**VHSL Conferences 2016-2017 - Round 07 - First Period, Fifteen Tossups**

1. This author described the effects of a devastating plague of Rocky Mountain Locusts in a book set *On the Banks of Plum Creek*. This woman's sister Mary went blind due to an illness that was probably scarlet fever. She wrote about her father building a cabin on Native American territory in part of a series of memoirs about her childhood. For 10 points, name this author of *Little House on the Prairie*.
ANSWER: Laura Ingalls **Wilder** [or Laura **Ingalls**]

2. One of the most celebrated women with this profession was the Greek-American Maria Callas. A man with this profession known as Farinelli was probably the greatest during the "castrato" era, undergoing a practice outlawed by Italy in the 1860s. One of the first global celebrities, Enrico Caruso, excelled in this musical profession. For 10 points, what field was Luciano Pavarotti performing in when he recorded various arias?
ANSWER: **opera** singer [prompt on singer; prompt on performer; prompt on music]

3. This hero is often described with the epithet *pius*, emphasizing his dutiful nature. This man kills Turnus in battle after arriving in Latium and being betrothed to its princess Lavinia. After fleeing Troy with his father Anchises (ann-KAI-seez), this son of Venus travels to Carthage and falls in love with its queen Dido before being forced to abandon her and travel to Italy. For 10 points, name this title character of a Virgil epic, the mythical ancestor of the Romans.
ANSWER: **Aeneas**

4. One of the first American stars in this medium was Maria Tallchief. The "father" of this medium in America was George Balanchine (BAL-en-CHEEN), and a great modern star of it is the actor and Soviet defector Mikhail Baryshnikov (BARE-ish-nuh-KOFF). "Arabesque" (AIR-ah-BESK) and "pirouette" (PEER-oh-ETT) are terms used in this artistic medium. For 10 points, *The Nutcracker* is a piece in what medium, which features choreographed dancing?
ANSWER: **ballet** [prompt on dance]

5. The abc conjecture states there are only finitely many triples such that this operation applied to a and b yields a result greater than a certain power of c. The integers form a group under this operation and the result of applying it to two vectors can be found using the parallelogram rule. An uppercase sigma represents repeated application of this operation. Like multiplication, this operation is both associative and commutative. For 10 points, name this operation that when applied to 3 and 5 gives 8.
ANSWER: **addition**

6. A leader of this empire gave a 1960 speech musing on "the wind of change blowing through" a certain continent. Another leader of this empire was forced to resign after failing to force out Egyptian President Nasser in the Suez Crisis. The Mau Mau Uprising in Kenya was directed against this empire. Its former territories are now members of the Commonwealth of Nations. For 10 points, what European empire used to control India and Canada?
ANSWER: **British** Empire [or **English** Empire; or **United Kingdom** of Great Britain and Northern Ireland; or **UK**; or Great **Britain**]

7. This play ends with a woman lamenting "We're free and clear…we're free." A character in this play steals a fountain pen from a prospective employer. A central plot point in this play is a former football star's discovery that his father is having affairs while on the road. After being fired, this play's protagonist kills himself in a car crash, leaving behind his wife, Linda, and his sons, Happy and Biff. For 10 points, name this Arthur Miller play about the tragic Willy Loman.
ANSWER: ***Death of a Salesman***

8. An embarrassing story about this man went public after reporter Ben Way encountered his mother, Ileana. In 2012, he unsuccessfully tried to trademark his catch phrase, "Jeah" (JA-yah). This man and Jimmy Feigen claimed he and two others had guns pointed at them, although the incident was actually related to vandalism at a gas station. For 10 points, what Olympic swimmer lost four endorsements after falsely claiming to be robbed in Rio de Janeiro?
ANSWER: Ryan **Lochte**

9. During the 1970's, this country experienced the Years of Lead, a time of disorder that featured the murder of Christian Democrat Aldo Moro. This country was once led by a man who founded the broadcasting company Mediaset. It became a republic after forcing Umberto, the son of Victor Emmanuel III, to abdicate after World War II. For 10 points, what European country has been led by Prime Minister Silvio Berlusconi?
ANSWER: **Italy** [or **Italian** Republic]

