# Round 7

## First Half

(Tossup 1)   **Fossil evidence for this structure includes Lystrosaurus remains found in Antarctica. A similar structure named Rodinia was discovered before this one, which was surrounded by Panthalassa. Alfred (\*)**  Wegener proposed the existence of this structure in support of the theory of continental drift. Laurasia and Gondwanaland were created from the breakup of, for ten points, what most recent supercontinent that existed approximately 335 million years ago?

ANSWER: **Pangaea** (or **Pangea**)

(Bonus 1)  The strength of this type of bond explains why water has a relatively high boiling point. For ten points each,

[Part A] Name these bonds between an atom like oxygen or nitrogen and the lightest element.

ANSWER: **hydrogen** bonds

[Part B] Hydrogen bonding with oxygen is particularly strong, and is weaker in compounds like this volcanic gas with a smell similar to rotten eggs. One mole of this gas has a mass of 34 grams: two grams of hydrogen and the rest from its central atom.

ANSWER: **hydrogen sulfide** (or **$H_2S$**)

[Part C] Hydrogen bonding occurs between a hydrogen and a nitrogen in this compound with chemical formula $NH_3$. It's commonly used in fertilizer.

ANSWER: **ammonia** (do not accept ammonium)


(Tossup 2)   **Ten days after this leader resigned, the political cartoon *Dropping the Pilot* showed him walking off a ship. This leader's troops were victorious at the Battle of Sedan, allowing him to seize Alsace-Lorraine in a conflict that he provoked by editing the (\*)**  Ems Dispatch. This ruler famously declared that "the great issues of the day" would be decided by "iron and blood." For ten points, name this Prussian chancellor who is credited with unifying Germany and is the namesake of, among other locales, the capital of North Dakota.

ANSWER: Otto von **Bismarck**

(Bonus 2)  The art of these people was well documented in Roman catacombs. For ten points each,

[Part A] Name this monotheistic faith that was persecuted by the Romans, leading to the martyrdom of saints like Peter.

ANSWER: **Christian**ity

[Part B] Peter was crucified by this notoriously anti-Christian emperor. He allegedly played a fiddle while Rome was engulfed in a great fire, an event that he blamed on Christians.

ANSWER: **Nero** Claudius Caesar Augustus Germanicus

[Part C] Christianity became tolerated in Rome after this emperor agreed to the Edict of Milan with Licinius.

ANSWER: **Constantine the Great** (or **Constantine I**)

(Tossup 3)  **In a painting by this man, a toddler with a bowl strapped to his waste offers a bird to the baby Jesus. This creator of *Madonna of the Goldfinch*, this man painted the fresco *Disputation of the Holy Sacrament* on the wall of the Stanza della Signatura [ston-zah deh-lah see-nyah-too-rah] in the (\*)**  Vatican, which also holds this man's painting of Plato pointing up as he walks beside Aristotle. For ten points, name this Italian Renaissance artist of *The School of Athens*.

ANSWER: **Raphael**lo Sanzio da Urbino)

(Bonus 3)  A set of 12 works of this type were collected in *The Contest Between Harmony and Invention* by Antonio Vivaldi, who featured the violin in them. For ten points each,

[Part A] Give this term for a musical composition in which an orchestra "accompanies" a solo performer.

ANSWER: **concerto**es (or **concerti**)

[Part B] Vivaldi's most famous violin concerti were this set of four works, individually named "Primavera," "L'estate," "L'autunno," and "L'inverno."

ANSWER: The **Four Seasons** (or Le **quattro stagioni**)

[Part C] Early concerti used a string or wind soloist, because early keyboard instruments like the harpsichord often couldn't compete on volume level with a full orchestra. Not always, though; this Baroque composer played the harpsichord solo himself in his fifth *Brandenburg* concerto.

ANSWER: Johann Sebastian **Bach**

(Tossup 4)  **Peter Jackson's 2005 film titled for this character was, at the time, the most expensive movie ever made. In a 1962 film, this character defeats Godzilla near Mt. Fuji before swimming home. This character resides on (\*)**  Skull Island, which also contains prehistoric monsters. This character is introduced as the "Eighth Wonder of the World" before grabbing Ann Dawson in a 1933 film. For ten points, name this movie monster who famously climbs to the top of the Empire State Building.

ANSWER: King **Kong**

(Bonus 4)  For ten points each, name the following characters in Pixar movies.

