

**Missouri Scholars Academy
Scholar Bowl Playoff Round One**

Written by Charles Hang and Julia Price
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Tossup One

Topic: Literature

The antagonist of this novel arrives in town from Amsterdam in the company of an Indian. It begins with the author's encounter with the subject matter as a customs house official, and describes Roger Chillingworth's plot to destroy Arthur Dimmesdale. The title object is worn to symbolize the act which conceived Pearl committed by Hester Prynne. Name this book about adultery by Nathaniel Hawthorne.

Answer: **The Scarlet Letter**

<Price>

Tossup Two

Topic: Literature

This novel's first part, "The Hearth and the Salamander," introduces the seventeen and crazy Clarisse McClellan. Other characters in this novel include the protagonist's suicidal wife Mildred, former professor Faber, Captain Beatty, and the main character who comes to "care so much he's sick" and stops setting manuscripts aflame. Name this novel about Guy Montag written by Ray Bradbury.

Answer: **Fahrenheit 451**

<Price>

Tossup Three

Topic: History

This nation's independence was restored in the 1400s by Lê Lợi. It was the site of fighting between the government and Cao Dai sect in the 1960s, while in the 1970s this nation's army overthrew the Khmer Rouge. The site of the Battle of Dien Bien Phu as well as the Tet Offensive, name this nation where the US fought a war from 1964 to 1973.

ANSWER: **Vietnam**

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Tossup Four

Topic: Mathematics Computation

MATH COMPUTATION-GEOMETRY: Find the surface area in terms of pi for a cylinder with radius 3 cm and height 12 cm. It's worth noting that the surface area of a cylinder is equal to the sum of the areas of its two ends plus the area of the middle section. Find the answer to 3 squared multiplied by 2 times pi plus 12 multiplied by six pi.

Answer: **90 pi cm²** (90 pi centimeters squared)

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Tossup Five

Topic: Mathematical Theory

One theory says that there are infinitely many of the Sophie Germain version of these entities. They are the subject of Fermat's Little Theorem, while The Sieve of Eratosthenes finds all of them up to a given quantity. Euclid's Theorem proves that there are infinitely many of these values which do not include one. Name this type of number used in cryptography which has exactly two divisors: itself and one.

ANSWER: **Prime** Numbers

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Tossup Six

Topic: Fine Arts

One of this musical instrument's famous modern players is Mark O'Conner, and it can reach the highest note a piano can using overtones. Vivaldi wrote a series of four concertos for this instrument entitled *The Four Seasons*, and its strings are tuned in fifths, ranging from the highest, E, to the lowest, G. Name this musical instrument, the most common in the orchestra.

ANSWER: **Violin**

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Tossup Seven

Topic: Religion, Mythology, and Philosophy

This philosopher's namesake paradoxes include the fact that virtue is knowledge. Known as the gadfly, he created the method of *elenchus*, which advocated the breaking down of problems into questions, a method which bears his name today. Notably, all knowledge of him comes from contemporaries such Plato. Name this philosopher sentenced to death by Athens and forced to drink Hemlock.

Answer: **Socrates**

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Tossup Eight

Topic: Science

Mutations of these entities in brain stem cells can cause Leigh's Disease, and Lynn Margulis postulated that they evolved from symbiotic bacteria within a host cell. They are divided by cristae, and carry their own genomes independent of the nucleus which are inherited maternally. Name this organelle responsible for the synthesis of ATP which supply cellular energy.

ANSWER: **Mitochondria**

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Tossup Nine

Topic: Fine Arts

One of this artist's paintings shows the Jerome crouching with a rock and a lion, entitled *St. Jerome in the Wilderness*. He also made two paintings featuring John the Baptist, Jesus and the Virgin Mary entitled *Virgin on the Rocks* as well as a sketch of human proportions entitled *Vitruvian Man*. Name this famous inventor and artist who painted the *Mona Lisa* and *The Last Supper*.

ANSWER: Leonardo di ser Piero **da Vinci**

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Tossup Ten

Topic: Fine Arts

This architect was mentored by Louis Sullivan, with whom he pioneered the Prairie House movement. Some of his structures include the Marin County Civic Center and the S.C. Johnson's administrative center in Wisconsin. Another of his works resembles a white ribbon curled into a cylinder, the Guggenheim Museum in New York City. Name this architect of Fallingwater house.