10. Groups whose order is one of these numbers are always cyclic. The amount of these numbers up to a given x is approximately x divided by the natural log of x. In 2013, Yitang Zhang proved that there are an infinite amount of these numbers differing by 70 million or less. They can be found using the sieve of Eratosthenes and Euclid used proof by contradiction to prove that there's an infinite amount of these numbers. For 10 points, name these integers that are only divisible by one and themselves.
ANSWER: **prime**s

11. This phenomenon is indistinguishable from acceleration according to the equivalence principle. The hierarchy problem asks why the weak force is so much stronger than this force, which results from the curvature of spacetime. The strength of this force between two bodies is equal to the product of their masses times big G all over the distance between them squared. For 10 points, name this attractive force described by Newton's law.
ANSWER: **gravity**

12. During this war, the Committee on Public Information, or the Creel Committee, was in charge of domestic propaganda campaigns. This war featured the first printing of J.M. Flagg's "I Want You" poster depicting Uncle Sam. Events that pushed American entry into this war included the release of the Zimmermann Telegram and the sinking of the *Lusitania*, which increased hate towards Germany. For 10 points, name this global conflict the U.S. entered in April 1917.
ANSWER: **World War One** [or the **First World War**; or the **Great War**]

13. This country produced a yam called *barbasco*, which was used to make various medicines. A March 18th holiday in this country honors the nationalization of its oil industry by Lázaro Cárdenas. Near this country's northern border, factories called maquiladoras (mah-KEE-lah-DORE-us) employed potential migrants. This country still battles the influence of the Sinaloa (see-na-LOW-ah) Cartel. For 10 points, name this southern neighbor of the United States.
ANSWER: **Mexico** [or **United Mexican States**; or **Estados Unidos Mexicanos**]

14. This man is the focus of the books *Game of Shadows* and *Love Me, Hate Me*. This former player recently served as the hitting coach of the Marlins for the 2016 season. A godson of Willie Mays, this man was the son of Bobby, a three-time All Star. This man is the only player to steal 500 bases and hit 500 homers in his career. He won a record 7 MVP awards. For 10 points, name this outfielder who holds the career record for home runs in MLB history.
ANSWER: Barry **Bonds**

15. A "niddah" is a type of this person who is seen as unclean. An "agunah" is a type of this person unable to obtain a document known as a "get." Conservative and Reform movements abandoned a rule restricting these people's ability to sing in public. Orthodox Judaism discourages them from wearing yarmulkes (YAH-muh-KAAS) and does not typically ordain them as rabbis. For 10 points, the Talmud claims that what subgroup of people has greater faith than men?
ANSWER: Jewish **women** [accept subgroups of women such as **wives**; prompt on Jews; prompt on Orthodox Jews]

 **VHSL Conferences 2016-2017 - Round 07 - Directed Period**

1A. Terminally differentiated quiescent (kwye-ESS-ent) cells usually stay in what "resting" phase of the cell cycle?
ANSWER: **G-zero** [or **G**-sub-**zero**; or **G-naught**]

1B. What man was suspended from the *Today* show after a 2005 recording surfaced featuring him making lewd comments alongside Donald Trump?
ANSWER: William "Billy" **Bush**

2A. Uluru is a rock formation in what dry region of inner Australia?
ANSWER: the **Outback**

2B. A series of post-World War II trials took place in what German city and led to the conviction of such Nazis as Rudolf Hess?
ANSWER: **Nuremberg**

3A. This is a 20-second calculation question. If a, b, and c are prime numbers, what is the greatest common divisor of a-squared times b times c and c-squared times b times a?
ANSWER: **abc** [or **a** times **b** times **c** in any order--since a,b,c are prime, the expressions given are the prime factorizations for the numbers; hence, we take the common parts between the two]

3B. This is a 20-second calculation question. IQ scores have a mean of 100 and a standard deviation of 15. What is the normal score corresponding to an IQ of 110?
ANSWER: **2/3** [110 is 10, or 2/3 of a standard deviation, above the mean.]

