



VHSL Scholastic Bowl  
State Championships 2016  
Round 2  
First Period, Fifteen Tossups

1. The protagonist of this novel lives with Mudd, who has been dead for some time. Its protagonist concludes that "the spirit gone, man is garbage" after seeing a friend's entrails spill out. This novel ends with the protagonist discovering that Orr is alive and is in Sweden. The protagonist of this novel is haunted by his memory of Snowden's death. In this book, people who are crazy do not have to go on missions, but trying not to go means they are sane. For 10 points, name this Joseph Heller novel about Yossarian and his World War II Air Force squadron.

ANSWER: Catch-22

2. The Bohr magneton is defined in terms of the reduced form of this constant, elementary charge, and electron mass. Its reduced form is written as this constant over two pi and represents the fundamental quantum of angular momentum. This constant was calculated during a quantum analysis of blackbody radiation. In the photoelectric effect, it is the constant of proportionality between frequency and the kinetic energy of electrons emitted. For 10 points, what constant, in Joule-seconds, is approximately 6.626 times ten to the negative thirty-fourth power?

ANSWER: Planck's constant [prompt on h]

3. The work done by this force is proportional to asperity deformation according to the Archard equation. The arctangent of a constant named for this force gives the angle of repose. This force causes the buildup of static charge in the triboelectric effect. Amontons' first law of this force states that its magnitude is independent of the area of contact, while Coulomb's law of this force states that its magnitude is independent of velocity. For 10 points, name this force that is perpendicular to the normal force, and which resists motion.

ANSWER: friction [or word forms such as frictional]

4. This man was impersonated by comedian Tom Wrigglesworth. In 2014, after a slow start, he told fans "R-E-L-A-X. Relax." This player appeared in a commercial where he flies in "grill class" and in others where his moves were stolen by men such as teammate B.J. Raji. Drafted out of Cal in 2005, he spent two years backing up Brett Favre (**FARV**). This man makes many State Farm commercials in which he is stalked by a man who shouts "Discount Double Check." For 10 points, name this quarterback for the Green Bay Packers.

ANSWER: Aaron Rodgers [Aaron Charles Rodgers]

5. Two ships made by this ruler were eventually recovered from the bottom of Lake Nemi. This man apparently ordered troops to collect British seashells as "spoils of the sea." He was assassinated by the Praetorian Guard as he addressed an acting troupe, after which his successor was found hiding behind a palace curtain. This man was known by a nickname meaning "little soldier's boot," and he legendarily tried to appoint his horse, Incitatus (**IN-cuh-TOT-iss**), a consul. For 10 points, name this decadent Roman emperor who preceded Claudius.

ANSWER: Caligula

6. This man showed that the product over all primes of one over one minus  $p$  to the negative  $s$  equals the Riemann zeta function. This man also discovered that, for a regular polyhedron, the sum of its vertices with its faces minus its edges equals two. This man's formula states that  $e$  to the  $ix$  equals cosine of  $x$  plus  $i$  times sine of  $x$ . The sum of one over  $n$  factorial, from  $n$  equals zero to infinity, converges to this man's namesake number. For 10 points, name this Swiss mathematician whose namesake number is roughly equal to 2.718 and is symbolized as  $e$ .

ANSWER: Leonhard **Euler** (**OY-ler, but accept phonetic pronunciations**)

7. This man drafted a successful amicus brief in the gun control case *District of Columbia v. Heller*. In a YouTube video, he fried bacon off the end of a semi-automatic rifle in Iowa. At a CNBC debate, this man told the moderators that the debate was not a "cage match." Donald Trump has speculated that this man's birthplace in Canada may disqualify him for the presidency, and has also noted that "not a lot of evangelicals come out of Cuba." For 10 points, name this Texas Senator who is a candidate for the Republican presidential nomination.