[Part A] This trash compacting robot becomes friends with the highly advanced EVE in a 2008 Pixar film.

ANSWER: **WALL-E**

[Part B] While drunk on tea and temporarily one-armed, this character insists that he is Mrs. Nesbitt. He's quickly slapped out of his delirium by his co-protagonist, Woody.

ANSWER: **Buzz** **Lightyear** (accept either or both)

[Part C] This mentor to Lightning McQueen was a former Piston Cup winner. He was voiced by Paul Newman; reflecting Newman's 2008 death, this character has passed away in *Cars 3*.

ANSWER: **Doc** **Hudson** (accept either or both; accept The **Hudson** Hornet)


(Tossup 5)  **One way to measure this quantity is the sum of the horizontal and vertical differences and is named for taxicabs. This quantity is measured along geodesics, like the great circles of a sphere. The Triangle Inequality shows that this quantity is (\*)** minimized when there are no detours. This quantity is measured as the square root of the sum of the squares of the changes in $x$ and $y$ according to a namesake formula. For ten points, name this measure of how far away two points are.

ANSWER: **distance**


(Bonus 5)  For ten points each, answer the following about coordinate systems.

[Part A] This is the traditional x-y coordinate system, developed by and named for a 17th century Frenchman.

ANSWER: **Cartesian** coordinate system (accept Rene **Descartes**)

[Part B] This other two-dimensional coordinate system replaces x and y with r, the distance from the central reference point, and theta, the angle of rotation from a reference direction.

ANSWER: **polar** coordinate system

[Part C] Adding a z-coordinate for height to the polar coordinate system gives this three-dimensional system, named for the simple 3D shape whose formula for volume is height times pi r squared.

ANSWER: **cylindrical** coordinate system (accept cylinder)


(Tossup 6)  **This work's protagonist rescues a poodle that turns out to be a demon, and is assisted by Wagner. In this play, the protagonist kills Valentin, the brother of his love interest, Gretchen, after using his blood to sign a deal with (\*)** Mephistopheles to get everything on Earth in exchange for eternal service in Hell. For ten points, name this drama by Johann Wolfgang von Goethe.

ANSWER: **Faust** (do not accept Doctor Faustus)

(Bonus 6)   These creatures can transform into dogs and bats, and are destroyed by Van Helsing with garlic, wooden stakes, and crucifixes. For ten points each,

[Part A] Name these legendary creatures that drink blood in the novel *Dracula*.

ANSWER: **vampire**s

[Part B] *Dracula* was written by this author.

ANSWER: Abraham "Bram" **Stoker**

[Part C] In *Dracula*, this fiancée of Jonathan Harker sees her friend Lucy Westenra succumb to Dracula's curse, and then is bitten herself, becoming more and more vampire-like until Dracula is finally defeated.

ANSWER: Wilhelmina "**Mina**" Murray (accept Wilhelmina "**Mina**" Harker)


(Tossup 7)   **This leader was misled by two Shashu spies prior to his greatest victory at the Orontes River. A temple complex built during this man's rule was relocated by the construction of the Aswan Dam. This commissioner of the (\*)** Abu Simbel complex signed the world's first peace treaty with Hattusili III after fighting the world's largest chariot battle against the Hittites. For ten points, name this Egyptian pharaoh who married Nefertari, won the Battle of Kadesh, and is known as "the Great."

ANSWER: **Ramesses II** (or **Ramesses the Great**; accept **Ramesses** alone after "the Great" is read; accept **Ozymandias**)


(Bonus 7)   This man defeated Rufus King in a landslide election in 1816 to become President, then won re-election unopposed. For ten points each,

[Part A] Name this US President. A doctrine named after this President warned imperial powers not to meddle in the Western Hemisphere.

ANSWER: James **Monroe** (accept **Monroe** Doctrine)

[Part B] Monroe's terms are often described as this era. This term originated because of the perceived decrease in partisanship and political bickering.

ANSWER: Era of **Good Feelings**

[Part C] Monroe's first Presidential election victory came a year after this political party held the Hartford Convention, where they discussed the War of 1812 and New England's possible secession from the Union. Before their demands could be presented in Washington, the US won the war and this party fell apart.

ANSWER: **Federalist** Party

# Sixty Second Rounds

The categories are . . .

1. Harper Lee

2. The German Capital City

3. Cell Organelles

4. Depictions of Jesus' Final Meal

HARPER LEE

In the works of Harper Lee, who or what is...

