**VHSL States 2016-2017 - Round 02 - First Period, Fifteen Tossups**

1. This country's "September Celebrations" include a holiday remembering the Battle of St. George's Caye. The Cockscomb Basin Wildlife Sanctuary is an important nature reserve here. This country is home to the second largest coral reef system in the world, and it was home to the first wilderness sanctuary built for jaguars. Since 1821, Guatemala has claimed much of this country. For 10 points, what country in Central America has English as its official language and used to be known as British Honduras?
ANSWER: **Belize** [or **British Honduras** until it is read; do not accept or prompt on "Honduras"]

2. This thinker classified three types of authority: charismatic, traditional and rational-legal. This man defined the state as an entity with a "monopoly on the legitimate use of physical force" in his essay "Politics as a Vocation." This thinker warned that traditional brotherhood and religious relationships could be replaced by the "iron cage" of rationalization and bureaucracy. He argued that Calvinism reinforced the value of working hard and pursuing monetary wealth. For 10 points, name this German author of *The Protestant Ethic and the Spirit of Capitalism*.
ANSWER: Max **Weber** (VAY-burr) [or Karl Emil Maximilian **Weber**]

3. This poet wrote, "The squirrel's granary is full, and the harvest's done," in a poem whose title character has her "wild wild eyes" shut "with kisses four." In that poem, this poet described a "knight-at-arms, alone and palely loitering" after being abandoned by the title woman. This poet wrote, "Heard melodies are sweet, but those unheard are sweeter" in a poem in which the title object asserts, "Beauty is truth, truth beauty." For 10 points, name this Romantic poet of "La Belle Dame sans Merci" and "Ode on a Grecian Urn."
ANSWER: John **Keats**

4. This kingdom was hired by king Ahaz to attack a northern rival. It was ruled by three different men named Tigleth-Pileser (PUH-lay-ser).The Bible records how its king, Sennacherib (SENN-ah-SHUH-reb), failed to conquer Jerusalem. A famous library of this empire was named for the king Ashurbanipal and was found at the capital of Nineveh. For 10 points, name this ancient Mesopotamian empire whose powerful military conquered Egypt and Israel but was eventually supplanted by the Medes and the Neo-Babylonians.
ANSWER: **Assyria** [or Neo-**Assyria**]

5. A sketch about the abandoned Chola Widow appears in this author's series of linked short stories *The Encantadas*, which appear alongside his stories "The Bell-Tower" and "The Lightning-Rod Man" in his collection *The Piazza Tales*. A character created by this author seals a promise by nailing a gold coin to a mast. The narrator of a novel by this man shares a bed in a crowded inn with Queequeg after introducing himself with the line "Call me Ishmael." For 10 points, name this author of *Moby-Dick*.
ANSWER: Herman **Melville**

6. Citrulline (SIH-truh-leen) is synthesized in this organelle as part of the urea cycle. Thermogenin (thermo-JEN-in) is found in this organelle in brown fat. This organelle contains a series of protein complexes that are bridged by co-enzyme Q and cytochrome (SY-toh-"chrome") C to shuttle electrons and pump hydrogen ions into its intermembrane space. The inner membranes of this organelle surround a matrix and are folded into cristae (KRIS-tee). For 10 points, name this organelle that performs cellular respiration and generates ATP.
ANSWER: **mitochondria** [or **mitochondrion**]

7. Stefan Zweig and Sigmund Freud claimed this ruler had a sexual dysfunction that required him to be circumcised. He nullified the Edict of Fontainebleau (FOW-ten-BLUE) by signing an edict granting non-Catholics legal rights. This ruler's chief finance minister was the Swiss banker Jacques Necker. His reign featured citizens pledging to reassemble during the Tennis Court Oath. During the reign of this husband of Marie Antoinette, the Bastille (bah-STEEL) was stormed in 1789. For 10 points, name this king executed during the French Revolution.
ANSWER: **Louis XVI** [or **Louis-Auguste**; or **Louis Capet**]

