

Round 2

First Half

(Tossup 1) **An eight-part “Hachimoji” type of this substance may be used to store data. Kary Mullis devised a technique that uses thermal cycling to amplify this substance, whose B-form is shown in Photo 51. Erwin Chargaff found that this substance must have a one to one ratio of purine to pyrimidine bases. Previous work by (*) Rosalind Franklin allowed Watson and Crick to determine the double-helix structure of, for ten points, what genetic molecule?**

ANSWER: **DNA** (accept **deoxyribonucleic acid**)

(Bonus 1) Let's go on a safari adventure! For ten points each,

[Part A] Name this large predator that comes in Bengal and Sumatran types. They are known for their orange and black fur color.

ANSWER: **tigers**

[Part B] Tigers belong to this genus. Lions, jaguars, and leopards also belong to this genus.

ANSWER: **Panthera**

[Part C] Sadly, poaching and habitat loss threaten the tiger population. Many tiger species are given this designation, meaning they are at risk of extinction.

ANSWER: **endangered**

(Tossup 2) **This man commanded the losing fleet at the Battle of Valcour Island and he led an attack on Quebec City in which his leg was shattered. This man distinguished himself at the Battle of Saratoga during which he feuded with (*) Horatio Gates, and he later fled on the sloop *Vulture* after the capture of Major John Andre. For ten points, name this American General who plotted to surrender West Point to the British.**

ANSWER: Benedict **Arnold**

(Bonus 2) The Ara Pacis was built to honor this leader. For ten points each,

[Part A] Name this adopted son of Julius Caesar and first emperor of Rome.

ANSWER: **Augustus** (Accept **Octavian**; accept **Gaius Octavius Thurinus**)

[Part B] Augustan forces defeated Mark Antony at this decisive 31 BC naval battle in which Antony was supported by Egyptian vessels.

ANSWER: Battle of **Actium**

[Part C] This Egyptian queen and lover of Mark Antony fought at the Battle of Actium. She legendarily committed suicide via asp bite.

ANSWER: **Cleopatra VII**

(Tossup 3) **This man's last words were to remind Crito that they owed Asclepius a rooster. According to Xenophon, this man served as the Epistates at the trial of the six generals after the Battle of Arginusae. This philosopher (*) left no written works and lends his name to a type of argumentative dialogue. This man, who was charged with corrupting the youth of Athens, died after he drank hemlock. For ten points, name this Greek philosopher, the teacher of Plato.**

ANSWER: **Socrates**

(Bonus 3) Animals are frequent psychology subjects. For ten points each,

[Part A] Name these animals that were used in Pavlov's classical conditioning experiments. They were trained to salivate at the sound of a bell.

ANSWER: **dogs**

[Part B] Watson was inspired by Pavlov's experiment and so he repeated them with this animal. It's not a mouse, but Baby Albert was conditioned to fear this white furry creature.

ANSWER: **rats**

[Part C] These animals were shown to be very adept at problem solving. Psychologists studied insight learning by observing these animals stack crates to reach a banana.

ANSWER: **chimpanzee** (accept **chimp**; prompt on monkey)

(Tossup 4) **In this story, a character is "made drunk with pleasure" at an event hosted by the Minister of Public Instruction. This story's title object is likely left behind in a cab after the protagonist leaves a ball. This work's central characters work for ten years to pay back (*) Madame Forestier. In this story, Madame Loisel discovers that the title object was worthless. For ten points, name this story by Guy de Maupassant story about a piece of jewelry.**

ANSWER: "The **Necklace**" [accept "**The Diamond Necklace**" or "La **Parure**"]

(Bonus 4) Alongside Cedric Diggory, this character represented Hogwarts in the Triwizard tournament. For ten points each,

[Part A] Name this boy wizard who attends Hogwarts and eventually defeats Lord Voldemort.

ANSWER: **Harry Potter**

[Part B] In *Harry Potter and the Goblet of Fire*, Fleur Delacour represents this French wizarding school in the Triwizard tournament. Madame Maxime is the headmistress of this school.

