## Tossup 1: Literature - Literature


#### Abstract

Irene Adler is the only woman to have beaten this character, according to his friend in the story "A Case of Identity." This man's brother, Mycroft, appears in three short stories, including the one in which this character falls to his apparent death while wrestling Professor Moriarty. Name this fictional detective created by Sir Arthur Conan Doyle.


Sherlock Holmes (accept Sherlock)

## Bonus 1: Social Studies - U.S. History

| Identify these people related to the John F. Kennedy assassination. |  |  |
| :--- | :--- | :--- |
| A | This man shot Kennedy from the Texas School Book Depository. | Lee Harvey Oswald |
| B | Two days after Kennedy was killed, this man killed the answer to <br> part A on live television. | Jack Leon Ruby (accept Jacob <br> Rubenstein) |
| C | This Vice President was sworn in on Air Force One as the 36th <br> President of the United States. | Lyndon Baines Johnson <br> (prompt on Johnson or LBJ) |
| D | This Governor of Texas also received critical wounds. | John Bowden Connally Jr. |

## Tossup 2: Social Studies - World History

This man was succeeded in 1750 B.C.E. by son Samsuiluna. Continuing the tradition of his ancestors, he sought to control the Euphrates by defeating other rulers, such as Rim-Sin of Larsa. The city of Isin was located between Larsa and this man's kingdom, Babylon. Name this king whose punishments consisted of giving "an eye for an eye," which was outlined in his famous code.

Hammurabi (accept
Hamтиrapi)

## Bonus 2: Miscellaneous - Entertainment

Identify these films, all of which ended with long periods without any dialogue.

The Oscar winner for Best Picture of 1951, it ended with a long
A dance number set to the music from which the movie's title was taken.

B

C
This 1969 classic ends with a twenty minute piece showing an astronaut aging, then turning into a child seen orbiting the Earth.

The last five minutes of this 1993 film sees a long line of people leaving rocks on a grave marker in an Israeli cemetery.

The last several minutes of this 1977 film does feature conversation using music and sign language, but is mostly about Richard Dreyfus boarding a ship with one of John Williams' great overtures.

An American in Paris

2001: A Space Odyssey

Schindler's List

Close Encounters of the Third Kind

## Tossup 3: Science - Biology

According to the endosymbiotic theory, they may have originated as separate bacteria, because they have their own DNA. Enzymes required for respiration can be found embedded in the membrane of its matrix, the cristae. Name this organelle that performs cellular

Mitochondrion (accept
mitochondria) respiration, often called the powerhouse of the cell.

## Bonus 3: Literature - Mythology

| Identify the following about Mythological beasts and monsters. |  |  |
| :--- | :--- | :--- |
| A | Polyphemus was the most famous member of this type of <br> creature, which had only one eye. | Cyclops |
| B | This many headed monster was eventually defeated by Hercules <br> when he placed its final remaining head under a large rock. | Lernaean Hydra |
| C | This creature was the brother of Chrysaor and with him, sprung <br> from the neck of Medusa after she was killed. | Pegasus |
|  | These pets of Ares with brass claws and sharp metallic feathers <br> they were able to launch at their victims, were eradicated by <br> Hercules in his sixth labor. | Stymphalian birds (prompt on <br> incomplete answer) |

## Tossup 4: Math — Algebra (Computational: 30 Seconds)

| How many distinct real solutions does the equation $5 \times$ squared plus |  |
| :--- | :--- |
| 5 equals $10 \times$ have? | $\mathbf{1}$ |

## Bonus 4: Science - Earth Science

Given a mineral, name its hardness on the Mohs scale of hardness.
For example, if I said gypsum, you would say 2.

| A | Diamond | $\underline{10}$ |
| :--- | :--- | :--- |
| B | Apatite | $\underline{5}$ |
| C | Feldspar | $\underline{6}$ |
| $\mathbf{D}$ | Fluorite | $\underline{4}$ |

## Tossup 5: Fine Arts - Visual Art

Work on it began in 1927, and it is named after a prominent New York lawyer. Another person was supposed to be added to it, but funding was unable to come through. The sculptor had worked on a similar structure in Georgia entitled Stone Mountain, but he is best known for this work, which is set among the Black Hills. Identify this South Dakota mountain sculpted by Gutzon Borglum that features the faces of four U.S. Presidents.