8. When this mineral is struck by lightning, it forms an amorphous mineraloid called lechatelierite. This weathering-resistant mineral appears at the bottom of the Goldich (GOAL-dik) dissolution series, and it appears in the same position below muscovite in Bowen's reaction series. This mineral is the second most abundant in the Earth's crust, after feldspar. Citrine and amethyst are varieties of it. For 10 points, what silicate mineral comes in "rose" and "smoky" varieties and consists of a framework of silicons bound to four oxygens, two of which are shared?
ANSWER: **quartz**

9. Hezekiah tore down a bronze one of these creatures mounted on a pole, an idol originally created to heal the Israelites by Moses. Isaiah 65:25 talks about the wolf and the lamb, but also relates that these animals will eat dust. In Matthew 10:16, Jesus tells the disciples to be as shrewd as these creatures when going out into the world. Objects owned by Moses and Aaron were turned into these creatures to prove the divinity of God to the Pharaoh. For 10 points, name these creatures, one of which tempted Eve to eat the forbidden fruit in the Garden of Eden.
ANSWER: **snake** [or **serpent**s; or more specific examples like **viper**s]

10. By snaking through a 2-dimensional array, this set of numbers was shown by Georg Cantor to be countably infinite. Factors of the leading and constant coefficients are used to find when this type of number is a zero of a polynomial according to a namesake root theorem. The numbers in this set are symbolized Q. Hippasus was allegedly murdered for revealing that the square root of two was not this type of number because it doesn't have a terminating or repeating decimal expansion. For 10 points, name these numbers that can be written as a quotient of two integers.
ANSWER: **rational** numbers [or **Q** until it is read]

11. This comic book character was created by William Moulton Marston, who also invented a precursor to the polygraph test. This character uses such catch phrases as "Merciful Minerva!" and "Suffering Sappho!" (SAFF-foh) This character flies an invisible plane, wields a Lasso of Truth, and can deflect bullets using her indestructible bracelets. Gal Gadot (GUH-doh) played this character in her live-action film debut, an appearance in *Batman v. Superman*. For 10 points, what female DC Comics superhero is an Amazon warrior?
ANSWER: **Wonder Woman** [or **Diana**; or **Prince**]

12. A movie satirizing this industry is narrated by Joe Gillis, who is lying dead in a swimming pool. That film is about a recluse formerly part of this industry named Norma Desmond. Another movie about this industry features star Gene Kelly jubilantly dancing during a downpour. It is heavily parodied in the movie *Sunset Boulevard*. The film *Singin' in the Rain* depicts this industry adjusting to making "talkies," which in, real life, forced silent stars like Charlie Chaplin to adapt. For 10 points, what industry is largely based in Hollywood?
ANSWER: **film** industry [or **movie** industry; or **Hollywood** until it is read]

13. During his death, Marcus Aurelius reportedly urged onlookers to weep about one of these events, not for himself. That example of these events began in AD 165 and was called the "Antonine" one, although it was also named for Galen. Thucydides (THOO-cid-uh-DEEZ) describes how one of these events in Athens destroyed the fear of the law and killed Pericles. An example of these events in Europe was spread by rat fleas and killed over a third of the populace. For 10 points, the Black Death was an outbreak of what kind of infectious disease?
ANSWER: **plague** [or **epidemic**; prompt on disease until it is read]

14. A destroyed painting of this man was commissioned to be placed in the Contarelli Chapel. That painting showed this man writing in a book with his legs crossed and an angel leaning over his shoulder. Another painting of this man shows him in a red robe working on writing his gospel, and is titled for his *Inspiration.* In a painting from 1600, light streaming from a window falls onto this man as Jesus approaches him with an outstretched arm. For 10 points, name this apostle who is summoned to follow Jesus in a Caravaggio painting titled for his *Calling.*
ANSWER: St. **Matthew**

