

**JAMES ROUND 13  
TOSSUPS**

1. **This thinker noted that there are overlapping features but no common one for games in describing "family resemblance." This philosopher who invented the picture theory of language wrote that "the world is everything that is the case" and "where one cannot (\*) speak, one must be silent" as the first and last propositions of one of his early works. This thinker also created a "beetle in a box" thought experiment, and wrote about "language games" and "family resemblances" in the later *Philosophical Investigations*. For 10 points, identify this Austrian-British philosopher and author of *Tractatus Logico-Philosophicus*.**

ANSWER: Ludvig Wittgenstein

2. **One member of this phylum is *Arbacia punctulata*, a model organism commonly studied by developmental biologists because its eggs are transparent. Some members of this phylum can chew through stone with an organ known as "Aristotle's lantern," and members of this phylum have skeletons formed of calcite ossicles. The ampulla and podia make up their (\*) tube feet, which, along with the madreporite, are a component of their water vascular system. These deuterostomes exhibit bilateral symmetry in their larvae, in contrast to their radially symmetric adult forms. For 10 points, name this phylum of spiny skinned invertebrates that includes sea cucumbers and sea urchins.**

ANSWER: echinoderms or echinodermata

3. **One character in this book discovers that Madame Stahl is bedridden only because of her stubby legs as he visits a German spa. A railroad worker is killed while two of this novel's characters are meeting, and it opens amidst fallout from Stiva Oblonsky's cheating with his children's governess on his wife Dolly. Konstantin (\*) Levin is happily married to Kitty in this novel. The title character's husband refuses a divorce, though she falls from St. Petersburg high society by having an affair with Count Vronsky anyway. The title woman eventually throws herself in front of a train in, for 10 points, what novel by Leo Tolstoy?**

ANSWER: Anna Karenina

4. **The composer of this work wrote that he simply "developed [original themes] with all the resources of modern rhythms, counterpoint, and orchestral colour". Three movements in E minor surround the second movement of this work, which contains a cor anglais melody, is played at a Largo tempo, and was based on *The (\*) Song of Hiawatha*. In the first movement of this symphony by the composer of *Slavonic Dances* and the *American Quartet*, a solo flute plays the "Swing Low, Sweet Chariot" theme. This piece was inspired by African-American spirituals. For 10 points, name this last symphony of Antonin Dvorak.**

ANSWER: New World Symphony or Symphony No. 9 by Dvorak (accept From the New World; prompt on "Symphony No. 9" before Dvorak is read, and accept afterwards)

5. **In one level in this game, the protagonist has to wander around Fort Frolic killing three artists who betrayed Sander Cohen. NPCs from this game include Dr. Suchong and Dr. Tenenbaum, the latter of whom first teaches the protagonist how to access a Gatherer's Garden. Telekinesis and shooting bees are (\*) plasmids in this game which can be accessed by harvesting ADAM. This game is the first in a series set in an underwater city founded by Adrew Ryan on a philosophy similar to Ayn Rand's, and includes Little Sisters, who are protected by enemies encased in diving suits. For 10 points, name this game set in Rapture which contains Big Daddies.**

ANSWER: Bioshock (do not accept "Bioshock Infinite")

6. **One king of this name was opposed by the Malcontents, and was later assassinated by the friar Jacques Clement. That king with this name became the first elected king of Poland-Lithuania. After the wedding of one man of this name, a massacre of (\*) Huguenots took place on St. Bartholomew's Day. A Duke of Guise with this name led the Catholic League in the final of the Wars of Religion that was fought between three men of this name. One man of this name declared issued the Edict of Nantes and declared that "Paris is worth a mass." For 10 points, give this name of a king of France who was the 4th of his name, and was from Navarre.**

ANSWER: Henry [accept Henry III; accept Henry, Duc de Guise; accept Henry IV or Henry of Navarre]

7. **This man wrote a dramatic poem about a character tormented by the death of Astarte who summons seven spirits. This author of *Manfred* wrote that the "widows of Ashur are loud in their wail" as "the Assyrian**

