franco** [or Francisco **Franco** Bahamonde]

4. The study of objects known by this term was initiated by Euler's solution to the Seven Bridges of Konigsberg (KEY-nigz-burg) problem. This term can be used to refer to mathematical objects consisting of vertices and edges. More commonly, this term applies to objects that can be shaded to show solutions to inequalities and which are displayed using the Cartesian coordinate system. For 10 points, what term refers to the mathematical objects on which functions are drawn in algebra?
ANSWER: **graph**s

5. This author used Mozart's operas to discuss the concept of the "musical-erotic" in a book that includes a section saying a man must always change himself as a form of "crop rotation." This man used such aliases as "Hilarius Bookbinder" and "Johannes Climacus." He contrasted the aesthetic and ethical stages of life in one book, and analyzed the story of Abraham and Isaac in another. For 10 points, name this Danish philosopher and author of *Either/Or* and *Fear and Trembling*.
ANSWER: Soren **Kierkegaard** (KEERK-uh-GARD) [or Johannes **de silentio**; or Victor **Eremita**; prompt on A]

The vector negative two, comma three can be written as x times the vector one, comma two plus y times the vector three, comma one. What is the ordered pair x, comma y?
ANSWER: (11/5, -7/5) [separating components gives the system of equations -2=x+3y and 3=2x+y, whose solution is (x,y)=(11/5,-7/5).]

What country, where some people worship death as a female saint, is also where Day of the Dead celebrations are traditionally held after Halloween?
ANSWER: **Mexico** [or **United Mexican States**; or **Estados Unidos Mexicanos**]