15. The *n*th number named for this polygon is equal to one-half n times the quantity three n minus one end quantity. In 2015, the fifteenth type of planar tiling with congruent copies of this polygon was discovered. The length of this polygon's diagonals is the side length times the golden ratio, and the number of diagonals is equal to the number of sides. The faces of a dodecahedron are this shape. For 10 points, name this polygon whose regular variety has internal angles of 108 degrees at each of its five vertices.
ANSWER: **pentagon**

 **VHSL States 2016-2017 - Round 02 - Directed Period**

1A. The Parthenon's Elgin Marbles are owned by what non-Greek European museum?
ANSWER: **British Museum**

1B. What official romanization system for Chinese superseded predecessors such as Wade-Giles?
ANSWER: **Pinyin** [or Hanyu **Pinyin**]

2A. During the 2016 presidential election, Hillary Clinton said half of Donald Trump's supporters belonged in a basket of what?
ANSWER: **deplorable**s

2B. What creature was brought to life by a rabbi by inserting a scroll into its mouth, and which served to protect the inhabitants of the Prague Ghetto?
ANSWER: **Golem**

3A. This is a 20-second calculation question. A point is randomly chosen from the unit circle. What is the probability that the point is at a distance greater than 2/3 from the center of the circle?
ANSWER: **5/9** [The circle with radius 2/3 and the same center covers (2/3)^2=4/9 of the circle, so there is a 1-4/9=5/9 probability of being outside it.]

3B. This is a 20-second calculation question. Giving your answer as an inequality, what is the domain of the function f(x)=log(3x-1) ("f of x equals log of the quantity 3 x minus 1 end quantity")?
ANSWER: **x>1/3** [The input to the logarithm must be positive.]

4A. What longtime journalist for *The Atlanta Journal* wrote about Scarlett O'Hara in her novel *Gone with the Wind*?
ANSWER: Margaret **Mitchell**

4B. Which former Balkan country that was once led by Marshal Tito split into multiple states in the 1990's, after conflict between ethnic groups such as Serbians and Croatians?
ANSWER: **Yugoslavia**

5A. What is the name of Don Quixote's horse?
ANSWER: **Rocinante** (roh-sih-NON-tay)

5B. The ETA, a separatist group which assassinated President Luis Carrero Blanco in 1973, consists of members of which ethnic group in Spain?
ANSWER: **Basque**s [or **Euskal**; or **Vasco**]

6A. What three-word Latin phrase literally means "in the middle of things" and describes literature that starts when some of the action is already underway?
ANSWER: **In medias res**

6B. What two-word term refers to civil rights activists who intentionally integrated interstate buses and stations in the South during the 1960's?
ANSWER: **Freedom Rider**s

7A. What predecessor of germ theory held that diseases were caused by poisonous or bad air characterized by the foul smell of decaying matter?
ANSWER: **miasma** theory [or **miasmatic** theory; or **night air** theory]

7B. What small cell fragments arising from megakaryocytes (mega-CARE-ee-oh-sites) aggregate around gaps in blood vessels formed from wounds?
ANSWER: **platelet**s

8A. This is a 30-second calculation question. Find the sum of the lengths of all diagonals of a regular hexagon with sides of length 2?
ANSWER: **12** **plus** **12** times the square **root** of **3** (12+12sqrt3) [Three diagonal stretch the diameter of the hexagon and six are long sides of 30-30-120 triangles with legs of length 2.]

8B. This is a 30-second calculation question. The point (2,2) ("2 comma 2") is rotated 60 degrees counterclockwise about the origin. At what point does it end?
ANSWER: **(1 minus square root of 3,1 plus square root of 3)** [Using the rotation matrix, the ending x-value is 2cos(60)-2sin(60)=1-sqrt(3) and the ending y-value is 2sin(60)+2cos(60)=sqrt(3)+1.]

