**BATE Quizbowl Tournament**

**Finals 2**

1 **This man suggested a difference between number and quantity in a work examining the origin of numbers, while another of his works espoused his theory of free variation. In addition to those works, *Philosophy of Arithmetic* and *Experience and Judgments*, this philosopher discussed intersubjectivity as a result of empathy in the book that popularized the term epoché**, *Cartesian* *Meditations*. Another work by this philosopher examines similarities between numbers and the title concept, such as the ability to combine and distinguish elements. For 10 points, name this author of *Logical Investigations* who founded phenomenology.
ANSWER: Edmund **Husserl**

2 **A group of these objects close to Earth are known as the magnificent seven. One form of these objects is found at the center of the Crab nebula, while one class of these objects are known as \* magnetars. The upper limit of these objects, kept from collapsing by the Pauli exclusion principle, are in the range of 2 to 3 solar masses, defined by the Tolman-**Oppenheimer-Volkoff limit. Forms of these objects that rotate rapidly and emit electromagnetic radiation are known as pulsars. For 10 points, name this type of star that forms from the collapse of a supernova, known for their extremely dense nature.

ANSWER: **neutron** star (prompt on “pulsar” before magnetar)

3 **The formation of this government was largely facilitated by the Ebert-Groener pact. Taking its name from a town in the province of Thuringia, this government faced an early uprising by the Spartacist society. One leader of this government, Gustav Stresemann, won the Nobel Peace Prize for his work in the negotiating the** Locarno Treaties. Other events that occurred during the rule of this government included the occupation of the Ruhr region by French troops and the Beer Hall Putsch. For 10 points, name this interwar government of Germany.

ANSWER: **Weimar Republic**

4 **In this work, the narrator gets into trouble after he appears to make an obscene gesture towards his grandmother while she bathes him. Later, he moves to Memphis where he works in an optics shop and stays at the home of Mrs. Moss. The grandfather of the narrator sits with a rifle and continually waits a for Civil War pension that will never come. It opens with the narrator, then four years old, burning down his grandparents’ home in Mississippi. The narrator joins the Communist party in the \* second part of this work titled “The Horror and the Glory”; the first part of this work is titled** “Southern Night”. For 10 points, name this autobiographical work of Richard Wright.

ANSWER: ***Black Boy***(accept ***Southern Night*** until “second part”)

5 **In one experiment run by this man, identical cars were placed in Palo Alto and the Bronx; after 3 days the car in the Bronx was completely vandalized while the one in Palo Alto was untouched. That experiment led to the development of the broken window theory. One concept developed by this man explores the point at which decent people turn to evil. That concept, known as the** Lucifer effect, was based on one experiment overseen by this man that was halted eight days earlier than expected due to the behavior of subjects assigned to the role of guards. For 10 points, name this man who oversaw the Stanford prison experiment.

ANSWER: Philip **Zimbardo**

6 **A calihan is one form of scoring in this sport, which often uses a defense involving one player called the rabbit and three players forming a wall. A long pass is referred to as a huck, while the defense can force the offense either home or away. Most offensive formations involve a vertical or horizontal stack, while salvaging an out of bounds passed is referred to as** “greatest”. Passes can be made using a backhand throw or forehand “flick”. For 10 points, name this team sport which involves the throwing of a certain plastic disc.

ANSWER: **ultimate** Frisbee (prompt on “Frisbee”)

7 **A group of the central characters in this work break orders when they swim across a river to spend a night with a group of French women. That encounter includes an extremely popular ladies-man named Leer, who dies alongside Bertinck. Other characters in this novel include the patriotic school teacher** Kantorek, the power hungry Himmelstoss, and the bed wetting Tjaden. Followed by *The Road Back,* this novel sees the death of Stanislaus Katczinsky, often referred to as “Kat”, a friend of the protagonist Paul Baumer. For 10 points, name this novel about a German military unit during World War One written by Erich Remarque.