4A. The Corn Laws were repealed by what British Prime Minister, who also lends his name to a nickname for British police officers?
ANSWER: Robert **Peel** [prompt on bobbie]

4B. The homeostatic balance between carbonic acid, bicarbonate, and carbon dioxide in your blood allows it to maintain its pH when small amounts of acids or bases are added, making it what type of solution?
ANSWER: pH **buffer** solutions

5A. Doll Common and Subtle set up a con artist den in what Jacobean author's play *The Alchemist*?
ANSWER: Ben **Jonson**

5B. What Scottish-American naturalist and friend of Teddy Roosevelt founded the conservation group called the Sierra Club?
ANSWER: John **Muir**

6A. What epic poem, whose characters include the bard Väinämöinen, is the national epic of Finland?
ANSWER: **Kalevala**

6B. What phrase, adapted from the Latin and the Greek, refers to a miraculous plot device that resolves the action of a play?
ANSWER: **deus ex machina** (DAY ess MOCK-ee-NAH) [or **god from the machine**]

7A. What iconic dance of the 1920s was named for a southern city?
ANSWER: the **Charleston**

7B. In American fiction, Sam Spade and Philip Marlowe hold what occupation, frequently seen in "pulp" magazines?
ANSWER: private **detective** [or **private eye**; do not accept "police officer"]

8A. This is a 30-second calculation question. Let A be the inverse cosine of one-third. Find the value of the cosine of 2A.
ANSWER: **-7/9** [Apply the trig identity cos(2A)=2cos^2(A)-1. Then cos(2A)=2(1/3)^3-1=2/9-1.]

8B. This is a 30-second calculation question. Let ABCDEFGH be a regular octagon with side lengths of 4. What is the area of triangle ABC?
ANSWER: **4** times the square **root** of **2** [Considering AB as the base, the exterior 45 degree angle shows that the height is 2sqrt(2). Thus the area is (1/2)\*4\*2sqrt(2)=4sqrt(2).]

9A. What American neighborhood's "Renaissance" included such authors as the poets Langston Hughes and Claude McKay?
ANSWER: **Harlem**

9B. What controversial former Mayor of Toronto, who had once been filmed smoking crack, died in March 2016?
ANSWER: Robert "Rob" **Ford**

10A. Dots called *niqqud* (nick-KOOD) signify vowels in the writing system of what language, which was used to write the Torah?
ANSWER: **Hebrew** [or **Ivrit**]

10B. Which experiment contributed to the discovery of the atomic nucleus by firing alpha particles at a namesake sheet of metal?
ANSWER: **Rutherford** **gold foil** experiment [accept either underlined answer; or **Geiger-Marsden** experiment]

 **VHSL Conferences 2016-2017 - Round 07 - Third Period, Fifteen Tossups**

1. Neural tube defects can arise from a fetal deficiency in a member of these specific compounds. Co-enzyme A contains one of these compounds called pantothenic (pan-tuh-THEH-nik) acid. Intrinsic factor helps absorb a cobalt-based one of them that is deficient in pernicious anemia. These water-soluble nutrients include biotin, folic acid, and thiamine ("THIGH"-uh-meen). For 10 points, what nutrients belong to a namesake vitamin complex numbered 1 through 12?
ANSWER: **B** vitamins [prompt on vitamins before it is read; reverse prompt on specific types of B vitamins]

2. This author led a campaign that led to the release of the wrongly convicted vicar George Edalji. In a story by this writer, Dr. Roylott bends an iron poker with his bare hands before trying to kill his stepdaughter with a poisonous snake. A character created by this man uses a smoke bomb to fake a fire in order to retrieve a photograph from Irene Adler. For 10 points, name this author of "A Scandal in Bohemia," which features Dr. Watson and Sherlock Holmes.
ANSWER: Arthur Conan **Doyle**

3. The northern hemisphere of this planet is smoother and flatter than the highlands in the southern hemisphere. The first flyby of this planet was completed by the probe *Mariner 4*. This planet's surface features a large volcanic plateau called the Tharsis Bulge, and its two moons are Phobos and Deimos. It is home to the largest volcano in the Solar System, Olympus Mons. For 10 points, what fourth planet from the Sun has iron oxides in its soil, giving it a distinctive red hue?
ANSWER: **Mars**