9A. What multiplayer first-person shooter by Blizzard includes the characters Tracer, Roadhog, and Symmetra?
ANSWER: ***Overwatch***

9B. The highest peak in the Karakoram range, Mount Godwin-Austen, is better known by what name?
ANSWER: **K2** [or **Chhogori**]

10A. What African American playwright included *Fences* and *The Piano Lesson* in his "Pittsburgh Cycle"?
ANSWER: August **Wilson**

10B. What theorem, which has two parts, is often summarized by stating that differentiation and integration are inverse operations?
ANSWER: **fundamental theorem of calculus**

 **VHSL States 2016-2017 - Round 02 - Third Period, Fifteen Tossups**

1. In this novel, the protagonist has a dream that his lover's songbird has died. This novel's protagonist is briefly reunited with his lover when she is fatally bitten by a snake, years after he leaves his life as a wealthy merchant to work as a ferryman with Vasudeva (vah-soo-DAY-vuh). This novel's title character leaves his hometown to join the Samanas (suh-MAH-nuhs) with his friend Govinda (go-VIN-duh) and search for enlightenment. For 10 points, name this Hermann Hesse (HESS-uh) novel set in ancient India.
ANSWER: ***Siddhartha***

2. While England did not fight in this war, its naval battles helped inspire the creation of the HMS *Dreadnought* roughly a year later. This war began with a surprise attack at Port Arthur, and the winning side destroyed most of the loser's fleet at the Battle of Tsushima (soo-SHEE-ma). Theodore Roosevelt won a Nobel Peace Prize for mediating the Treaty of Portsmouth, which ended this war. It began after disputes over Manchuria and Korea. For 10 points, name this 1904 to 1905 conflict during which Tsar (ZAR) Nicholas II's empire lost to an Asian country.
ANSWER: **Russo-Japanese** War

3. This character says, "Fain would I dwell on form, fain, fain deny what I have spoke: but farewell compliment!" before noting that Jove laughs at lovers' perjuries. This character declares, "This is thy sheath; there rust, and let me die," in her address to a "happy dagger" that belonged to her lover. This character is compared to a "fair sun" that must "kill the envious moon" during a famous balcony scene. For 10 points, name this Shakespeare character, a member of the Capulet family and lover of Romeo.
ANSWER: **Juliet** [prompt on Capulet before it is read]

4. A vague warning about this event was communicated by an anonymous letter sent to Baron Monteagle. A planner of this event was arrested under the name John Johnson shortly after being found near a pile of firewood. Its failure is remembered on Bonfire Night, when people chant "remember, remember, the fifth of November." Robert Catesby and various Catholics organized this scheme, which placed explosives in the hands of Guy Fawkes. For 10 points, name this failed 1605 plot to kill King James I by blowing up the House of Lords.
ANSWER: **Gunpowder** Plot [prompt on Jesuit Treason]

5. This man won a competition held by *The Spectator* to write the most offensive poem about Recep Tayyip Erdogan, although he later supported Turkey's bid for E.U. membership. After President Obama urged the U.K. not to leave the E.U., this man claimed that Obama was anti-British due to his Kenyan ancestry. This politician decided not to run for leadership of the Conservative Party after he was betrayed by Michael Gove, a fellow supporter of Brexit. For 10 points, name this former Mayor of London and current U.K. Foreign Secretary.
ANSWER: Boris **Johnson** [or Alexander Boris de Pfeffel **Johnson**]

6. An account of this man's death states he was smothered by his follower, Macro. During his reign, Syrian governor Piso was accused of murdering the general Germanicus. The first six books of Tacitus' *Annals* are dedicated to this man's reign. Near the end of his reign, he left Sejanus in charge of Rome while living on the island of Capri (CUH-pree). This ruler married Julia the Elder, the daughter of his predecessor and was the emperor at the time of the crucifixion of Jesus. For 10 points, what Roman emperor succeeded Augustus?
ANSWER: **Tiberius** [or **Tiberius** Claudius Nero; or **Tiberius** Julius Caesar; prompt on Caesar; do not accept "Claudius"; do not accept "Nero"]

