

Missouri Scholars Academy
Scholar Bowl Playoff Round Two
Written by Charles Hang and Julia Price
Thursday, June 25th, 2009

Tossup One

Topic: History

Wade McClusky made a key decision during this battle to continue searching despite a fuel shortage. One force at this battle was led by Chester Nimitz, while the other attacked a target codenamed AF falsely described as being low on water, and lost four aircraft carriers. Name this June 1942 battle which saw the the Japanese fleet repulsed, the turning point of the Pacific theater of World War II.

ANSWER: The Battle of **Midway**

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Tossup Two

Topic: Math Computation

Find the volume in terms of pi of a sphere with diameter 12 cm. The volume can be found by multiplying four-thirds pi times the radius cubed. Thus, find the product of 216 multiplied by four thirds, then by pi.

Answer: **$288\pi \text{ cm}^3$**

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Tossup Three

Topic: Fine Arts

This composer began composing operas after seeing Verdi's *Aida*. His works include *The Girl of the Golden West* and *Tosca*, while another describes the friendship of Marcello and Rodolfo and the latter's love for the doomed Mimi and is the loose basis of the musical *Rent*, *La Boheme*. Name this Italian composer of *Madame Butterfly*.

Answer: Giacomo Antonio Domenico Michele Secondo Maria **Puccini**

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Tossup Four

Topic: History

This leader headed the Executive Branch of Pennsylvania from 1785 to 1788. He was part of the Committee of Five which drafted the Declaration of Independence and was the first Postmaster General. He also negotiated French entry into the Revolutionary War as Ambassador to France. Name this famous politician and inventor famous for *Poor Richard's Almanac* and flying a kite into lightning.

ANSWER: Benjamin **Franklin**

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Tossup Five

Topic: Science

The stability of these chemical bonds is due to the electron density around the nuclei of the atoms involved. Dots surrounding symbols of elements show these bonds using Lewis structures. Examples of compounds with this bonding are acids with only two atoms and carbon monoxide. What type of chemical bonds holds molecules together by sharing electrons between atoms?

Answer: **Covalent** bonds/bonding

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Tossup Six

Topic: Religion, Mythology, and Philosophy

This religion's first step involves taking refuge in three jewels, and its scripture and doctrine developed in two languages, Pali and Sanskrit. Its variants include Mahayana and Theravada. The goal is to escape samsara, the cycle of rebirth, and stop kilesa, or suffering. It teaches that there are Four Noble Truths. Name this movement whose founder was Siddhartha Gautama.

Answer: **Buddhism**

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Tossup Seven

Topic: Mathematical Theory

The Alexander-Conway version of these entities is calculated using a skein relation, while Galois theory studies how parts of these relate to one another. Their derivatives are calculated with the Power Rule, while synthetic division is used to find their roots and a third degree version of one of these is a cubic. Name these mathematical expressions using variables which are constructed from monomials

ANSWER: **Polynomial**

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Tossup Eight

Topic: Missouri Scholars Academy

Tossup Nine

Topic: History

This leader rose to power after the death of his uncle Rugila, and later defeated an assassination attempt by his brother Bleda. He interpreted a request for help from Valentinian's sister Honoria as an invitation to invade, and was halted at the gates of Rome by Pope Leo III, though he was defeated earlier by Aetius at the Catalunian Fields. Name this leader of the Huns nicknamed "The Scourge of God."

ANSWER: **Attila** the Hun

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Tossup Ten

Topic: Science

The calcareous variety of this phylum produces spicules, and their closest living relatives are believed to be the choanoflagellates. Their bodies consist of a mesohyl between two thin layers of cells, and Members of this phylum can bud to reproduce and are used in arts and crafts. Name this phylum that contains species of the animal formerly thought to be a plant, the sponge.

Answer: **Porifera**

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Tossup Eleven

Topic: Literature

At the beginning of this play, one character is offered a choice between death or worshipping Diana as a nun. This play includes the efforts several craftsmen to put on a show for the wedding of Theseus and Hippolyta. Puck notes what fools mortals be after dripping love juice into the eyes of four young lovers, including Lysander and Hermia. Name this play about misplaced love and fairies by William Shakespeare.