(1) her first novel, the prequel to *Go Set a Watchman*?

ANSWER: **To Kill a Mockingbird**

(2) the protagonist of both of Lee's novels, a girl from Maycomb, Alabama?

ANSWER: **Jean Louise** "**Scout**" Finch (accept either underlined portion; prompt on Finch)

(3) the protagonist's father, a lawyer who defends Tom Robinson in court?

ANSWER: **Atticus** Finch (prompt on "Finch")

(4) the man who saves the protagonist and her brother from Bob Ewell?

ANSWER: **Arthur** "**Boo**" Radley (accept either underline name; prompt on Radley)

(5) Bob Ewell's daughter, who falsely accuses Tom Robinson of rape?

ANSWER: **Mayella**

(6) the protagonist's family's maid, who treats the protagonist coldly in *Go Set a Watchman*?

ANSWER: **Calpurnia**

The German Capital City

Name the...

(1)  Capital of Germany.

ANSWER: **Berlin**

(2)  Structure that included Checkpoint Charlie and divided the city from 1961 to 1989.

ANSWER: Berlin **Wall**

(3)  US President who demanded that the Soviets "Tear down" that structure in a 1987 speech.

ANSWER: Ronald **Reagan**

(4)  US politician who awkwardly said "Ich bin ein" [a citizen of the city] on his 1963 visit.

ANSWER: **J**ohn F. **Kennedy** (accept **JFK**; prompt on Kennedy)

(5)  Allied method of re-supplying the city during a 1948-49 Soviet blockade.

ANSWER: Berlin **Airlift**

(6)  Monumental gate topped by a four-horse chariot, found near the Reichstag.

ANSWER: **Brandenburg** Gate (or **Brandenburger** Tor)

Cell Organelles

Which organelle...

(1) Is the site of ATP production and known as the powerhouse of the cell?

ANSWER: **mitochondria** (or **mitochondrion**)

(2) Is the central home of the cell's genetic material?

ANSWER: **nucleus** or **nuclei**

(3) Is the site of photosynthesis in planets?

ANSWER: **chloroplast**s

(4) Is the site of protein synthesis?

ANSWER: **ribosome**s

(5) Is a transport organelle whose rough form is studded with the previously answered organelle?

ANSWER: (smooth and/or rough) **endoplasmic recticulum** (or **ER**)

(6) Is the site of catalase, which reduces its namesake molecule?

ANSWER: **peroxisome**s

Depictions of Jesus' Final Meal

In paintings of Jesus' final meal with his disciples, who or what is the...

(1)  Title commonly given to depictions of this meal?

ANSWER: The **Last Supper** (accept L'**ultima cena**)

(2)  Disciple who is usually depicted at the meal clutching either a sack of coins or thirty pieces of silver, the price for betraying Jesus?

ANSWER: **Judas** Iscariot

(3)  Italian Renaissance painter who depicted the meal on the wall of the Santa Maria delle Grazie [son-tah mah-ree-ah deh-lah grah-tsee-ay]?

ANSWER: **Leonardo** **da Vinci** (accept either underlined portion)

(4)  Italian city where the Santa Maria delle Grazie painting is, also home to the La Scala theater.

ANSWER: **Milan**o

(5)  Spanish Surrealist who painted a *Sacrament of* the meal in front of a mystical floating body?

ANSWER: Salvador **Dalí**

(6)  Italian artist who painted a busy version of the meal in a very dark room illuminated mostly by Jesus' halo?

ANSWER: Jacopo **Tintoretto** (accept Jacopo **Comin** or Jacopo **Robusti**)

# Second Half

(Tossup 8) **Two representatives of this family, Samson and Gregory, confront Abraham and Balthasar at the beginning of a play about this family. A member of this family throws a party to celebrate his daughter's engagement to (\*)** Paris. Another member of this family is killed by his cousin's husband after he murders Mercutio, and is named Tybalt. For ten points, name this noble family of Verona, the family of Juliet and enemies of the Montagues.

ANSWER: **Capulet**

(Bonus 8) Anne Elliot eventually eventually marries the naval officer Frederick Wentworth at the end of this author's novel *Persuasion*. For ten points each,

[Part A] Name this English novelist who also wrote about the Dashwood sisters in *Sense and Sensibility*.

ANSWER: Jane **Austen**

[Part B] In this Jane Austen novel, Elizabeth Bennet eventually falls in love with the initially awkward Mr Darcy.