Mt. Rushmore

## Bonus 5: Math - Geometry

| Give the following quantities related to polyhedra. |  |  |  |
| :--- | :--- | :--- | :---: |
| A | An icosahedron (eye-KAH-suh-HE-drun) has this many faces. | $\underline{\mathbf{2 0}}$ |  |
| B | A cube has this many vertices. | $\underline{\mathbf{8}}$ |  |
| C | The faces of a dodecahedron are this regular polygon. | $\underline{\text { Pentagon }}$ |  |
| D | A tetrahedron has this many edges. | $\underline{6}$ |  |

## Tossup 6: Miscellaneous - Entertainment

| It was written by Max Freedman and James Myers in 1952, and was |  |
| :--- | :--- | :--- |
| first recorded on April 12, 1954 at the Pythian Temples Studio in New |  |
| York as the "B" side for Thirteen Women. Though it did chart, it was | We're Gonna Rock Around the |
| not commercially successful until actor Glenn Ford suggested it as | Clock Tonight |
| the music over the opening credits of the film Blackboard Jungle. |  |
| Identify this song recorded by Bill Haley and His Comets, the first |  |
| rock-and-roll song to hit number one on the American record charts. |  |

## Bonus 6: Social Studies - Geography

| Identify these Scandinavian countries. |  |  |
| :---: | :---: | :---: |
| A | This country is connected to the mainland by the Jutland peninsula. | Kingdom of Denmark |
| B | This country, famous for its fjords, has its capital at Oslo. | Kingdom of Norway |
| C | The Nobel Prize winners are announced in Stockholm, this country's capital. | Kingdom of Sweden |
| D | This country's largest lake is Saimaa, and it is the farthest east of all the Scandinavian countries. | Republic of Finland |

## Tossup 7: Math — Other (Computational: 30 Seconds)

You have a standard deck of playing cards. Without replacement, what is the probability that you will draw a red ace followed by any

5/442 face card or ace?

## Bonus 7: Fine Arts - Visual Art

| Identify the art museum given a description. |  |  |
| :---: | :---: | :---: |
| A | This Paris museum has works such as the Mona Lisa and Liberty Leading the People. | The Louvre (LOOV) |
| B | Formerly an office building, this Milan gallery contains Primavera and Venus of Urbino, among others. | Uffizi Gallery (accept Galleria degli Uffizi) |
| C | St. Sebastian and Madonna With a Flower are among the works housed at this St. Petersburg museum. | State Hermitage Museum |
| D | The Soldier Drinks and Sacrifice can be found in this New York museum, which typically features more modern art. | Solomon R. Guggenheim Museum |

## Tossup 8: Social Studies - U.S. History

After serving as the third New York Attorney General, this man would become a United States Senator. Later in his life, he would be charged and acquitted of treason for attempts to create and lead an independent nation in what is now the American southwest. Name this first vice president not to become president, and the man who killed Alexander Hamilton in a gunfight.

## Bonus 8: Science - Astronomy

| Given a moon in our solar system, name the body it orbits. |  |  |
| :--- | :--- | :--- |
| A | lo | Jupiter |
| B | Triton | Neptune |
| C | Phobos | Mars |
| D | Dysnomia | Eris |

## Tossup 9: Literature - Literature

As a child, she and her siblings created imaginary lands such as Angria, Gondal, and Gaaldine which later appeared in the stories they wrote. Her only novel was published as two volumes of a three volume set, with the third being her sister's Agnes Grey. Publishing this work under the pseudonym of Ellis Bell, identify this British novelist best known for Wuthering Heights.