Answer: Frank Lloyd **Wright**

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Tossup Eleven

Topic: Science

In astronomy, this Greek letter denotes the distance from the shadow of the moon to the Earth's center in a solar eclipse, while in engineering, it is used to denote shear strain. In Physics, it denotes the Lorentz factor, the propagation constant of an electromagnetic wave, as well as a photon. Name this Greek letter which names the highest frequency form of EM radiation, the third in the Greek alphabet.

ANSWER: **Gamma**

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Tossup Twelve

Topic: Mathematics Computation

Pencil and Paper ready. Find the midpoint of the line with endpoints $(7\sqrt{2}, 12)$ and $(9\sqrt{2}, -22)$. The midpoint formula states that the coordinates of the midpoint of two points are at the average of the x and y values of the two points. Find the point with x coordinate halfway between $7\sqrt{2}$ and $9\sqrt{2}$ and y coordinate halfway between 12 and -22.

Answer: **$(8\sqrt{2}, -5)$**

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Tossup Thirteen

Topic: Mathematical Theory

This entity can be represented parametrically with the equations $x = a + r \cos(t)$ and $y = b + r \cos(t)$. Lindemann proved that they are impossible to square because of the transcendental nature of pi. These geometric entities are defined as the points in a plane which are the same distance from a given point. Name these shapes which have circumferences and radii.

ANSWER: **Circle**

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Tossup Fourteen

Topic: Literature

The discovery of this author's poetic talent resulted in the publication of a family poetry collection, for which she wrote under the pseudonym of Ellis Bell. This author's most famous novel revolves around the story Nelly tells Mr. Lockwood about the love between Catherine Earnshaw and Heathcliff in the title mansion of *Wuthering Heights*. Name this author and sister of Anne and Charlotte Bronte.

Answer: **Emily Bronte**

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Tossup Fifteen

Topic: History

As Defense Minister, this politician was indirectly responsible for the Sabra and Shatila Massacre. A tank commander during the Yom Kippur War, his visit to the Al-Aqsa Mosque triggered riots in 2000. Though elected prime minister in 2001 as a conservative, he chose withdraw from Gaza and found the centrist Kadima party in 2005. Name this former leader of Israel who entered a coma after a stroke in early 2006.

Answer: Ariel **Sharon**

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Tossup Sixteen

Topic: Mathematics Computation

Pencil and Paper Ready. Find the derivative of the function $f(x)$, if $f(x)$ equals x to the fourth power plus three x cubed minus two and a half x squared plus pi. To do so, employ the power rule and multiply the exponents of the x values by their coefficients. Find the derivative of x to the fourth power plus three x cubed minus two and a half x squared plus pi.

Answer: **Four x cubed plus Nine x squared plus Five x** (or $4x^3 + 9x^2 + 5x$)

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Tossup Seventeen

Topic: Religion, Mythology, and Philosophy

This religious figure's first wife was a shepherdess named Zipporah. His sister Miriam objected to this marriage to a Cushite woman, and God later describes him as being of greater authority than both her and their brother, Aaron. This figure fled Egypt after committing murder, and saw God in a burning bush. Name this Biblical figure who led the Jews from slavery to the Promised Land.

ANSWER: Moses

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Tossup Eighteen

Topic: Popular Culture

The brother of one of this television show's main characters meets Asher Hornsby in the Ostoff Center. This show's third season will see its title figure following its characters to college from their homes in New York City, where Constance Billard is the school of Blair Waldorf. Name this CW show based on a series of books by Cecily von Ziegesar about wealthy teenagers on New York's Upper East Side.

Answer: Gossip Girl

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Tossup Nineteen

Topic: History

This event was investigated by the Tower Commission and initiated by Robert MacFarlane's plan to violate the Boland Amendment. This affair was intended to help a group fighting against Daniel Ortega and funds from this scandal were administered by Oliver North. Name this Reagan Administration scandal which involved arms sales and the support of a right wing Nicaraguan group.

ANSWER: The Iran-Contra Affair

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Tossup Twenty

Topic: Current Events

This leader's first sponsored piece of legislation established Reza's Compassion Fund to fund urban housing. As a young man, he was a member of the Basij militia, which continues to support him today. He was recently reelected to the presidency against Mir-Hossein Mousavi in a disputed election. Name this individual who has urged the obliteration of Israel, the current president of Iran.