ANSWER: **Beauxbatons**

[Part C] The *Harry Potter* series was written by this author whose other works include *The Casual Vacancy*.

ANSWER: J.K. **Rowling**

(Tossup 5) **This religion has come into controversy for baptizing dead non-believers. The first book of the holy text in this religion is the book of Nephi, and that book was dug up as golden tablets by this religion's founder. (*)** Brigham Young helped this religion move to Deseret, Utah, and members of this group include Orrin Hatch and Mitt Romney. For ten points, name this religious group founded by Joseph Smith.

ANSWER: Church of Jesus Christ of Latter-day Saints (accept Mormon)

(Bonus 5) Egypt had several gods and goddesses. For ten points, name these gods.

[Part A] Name this Egyptian god of the Sun.

ANSWER: Ra

[Part B] Originally a fierce lioness goddess, this goddess was changed into the cat goddess that is famous today.

ANSWER: Bastet or Bast

[Part C] Osiris was resurrected by his wife, who is this goddess, and shares her name unfortunately with an abbreviation of a modern terrorist group.

ANSWER: Isis

(Tossup 6) **This artist protested one war with his painting Massacre in Korea. A dead soldier holds a flower and a horse screams in one painting by this artist, who showed five nude women in (*)** Les Demoiselles D'Avignon. This man painted a man with a hunched neck in his The Old Guitarist, and this painter went through "blue" and "rose" periods. This painter depicted a bombing in his Guernica. For ten points, name this founder of cubism.

ANSWER: Pablo Ruiz Picasso

(Bonus 6) Answer the following about trumpet concertos. For ten points each:

[Part A] Perhaps the most famous trumpet concerto was written by this composer. This composer of 68 string quartets composed 104 symphonies like "Farewell" and "Surprise."

ANSWER: Franz Joseph Haydn

[Part B] The aforementioned Haydn trumpet concerto is in this key, as is the Hummel trumpet concerto. This key with three flats is the relative major of C minor.

ANSWER: E-flat major

[Part C] Haydn composed the Trumpet Concerto while living in this capital city of Austria.

ANSWER: Vienna

(Tossup 7) **In a common chemistry technique, samples are put in tubes and watched until this reaction occurs. The heat of fusion is the energy required for this change to occur. The “point” of this phase change occurs at (*) -114 degrees Celsius for methanol, and carbon dioxide skips this phase change at standard temperature and pressure. Ice on roads can help to encourage, for ten points, what phase change from a solid to a liquid?**

ANSWER: **melting** (accept **fusion** before mentioned; do not accept “freezing”)

(Bonus 7) From base to peak, it is the tallest mountain on Earth, though most of it is underwater. For ten points each,

[Part A] Identify this dormant volcano, the highest point on the island of Hawaii, which despite being taller than Mauna Loa, takes up less surface area on the island.

ANSWER: **Mauna Kea**

[Part B] Mauna Kea is classified as this kind of volcano because of its gently sloping sides, caused by the flow of low viscosity lava. These are often contrasted with taller stratovolcanoes.

ANSWER: **Shield** volcanoes

[Part C] Hawaii’s volcanoes are associated with one of these points on the Earth’s mantle which don’t move while the plates above them move, leading to island chains over many centuries.

ANSWER: **Hot spots**

(Tossup 8) **While serving as Education Secretary in Edward Heath’s government, this leader was nicknamed the “Milk Snatcher”. This leader who was targeted by the Brighton Hotel bombing in 1987 later attempted to implement a poll tax called the (*) Community Charge. This Prime Minister led Britain to victory in the Falklands war during her first term. For ten points, name this Conservative British Prime Minister nicknamed “The Iron Lady”.**

ANSWER: Margaret **Thatcher**

(Bonus 8) For ten points each, answer some questions about the Seven Wonders of the Ancient World.

[Part A] Which Wonder of the Ancient World is the oldest of the wonders and is located at Giza in Egypt?