## Bonus 9: Math - General

| Complete the following identities in math. |  |  |  |
| :--- | :--- | :--- | :---: |
| A | The number of vertices in a polyhedron, minus the number of <br> edges, plus the number of faces, equals this. | $\underline{\mathbf{2}}$ |  |
| B | Two times the sine of $x$ times the cosine of $x$ equals this. | $\underline{\text { sine of } 2 \mathbf{x}}$ |  |
| C | E to the i pi equals this. | $\underline{-1}$ |  |
| D | e to the natural log of $x$ equals this. | $\underline{\mathbf{x}}$ |  |

## Tossup 10: Science - Chemistry


#### Abstract

Equal to Faraday's constant divided by the charge of an electron, or the ideal gas constant divided by Boltzmann's constant, it was never measured by its namesake. That namesake, an Italian chemist, realized that the volume of an ideal gas is proportional to the number of particles. Name this physical constant, the number of particles in a mole, equal to 6.02 times ten to the 23 rd.


Avogadro('s) number (or
Avogadro('s) constant)

## Bonus 10: Literature - Literature

Identify the Shakespeare plays in which the following locations play prominent roles.

A Dunsinane Castle, the castle of the title ruler, which sits atop a hill next to Birnam Wood.

Macbeth

Elsinore Castle, atop which two watchmen see the ghost of the
B recently-deceased king who was murdered, as it turns out, by his brother.

Venice, from which the title character hails, as well as Cyprus, the
C
island to which he travels as a military commander to fight against Turkish forces.

Dover, where the title character and the Earl of Gloucester (GLOW-stur) end up at the end of the play. Neither is doing very well, as Gloucester is blind, and the title man has gone mad after two of his three heirs have mistreated him.

## END OF FIRST HALF - 2 minute timeout

## Tossup 11: Miscellaneous - Interdisciplinary

Michael Collins and Jim Lovell were co-credited with developing the symbol for this mission. Their original design was rejected because the talons were empty, and appeared warlike. When the olive branches were moved from the beak to the talons, it was accepted, even though later it was discovered that the unseen sun was in the

Apollo Eleven wrong place. Identify the mission which used this design on its mission patch; of which Lovell was not a part, Collins stayed behind, and Aldrin and Armstrong walked on the moon.

## Bonus 11: Literature - Literature

| Identify the following literary classics that have become movies that <br> won the Best Picture Oscar. |  |  |
| :--- | :--- | :--- |
| A | This Tolkien work features the epic Battle of the Pelennor Fields. | Lord of the Rings: The Return <br> of the King |
|  | This Judith Guest novel tells the story of the Jarrett family and <br> their life after the death of Buck, and the attempted suicide of <br> Con. | Ordinary People |
|  | This work tells the story of Paul Bäumer and the tragedy that <br> befalls him while fighting in World War I. | All Quiet on the Western Front |
|  | This novel relays the story of patients in a mental institution, and <br> includes the characters R.P. McMurphy and Nurse Ratched. | $\underline{\text { One Flew Over the Cuckoo's }}$ |

## Tossup 12: Social Studies — World History

This German thinker's work was relatively obscure during his lifetime, but shortly after his death they became very influential, particularly on workers' movements. Vladimir Lenin and Mao Zedong proclaimed themselves heir to his teaching, but they practiced a much more

Karl Marx extreme version than prescribed by this author of Das Kapital and coauthor of The Communist Manifesto.

## Bonus 12: Math — Other

Find the probability that you draw the following cards from a standard deck of 52 playing cards, without putting the first card back before drawing the second card.

| A | A red card, followed by a red card. | $\underline{25 / 102}$ |
| :--- | :--- | :--- |
| B | A red card, then a black card. | $\underline{13 / 51}$ |
| C | An ace, then another ace. | $\underline{1 / 221}$ |
| D | The five of diamonds, then a red card. | $\underline{25 / 2652}$ |

## Tossup 13: Math — General (Computational: 30 Seconds)

| Systems of linear equations can have different types of solutions <br> depending on how many values can satisfy the system. Give the <br> geometric shape of the solution set of the following equations: <br> $x+2 y+3 z=1,3 x+6 y+9 z=3, ~ a n d ~$ <br> $x+4 y+6 z=2$. | Line (as opposed to space, <br> plane, or point) |
| :--- | :--- |

## Bonus 13: Science - Physics

Given a physical quantity, name the single named SI unit which measures it. For example, if I said force, you'd say Newton.