7. Whether this philosophy should have a moral code or work on a case-by-case basis distinguishes its "rule" and "act" types. An early founder of it proposed the panopticon, a prison in which a single watchman observes all of the prisoners. That proponent of this philosophy outlined the felicific (FELL-uh-sih-FICK) calculus, which was also called hedonistic. For 10 points, name this ethical system supported by Jeremy Bentham and John Stuart Mill, which seeks the most happiness for the most people.
ANSWER: **utilitarianism** [prompt on hedonism]

8. Haydn used this instrument to represent a thunderstorm in his eighth symphony and in his oratorio *The Seasons.* This instrument is the first to state the main melody of Ravel's *Boléro.* This instrument's modern system of keyholes was developed by Thoebald Boehm. Famous players of this instrument include Jean-Pierre Rampal, James Galway, and Frederick the Great. A low solo on this instrument opens Debussy's *Prelude to the Afternoon of a Faun.* For 10 points, name this transverse woodwind instrument, a bigger version of the piccolo.
ANSWER: **flute**

9. A scientist in this game acquired a split personality after testing the Addermire solution on herself. One character in this game can use the grappling-hook-like Far Reach ability. In this game, Erica Luttrell voices a character originally voiced by Chloe Grace Moretz. This game primarily takes place in the capital of Serkonos, called Karnaca. This game allows you to play as either Emily Kaldwin or her father Corvo, and begins with Emily's overthrow as Empress. For 10 points, name this 2016 sequel, a stealth action-adventure game by Bethesda Software.
ANSWER: ***Dishonored 2*** [do not accept "*Dishonored*"]

10. In two's complement notation, this number is represented by a string of ones. The integral of sin of x is this number times cosine of x. This number is the value of e raised to the i pi power according to Euler's Formula. The derivative of the natural logarithm is this power of x. This real number is the square of the imaginary number i. This number is the product of the slopes of perpendicular lines, since the slopes are opposite reciprocals. For ten points, name this largest integer less than zero.
ANSWER: **negative one**

11. The Large Underground Xenon experiment was designed to search for this substance. Halos of this substance were posited to explain the anomalous behavior of galaxy rotation curves by Vera Rubin, and it was originally posted by Fritz Zwicky to explain unseen mass in the Coma cluster. This substance is thought to exist of exotic particles that don't interact via the electromagnetic force but do interact via gravity. For 10 points, name this largely undetectable form of matter that's thought to make up about 23% of mass in the universe.
ANSWER: **dark matter** [or **WIMP**s; or **weakly interacting massive particle**s; do not accept "dark energy"]

12. Broadly speaking, this institution commissioned the 2004 John Jay Report. A high-ranking employee of this institution, Timothy Dolan, paid thousands to other employees suspected of wrong-doing. A former leader of this institution started the World Youth Day event and called for a "culture of life" in his 1995 text *Evangelium vitae* (vuh-TAY). Its leader is chosen by a conclave that indicates a decision by the creation of white smoke. For 10 points, what religious institution was once led by John Paul II and is headquartered at the Vatican?
ANSWER: Roman **Catholic** Church [or the U.S. Conference of **Catholic** Bishops; or the Roman **Catholic** Archdiocese]

13. Though Huygens perfected it, this scientist conceived the first pendulum clock. Though Newton refined it, this scientist's definition of inertia was the inspiration for Einstein's theory of special relativity. This scientist's *The Starry Messenger* was a seminal work of telescopic astronomy. His *Dialogue Concerning the Two Chief World Systems* championed heliocentrism and earned him house arrest from the Vatican for the rest of this life. For 10 points, what Italian scientist developed the first good refracting telescope, with which he discovered four moons of Jupiter.
ANSWER: **Galileo** Galilei

14. This poet coined the name of a literary movement called the "Dolce Stil Novo" (DUL-chay STEEL NO-vo), or "Sweet New Style," which included his close friend Guido Cavalcanti (kah-val-KON-tee). This poet created a character who, "in the middle of our life's journey," finds his way blocked by a lion, and leopard, and a she-wolf. He described Satan as a beast half buried in ice whose three heads chew on Brutus, Cassius, and Judas, the traitors found in the ninth and final circle of Hell. For 10 points, name this Italian poet who wrote the *Inferno.*
ANSWER: **Dante** Alighieri [or Dante **Alighieri**]