ANSWER: Great **Pyramid**

[Part B] Which Wonder of the Ancient World was legendarily built by King Nebuchadnezzar II and is often speculated to have never existed?

ANSWER: **Hanging Gardens** of Babylon

[Part C] The Great Lighthouse, also called the Pharos, was built in which city, the capital of Ptolemaic Egypt?

ANSWER: **Alexandria**

Sixty-Second Rounds

The categories are . . .

1. Jane Austen
2. The Early Soviet Union
3. Dinosaurs

JANE AUSTEN

Name the...

(1) Country where she lived whose landed gentry she often wrote about

ANSWER: Great **Britain** (or **United Kingdom** or **England**)

(2) Novel featuring a title protagonist with surname Woodhouse who marries George Knightley.

ANSWER: **Emma**

(3) Century in which she was born in the county of Hampshire.

ANSWER: **18th**

(4) Novel featuring the Dashwood sisters and their half-brother John

ANSWER: **Sense and Sensibility**

(5) Novel in which Henry Tilney eventually marries Catherine Morland.

ANSWER: **Northanger Abbey**

(6) Novel in which Fanny Price is sent to live at the title estate owned by Thomas Bertram.

ANSWER: **Mansfield Park**

EARLY SOVIET UNION

Name the...

(1) Modern-day country where small councils called “soviets” began in cities such as St. Petersburg.

ANSWER: **Russia** (accept Russian Federation)

(2) First leader of the Soviet Union who wrote the April Theses.

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

(3) Final Tsar that was overthrown and killed in Yekaterinburg in 1917.

ANSWER: **Nicholas II** of Russia

(4) Conflict in which the Red Army fought the White Army

ANSWER: **Russian Civil War**

(5) Soviet politician who was assassinated in Mexico with an ice pick.

ANSWER: Leon **Trotsky** (accept Lev Davidovich **Bronstein**)

(6) Party defeated by the Bolsheviks in the power struggle following World War I.

ANSWER: **Mensheviks**

DINOSAURS

Name the...

(1) Large predator from the Cretaceous period whose name means “tyrant lizard king” in Latin

ANSWER: **Tyrannosaurus Rex** (Accept **T-Rex**)

(2) Dinosaur well known for having three horns whose name literally means “three-horned face”.

ANSWER: **Triceratops**

(3) Type of epidermal growth present on birds which some dinosaurs were known to have.

ANSWER: **Feathers**

(4) Herbivorous dinosaur with broad upright plates on its back and a spiked tail.

ANSWER: **Stegosaurus**

(5) Heavily armored herbivorous dinosaur which had a massive tail club.

ANSWER: **Ankylosaurus**

(6) Modern peninsula where the Chicxulub asteroid crashed into the Earth, causing the extinction of the dinosaurs.

ANSWER: **Yucatan** Peninsula

Second Half

(Tossup 9) **In this play, characters put on a play in which Lucianus pours poison in the ear of his sleeping uncle. One character in this play cries “O, I am slain!” after being struck through a tapestry. The title character of this play causes the death of (*) Ophelia by pretending to be insane. During his duel with Laertes, the title character of this play kills his uncle Claudius. For ten points, name this Shakespeare tragedy about the title Prince of Denmark.**

ANSWER: Hamlet

(Bonus 9) In this novel, a doubloon is nailed to the main mast. For ten points each,

[Part A] Name this work in which Ishmael is the only survivor of the Pequod after it is destroyed by the title white whale.

ANSWER: Moby Dick; or, The Whale

[Part B] This character, described as a “grand, unholy, godlike man”, was the captain of the Pequod.

ANSWER: Captain Ahab

[Part C] *Moby Dick* was written by this American author who also wrote *Billy Budd*.