4. During World War II, this painting was detached from its frame and rolled around a cylinder for safekeeping. The only girl in this painting wears a white dress and carries a dead chicken. A drummer appears at the very right of this painting, which depicts its commissioner in the center wearing black clothes and a red sash. This painting depicts the shooting company of Frans Banning Cocq. For 10 points, identify this painting by Rembrandt, nicknamed for its use of a dark varnish.
ANSWER: *The* ***Night Watch*** [or *De* ***Nachtwacht***; or *The* ***Shooting Company of Frans Banning Cocq*** *and Lieutenant Willem van Ruytenburch* until it is read]

5. This object was created by Phrixus when he killed an offspring of Poseidon. This object was guarded by a group of bulls that could breathe fire and by a dragon whose teeth were capable of spawning soldiers when they were sewn into the ground. After fulfilling a quest to obtain this object, a hero elopes with the sorceress Medea. For 10 points, name this object sought by Jason and the Argonauts that was produced from a ram.
ANSWER: **Golden Fleece** [prompt on fleece; prompt on hide]

6. In a play by this author, a man who mocks his companions' "pipe dreams" reveals that he killed his wife. A largely autobiographical play by this author features such characters as the tubercular Edmund. This man created such characters as the hardware salesman Hickey, who visits Harry Hope's bar, and the Tyrone family, whose matriarch Mary is addicted to morphine. For 10 points, name this playwright, the author of *The Iceman Cometh* and *Long Day's Journey Into Night*.
ANSWER: Eugene **O'Neill**

7. A pyramid-shaped one of these places uses 39 lamps to create the world's strongest beam of light. Bugsy Siegel oversaw the development of one of these places called the Flamingo. An Eiffel Tower replica and elaborate, choreographed fountains are some of the landmarks found outside these places. Many of these places, including Circus Circus and the Bellagio, are owned by MGM. For 10 points, identify these establishments in Las Vegas where tourists gamble.
ANSWER: **casino**s [prompt on hotels]

8. This man debated a Soviet leader in what was known as the "Kitchen Debate." He defended the usage of a slush fund by emotionally bringing up a gift of a cocker spaniel dog. During a presidential campaign, this man was judged to look pale and haggard during the first ever televised debate. For 10 points, name this politician who lost the presidency to John F. Kennedy in 1960, but who later was involved in the Watergate scandal as President himself.
ANSWER: Richard **Nixon**

9. In a version of this song, Missy Elliott claims to "smoke" certain creatures "like backwoods." This song's performer was sued by Huey Lewis because it sounded similar to Lewis's song "I Want a New Drug." In 2016, Fall Out Boy covered this theme song, which was originally sung by Ray Parker Jr. This song repeats the question "Who you gonna call?" For 10 points, name this theme song for a 1984 movie about hunting down the paranormal.
ANSWER: "**Ghostbusters**"

10. This man compared the role of women being taken as trophies by barbarians to women who were stay-at-home housewives. In an 1899 book, this author claimed that things like sports and going to church were wastes of time and resources that were meant to show off the status of the middle class. He coined the phrase "conspicuous consumption." For 10 points, name this Norwegian-American sociologist, the author of *The Theory of the Leisure Class*.
ANSWER: Thorstein **Veblen** [or Torsten **Veblen**]

11. A proof concerning the solvability of these objects relies on showing the quotient group of A5 and the trivial group is nonabelian. The Abel-Ruffini theorem states that there is no general algebraic solution to these objects of degree five or higher. The eigenvalues of a matrix are determined by solving the "characteristic" example of these functions. They all 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

12. The Ridolfi plot was directed against a member of this house by the Duke of Norfolk. While dying, a member of this house suggested Lady Jane Grey be his successor. A king from this house became the Supreme Head of the Church of England as part of a plan to divorce his wife. This house came to power after the Wars of the Roses and was founded by Henry VII. For 10 points, Elizabeth I and Henry VIII were both part of what royal house?
ANSWER: House of **Tudor**