**came down like the wolf on the fold" in "The (\*) Destruction of Sennacherib."** This poet notes "every raven tress" of a woman in whom "all that's best of dark and bright / Meet in her aspect and eyes" and who is "like the night." He reverted a trope by writing about a Spaniard who is easily seduced by women. An archetypal jaded hero is named after, for 10 points, what English Romantic poet of "Don Juan" and "She Walks in Beauty?"  
ANSWER: Lord George Gordon Byron, 6th Baron Byron (accept either or both underlined parts)

**8. Versions of this language are set by prefacing files with a DOCTYPE declaration. Some programs read this language in "quirks mode" but the "standard mode" is more common. Objects in this language are managed by the Document Object Model, or DOM. Invented by Tim Berners-Lee and maintained by the (\*) W3C, this language uses angled brackets called tags for defining elements such as headers and bodies. The appearance of constructs made using this language can be controlled using CSS, while interactive elements for use with this language can be made with Javascript. The 5th standard was recently released for, for 10 points, what markup language used to design web pages?**

ANSWER: HTML or HyperText Markup Language

**9. In one story from this myth system, a god throws himself onto a funeral pyre after allowing himself to be seduced by another god who had previously battled the primordial crocodile Cipactli. The moon in this myth system is the head of a goddess which was tossed into the sky by her brother, who is represented as a (\*) hummingbird. One god in this mythology replaced a foot with a smoking mirror; that god is Tezcatlipoca. The creator god of the mythology of this civilization was identified with the morning star and appeared as a feathered serpent. Quetzacoatl was a god of, for 10 points, what Mesoamerican civilization famously associated with human sacrifice?**

ANSWER: Aztec

**10. This region was home to the Sunshine Policy, which loosened tensions within it. Conflicts in this region have included the 625 Upheaval and a movement inspired by the Fourteen Points that began on March 1. One leader in this region espoused a policy of self-reliance known as (\*) "juche." Ancient kingdoms in this region have included the Silla and Goguryeo. An exiled provisional government of this region before World War II was led by Syngman Rhee, who came to oppose Kim Il-Sung in a namesake war of this peninsula. The thirty-eighth parallel forms a Demilitarized Zone dividing, for ten points, what East Asia peninsula into two countries?**

ANSWER: Korean peninsula (accept North Korea or Democratic People's Republic of Korea; accept South Korea or Republic of Korea)

**11. One poem by this author talks about hunters who "would have the rabbit out of hiding / To please the yelping dogs" and describes a man who "moves in darkness as it seems to me." Another of his poems says "Eden sank to grief" and (\*) "nothing gold can stay," while his collection *North of Boston* contains a poem with the line "good fences make good neighbors. In the most famous work of this author of "Mending Wall," he describes "leaves no step had trodden black" on a path that "bent in the undergrowth." For 10 points, name this author who wrote that "two roads diverged in a yellow wood" in "The Road Not Taken."**

ANSWER: Robert Frost

**12. This man wrote a song cycle setting 24 poems by Wilhelm Muller titled *Winterreise* or *Winter Journey*. This composer wrote a string quartet based on variations of his song *Death and the Maiden*. This composer used Goethe as an influence in creating a work about a boy killed by an evil spirit in *The (\*) Elf-King*, as well as the lieder *Gretchen at the Spinning Wheel*. This composer wrote a piano quintet in A minor in which rising sextuplets represent the title animal's leaping through a stream; that piece is *The Trout Quintet*. Whose 8th symphony in B minor, for 10 points, contained only two movements at his death and is labeled the *Unfinished Symphony*?**

ANSWER: Franz Schubert

**13. The discovery of one satellite of this object was confirmed by a five year period of regular solar eclipses viewed from it. After the Hubble Telescope discovered a fifth body orbiting this body in 2012, the flight path of the New Horizons spacecraft may have to be diverted on approach in 2015. The discovery of (\*) Sedna and Eris helped cause a change in the classification of this body because it does not "clear the neighborhood" of its orbit. Charon is one of this body's moons, and it was discovered by Clyde Tombaugh. For 10 points, name this dwarf**

planet formerly known as the ninth planet of the solar system.