ANSWER: ***All Quiet on the Western Front***

8 **Anton Bruckner composed an F major version of this prayer for a seven part chorus. Desdemona sings this prayer in the final act of the opera *Otello*. Franz Schubert’s song “Ellens dritter Gessang” is often performed to the words of this prayer, which closes the original version of *Fantasia*. Another setting of this prayer adds a melody to the first prelude in J. S. Bach’s *Well-Tempered Clavier*, and was composed by Charles Gounod.** For 10 points, name this traditional Christian prayer addressed to the mother of Jesus.
ANSWER: **Ave Maria** (or **Hail May**)

9 **This man compared one of his military actions to a hunter bagging a fox. While in India, he negotiated the Permanent Settlement and led British forces in the siege of Seringapatam during the Third Anglo-Mysore War. This man also signed the Treaty of Amiens with Napoleon and was made Lord Lieutenant of Ireland during the** 1798 Irish Rebellion. In another position, this man was victorious at the Battle of Camden but was trapped by a naval force under the Comte de Grasse near the mouth of the Chesapeake Bay. For 10 points, name this British officer who surrendered his troops at the Battle of Yorktown.

ANSWER: Charles **Cornwallis**, 1st Marquess Cornwallis

10 **Instruments called rheometers measure this force. Isaac Newton stated this force times the velocity gradient in the perpendicular direction equals the shear stress. Stokes law contains a term equal to six pi times this force times a sphere’s radius times its velocity. This force is accounted for in the denominator of Reynolds number and is variable in non-Newtonian** fluids. There are dynamic and kinematic forms of this property; the dynamic form is expressed as mass divided by length multiplied by time, where one Pascal second is equal to ten poise. For 10 points, name this force that describes a fluid’s resistance to movement

ANSWER: **viscosity** or **viscous** force

11 **This island achieved independence with the Zurich and London Agreement, and among its largest cities are Famagusta and Limassol. The eastern portion of this island is noted for the long Karpass peninsula. The invasion of this island by a nearby foreign power led its capital to be divided along Ledra Street up until April 2008. That invasion led to the downfall of the so called Regime of the Colonels military junta. A 1974 invasion of this island led to a United Nations buffer called the** Green Zone. For 10 points, Nicosia is the capital of what Mediterranean island with disputed Greek and Turkish halves?

ANSWER: **Cyprus**

12 **This artist painted Saint Bartholomew and Biaggio to the left and Saint Giovenale and Anthony Abbot to the right in his Saint Giovenale Triptych. One work by this artist contains a message that translates as “I was what you are and what I am you shall be”. That message lies above a sarcophagus which has a skeleton resting on it. Lake Genezaret can be seen on the left side of another painting by this artist, which shows Peter taking a coin out of a** fish and then handing it over to a tax collector. For 10 points, name this Italian artists whose works in the Brancacci Chapel include *The Expulsion from the Garden of Eden* and *Tribute Money.*

ANSWER: **Masaccio** [or Tommaso di ser Giovanni di **Simone**]

13 **The Luba Empire was located in what is now this modern country. One conflict in this nation led to the death of Dag Hammarskjold. That conflict involved a region heralded by the CONAKAT party, a group founded by Moishe Tshombe. After gaining independence, this nation faced a secessionist movement from the southeast mineral rich region of** Katanga; that movement led to the assassination of Patrice Lumumba and to the eventual 30 year rule of Mobutu Sese Soko. For 10 points, name this large central African nation which in 1960 gained independence from Belgium.

ANSWER: **DRC** or **Democratic Republic of the Congo** or **Congo-Kinshasa** (prompt on “Congo” or “Zaire”, do not accept “Republic of the Congo” since that refers to another nation)

14 **Gustav Tammann determined that this condition exists at several different points for water; for ice III it occurs at about 251 on the kelvin scale. Taking the inverse that this condition exists for water defines the unit of the Kelvin scale; extremely precise thermometers are still calibrated using this condition. Gibbs phase rule implies that a pure substance in this condition will have zero degrees of** freedom. A system with p phases will have p choose 3 number of these points; one of them for water exists at .01 degrees Celsius and 611 Pascals. For 10 points, name this point on a phase diagram where a substance can exist as a solid, liquid and gas.