13. This man used a drawing by Henry Pelham to create an inaccurate engraving of the Boston Massacre for propaganda purposes. Along with William Dawes, this man was dispatched by Joseph Warren on a mission during which he told a North Church sexton to light two lanterns if the enemy was approaching by sea. For 10 points, name this silversmith whose "midnight ride" alerted the colonists to the approach of British forces before the Battle of Lexington.
ANSWER: Paul **Revere**

14. This character is killed after he refuses to betray Cassy and Emmeline. George Shelby arrives too late to free this character, who forgives his killers, Quimbo and Sambo, and leads them to accepting Jesus Christ. This person is beaten to death on orders of the cruel Simon Legree, and his name was inaccurately used to refer to overly submissive African Americans. For 10 points, name this slave, the title character of an 1852 Harriet Beecher Stowe novel.
ANSWER: Uncle **Tom** [or *Uncle* ***Tom's*** *Cabin*]

15. Geodesics are equivalent to these objects in flat space. Parabolas are defined as the set of points equidistant from a focus and from one of these objects called the directrix. Euclid's fifth postulate gives the conditions for two of these objects to be parallel. Rays are sometimes named as being half of these infinitely long one-dimensional objects. For 10 points, name these mathematical objects described by the equation *y* equals *m* times *x* plus *b*.
ANSWER: **line**s

 **VHSL Conferences 2016-2017 - Round 07 - Tiebreaker Questions**

1. A dispute over money in one of these wars resulted in the Mercenary War. In another of these conflicts, a commander won such battles as Lake Trasimene (TRASS-uh-MEEN) and Cannae before ultimately losing the Battle of Zama. The second of these wars featured a general crossing the Alps with three dozen war elephants. During these conflicts, Scipio (SIP-ee-oh) Africanus defeated Hannibal. For 10 points, name these wars that pitted Rome against Carthage.
ANSWER: **Punic** Wars [or First **Punic** War; or Second **Punic** War]

2. The narrator of this story describes his family coat of arms as a heel crushing a snake and his family motto translating as "No one attacks me with impunity." A character in this story who is wearing a jester's outfit asks his companion for a sign to prove that he is a Mason. In this story, Montresor narrates how he gets revenge by walling Fortunato in a cellar. For 10 points, name this story by Edgar Allan Poe titled for a barrel of wine.
ANSWER: "The **Cask of Amontillado**"

3. President James Garfield developed a proof of this theorem while chatting about mathematics with congressmen. It's often proven by drawing three squares of different side lengths, each meeting at two of their vertices. This theorem is a specific case of the law of cosines because the cosine of 90 degrees is zero. Integers satisfying it are known as this theorem's "triples". For 10 points, name this theorem often stated as *a* squared plus *b* squared equals *c* squared.
ANSWER: **Pythagorean** theorem

4. This man cut the ear off of Malchus, the servant of the High Priest. He sees a vision of animals being lowered from Heaven in a sheet, which guides him to help convert the centurion Cornelius. After correctly noting another person is "the Messiah, the Son of the living God," this former fisherman is dubbed the "Rock of My Church" by Jesus, even though this person denied Christ three times after Jesus's arrest. For 10 points, what apostle is said to be the first pope?
ANSWER: **Peter** [or **Simon** Peter; or **Simeon**]

5. In a re-imagining of one of this painter's portraits, Francis Bacon painted Pope Innocent X screaming. This painter honored a military victory by Ambrogio Spinola during the Eighty Years' War in his *The Surrender of Breda*. This painter of the *Rokeby Venus* depicted himself standing in a doorway, observing the attendants of the Infanta Margarita. For 10 points, name this artist of the Spanish Golden Age who painted *Las Meninas*.
ANSWER: Diego **Velázquez** [or Diego Rodríguez de Silva y **Velázquez**]

This is a 20-second calculation bonus. You have a 7x7 ft picture that you want to get through a door of 3ft width. What is the minimum required height of the door frame to get the table through?
ANSWER: **square root of 40 feet** [or **two times the square root of 10** (we need a diagonal of the door frame to be seven feet long; by the Pythagorean theorem, that means we need 3²+x²=7², so x²=40)]

The city of Carrara provided what material to sculptors such as Michelangelo, who used it to create his *David*?
ANSWER: **marble**