ANSWER: 134340 Pluto

14. If this city were a nation, it would have the world's longest life expectancy. This city, with the most skyscrapers in the world, is home to the Central Plaza building. This city is bordered by the city of Shenzhen ["Shen-jen"] on the north. The (\*) Kowloon Peninsula and this city's namesake island are separated by Victoria Harbour. This city is a constituent of the Pearl River Delta megalopolis along with Guangzhou ["gwang-joe"] and Macau, and Britain transferred control of this former colony in 1997. For 10 points, name this Special Administrative Region located in southern China.

ANSWER: Hong Kong

15. In response to this scandal, Bill Breeden was jailed for stealing the sign of a street named after a participant, leading Howard Zinn to deem him the "only person to be imprisoned as a result" of this scandal. Secretary Fawn Hall shredded several documents pertaining to this scandal, which caused John Poindexter's resignation. It was investigated by the (\*) Tower Commission and it violated the Boland Amendment, which forbid US assistance to a certain Nicaraguan rebel group. For 10 points, name this scandal that implicated Oliver North and Ronald Reagan in the sale of arms to Ayatollah Khomeini's government in order to fund some Latin American rebels.

ANSWER: Iran-Contra affair (accept Irangate or Contragate)

16. A king of this country, who lost the Battle of Baia to Stephen the Great, placed a raven at the center of his Black Army's flag; that man was Matthias Corvinus. The kings of this country traditionally wore a crown with a crooked cross called St Stephen's Crown. This country's Revolution of 1848 was led by (\*) Lajos Kossuth. Goulash communism occurred in this country after it failed to leave the Warsaw Pact. Soviet tanks entered this country to replace Imre Nagy with Janos Kadar during its failed 1956 revolution. The homeland of the Magyars is, for 10 points, what Central European country that was part of a dual monarchy with Austria before World War I?

ANSWER: Hungary

17. The Hilbert Basis Theorem concerns rings of these constructs. A function of this type can approximate any other continuous function as closely as wanted by the Stone-Weierstrass Theorem, and according to Abel's Impossibility Theorem, formulas for solving those above a certain (\*) degree do not exist. Descartes' Rule of Signs can be used to determine the sign of their roots. By the Fundamental Theorem of Algebra, their total number of zeros is equal to the degree of their highest term. For 10 points, name this type of expression exemplified by monomials, as well as  $x^2 + x + 1$ .

ANSWER: polynomials

18. This anthropologist used the studies by Reo Fortune of the Dobu Tribe, identifying them as "treacherous" in a work that also studied the Kwakiutl and Zuni. The examples of restraint in Pueblo cultures and abandon in the Great Plains in that work, *Patterns of Culture*, are examples of her definition of culture as

(\*) "personality-writ-large." This anthropologist used newspapers and recordings in a work of "anthropology at a distance" because of her inability to visit a country during WWII. That work contrasts the guilt and shame cultures of America and Japan. For 10 points, name this author of *The Chrysanthemum and the Sword*.

ANSWER: Ruth Benedict

19. This book includes the character Margaret Saville, who is addressed in letters throughout the book. One character in this book reads Plutarch's Lives while simultaneously observing the lives of the De Laceys, who live in a cottage. The protagonist's friend Henry Clerval and his wife Elizabeth are (\*) murdered in this book by a character who flees to the North Pole. That character had earlier forced Victor to make him a companion after that character had been rejected by everyone it met due to its hideousness. For ten points, name this book by Mary Shelley where the title scientist creates a monster out of human body parts.

ANSWER: Frankenstein; or, *The Modern Prometheus*

20. This man painted a self-portrait of himself wearing a beret and a turned-up collar. In one work by this artist, Jesus and the twelve disciples are shaken by the title *Storm on the Sea of Galilee*. This artist showed a Babylonian king turning from his dinner to look at the Hebrew writing on the wall behind him in (\*) *Belshazzar's Feast*, while in another painting, a surgeon points out the muscles and tendons in a dissected corpse.