ANSWER: Mahmoud Ahmadinejad

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Tossup Twenty One

Topic: Science

Heike Kamerlingh Onnes discovered that this property disappears below a certain temperature. Its value is proportional to length and inversely proportional to cross-sectional area in a conductor, and it is proportional to voltage and inversely proportional to current in Ohm's Law. Name this value, an object's opposition to the flow of electric current which is measured in ohms and commonly denoted R .

ANSWER: Electrical **Resistance**

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Tossup Twenty Two

Topic: Science

This quantity is the derivative of angular momentum and is equal to power divided by angular speed. It is proportional to the applied force, length of displacement arm, and the sine of the angle between the direction of the force and the displacement arm. Name this quantity represented by the Greek letter tau, the rotation of a force around an axis commonly measured in newton-meters.

ANSWER: **Torque** (accept **Moment of Force**)

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Tossup Twenty Three

Topic: Literature

In one of this author's novels, Dick Shelton fights against his father's murderer, Sir Daniel Brackley. In addition to *The Black Arrow*, another of this author's novels features a doctor with split personalities, *The Strange Case of Dr Jekyll and Mr Hyde*. This author also described David Balfour's attempts to regain his inheritance in *Kidnapped*. Name this Scottish author of *Treasure Island*.

ANSWER: Robert Louis **Stevenson**

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Tossup Twenty Four

Topic: SCIENCE

The lightest of this group of elements bonds with Uranium to form the most common type of depleted uranium. Along with nitric acid, the acid form of one of these elements forms aqua regia. Elements in this group include the only nonmetal liquid at room temperature andastatine and they have seven valence electrons each. Name these highly reactive elements located to the left of the noble gases.

Answer: **Halogens** (accept **Group 17** Elements, prompt on **Group 7** Elements or **Group 7A** Elements)

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Tossup Twenty Five

Topic: Literature

The author's experiences in Bengal formed the basis of his *Shooting an Elephant*, while his service with the Loyalists in the Spanish Civil War framed his *Homage to Catalonia*. His most famous novels, however, describe characters such as Boxer and the domination of Napoleon as well as Julia and Winston's fight against Big Brother. Name this author of *Animal Farm* and *1984*.

Answer: George **Orwell** (accept Eric Arthur **Blair**)

<Price>

Tossup Twenty Six

Topic: History

He became a radical after his brother Alexander's hanging, and later led a political party faction supporting membership for only revolutionary professionals. He also presided over the signing of the Treaty of Brest-Litovsk and was delivered by Germany from a Swiss exile to St. Petersburg by a sealed train. Name this leader of the Russian Bolshevik Party and first leader of the Soviet Union.

ANSWER: Vladimir Ilyich **Lenin** (also accept Vladimir Ilyich **Ulyanov**)

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Tossup Twenty Seven

Topic: History

This leader's early reign included the Bedchamber Crisis, and this ruler removed Palmerston from office for unilaterally supporting Napoleon III. This monarch also oversaw the repeal of the Corn Laws and the Irish Potato Famine and was the first Empress of India, while social conservatism marked her rule, the longest in British history. Name this Queen of England whose namesake era spanned seventy years.

ANSWER: Queen **Victoria**

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Tossup Twenty Eight

Topic: Science

Types of this disease include the ordinary, modified, malignant, and hemorrhagic, and it is believed to have originated in rodents. A member of the variola family, Edward Jenner discovered the first vaccination for this disease known for causing skin lesions and scarring its survivors. Name this only human infectious disease to be eradicated.

ANSWER: **Smallpox** (Accept **Variola** before mentioned)

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Tossup Twenty Nine

Topic: GEOGRAPHY

This nation's inhabitants shake their heads yes and nod to mean no, as portrayed in Elizabeth Kostova's *The Historian*, and signs can be in both the Latin and Cyrillic alphabets. The Byzantine Emperor Basil was famous for slaying the inhabitants of this nation, which borders the Black Sea with a port at Varna. and shares the Danube river with northern neighbor Romania. Name this eastern European country with capital at Sofia.

Answer: **Bulgaria**

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Tossup Thirty

Topic: Fine Arts

This artist featured Jesus crucified on a hypercube in his *Crucifixion*. His *The Face of War* shows war's horrors with a withered face, while this painter included his friend Edward James in *Swans Reflecting Elephants*. His most famous work, however, features ants swarming over a watch, a twisted organic shape on the ground, and melting clocks. Name this Surrealist Spanish painter of *The Persistence of Memory*.