ANSWER: Ted **Cruz** [or Rafael Edward **Cruz**]

8. Variants of this practice include "affusion" and "aspersion." A controversial variant of this practice involving Anne Frank and other Holocaust victims have been criticized by Jewish groups. During an example of this practice, the Holy Spirit descends like a dove and a voice says "This is my beloved Son, in whom I am well pleased." Mormons apply this practice to the dead. Lutherans and Catholics believe this practice should be applied to infants. For 10 points, name this Christian sacrament involving some degree of immersion in water.

ANSWER: **baptism** [or **infant baptism**; or **baptism of the dead**]

9. This hero kills a son of Poseidon who pushes travelers off of a cliff while they are busy washing his feet. He also encounters Sinis, who ties people to two pine trees, and a man who forces passersby into one of two uncomfortable beds. Dionysus rescues and marries a woman that this hero leaves behind on an island. He forgets to replace the black sails on his ship with white ones while returning home from a quest in which this hero uses Ariadne's ball of string to not lose his way as he navigates the Labyrinth. For 10 points, name this Athenian hero who slays the Minotaur.

ANSWER: **Theseus**

10. An ecoregion in the north of this state is home to a tree species known as Vic Stockwell's Puzzle. This state's Barron Falls are found in its Wet Tropics region, near its coastal city of Cairns. The neighborhood of Surfer's Paradise can be found in this state's second-largest city, Gold Coast. Its Cape York Peninsula lies south of the Torres Strait, and a natural feature off its coast has been damaged by the crown-of-thorns starfish and coral bleaching. For 10 points, the Great Barrier Reef is off the coast of what state in northeastern Australia, whose capital is Brisbane?

ANSWER: **Queensland**

11. A film set during this war ends with Major Clipton saying "Madness...madness!" as he observes the deaths of Shears and Nicholson. In the film *The Best Years of Our Lives*, three veterans of this war return to Boone City. In another film set during this war, Ilsa Lund asks a piano player named Sam to play the song "As Time Goes By," which reminds her of her Humphrey Bogart-played lover. For 10 points, name this war, the setting of such films as *The Bridge on the River Kwai* (**KUH-why**) and *Casablanca*, which is set in German controlled Africa.

ANSWER: **World War II**

12. The losing candidate in this presidential election year was a Governor who opposed the "Canal Ring." The abrupt resignation of Supreme Court Justice David Davis impacted this election. The Democratic nominee in this election led the fight as a New York reformer against Boss Tweed. It was settled by a Republican promise to withdraw troops from the South to end Reconstruction. For 10 points, name this heavily disputed presidential election in which Samuel Tilden lost to Rutherford B. Hayes due to the Compromise of 1877.

ANSWER: Election of **1876**

13. By identifying the sides of this shape together, one can create the real projective plane or a Mobius strip. The equation "absolute value of x plus the absolute value of y equals a constant" plots out this shape on the xy-plane. Creating a figure of this shape with the same area as a circle is impossible using a compass and straightedge. The length of a diagonal of this shape is side length times square root two. Its perimeter is four times side length, while its area is side length squared. For 10 points, name this special type of rectangle with four sides of equal length.

ANSWER: **square** [prompt on **rectangle** until it is read; prompt on **quadrilateral**]

14. This character's half-brother is named Edward Leeford, although he uses the name Monks. After his mother is mocked, this character attacks Noah Claypole. This character works as a professional mourner for an undertaker and is ordered to weave oakum by the fiendish beadle, Mr. Bumble. This character does not realize that Charley Bates, Fagin, and the Artful Dodger are criminals. This character causes a near-riot when he asks for more gruel at a workhouse. For 10 points, name this title orphan who ends up with a street gang in a Charles Dickens novel.

ANSWER: **Oliver** Twist [or Oliver **Twist**]

15. In his dissent in this case, Byron White called it "an improvident and extravagant" use of judicial review. Harry Blackmun, who wrote this case's decision, admitted he set an arbitrary date that cut off a "compelling" state interest in protecting health. The plaintiff in this case was Norma L. McCorvey, who used the alias "Jane." The original time framework in this case was thrown out in 1992's *Planned Parenthood v. Casey* case. For 10 points, name this 1973 Supreme Court case that extended a right to privacy to abortion rights.