This artist's most famous work displays a man waving a blue and gold banner and Frans Banning Cocq. For 10 points, name this Dutch artist who painted *The Anatomy Lesson of Dr. Nicolaes Tulp* and *The Night Watch*.  
ANSWER: **Rembrandt** Harmeensoon van Rijn

#### TIEBREAKER/REPLACEMENT TOSSUPS

21. This statement includes a term equal to the kinetic energy per unit volume, often called the "dynamic pressure". A law giving the speed of outflow for a hole in a tank a certain height above the ground is derived from this law, as is an effect in which pressure is lowered in a constricted section of pipe. (\*) Torricelli's law and the Venturi effect result from this principle, a statement of the conservation of energy in a fluid. This principle explains why an increase in fluid speeds results in a decrease in pressure and is often falsely used to explain lift on airplanes. For 10 points, name this fundamental principle of fluid dynamics, named for a Swiss mathematician.  
ANSWER: **Bernoulli's** principle or law or equation or effect (or other reasonable equivalents)

22. This writer claimed that "My life closed twice before its close" in one poem and wrote about "a Service, like a Drum" in another poem that opens with the line "I felt a Funeral, in my Brain." This poet wrote of feeling "zero at the bone" upon seeing a snake, which the speaker calls "A (\*) narrow fellow in the grass." In another poem, this poet wrote "how public, like a frog" it was to be somebody after exclaiming "I'm nobody! Who are you?" This poet enters into a carriage with Immortality and the title figure in one poem. For 10 points, identify this reclusive "Belle of Amherst" who wrote the poem "Because I could not stop for Death."  
ANSWER: Emily **Dickinson**

## BONUSES

1. One of his novels ends with the protagonist imagining the sensation of the Milky Way moving through him. For 10 points each:

[10] The protagonist falls in love with the geisha Komako while visiting hot springs in what Japanese author's book *Snow Country*?

ANSWER: Yasunari **Kawabata**

[10] The protagonist of *Snow Country* claims to be an expert on this Western art form, though he admits to never having seen it performed. The pirouette and en pointe are techniques from this art.

ANSWER: **ballet**

[10] In this novel by Kawabata, Honinbo Shusai is stunned when Minoru Kitani plays the sealed Move 121 during a match of the title game.

ANSWER: *The **Master of Go***

2. Priestesses in this religion are called mambo and priests are called houngan. For 10 points each:

[10] Name this religion based in Haiti with African and Catholic elements. It is associated by many people with the sticking of pins into dolls to curse people.

ANSWER: **Vodou** (pronounced "Voodoo"; accept **Vodun**)

[10] These spirits are venerated in Vodou. They are represented by vÃ©vÃ© symbols, which act as beacons to them.

ANSWER: **loa** (or **lwa**)

[10] This loa acts a gatekeeper who stands at the spiritual crossroads. He is represented as an old man in a hat.

ANSWER: **Papa Legba**

3. The book *Ten Days that Shook the World* was written by John Reed about this event. For 10 points each:

[10] Name this revolution which occurred in the same year as the February Revolution and which brought the Bolsheviks to power.

ANSWER: **October** Revolution or the **October** Uprising (or Red **October**; prompt on "Bolshevik Revolution")

[10] This man led the Bolsheviks during the October Revolution. As leader of the USSR, he was de facto succeeded by Joseph Stalin, who was denounced in this man's "Testament."

ANSWER: Vladimir **Lenin**

[10] To alleviate food shortages, Lenin instituted this policy of state-sanctioned capitalism. It replaced War Communism and was replaced by the Five Year Plans.

ANSWER: **New Economic** Policy or **NEP**

4. Along with Thomas Hart Benton, this painter was associated with the Regionalism movement. For 10 points each:

[10] Name this artist who depicted a bespectacled man holding a pitchfork standing next to a frumpy looking woman in *American Gothic*.