| A | Frequency | Hertz |
| :---: | :---: | :---: |
| B | Electric resistance | Ohm |
| C | Temperature | Kelvin (do not accept Celsius or centigrade or degrees Kelvin) |
| D | Luminous intensity | Candela |

## Tossup 14: Literature - Literature

A reporter named Nellie Bly once accomplished this feat, but she managed to do it faster, as did Monty Python alumnus Michael Palin. During the course of this achievement, the main character jumps bail, rides an elephant, and convinces a ship's crew to mutiny, all while never actually flying in a hot air balloon. He also rescues a young woman named Aouda with the help of his manservant Passepartout. Taking place in London, Suez, Bombay, Calcutta, Hong Kong, Yokohama, San Francisco, New York and London again, identify this work about Phileas Fogg written by Jules Verne.

Around the World in Eighty
Days (also accept Le tour du
monde en quatre-vingts jours)

## Bonus 14: Miscellaneous - Entertainment

Many artists are too lazy to create new music, so they just either sample from or cover older songs. Identify the following artists who have done just that.

| A | He used the chorus of Aerosmith's "Dream On" for his single <br> "Sing for the Moment". | Eminem (accept Marshall <br> Mathers) |
| :--- | :--- | :--- |
| B | In 2000, this pop queen did a cover of Don McLean's "American <br> Pie". | Madonna Louise Veronica <br> Ciccone Ritchie |
|  | The opening to 'Pretty Fly (for a White Guy)' by The Offspring is a <br> sample of the opening to their song 'Rock of Ages". | Def Leppard |
|  | Vanilla Ice's fame came to a halt after accusations that he <br> sampled from this song by David Bowie and Queen for his hit 'Ice <br> Ice Baby', claiming that with the little ching, it wasn't the same. | $\underline{\text { Under Pressure }}$ |

## Tossup 15: Science - Physics

This man's contributions to math include the generalized binomial theorem and a namesake method for approximating the roots of equations. Placing a spherical lens on a flat surface generates his namesake rings, a fact he discovered during his studies of optics. More famous for the law of universal gravitation and his three laws of motion, name this English scientist who invented calculus.

Sir Isaac Newton

## Bonus 15: Social Studies - World History

| Identify these facts related to the colonization of Africa. |  |  |
| :--- | :--- | :--- |
| A | This leader of Belgium drew criticism for his handling of the <br> Congo Free State. | Leopold II (prompt on Leopold) |
| B | This 1885 meeting was called to discuss the colonization of <br> Africa. | Congress of Berlin (accept <br> Berlin Conference) |
|  | This country, whose capital is Monrovia, was set up by America to <br> be used as a "Free Slave State." | Liberia |
|  | German East Africa was all that stood in the way of this country's <br> plan to have their colonies stretch from the northern tip to the <br> southern tip of the continent. | Great Britain |

## Tossup 16: Fine Arts - Visual Art

This frigate was the lead ship taking the new French governor to Senegal. When it ran aground, the ministers were put in the lifeboats, and the crew towed behind on flotsam. When the rowing became too much, the crew was cut loose, leaving the crew to kill each other and resort to cannibalism before rescue. This ship would not be as wellknown today if not for an 1818 painting depicting the survivors. Name this ship with a mythologically inspired name, whose desperate survivors are portrayed in one of Théodore Géricault's most famous works.

The Raft of the Medusa (accept Le Méduse)

## Bonus 16: Math - Calculus

| Find the following limits. |  |  |  |
| :--- | :--- | :--- | :---: |
| A | The limit as $x$ approaches infinity, of the quantity $2 x$ squared plus <br> $3 x$, over the quantity $x$ squared minus three. | $\underline{\mathbf{2}}$ |  |
|  | The limit as $x$ approaches zero, of sine of $x$, over $x$. | $\underline{\mathbf{1}}$ |  |
|  | The limit as $x$ approaches one, of the quantity $x$ minus one, over <br> the quantity $x$ squared minus one. | $\underline{\mathbf{1} / \mathbf{2}}$ |  |
| D | The limit as $x$ approaches e, of the natural log of $x$. | $\underline{\mathbf{1}}$ |  |

## Tossup 17: Math — Algebra (Computational: 30 Seconds)

```
Find the y-intercept of the line containing the points (11,25) and \((24,51)\).
```