15. An early proposal for this non-American structure was made by U.S. Bureau of Reclamation engineer John Savage. This structure's creation has resulted in the opening of the White Crane Ridge Underwater Museum. Located in the Hubei (HOO-bay) province, it set a new world record in 2014 by generating 98.8 terrawatt hours of electricity. This structure results in less silt flowing downstream, which could be disastrous for cities like Shanghai. For 10 points, name this massive hydroelectric dam that spans China's Yangtze (YANG-see) River.
ANSWER: **Three Gorges** Dam

 **VHSL States 2016-2017 - Round 02 - Tiebreaker Questions**

1. A fluorescently-tagged molecule is incorporated into nested target fragments in the dideoxy (dye-dee-OX-ee) chain termination type of this technique. dNTP solutions are iteratively added to millions of distinct templates and assayed for base-pairing in the "next generation" type of it. Frederick Sanger won a Nobel for developing his namesake type of this technique, which was used during the Human Genome Project. For 10 points, name this technique of determining the order of nucleotides (NU-klee-o-"tides") in a genetic molecule.
ANSWER: DNA **sequencing** [or genome **sequencing**; or gene **sequencing**]

2. This was the name of the Holy Roman Emperor when the Peace of Westphalia was signed. His predecessor of the same name employed Catholic commanders like Tilly and Wallenstein during the Thirty Years War. A male ruler with this name passed the Alhambra Decree to expel Jews from his kingdom. With his wife, that ruler with this name completed the Reconquista (ree-CONE-kee-STAH) and sponsored the voyages of Christopher Columbus. For 10 points, what was the name of the king of Aragon who married Isabella of Castile?
ANSWER: **Ferdinand** [or **Ferdinand** II; or **Ferdinand** III]

3. This poem's speaker compares his "favor at her breast" to "the dropping of the daylight in the West." This poem's speaker claims he "chooses never to stoop," and cites his "gift of a nine-hundred-years-old name" to the title person. This poem describes Claus of Innsbruck's bronze statue of Neptune taming a seahorse, and its title character "had a heart...too soon made glad." For 10 points, name this dramatic monologue about a Fra Pandolf portrait of the Duke of Ferrara's dead wife, a work of Robert Browning.
ANSWER: "**My Last Duchess**"

4. This mountain range's Ordesa National Park was home to a namesake subspecies of ibex which went extinct in 2000. The exclave of Llivia (YEE-vee-uh) was created within this range as a result of a 1659 treaty. The eastern edge of this mountain range is the Cap de Creus (CROO), and a dialect of Occitan is spoken in its Aran Valley. A principality within this mountain range is co-ruled by the Bishop of Urgell and the President of its northern neighbor. For 10 points, Andorra is found in what mountain range that forms the border between France and Spain?
ANSWER: **Pyrenees** Mountains

5. In an infamous incident, one of these animals apparently killed Azaria Chamberlain in 1980, even though the girl's mother, Lindy, was initially tried for murder. Besides humans, these animals are thought to play large roles in the extinction of the thylacine (THY-luh-SEEN). One of them killed a baby girl during a family camping trip to Ayers Rock. These animals may have wiped out the Tasmanian Devil from their island, and their prey includes kangaroos. For 10 points, name this wild dog found in Australia.
ANSWER: **dingo**es

Find a complex number whose square is -5-12i ("negative 5 minus 12 i").
ANSWER: **2-3i** or **-2+3i** [Expanding (a+bi)^2=-5-12i gives the system of equation a^2-b^2=-5 and 2ab=-12, so a is +2 or -2 and b=-6/a.]

At the end of the War of Spanish Succession, the Hapsburgs were replaced on the Spanish throne by Philip V, a great-grandson of Louis XIV and member of which royal house?
ANSWER: House of **Bourbon**