ANSWER: **Roe** v. *Wade*



VHSL Scholastic Bowl  
State Championships 2016  
Round 2  
Directed Round

1A. What law is used to find the third side of a triangle when one knows the values for two sides and their enclosed angle?

ANSWER: law of cosines [or cosine formula; or cosine rule; do not accept "law of sines"]

1B. What data structure has nodes which consist of both data and a reference to the next node?

ANSWER: linked lists

2A. Karl Popper's principle of falsifiability was majorly influenced by his efforts to demarcate astronomy from what pseudoscience, which believes that the positions of celestial objects affects human events?

ANSWER: astrology

2B. Ragnar Brovnik is employed by the architect Halvard Solness in what play by Henrik Ibsen?

ANSWER: *The Master Builder* [or *Bygmester Solness*]

3A. This is a 20-second calculation question. Five lines are drawn in the plane. What is the maximum number of points at which two of them can intersect?

ANSWER: 10 points

3B. This is a 20-second calculation question. For angles in Quadrant IV and what quadrant must the expression sine theta minus tangent theta be non-negative?

ANSWER: Quadrant II [or 2]

4A. In what country did Imre Nagy (**IM-ray NAHJ**) lead a 1956 revolution that was crushed by the Soviet Union?

ANSWER: Hungary

4B. What short story collection by James Joyce includes "Araby" and "The Dead"?

ANSWER: Dubliners

5A. What 1993 treaty signed in a namesake Dutch city established the European Union and led to the creation of the euro?

ANSWER: Maastricht (mah-streakt) Treaty

5B. What soul musician wrote "Respect" for Aretha Franklin and scored a posthumous number-one hit in 1968 with "Sittin' On The Dock Of The Bay"?

ANSWER: Otis Redding

6A. What current president of South Africa was criticized by Julius Malema for being insufficiently leftist and by anti-corruption watchdogs for pardoning his business associate Schabir Shaik?

ANSWER: Jacob **Zuma**

6B. What character, who receives Kemmerich's boots after his death, is the protagonist of Erich Maria Remarque's *All Quiet on the Western Front*?

ANSWER: **Paul** Baumer [or Paul **Baumer**]

7A. What scientist, who developed the bra-ket notation that describes quantum states, developed an equation that predicted the existence of antimatter?

ANSWER: Paul **Dirac** [Paul Adrien Maurice **Dirac**]

7B. In November 2015, Islamist militants raided a hotel in Bamako, the capital of what West African country?

ANSWER: **Mali** [Republic of **Mali**; or Republique de **Mali**]

8A. This is a 30-second calculation question. If you draw cards with replacement from a standard deck, how many cards do you expect to draw *before* you draw a face card, of which there are three?

ANSWER: **10/3** [or **3 and 1/3**]

8B. This is a 30-second calculation question. Find all values, real and complex, that satisfy the equation: the square root of the quantity x plus 8 equals x minus 4.

ANSWER: **{8}** [or x equals **8**; do not accept answers with more than one value]

9A. The critic Champfleury and Charles Baudelaire appear in *The Artist's Studio*, a canvas by what French realist who painted *Burial at Ornans*?

ANSWER: Gustave **Courbet**

9B. At what 1071 battle did the Seljuk leader Alp Arslan defeat and capture Byzantine Emperor Romanos IV Diogenes (**die-AH-jen-ease**)?

ANSWER: Battle of **Manzikert**

10A. What type of place in English translates as "toshokan" in Japanese, "maktaba" in Arabic, and "tushuguan" in Mandarin?

ANSWER: **library**

10B. What term refers to the repetition of the same vowel sound across the stressed syllables of words with different consonants?