ANSWER: Herman Melville

(Tossup 10) **Ibn Battuta wrote that this structure was a sixty day journey from Zeitun. The Badaling section of this structure near Zhangjiakou is its most famous stretch. Most of this structure’s construction was completed during the (*) Ming Dynasty, but was started by Qin Shihuangdi. Contrary to popular belief, this structure cannot be seen from space. For ten points, name this set of fortifications built to defend China from northern invaders.**

ANSWER: Great Wall of China

(Bonus 10) Puget Sound is located along the Northwestern coast of this state. For ten points each,

[Part A] Name this state in the Pacific Northwest with capital Olympia.

ANSWER: Washington

[Part B] This city is the largest in the State of Washington. It is home to the Space Needle.

ANSWER: Seattle

[Part C] This large active volcano is the highest mountain of the Cascade Range and the highest mountain in the State of Washington.

ANSWER: Mount Rainier

(Tossup 11) **This man angrily changed the dedication of one his works away from Napoleon Bonaparte once he proclaimed himself emperor. That work, the *Eroica Symphony*, is also known as this man's third symphony. One of this man's works in C minor opens up with (*) Fate Knocking on the Door with ominous "short-short-short-long" notes. A choral version of "Ode to Joy" ends this man's ninth symphony. For ten points, name this German composer of the famous Symphony No. 5 and Für Elise.**

ANSWER: Ludwig van **Beethoven**

(Bonus 11) This museum contains the Sully wing and Denon wing. For ten points each,

[Part A] Name this museum which includes a giant glass pyramid designed by I.M Pei.

ANSWER: **Louvre**

[Part B] This statue of the Roman goddess of love can be found in the Louvre. This statue is famously missing its arms.

ANSWER: **Venus di Milo**

[Part C] The Louvre museum is located in this French city, the capital of France.

ANSWER: **Paris**

(Tossup 12) **Lagrange proved a theorem stating that every positive integer can be written as the sum of four of these numbers. Quadratic residues are these numbers in a given mod. Positive examples of these numbers are the only positive integers to have an (*) odd number of factors. These numbers always have remainder zero or one when divided by four. For ten points, name this type of number equal to an integer multiplied by itself.**

ANSWER: perfect **squares**

(Bonus 12) You can't go wrong with right triangles. For 10 points each:

[Part A] This is the number of degrees in a right angle.

ANSWER: **90** degrees

[Part B] Two answers required. Along with 90 degrees, these are the measurements of the other two angles in an isosceles right triangle, in which both side lengths are equal to each other.

ANSWER: **45** degrees and **45** degrees (both parts must be correct)

[Part C] In a 45,45,90 triangle, the side length is multiplied by this number to get the length of the hypotenuse. If you give your answer in decimals, you must have the tenths place as well.

ANSWER: **radical 2** (accept **1.4**, accept **square root of 2**)

(Tossup 13) **This man founded La Navidad on Hispaniola. An exchange named for this man describes how crops and diseases were introduced from Europe. This man first found the Taino people after landing near the Bahamas. (*)** Ferdinand and Isabella endorsed this Genoese navigator to sail to the New World. Believing he found the Indies and Japan, for ten points, what man crossed the Atlantic Ocean to actually reach North America in 1492?

ANSWER: Christopher Columbus

(Bonus 13) This action was prevented by the deciding vote of Edmund Ross, whose actions were explored further in John F. Kennedy's book *Profiles in Courage*. For ten points:

[Part A] Name this action which was almost achieved after its main subject dismissed Secretary of War Edwin Stanton, violating the Tenure of Office Act.

ANSWER: impeachment of Andrew Johnson

[Part B] Andrew Johnson succeeded to the presidency after this man was killed by John Wilkes Booth.

ANSWER: Abraham Lincoln

[Part C] Johnson replaced Stanton with a man with this last name. This was the first name of a president who declared "we are all Federalists, we are all Republicans" following his victory in a contentious election against John Adams.

ANSWER: Thomas (the question refers to Lorenzo Thomas and Thomas Jefferson)

(Tossup 14) **Feldmark, which is a community structure of scattered plants including low-lying cushion plants, is found within this habitat. This habitat is found in regions colder than the taiga, or (*)** north of the boreal forest and it contains no trees. For ten points, name this barren habitat characterized by permafrost which comes in alpine, Arctic, and Antarctic types and is home to caribou and reindeer.