ANSWER: Salvador Domingo Felipe Jacinto **Dalí** i Domènech, 1st Marquis of Púbol

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Tossup Thirty One

Topic: Missouri Scholars Academy

Tossup Thirty Two

Topic: Literature

This book's main character's knee is operated on by Dr. Valentini, and halfway through this book, that character flees execution by jumping into a river. This book's main character flees to his lover who dies at the end of this book after giving birth in Switzerland, Catherine Barkley. Name this novel about an American ambulance driver on the Italian Front of the First World War by Ernest Hemingway.

ANSWER: **A Farewell to Arms** (prompt on "Tenente" or "Frederic Henry" at your discretion in case someone thinks the question is asking for the character rather than the book despite my best efforts)

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Tossup Thirty Three

Topic: History

This conflict's largest land battle occurred at Mantinea. One of this war's generals was exiled for failing to relieve Amphipolis, while another was banished for allegedly defacing religious statues. Both Thucydides and Alcibiades fought in this conflict for a city protected by the Long Walls and defeated in Sicily. Name this war which pitted that city ruled by Pericles, Athens, against Sparta.

ANSWER: The **Peloponnesian** War

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Tossup Thirty Four

Topic: Mathematics Computation

Solve the following system of equations for y . $X + 4Y = 6$ ["x plus four y equals six"] and $3Y - X = 8$. ["three y minus x equals eight"]. One can set an equation equal to a variable and insert it into the other equation, or use elimination. Solve the system of equations of $X + 4Y = 6$ ["x plus four y equals six"] and $3Y - X = 8$. ["three y minus x equals eight"].

Answer: Y equals 2

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Tossup Thirty Five

Topic: Science

Ammonia serves as one of these agents in the manufacture of Bakelite, and they can be destroyed by coking. Their activity is measured in katals, and they often react with reagents to form intermediates, but do not alter a reaction's equilibrium. Platinum is a common example of these substances which lower activation energies, as are enzymes. Name these substances which increase the rate of a reaction.

Answer: **Catalyst(s)**

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Tossup Thirty Six

Topic: Current Events

This leader presided over the confirmation hearing of Clarence Thomas as chairman of the Senate Judiciary Committee. This politician was accused of plagiarism during the 1988 Presidential election, and as a 2008 presidential candidate, he used the words "articulate and bright and clean" to describe Obama. Name this former Delaware Senator and current Vice President of the United States.

ANSWER: Joseph Robinette **Biden** (accept "Joe **Biden**")

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Tossup Thirty Seven

Topic: LITERATURE

As manager of the fencing team, this character causes his school's team to miss the competition by leaving the foils on the subway. He has three siblings, though only two of them are alive during the novel: D.B. and his sister whom he watches ride a carousel, Phoebe. He rooms with Stradlater before flunking out of Pencey Prep. Name this main character of J.D. Salinger's *Catcher in the Rye*.

Answer: **Holden Caulfield** (accept either)

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Tossup Thirty Eight

Topic: Popular Culture

This movie ends with the two main characters singing *Anyone Else But You* by The Moldy Peaches. The main character is warned by her step mother to avoid one character in this movie is a former rocker who now composes commercial jingles and later divorces Vanessa. Name this movie where Michael Cera play Bleeker and Ellen Page is the title pregnant teenage girl.

Answer: **Juno**

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Tossup Thirty Nine

Topic: History

This ruler suffered his worst defeat at Roncevaux Pass, and he divided his empire into marks ruled by margraves and counties ruled by counts. The son of Pepin the Short, this king not only continued his father's conquests with campaigns in Spain, Saxony, and Italy, but also promoted education. Name this king of the Franks who was crowned by Pope Leo III as the first Holy Roman Emperor.

ANSWER: **Charlemagne** (accept **Carolus Magnus** or **Charles the Great**)

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Tossup Forty

Topic: Religion, Mythology, and Philosophy

This mythological figure is called unmanly for using magic in the *Lokasenna*. He is said to have killed the frost giant Ymir in order to create the world, and at Ragnarok he will be devoured by Fenrir. This husband of Frigg also rides the eight legged horse Slepnir and gave up an eye at Mimir's Well to obtain wisdom. Name this chief God of the Norse pantheon.

ANSWER: **Odin**

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