ANSWER: **assonance**



**VHSL Scholastic Bowl  
State Championships 2016  
Round 2  
Third Period, Fifteen Tossups**

1. A national border on this island can be seen by comparing the staggering difference in deforestation between both sides. This island lies on the western end of the Mona Passage. A quarter of this island's population is clustered in the Cibao (**seeb-OW**) valley, where the merengue dance originated. In January 2010, a 7.0 magnitude earthquake destroyed a presidential palace in this island's city of Port-au-Prince. This island is west of Puerto Rico and east of Jamaica and Cuba. For 10 points, name this Caribbean island that is home to Haiti and the Dominican Republic.

ANSWER: **Hispaniola**

2. An unfinished artwork by this man features a hermit with a lion at his feet, about to beat himself with a rock. This artist of *St. Jerome in the Wilderness* designed a mechanical knight for his patron Ludovico Sforza (**SFORT-suh**). Overcleaning may have removed the eyebrows from one of this man's portraits. He used mirror writing to describe a man, named after a Roman architect, who is inscribed in a square and circle and has arms and legs depicted in two positions. For 10 points, name this artist who created the *Vitruvian Man* and the *Mona Lisa*.

ANSWER: **Leonardo** [or Leonardo di ser Piero **da Vinci**]

3. This man names a text translated and published in 2006 which portrays him as favored and blessed. That Gnostic (**NOSS-tick**) text praises this man, who bought a location named Akeldama (**AH-kel-DAH-mah**). According to one account, this person bought the "Field of Blood;" another source states he hanged himself, and priests used his returned money to buy the potter's field. This man kisses his leader to identify him to arresting soldiers, which is how he earns his "thirty pieces of silver." For 10 points, name this disciple who betrays Jesus.

ANSWER: **Judas** Iscariot [do not accept "Jude" or "Jude Thaddeus"]

4. For a type Ia (**one a**) supernova to occur, one of these objects must accrete matter from a companion star. The upper mass these objects can obtain is the Chandrasekhar (**shan-druh-SAY-kar**) limit, above which they are no longer stable due to electron degeneracy pressure. These objects, black holes, and neutron stars are possible end-of-life evolutions for stars. After trillions of years, these objects are theorized to become black dwarfs, though none have been discovered yet. For 10 points, name these dwarf stars that are not "red" or "brown".

ANSWER: **white dwarfs**

5. In a play written in this language, an inspector named Sports Jacket helps investigate the Maniac. That play in this language centers on an anarchist's death falling from a fourth floor window. The identity of Signora Ponza is the subject of a play in this language entitled *Right You Are, If You Think You Are*. In another play in this language, the Director's staging of *Mixing It Up* is interrupted by the Father, Mother, and Stepdaughter, who are looking for their own writer. For 10 points, name this language used to write *Six Characters in Search of an Author*, a play by Luigi Pirandello.

ANSWER: **Italian** [or **Italiano**]

6. The Euler (**OY-ler**) totient function of one of these numbers is equal to half the input. The minimum number of moves required to solve the Tower of Hanoi is one less than one of these numbers. A prime number that is one less than one of these numbers is a Mersenne prime. The sum of all binomial coefficients in a row of Pascal's triangle is equal to one of these numbers. These numbers appear as a 1 followed only by zeros in binary. For 10 points, name these numbers, which include 4, 8, 16, and 32.

ANSWER: **powers of two** [or **two to the n**; prompt on **integers** or **even** numbers]

7. In an epic poem by this author, the son of a prosperous innkeeper becomes infatuated with a young maid while delivering supplies to refugees during the French Revolution. This author of *Hermann and Dorothea* wrote a novel in which Edward falls in love with Ottilie after being introduced to her by his wife Charlotte. The protagonist of another novel by this author shoots himself and is buried under a linden tree after being rejected by Lotte (**LOT-tuh**). For 10 points, name this German author of *Elective Affinities* and *The Sorrows of Young Werther* (**VAIR-ter**), who also wrote the drama *Faust*.