## Bonus 17: Literature - Literature

| Answer the following about works that have something in common. |  |  |
| :--- | :--- | :--- |
| A | Written by Stephen Crane and narrated by Henry Fleming, this <br> work takes place during the American Civil War. | The Red Badge of Courage |
| B | This short story by O. Henry involves two fugitives kidnapping a <br> boy in order to turn a quick buck. | The Ransom of Red Chief |
| C | In this Poe short story, Prince Prospero holds a ball for nobles <br> hoping to escape from a terrible plague. | The Masque of the Red Death |
|  | This Steinbeck work consists of tales from the author's childhood <br> recounted by ten-year-old Jody Tiflin. | The Red Pony |

## Tossup 18: Social Studies - Other

The name's the same. The first Black mayor of Chicago. The highest point in New Hampshire. A well respected university in St. Louis. The author of "Up From Slavery." The state whose capital is Olympia. Give the name all these share, the most famous of which is that of the first president of the United States.

Washington

## Bonus 18: Science - Chemistry

| Identify these regions of the periodic table. |  |  |
| :---: | :---: | :---: |
| A | Helium, neon, and argon are three elements of this unreactive group at the far right of the periodic table. | Noble gases |
| B | One group away from the far right of the periodic table is this group of non-metals like chlorine. | Halogens |
| C | Boron, silicon, and germanium are considered this type of element, having properties of both metals and non-metals. | Metalloids |
| D | While vertical columns of the periodic table are called "groups," horizontal rows are called these. | Periods |

## Tossup 19: Science - Earth Science

The word for these in Spanish is "maremoto," but they are typically referred to in another language. Occasionally triggered by landslides, they are more often attributed to underwater fault ruptures, and their name in Japanese means "harbor wave." Name this type of devastating natural disaster which killed over 300,000 people in Indonesia in December 2004.

Tsunami (prompt on tidal wave)

## Bonus 19: Fine Arts - Music

Answer the following about opera.
A The first opera was arguably L'Orfeo by this Italian composer of Beethoven is famous for having composed only one opera, this work which takes place in a Spanish prison. Many of Mozart's operas, including Cosi fan Tutte and The Marriage of Figaro, are in this style, a lighter version of opera more accessible to the common man.

Richard Wagner (VOG-ner) is famous for building an opera house
D and staging a yearly festival for his Ring Cycle in this German
Claudio Monteverdi city.

## Tossup 20: Literature - Mythology

Both a sea and an island southwest of Samos bear his name. Some say that he drowned after falling overboard on a ship for which his father invented the first sails, while others maintain his death was more interesting. Either way, it was Heracles who eventually found him washed up and buried him on the island of Doliche, renaming it in honor of the boy. Identify this son of Daedelus, who, while escaping from the Labyrinth, ended up flying too close to the sun, causing his wax wings to melt.

Icarus

## Bonus 20: Social Studies - Current Events

| Identify these Democratic candidates for President. |  | A This former Secretary of Energy is currently the Governor of New <br> Mexico. <br>  William Blaine "Bill" <br> Richardson III <br> Chis candidate, the wife of a former president, is the only female  <br> in the running.  |
| :--- | :--- | :--- |
| This former North Carolina senator was on the ticket in 2004 as <br> the Vice Presidential candidate. | Johnny Reid "John" Edwards |  |
| D | This candidate has been representing Delaware in the Senate for <br> over 34 years. | Joseph Robinette Biden, Jr. |

END OF MATCH

## Tossup A: Math — Geometry (Computational: 30 Seconds)

| Find the area of a rhombus with diagonals of length 13 and 20. | $\underline{\mathbf{1 3 0}}$ |
| :--- | :--- |

## Bonus A: Social Studies - U.S. History

| Identify these facts related to United States and American Indian <br> relations. |  |  |
| :--- | :--- | :--- |
| A | This 1876 battle at which Custer made his famous "Last Stand" is <br> one of the government's better-known debacles. | Battle of Little Bighorn |
|  | This December 1890 massacre in South Dakota left many <br> soldiers and Sioux dead. | Wounded Knee Massacre <br> (accept The Battle at Wounded <br> Knee Creek) |
|  | This forced march of Cherokee Indians in 1838 gained its name <br> because many Cherokee died during the journey. | Trail of Tears |

## Tossup B: Science - Astronomy

Some of its Kirkwood gaps are located at 2.06 and 3.27 astronomical units away from the sun, and the first two bodies discovered in this region were Pallas and Ceres. First visited by Pioneer 10 in 1972, its total mass is only four percent of that of the moon. Name this region of minor planets in the solar system, located between Mars and Jupiter.