ANSWER: **Pride and Prejudice**

[Part C] Jane Austen also wrote this novel, whose title character enjoys matchmaking. Though initially attracted to Frank Churchill, she eventually marries George Knightley.

ANSWER: **Emma**

(Tossup 9) **Milton Mazer's book *People and Predicaments* analyzes the heightened occurrence of mental illness on this island. William Labov focused a sociolinguistics thesis on English dialects on this island, which is south of the Elizabeth Islands. (\*)** Chappaquiddick Island is west of this island's Edgartown. Bill Clinton and Barack Obama have vacationed on this island, which is south of Nantucket Sound. For ten points, name this island off the coast of Massachusetts.

ANSWER: **Martha's Vineyard**

(Bonus 9) This country, once ruled by the Merina Kingdom, has its capital at Antananarivo. For ten points each,

[Part A] Name this island nation, bordered to the east by the Indian Ocean, whose relative isolation has caused it to have an extremely high level of biodiversity.

ANSWER: **Madagascar**

[Part B] This word describes species that are found only in a specific geographic environment; for example, lemurs have this relationship to Madagascar, because it's their only habitat.

ANSWER: they are **endemic** to Madagascar (accept word forms)

[Part C] Madagascar has two official languages; name either. One is the language of their European colonizers; the other is a native language that also names the major ethnic group of Madagascar.

ANSWER: **French** and/or **Malagasy**

(Tossup 10) **The Namokar Mantra is a central prayer in this religion, which divides time into periods of spiritual ascension decline. Some practitioners of this religion take great care to avoid (\*)** harm to living creatures as part of the doctrine of Ahimsa. For ten points, name this Indian religion that practices extreme nonviolence.

ANSWER: **Jain**ism

(Bonus 10) These works laid out what happened to a corpse as it entered a tomb and eventually the underworld. For ten points each,

[Part A] Give the common name of these related ancient texts which describe what ancient Egyptians believe after the end of one's life.

ANSWER: The **Book of the Dead** (accept **Book of Coming Forth by Day**; accept **Book of Emerging Forth into the Light**)

[Part B] One of the Books of the Dead shows this jackal-headed god weighing a heart against the feather of Ma'at. This god is chiefly associated with mummification and was replaced in his role as Lord of the Underworld by the time of the Middle Kingdom.

ANSWER: **Anubis** (accept **Anpu**)

[Part C] During the weighing of the heart, this mediator of the gods recorded the results. This god is credited with keeping a balance between good and evil, as well as being the author of all the world's literature and science.

ANSWER: **Thoth** (accept **Djehuti**)

(Tossup 11) **This man, along with his former student Leo Szilard, created a refrigerator with no moving parts. With Satyendra Bose, this man names a phase of matter in which particles are in their lowest quantum state. He won the Nobel Prize in Physics in (\*)** 1921 for his paper on the photoelectric effect and developed a theory that described the curvature of space-time. For ten points, name this formulator of relativity, a German physicist who developed the equation E equals m c squared.

ANSWER: Albert **Einstein**

(Bonus 11)  The "blood" that comes out of a cooked steak isn't actually blood; it's a mixture of water and this protein. For ten points each,

[Part A] Name this protein that binds iron and oxygen. It is only released into the blood after certain injuries, unlike the related hemoglobin.

ANSWER: **myoglobin**

[Part B] Myoglobin is normally found in this type of tissue. The motion of actin and myosin filaments causes this tissue to contract, moving your limbs.

ANSWER: **muscle** tissue

[Part C] Myoglobin usually isn't found in smooth muscle; instead, it's found in the other two major types of muscle. Name *either*: one is the type that moves bones, while the other is specifically found in the heart.

ANSWER: **skeletal** muscle and/or **cardiac** muscle


(Tossup 12)  **This author set *The Monster* in the fictional town of Whilomville, and wrote a novel in which Pete abandons the title woman, *Maggie: A Girl of the Streets*. In another novel by this author, Jim (\*)**  Conklin dies while serving in a New York regiment, and Henry Fleming pretends to be wounded during the Civil War. For ten points, name this American author of *The Red Badge of Courage.*

ANSWER: Stephen **Crane**


(Bonus 12)  This one-eyed character is allied with Mombi and rules over the land of the Winkies. For ten points each,

[Part A] Name this character, who is obsessed with retrieving the Silver Shoes that formerly belonged to the ruler of Munchkin Country.