ANSWER: Johann Wolfgang von **Goethe** (**GUR-tuh**)

8. A pioneer in this field as applied to black Americans was Melville Herskovits. The author Zora Neale Hurston won a scholarship in 1925 to study this discipline. A man who works in this field wrote an essay called "Deep Play" that uses thick description. A famous program of this discipline at Columbia University was led by Franz Boas (**BOH-azz**), who taught such practitioners as the author of *Coming of Age in Samoa*, Margaret Mead. For 10 points, name this social science discipline that studies human societies and cultures.

ANSWER: **anthropology** [or social **anthropology**; or cultural **anthropology**]

9. This king was excommunicated for supporting antipope Victor IV. This ruler was incorrectly thought killed at the Battle of Legnano (**lay-NON-yo**). He supposedly gave the relics of the biblical Magi to the Cologne (**KUH-loan**) cathedral. Pope Alexander III formed the Lombard League to oppose this king's control over Italy. He died when he drowned crossing the Saleph River. This man joined Philip Augustus and Richard the Lionheart on the Third Crusade. For 10 points, name this Holy Roman Emperor whose nickname means "Red Beard."

ANSWER: **Frederick I** [or Frederick **Barbarossa**; prompt on **Frederick**]

10. In 2002, a retiring leader of this party urged the electorate to vote against the National Front candidate. IMF director Dominique Strauss-Kahn was a notable member of this party, which formed a "Cohabitation" government with Prime Minister Jacques Chirac (**SHAH-rock**). The first leader of this party to become president was Francois (**FRANS-wah**) Mitterrand, and it took power in 2012 after defeating Nicolas Sarkozy's party. For 10 points, name this left-wing French political party, whose members include current President Francois Hollande.

ANSWER: **Socialist** Party of France [or **PS**; or Parti **socialiste**]

11. In this opera, the male protagonist throws his gambling winnings at the title character because he believes she has fallen in love with Baron Douphol. At the start of this opera, Gastone invites his friend to a ball where they sing the drinking song "Libiamo ne' liete calici (**cah-LEE-c hee**)." In its second act, Flora learns that her friend has stopped seeing the main character due to his father Giorgio's disapproval. At the end of this opera, Alfredo and Violetta sing a duet as the latter dies of tuberculosis. For 10 points, name this Giuseppe Verdi opera about the title courtesan.

ANSWER: *La **Traviata***

12. A form of this quantity is calculated by considering the dissociation of chemical compounds and is normality. Absorbance is equal to the extinction coefficient times path length times this quantity according to Beer's law. This chemical quantity is represented using square brackets. Molecular diffusion in solution is driven by its gradient, from areas where it is high to areas where it is low. Diluting a solution decreases it. For 10 points, name this quantity equal to moles per unit volume, which indicates how much of a compound is present in a solution.

ANSWER: molar **concentration** [or **molarity**; prompt on **c**]

13. This character finds a helmet that once belonged to a captain named Dosmit. She angers Unkar Plutt by refusing to sell an object she found, even for sixty survival portions. This character prevents scavengers from taking the property of Poe Dameron. While in the vault of Maz Kanata, this character touches a weapon and has a vision of Kylo Ren. She is living on Jakku (**JAH-ku**) when she encounters BB-8 and a defector from the First Order named Finn. For 10 points, name this Force-sensitive protagonist of *Star Wars: The Force Awakens*.

ANSWER: **Rey**

14. James Garfield came to the 1880 Republican convention to nominate a man with this surname. The phrase "I will not accepted if nominated and will not serve if elected" was first uttered by a man with this surname. A politician with this surname, the "Ohio Icicle," was the namesake of a 1890 law increasing government silver purchases. An Ohio Senator with this surname is the namesake of an 1890 antitrust law. A general with this surname devastated Georgia on his "March to the Sea." For 10 points, give this last name of Civil War general William Tecumseh.