Answer: **A Midsummer Night's Dream**

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Tossup Twelve

Topic: Math Computation

Pencil and paper ready. Find the distance between the two points (9, 2) and (6, 6). You can do this by creating a right triangle, or even better yet, remembering that the distance formula is the square root of the quantity $[(X_1 - X_2)^2 \text{ plus } (Y_1 - Y_2)^2]$. Find the distance between the two points (9, 2) and (6, 6).

Answer: **5**

<Price>

Tossup Thirteen

Topic: Pop Culture

This movie begins with the characters getting lost and wandering into an abandoned amusement park which is actually a world inhabited by spirits. In this movie, Yubaba renames the main character Sen after turning her parents into swine. Later Sen helps Haku remember that he is a river and recalls her own name, Chihiro. Name this 2002 anime film directed by Hayao Miyazaki.

Answer: **Spirited Away**

<Price>

Tossup Fourteen

Topic: History

Prussia gained control of the Rheinland at this event due to the efforts of Hardenberg, while Great Britain was represented by Castlereagh. Talleyrand eventually became a key player despite an initial exclusion from this conference interrupted by Waterloo. Name this meeting chaired by Metternich which established the Concert of Europe held in Austria's capital.

ANSWER: the **Congress of Vienna**

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Tossup Fifteen

Topic: Math Computation

Pencils and paper ready. If $f(x)=x^2+2x$ and $g(x)=4x$, find $f(g(2))$. Notably, $f(g(x))$ is equal to $16x^2+8x$, and thus $f(g(2))$ can be found by inputting 2 into $16x^2+8x$. Find $f(g(2))$ if $f(x)=x^2+2x$ and $g(x)=4x$.

Answer: $f(g(2)) = \mathbf{80}$

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Tossup Sixteen

Religion, Mythology, and Philosophy

This Greek mythological figure's symbol children include Hestia and Demeter. His sister Rhea as his consort, and he was the youngest of the 12 Titans who were children of Uranus and Gaea. His symbol became the sickle after he created the Furies when he castrated his father and became king of the Titans. Name this equivalent of the Roman Saturn who was defeated by his son Zeus.

Answer: **Cronus**

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Tossup Seventeen

Topic: Science

The angular variety of this quantity measures rotation rate. The energy of a photon is proportional to both Planck's constant and this value, which is also used along with velocity to calculate the Doppler Effect. This variable is inversely proportional to both a wave's period and its wavelength. Name this quantity measured in Hertz usually denoted f .

ANSWER: **Frequency**

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Tossup Eighteen

Topic: Fine Arts

This musician wrote about his bandmates, including Cootie Williams and Harry Carney, in his autobiography, *Music Is My Mistress*. He composed such jazz classics as "Mood Indigo," "Sophisticated Lady," and "Satin Doll." Notably, he did not compose his band's theme song, "Take the A Train." Name this bandleader and jazz pianist who is often labeled America's greatest composer.

Answer: Edward Kennedy "Duke" **Ellington**

<Price>

Tossup Nineteen

Topic: Science

These entities are the lightest found in a canal ray, and they are composite fermions with spin equal to one-half ($1/2$). Gluons are believed to prevent the repulsion of these objects made up of two up quarks and one down quark which were first discovered in the gold foil experiment conducted by Rutherford. Name this type of subatomic particle which gives an element its atomic number.

ANSWER: **Proton**

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Tossup Twenty

Topic: Math Computation

In triangle ABC, angle B is the right angle. The sine of angle A is $24/25$. Find the secant of angle C. Notably, secant is equivalent to one over the cosine, and the cosine of angle C is equal to the sine of angle A. Find the secant of angle C if the sine of angle A is $24/25$ and angle B is the right angle.

Answer: **25/24**

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Tossup Twenty One

Topic: Geography

The Kerch Strait connects this body of water to the Sea of Azov, while it is connected to the Atlantic Ocean via the Bosphorus, Dardanelles, Sea of Marmara, and the Mediterranean. The Crimean Peninsula juts into its northern waters. Name this inland sea bordered by Bulgaria, Romania, Ukraine, Russia, Georgia, and Turkey situated in southeastern Europe.