ANSWER: Grant **Wood**

[10] Wood created a satirical painting titled *The Daughters of Revolution*, in which three women stand in front of a recreation of this artist's painting of *Washington Crossing the Delaware*.

ANSWER: Emmanuel Gottlieb **Leutze**

[10] Another George Washington themed painting by Grant Wood shows this man drawing back a curtain revealing his title "Fable," in which a young Washington has just chopped down a cherry tree.

ANSWER: Parson **Weems** (or Mason Locke **Weems**)

5. The British seized this city in 1664, leading to the Second Anglo-Dutch War. For 10 points each:

[10] Name this Dutch-founded city that was renamed New York.

ANSWER: **New Amsterdam**

[10] This Dutch governor of New Amsterdam oversaw the capture of Sweden's Delaware colony. He was in charge during the British capture of New Amsterdam.

ANSWER: Peter **Stuyvesant** [or Pieter **Stuyvesant**]

[10] Stuyvesant tried to kick some of these habitually oppressed people out of New Amsterdam. The Diaspora involved their being kicked out of Judea, which they regarded as their homeland.

ANSWER: **Jews** (or **Hebrews**, accept word forms)

6. Its entrance is guarded by the three-headed dog Cerberus. For 10 points each:

[10] The Styx and Acheron rivers are located in what place in Greek mythology, where Persephone reigns as queen for nine months of the year?

ANSWER: Greek **underworld** (or **Hades**)

[10] This ferryman escorted souls across the Styx into the underworld. A coin was usually buried with the dead to pay this son of Nyx and Erebus.

ANSWER: **Charon**

[10] Individuals who have led neither good nor evil lives are confined to the Asphodel Fields, where many of them drink from this river which erases the memories of dead souls and eventually sends them into oblivion.

ANSWER: **Lethe**

7. This character slays the adviser Aeschere while attacking Heorot. For 10 points each:

[10] Name this villain of an epic who resides in an icy lake and is beheaded by the same hero who killed her son.

ANSWER: **Grendel's mother**

[10] Grendel's mother is slain by this title character of an Old English epic, a Geat who kills Grendel and dies at the hand of a dragon.

ANSWER: **Beowulf**

[10] Beowulf is given this sword by Unferth to use against Grendel's mother, though it fails against her.

ANSWER: **Hrunting**

8. Name these SI base units from how they are measured for 10 points each.

[10] This unit is now measured with reference to the excitation of electrons in cesium atoms, which is also the way atomic clocks measure the quantity it measures.

ANSWER: **second**

[10] This unit remains one of the few common ones which still requires a single physical standard. That standard is made of platinum and iridium and is kept under three bell-jars in the BIPM just outside of Paris.

ANSWER: **kilogram** [do not accept or prompt on "gram"]

[10] The definition of this quantity is based on the attractive force between two straight, parallel electrical conductors placed one meter apart in a vacuum.

ANSWER: **ampere**

9. This country's fate has been uncertain ever since Hosni Mubarak was overthrown in the Arab Spring in 2011. For 10 points each:

[10] More recently, the democratically elected Mohamed Morsi was overthrown by the army in what North African country?

ANSWER: Arab Republic of **Egypt**

[10] Morsi belonged to this political party long oppressed under Mubarak's regime. Protesters for this party were killed at staggering levels in August.

ANSWER: **Muslim Brotherhood**

[10] This Commander-in-Chief of Egypt's armed forces was largely responsible for what may or may not have been a coup.

ANSWER: General Abdel Fattah el-**Sisi**

10. This mathematician lends his name to an algorithm for finding the greatest common divisor between two numbers. For 10 points:

[10] Identify this ancient Greek mathematician known for his work on plane geometry.

ANSWER: **Euclid**

[10] Euclid's geometry is described in this book, which also gives his proof that there are an infinite number of primes.

ANSWER: *Euclid's* **Elements** (or **Stoicheia**)

[10] This postulate from *The Elements* is equivalent to the statement that, given a line and a point, there is exactly one line through that point that never intersects that line. It does not hold in non-Euclidean geometries like elliptic or hyperbolic geometries.