ANSWER: tundra

(Bonus 14) The electromagnetic spectrum classifies and describes electromagnetic or EM radiation based on frequency and energy. For ten points each,

[Part A] RADAR generally consists of EM radiation from these two parts of the EM spectrum, the two lowest parts of the spectrum in terms of energy.

ANSWER: Radio and Microwave

[Part B] This part of the EM spectrum was discovered by Wilhelm Roentgen, a discovery for which he was awarded the first Nobel Prize in Physics.

ANSWER: X-rays

[Part C] Many early renderings of the EM spectrum included this region as being more energetic than gamma rays, though they are now known to be particles of galactic or extra-galactic origin, and are not included.

ANSWER: Cosmic rays

(Tossup 15) **This character was the father of the centaur Chiron. After winning one conflict, this character imprisoned the Hecatonchires and Cyclopes and sent Campe to guard them. This character swallowed the Omphalos stone instead of an (*) infant who was kept hidden on Mount Ida. This sickle-wielding husband of Rhea overthrew his father Uranus and famously swallowed his own children. For ten points, name this titan, the father of Zeus, Poseidon, and Hades.**

ANSWER: **Kronos** (Accept **Cronus**)

(Bonus 15) There are many observances and practices in the Jewish faith. For ten points each, name these customs or days of significance in the Jewish calendar.

[Part A] Name this day of rest in Judaism where people stop working, equivalent to the 'day of rest' that God took after His creation of the world.

ANSWER: **Sabbath**

[Part B] Name this 'Festival of Lights' commemorating the rededication of the Second Temple in Jerusalem

ANSWER: **Hanukkah**

[Part C] Name this Jewish 'Day of Atonement' that names a war between Israel and Arab nations in 1973.

ANSWER: **Yom Kippur**

(Tossup 16) **This character witnesses the framing of Muff Potter in a graveyard after accidentally revealing his engagement to Amy Lawrence. This character finds himself trapped in McDougal's Cave, where Injun Joe later starves to death. As punishment for skipping school, this (*) St. Petersburg resident is commanded to paint a fence white by his Aunt Polly. For ten points, name this friend of Huckleberry Finn and title character of a novel by Mark Twain.**

ANSWER: **Tom Sawyer** [accept either underlined portion]

(Bonus 16) Cosette marries Marius Pontmercy in this work. For ten points each,

[Part A] Name this work which culminates in the 1832 June Rebellion and follows characters such as Jean Valjean, Fantine and Eponine Thenardier.

ANSWER: **Les Miserables**

[Part B] In *Les Miserables*, Jean Valjean is pursued by this police inspector who commits suicide by jumping into the Seine.

ANSWER: **Javert**

[Part C] *Les Miserables* was written by this famous French author.

ANSWER: Victor **Hugo**

Tiebreakers

(Tossup 17) **In this country, Nurhaci unified a majority ethnicity who changed their name from the Jurchens. In this country, the Ten Great Campaigns were launched by a member of the Aisin Gioro clan, which ruled until its collapse after (*) Emperor Puyi. The longest reigning emperor Kangxi ruled this country, which later saw the Boxer Rebellion led by the Empress Dowager Cixi. For ten points, name this country where its Qing Dynasty was its last.**

ANSWER: **China**

(Bonus 17) The reign of the Stuart dynasty was a troublesome time in England. For ten points each, answer some questions about one incident during their reign

[Part A] The first Stuart monarch was this cousin of Elizabeth I.

ANSWER: **James I**

[Part B] James was targeted by this conspiracy led by Robert Catesby which tried to destroy the House of Lords.

ANSWER: **Gunpowder** Treason Plot (Accept **Jesuit Treason**)

[Part C] This conspirator was found guarding the barrels of gunpowder and is now a symbol of anarchism.

ANSWER: Guy **Fawkes**