Answer: **Black** Sea

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Tossup Twenty Two

Topic: Fine Arts

This artist worked with Stravinsky on the opera *Pulcinella*, while his *Massacre in Korea* is reminiscent of Goya. One of his works features a boy in blue smoking a pipe and is emblematic of his Rose Period, while another shows prostitutes wearing African masks, *Les Femmes d'Alger*. His most famous work protests the destruction of the sacred city of the Basques. Name this cubist painter of *Guernica*.

ANSWER: Pablo **Picasso**

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Tossup Twenty Three

Topic: Literature

This book tells the tale of a summer in 1922. One character breaks up with a girlfriend who cheats at golf, while another marvels at the title character's collection of shirts. The title character has connections with Meyer Wolfsheimer, while settings of this novel include the Valley of Ashes and West and East Egg. Name this novel narrated by Nick Carraway about the Roaring Twenties by F. Scott Fitzgerald?

Answer: The **Great Gatsby**

<Price>

Tossup Twenty Four

Topic: History

The inhabitants of this future nation were the subject of a work by Tacitus, while the Hanseatic League was based in its north. Arminius slaughtered three Roman legions here in 9 A.D., while more recently, a conference in this nation's capital triggered the Scramble for Africa. It was also the site of the treaty ending the Thirty Years' War. Name this country, the home of Bismarck with its capital at Berlin.

ANSWER: **Germany** (Do not prompt on Prussia, Westphalia, or any other subsets of Germany—the first two clues uniquely point to Germany alone)

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Tossup Twenty Five

Topic: Science

This graph's instability strip includes values for absolute magnitude ranging from negative ten to positive five on its y-axis. Cepheid Variables appear near the middle of one version of this graph which features Class O at its left, Class T on its right, and supergiants in the top left. Name this diagram used to plot star types named for the Danish and British astronomers who created it.

ANSWER: **Hertzsprung-Russell** Diagram

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Tossup Twenty Six

Topic: Literature

This novel focuses on a warrior from the Umuofia clan. The protagonist is troubled by his father Unoka's shortcomings and strives to become one of the most respected men in his tribe. He sees his father in his son, Nwoye, and is pleased that his son's attitude improves with friendship with Ikemefuna. Name this novel about Okonkwo written by Nigerian author Chinua Achebe.

Answer: **Things Fall Apart**

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Tossup Twenty Seven

Topic: Religion, Mythology, and Philosophy

One of this philosopher's major works, *De Cive*, predicted arguments made in a later work which was criticized by John Bramhall in *Of Liberty and Necessity*. This author's most famous work described three types of commonwealth and called pre-civilized life "nasty, brutish, and short," before describing the title entity, an ideal state led by an absolute monarch. Name this English author of *Leviathan*.

ANSWER: Thomas **Hobbes**

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Tossup Twenty Eight

Topic: Literature

This character realizes that a conch shell will help bring the boys together. The boys focus sunlight to start the first fire on the island using his eyeglasses, and he is later killed by Roger, who shatters the conch with a boulder. Name this porcine intellectual who is Ralph's right hand man in William Golding's *Lord of the Flies*.

Answer: **Piggy**

<Price>

Tossup Twenty Nine

Topic: History

This leader's brother's ties with the CIA during the 1980s allowed him to help the mujahideen overthrow the Soviet-backed government in his home country. In the 1992 coalition government, he served as deputy foreign minister. While the Taliban ruled, he went into exile in Pakistan, but returned in 2001. Name this man who was elected in 2004 as president of Afghanistan.

Answer: Hamid **Karzai**

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Tossup Thirty

Topic: Fine Arts

This musical instrument was originally an adaptation of an instrument called the chalumeu. Strauss took advantage of its C version's bright tone in his *Der Rosenkavalier*; while Mozart's sonata for this instrument goes from Allegro to Adagio to Rondo and was his final instrumental piece. Its most popular version is the B-flat or soprano version. Name this most versatile woodwind, a cousin of the recorder.

ANSWER: **Clarinet**

<Hang>

Tossup Thirty One

Topic: Pop Culture

An early name for this band was the Quarrymen. This quartet's songs include *Tomorrow Never Knows*. They launched their own record label, Apple, before disbanding in 1970, and redefined rock and roll through albums like *Sergeant Pepper's Lonely Hearts Club Band* and *Abbey Road*. Name this group whose members included John Lennon and Paul McCartney.