ANSWER: **Parallel** Postulate (or Euclid's **Fifth** Postulate)

11. Europe is the smallest continent and is thus home to some really tiny countries. For 10 points each:

[10] Name this nation, the smallest in the world. It is home to the headquarters of the Roman Catholic Church, leading to the amusing statistic of having six popes per square mile.

ANSWER: Vatican City or the Holy See

[10] This nation, whose most populous quartier is Monte Carlo, is located in the French Riviera.

ANSWER: Monaco

[10] This landlocked country, founded as a republic in 301 AD, hosts the Guard of the Rock.

ANSWER: San Marino

12. Members of this people included Erik the Red and his son Leif Ericsson. For 10 points each:

[10] Name these Norse warriors and explorers who did sail in longships, but did not in fact wear horned helmets.

ANSWER: vikings

[10] The Vikings received their barbarous reputations in part after raiding this type of location on the isle of Lindisfarne off the coast of England. These locations were often bastions of learning and writing.

ANSWER: abbey (accept monastery)

[10] This Viking baptized as Robert I established the fiefdom of Normandy. When he entered into vassalage to King Charles the Simple, he apocryphally ordered a servant to kiss Charles's feet instead, who was subsequently knocked over.

ANSWER: Rollo

13. This man's symphonies include *Capriccio Espagnol* and *Russian Easter Festival Overture*. For 10 points each:

[10] Name this Russian composer who included the winding *Flight of the Bumblebee* in his opera *The Tale of Tsar Saltan*.

ANSWER: Nikolai Rimsky-Korsakov

[10] Rimsky-Korsakov was a member of this group of Russian composers named for its size whose other members included Modest Mussorgsky and Alexander Borodin.

ANSWER: the Five or the Mighty Five (or the Mighty Handful\*)

[10] This opera by Rimsky-Korsakov is based on a story by Alexander Pushkin. In it, the title bird kills King Dodon in revenge for the death of the Astrologer.

ANSWER: *The* Golden Cockerel

14. His economic policies were coordinated by the Chicago Boys. For 10 points each:

[10] Name this South American dictator who was initially opposed by Gustavo Leigh after leading a coup against Salvador Allende.

ANSWER: Augusto Pinochet

[10] Pinochet was the leader of this country. In 2010, several miners were trapped when a copper mine collapsed in this country.

ANSWER: Republic of Chile

[10] The secret police of Chile, the DINA, helped coordinate this movement of political repression with several other South American countries. Thousands were kidnapped, killed, or otherwise disappeared during its occurrence.

ANSWER: Operation Condor

15. For 10 points each, answer some questions about the varying definitions of acids:

[10] The Bronsted-Lowry definition states that protons dissociate from acids, whereupon they combine with this molecule to form hydronium ion. This molecule is often called the universal solvent.

ANSWER: water or H<sub>2</sub>O

[10] This man defined acids as molecules which accept electron pairs, an example of which is boron trihydride. This man also names a method of dot diagramming molecules.

ANSWER: Gilbert Newton Lewis

[10] Lewis acids are examples of these molecules which are contrasted with nucleophiles. They have a namesake addition reaction.

ANSWER: electrophiles

16. This man said about one of his books that "I aimed at the public's heart, and by accident I hit it in the stomach." For 10 points each:

[10] Identify this author of a book about the son of an oil tycoon, *Oil!*, as well as a book about a Lithuanian

immigrant in Chicago.

ANSWER: Upton **Sinclair**

[10] Sinclair was most famous for this book featuring Jurgis Rudkus. Its horrifying depictions of the food industry galvanized the public into forcing the passage of the Meat Inspection Act.

ANSWER: *The **Jungle***

[10] Sinclair also wrote a series featuring this character, the son of an arms manufacturer. That series includes *World's End* and *Dragon's Teeth*.

ANSWER: **Lanny Budd** (accept either or both)

17. This man beat his second son to death in a fit of rage, leaving his much less able son Fyodor the heir. For 10 points each:

[10] Name this Russian Tsar whose most famous epithet meant "inspiring fear" rather than simply bad.