ANSWER: **Sherman**

15. In a novel by this author, the protagonist accuses her suitor, Henry Clinton, of being a hypocrite for attending a Citizens' Council meeting. This author assisted her childhood friend and neighbor Truman Capote in researching his book *In Cold Blood*. In a novel by this author, the protagonist returns to Maycomb, Alabama, and becomes disturbed that her lawyer father is seemingly racist. That novel is effectively the "first draft" of a novel about Jean Louise "Scout" Finch. For 10 points, name this author of *Go Set a Watchman* and *To Kill a Mockingbird*.

ANSWER: Harper **Lee** [or Nelle Harper **Lee**]



VHSL Scholastic Bowl  
State Championships 2016  
Round 2  
Tiebreaker/Replacement Questions

1. Unique retail stores in this country were part of the Intershop chain. An intelligence agent for this country working undercover was exposed in the Guillaume (**GEE-ohm**) affair. This country successfully produced a car called the Trabant. Its security police was the Stasi, and its governing political party was the SED, the Socialist Unity Party, whose leaders included General Secretaries Walter Ulbricht and Erich Honecker (**HO-nek-ur**). For 10 points, name this Communist country which built the Berlin Wall.

ANSWER: East Germany [or German Democratic Republic; or GDR; or Deutsche Demokratische Republik; or DDR; do not prompt or accept "Germany"]

2. Dayton Miller reproduced this experiment atop Mount Wilson, only to get erroneous results. This experiment was confirmed by the Kennedy-Thorndike experiment, which shortened one of the arms used in the primary apparatus. This experiment crossed light in perpendicular directions using an interferometer (**INT-ur-fur-AH-meh-tur**) to try to detect a difference in the speed of light, but failed to do so. For 10 points, what experiment performed at Case Western was the first major step in disproving aether theory?

ANSWER: Michelson-Morley experiment [or Morley-Michelson experiment]

3. In a novel by this author, the protagonist's first marriage produces a prematurely old-seeming child nicknamed "Little Father Time," who commits suicide in the university town of Christminster. In another novel by this author, Fanny Robin fails to appear at church for her wedding to Sergeant Troy, who is later shot by Mr. Boldwood. In the last novel by this author, the title stonemason introduces his teacher Richard Phillotson to his cousin and future lover Sue Bridehead, whom he marries. For 10 points, name this Victorian novelist who wrote *Far from the Madding Crowd* and *Jude the Obscure*.

ANSWER: Thomas Hardy

4. A composer from this country called for three string orchestras of varying size in his *Fantasia on a Theme by Thomas Tallis*. Jacqueline du Pré made the definitive recording of the Cello Concerto in E minor by a composer from this country who depicted his publisher Augustus Jaeger (**YAY-gurr**) in the "Nimrod" movement of his *Enigma Variations*. Graduation ceremonies traditionally play the *Pomp and Circumstance* marches written by a composer from this country. For 10 points, name this country home to Ralph (**RAFE**) Vaughan Williams and Edward Elgar.

ANSWER: United Kingdom of Great Britain and Northern Ireland [or U.K.; or Great Britain; prompt on England]

5. The track "St. Thomas" opens an album titled for this instrument's *Colossus*, written by one of its performers, Sonny Rollins. A musician who played this instrument divided one of his albums into the tracks "Acknowledgement," "Resolution," "Pursuance," and "Psalm," and covered "My Favorite Things" from *The Sound of Music*. That performer titled one of his albums for the large and frequent leaps between chords on its title track, "Giant Steps," and released the album *A Love Supreme*. For 10 points, name this jazz instrument played by John Coltrane.

ANSWER: saxophone

What author of *A Room with a View* also wrote a novel in which Dr. Aziz faces trial for supposedly assaulting Adela Quested in a cave?

ANSWER: E. M. Forster [Edward Morgan Forster]

What is the average value of sine-squared of x, as x ranges from zero to one-half pi radians?

ANSWER: 1/2 [or 0.5]