Asteroid belt (accept main belt or equivalents)

## Bonus B: Literature - Literature

Answer the following questions about science fiction author Robert A. Heinlein (HINE-line):

The superhuman Michael Valentine Smith, raised by Martians,

A creation of the Church of All Worlds in Heinlein's most famous work.

This 1966 work deals with a revolt by the Lunar Colonists, who are aided immensely by the self-aware computer Mike.

This economics term comes from the previously mentioned work. It states that no good is "free" because there are always opportunity costs.

The novels in Parts $A$ and $B$, as well as two of Heinlein's other novels, won this award for the best science fiction works of the year, given by the World Science Fiction Convention.

Stranger in a Strange Land

The Moon is a Harsh Mistress

There $\underline{\text { Ain't No Such Thing as }}$ a Free Lunch (accept There Isn't No Such Thing as a $\underline{\text { Free }}$ Lunch)

Hugo Award

## Tossup C: Fine Arts - Music

> Its forerunner was the ancient Roman hydraulis, invented around the third century BC, where it usually accompanied processions or games in the amphitheater. Evolving into their modern form by the fourteenth century, they can have between two to seven manuals. They have one set of stops per manual, and one for the pedals. Identify this instrument, a favorite of J. S. Bach, which could be run by the release of compressed air or, today, can be electric.

Pipe Organs (accept Electric organ)

## Bonus C: Science - Biology

| Name these cellular organelles. |  |  |
| :--- | :--- | :--- |
| A | This organelle performs photosynthesis within plant cells. | Chloroplast |
| $\mathbf{B}$ | This organelle is a sac that contains enzymes to break down <br> many kinds of molecules. | Lysosome |
|  | This organelle is a series of sacs which help process and <br> package proteins. | Golgi apparatus (accept Golgi <br> body or complex) |
| D | This organelle found in sperm contains enzymes that help sperm <br> cells enter eggs. | Acrosome |

## Tossup D: Literature - Literature

> In the Koran, this man's fruitless preaching incurred Allah's wrath on the world. In the Torah, he was born with white hair and a white body. In the Bible, the events of his life are often equated with baptism. He was the grandson of Methuselah and father to Shem, Ham, and Japheth. Name this man, who when God flooded the earth, built an ark to protect his family.

Noah

## Bonus D: Math - Algebra

| Find the prime factorizations of the following numbers, using exponents for repeated factors, and ordering factors from smallest to largest. |  |  |
| :---: | :---: | :---: |
| A | 143 | 11 times 13 |
| B | 210 | 2 times 3 times 5 times 7 |
| C | 2250 | 2 times 3 squared times 5 cubed |
| D | 3381 | 3 times 7 squared times 23 |

## Tossup E: Social Studies - Geography

Surrounded by the Kern River and Owens Valley, it is located in the Sierra Nevada in Sequoia National Park. The end of the John Muir Trail, its summit was first reached in 1873. Name this California mountain that towers over 14,000 feet, making it the tallest in the continental United States.

Mt. Whitney

## Bonus E: Miscellaneous - Entertainment

Identify these musicals with rather long titles. No extra points for saying them all in one breath.

A This Andrew Lloyd Webber work is based on the last story in the book of Genesis.

Joseph And The Amazing Technicolor® Dreamcoat

Zero Mostel originated the role of Pseudolus (SOO-dle-us) in this comedy with music and lyrics by Stephen Sondheim.

A Funny Thing Happened On The Way To The Forum

The 25th Annual Putnam County Spelling Bee

This off-Broadway revue is based on the work of a Belgian-
D French composer, though the title is no longer true as of October 1978.