ANSWER: The **Wicked Witch of the West** (prompt on Wicked Witch)

[Part B] The Wicked Witch of the West uses a richly-decorated, magical Golden Cap to control a group of these unusual animals. The Witch uses the cap to make these animals force the Wizard of Oz out of her lands and capture the protagonist of *The Wonderful Wizard of Oz.*

ANSWER: **winged monkey**s (accept **flying monkey**s; prompt on monkeys)

[Part C] The winged monkeys capture the Cowardly Lion and this girl for the Witch. This young girl from Kansas is kept hostage until she accidentally kills the Witch with a bucket of water.

ANSWER: **Dorothy Gale** (accept either underlined name)


(Tossup 13)  **Byron de la Beckwith's speech at a meeting for this group re-opened the case against him for murdering activist Medgar Evers in Mississippi in 1963. This group experienced a revival at Stone Mountain after it was glorified by (\*)**  D.W. Griffith in the film *Birth of a Nation.* During Reconstruction, Nathan Bedford Forrest helped found, for ten points, what white supremacist group whose members burn crosses while wearing white hoods?

ANSWER: **Ku Klux Klan** (or the **KKK**)

(Bonus 13)  The French Imperial Guard was routed for this first time during this battle, which marked the end of the Hundred Days. For ten points each,

[Part A] Name this 1815 battle in which the Duke of Wellington inflicted a final defeat upon Napoleon.

ANSWER: Battle of **Waterloo**

[Part B] The Battle of Waterloo turned in favor of the allied coalition with the arrival of this nation's troops, led by Gebhard von Blucher.

ANSWER: **Prussia** (do not accept Germany)

[Part C] The Battle of Waterloo took place in what is now this country. In World War II, the French built the Maginot Line along its border with Germany, so the Nazis invaded France by moving through the Netherlands, Luxembourg, and this country.

ANSWER: **Belgium**


(Tossup 14)  **A common genetic test to predict this disease looks for copies of the E4 allele of the APOE gene. A common theory of this disease involves the lack of acetylcholine. Plaques and tangles of amyloid beta and tau protein are found in the (\*)**  brains of patients suffering from this disease. For ten points, name this neurodegenerative disease which leads to progressively worse memory loss and dementia in the elderly.

ANSWER: **Alzheimer's** disease (prompt on dementia before mentioned)


(Bonus 14)  The first module of what would become this object was named Zarya and launched in 1998. For ten points each,

[Part A] Name this largest man-made satellite of the Earth. Currently, it's the only man-made object in space that is permanently inhabited by humans, and it succeeded similiar structures called Mir and Skylab.

ANSWER: **International Space Station** (or **ISS**)

[Part B] These American manned vehicles delivered supplies to the International Space Station until they were retired in 2011. These vehicles included the *Atlantis*, *Discovery*, *Endeavor*, and *Enterprise*.

ANSWER: **space shuttle**s

[Part C] The ISS was once commanded by Chris Hadfield, an astronaut from this country. This country has provided two Remote Manipulator "arms" to the space shuttle and ISS projects.

ANSWER: **Canada**

# Extra Question

Only read if you need a backup or tiebreaker!

(Tossup 15) **This event inadvertently caused a typhoid outbreak in Canada, spread by unsanitary coffin ships. In response to this event, Robert Peel sacrificed his political career by repealing the Corn Laws, and Quakers operated free soup kitchens, in contrast to several (\*)** Protestant groups who demanded that the overwhelmingly Catholic population convert before getting help. For ten points, name 19th century disaster in which a blight infected a staple crop, leading to a massive decline in the population of Ireland.

ANSWER: Irish **Potato Famine** (accept **Great Famine**; accept **Great Hunger**)

(Bonus 15) A cannonball is dropped in an environment with no air resistance. For ten points each,

[Part A] The cannonball undergoes this type of motion, in which the only force acting on it is the downward gravitational force.

ANSWER: **free fall**

[Part B] The position of a cannonball in free fall can be modeled by this type of polynomial, which can be obtained from integrating the constant acceleration twice.

ANSWER: **quadratic** polynomial (or **second-order** polynomial; accept descriptions of **parabola**s)

[Part C] If there *is* air resistance and the tower is high enough, the cannonball will reach terminal velocity, where the magnitude of the air resistance equals the force exerted by gravity. An object at terminal velocity will experience this kind of acceleration.

ANSWER: **zero** acceleration (accept equivalents that describe "the cannonball **isn't speeding up** any more")