Answer: The **Beatles**

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Tossup Thirty Two

Topic: Science

Morpholino antisense oligos are an analogue of these biopolymers, the two most famous types of which differ by the presence of a hydroxyl group. These entities are connected to one another by phosphodiester bonds and consist of a phosphate group, pentose sugar, and a nitrogenous base such as uracil. Name this type of molecule, the most famous of which are RNA and DNA.

ANSWER: **Nucleic Acid**

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Tossup Thirty Three

Topic: Literature

One of this author's novels features an embittered civil servant who stalks a police officer in order to bump into him, *Notes from the Underground*, which along with *The Idiot* was influenced by a Siberian exile in the 1860s. Another of his works features an murderous ex-student with delusions of being like Napoleon, *Crime & Punishment*. Name this Russian author of *The Brothers Karamazov*.

Answer: Fyodor **Dostoevsky**

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Tossup Thirty Four

Topic: Current Events

This nation's political philosophy of *juche* can be translated “self-reliance,” though ironically, one of its most important issues involves imported fuel oil. Singapore recently refused to let dock a ship from this country bound for Myanmar, while much of this nation's diplomacy has been in six-party talks to defuse its nuclear ambitions. Name this nation led by Kim Yong-Il with capital at Pyongyang.

ANSWER: **North Korea** (do not prompt on Korea)

<Hang>

Tossup Thirty Five

Topic: Literature

The main character of this novel is charged with treason on his wedding day and is educated in prison by the Abbé Faria. After escaping, he finds treasure and hunts down Mondego, Danglars, and Villefort in revenge for falsely indicting him. Name this novel about Edmond Dantes by Alexandre Dumas.

Answer: **The Count of Monte Cristo**

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Tossup Thirty Six

Topic: Mathematical Theory

The Cauchy-Lorentz distribution deals with variables following this curve, while the Central Limit Theorem states that the sum of many random variables follows this distribution. It is only valid when the mode is roughly equal to the mean, and it is defined by a mean and standard deviation. Name this distribution often used to measure intelligence, the formal name for the “Bell Curve.”

ANSWER: the **Normal** Distribution (accept **Gaussian** Distribution, **Bell Curve** before mentioned, and variants involving “**Normal**” or “**Gaussian**”)

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Tossup Thirty Seven

Topic: Science

This type of experiment is related to the Henderson-Hasselbalch equation. The curve describing one involving a diprotic acid has two buffering regions and two equivalence points. Equipment used during this includes a stopcock and a buret. Name the process in the neutralization of an acid or base of unknown concentration with an acid or base of known concentration and volume is used determine the unknown concentration.

Answer: (Acid-Base) **Titration**

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Tossup Thirty Eight

Topic: Current Events

This leader began his public service career as a Senate liaison and later led the Senate's Gang of 14. He was the subject of a rumor that he had fathered an African American child out of wedlock in 2000, and in 2002, a campaign finance reform bill bearing his name and that of Russ Feingold passed into law. Name this Arizona Senator, the Republican nominee for the 2008 Presidential Election.

ANSWER: John **McCain**

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Tossup Thirty Nine

Topic: Literature

This author's first three novels, *Cup of Gold*, *The Pastures of Heaven*, and *To a God Unknown*, were unsuccessful. He first experienced success with a book about Mexican Americans and later won the Nobel Prize for Literature in 1962. Name this author of *Tortilla Flat* who also created the characters of George and Lennie in *Of Mice and Men* and the Joad family in *The Grapes of Wrath*.

Answer: John Ernst **Steinbeck**

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Tossup Forty

Topic: History

In 1987, Philip Elman claimed he and Felix Frankfurter were largely responsible for this case's result. The Warren Supreme Court unanimously found that a violation of the Fourteenth Amendment was taking place, an opinion later interpreted to affect all public facilities, overturning the 'separate but equal' doctrine of *Plessy v. Ferguson*. Name this 1954 case that banned segregation in schools.

Answer: **Brown v. Board** of Education of Topeka, Kansas (accept "**Brown v. Board I**" or "**Brown v. Board II**")

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