ANSWER: **Ivan the Terrible** or **Ivan IV** (or **Ivan Grozny**; prompt on "Ivan")

[10] Ivan severely restrained the powers of these Russian nobles. This group initially made up the Duma, and Peter the Great imposed a beard tax upon them.

ANSWER: **boyars**

[10] An older Ivan, Ivan I, gained this epithet. It referred to his allegiance to the Golden Horde, by which he gradually made Moscow wealthy.

ANSWER: **moneybags** or **Kalita** (accept Ivan the **Moneybag** or **Moneybags**)

18. Union leaders and socialists often described this term as being at odds with labor, although they were generally referring to its owners. For 10 points each:

[10] Give this term from economics, which describes the machinery and tools used to produce goods more efficiently. Its 'human' variety is acquired through education and training.

ANSWER: **capital**

[10] The Cobb-Douglas function estimates the output of these entities as a function of capital and labor using two exponents. Modeled as profit maximizers, these producers' optimization concerns determine the supply curve.

ANSWER: **firms** [or **businesses**]

[10] The four basic economic resources are land, labor, capital, and this fourth "resource", a French-derived term for the risk-taking ability to combine the other three resources to start a business or firm.

ANSWER: **entrepreneurship** [or similar answers]

19. A 20,000 foot tall inhabitant of an orbiting Sirius visits Saturn and Earth in this man's short story "Micromegas." For 10 points each:

[10] Name this Enlightenment thinker and writer who created a Babylonian philosopher in *Zadig*. Another of his works ends with one character's assertion that "we must cultivate our garden."

ANSWER: **Voltaire** (or François-Marie **Arouet**)

[10] Voltaire is best known for this satire, in which the title character faces ever more tragedies like the Lisbon earthquake despite his mentor Pangloss's assertion that this is "the best of all possible worlds."

ANSWER: **Candide**; or *Optimism* (or **Candide**, ou *l'Optimisme*)

[10] Pangloss is a parody of this real life thinker who invented calculus independently from Newton and theorized about atom-like monads.

ANSWER: Gottfried Wilhelm **Leibniz**

20. It makes up 84% of the earth and is separated from the crust by the Mohorovicic discontinuity. For 10 points each:

[10] Name this layer of the earth that is primarily composed of silicate and which lies above the core.

ANSWER: **mantle**

[10] This discontinuity divides the outer core and mantle. It is named for a German seismologist.

ANSWER: **Gutenberg** Discontinuity

[10] With this scientist, Gutenberg came up with a law governing the relationship between the magnitude and total number of earthquakes in any region and time period. This scientist also names a scale for the magnitude of earthquakes.

ANSWER: Charles Francis **Richter**

## **TIEBREAKER/REPLACEMENT BONUSES**



21. One leader of this group was Feargus O'Connor who advocated "physical force." For 10 points each:

[10] Name this group that took its name from a 1838 document that called for the introduction of the secret ballot and the right to vote for all men over 21.

ANSWER: **Chartism** [accept word forms]

[10] Chartism was a 19th century political movement in this country, the first to experience the Industrial Revolution.

ANSWER: Great **Britain** [or **England**; or **United Kingdom**]

[10] This Chartist newspaper was edited by Feargus O'Connor, who used it to oppose William Lovett's "New Move."

ANSWER: **Northern Star**

22. Stars are generally modeled as examples of these entities, because of their close obedience to Planck's law. For 10 points each:

[10] Name these objects, which absorb all oncoming radiation. The Stefan-Boltzmann law for them gives their luminosity in terms of their temperature and size.

ANSWER: **black bodies**

[10] The temperature of a star can be determined by using Wien's law and looking at this quality of the star, quantified with a B minus V index. This visual property can tell you the peak wavelength of emission.

ANSWER: the star's **color**

[10] Given the luminosity of a star, its distance can be calculated by means of this quantity, the difference between its absolute and apparent magnitudes. This value is proportional to the logarithm of the distance to a star.

ANSWER: distance **modulus**