ANSWER: **triple point**

15 **One part of this collection assures that “there’ll be enough time to sleep” and is titled “Reveille”. Another notes that the title flower “has not long to stay/ and dies on Easter day”. In addition to “The Lent Lily”, this collection of poems has a character who is criticized for “the rate at which you drink your beer” and told** “this is stupid stuff”. Another poem advises, “give crowns and pounds and guineas/ but not your heart away”. Its most famous part elegizes a successful runner who “won your town the race”. “When I was one-and-twenty” and “To an Athlete Dying Young” are part of, for ten points, what collection of poems by A.E. Housman?

ANSWER: ***A Shropshire Lad***

16 **This man first argued in front of the Supreme Court for Yale professor John Peters. In *Solem v. Helm*, he disagreed that a life sentence was cruel and unusual punishment for writing a fraudulent $100 check. This man maintained support of the death penalty in *Furman v. Georgia* and *Gregg v. Georgia* and voted with the majority in a case that has been challenged by** *Planned Parenthood v. Casey* and *Gonzales v. Carhart*. For ten points, name this Supreme Court Chief Justice appointed by Richard Nixon who issued a concurring opinion in *Roe v. Wade* and ordered the release of the Watergate Hotel tapes.

Answer: Warren **Burger** (do not accept just “Warren”)

17 **Severo is horrified when Paolina joins the title character in dying for Christianity in this man’s opera *Poliuto*. This composer of La Favorite described Alfonso’s rescue of his wife from Amur and Zeidar in *Elvida* and created an opera in which a woman disguised as Sofronia prompts the title character to consent to the marriage of Ernesto and Norina. This composer of *Don Pasquale* and** *The Daughter of the Regiment* created the arias “Il Dolce Suono” and “Una Furtiva Lagrima” for his two most famous operas. For 10 points, name this Italian composer of *Lucia di Lammermoor* and *The Elixir of Love*.
ANSWER: Gaetano **Donizetti** (accept ***Poliuto*** before mentioned)

18 **This author noted that “the spirit/ is an invention of the body” in one of his works, while his first collection of poems was titled *Wild Moon*. He discussed the “word bridge” in his poem “Salamander” and discussed his theory of poetry in *The Bow and the Lyre*. This man wrote a poem whose 584 lines each represent a day of the** Aztec calendar and a collection of essays that discusses topics like *machismo* and “The Day of the Dead”.  For 10 points, name this Mexican author of “Sunstone” and *The Labyrinth of Solitude*.
ANSWER: Octavio **Paz** Lozano

19 **One of the main actions of this hormone is described by the acid growth hypothesis. By activating proton pumps in the cell membrane, this hormone causes the pH of the cell wall to decrease, ultimately making it more elastic. They also can induce ethylene synthesis in high concentrations and inhibit senescene and abscission**. Indole-3-acetic acid is the prominent example of this group of hormones, which help ensure that the main stem of the plant grows the most by inhibiting development of the lateral buds. For 10 points, name this class of plant hormones which promote cell division and maintain apical dominance.

ANSWER: **auxin**s (accept **indole-3-acetic acid** before mentioned)

20 **At the end of his life, this figure tied himself to a column to die standing on his feet. Earlier he had slain Connla, his illegitimate son by Aife, whom he had defeated while training with the warrior woman Scathath. After finishing his training, this figure married Emer and at the age of seventeen defended all** of Ulster from the forces of Queen Medb. Born as Setanta, for 10 points, name this Irish hero who wields the spear Gae Bulg and fought off the Cattle Raid of Cooley who received his more common name after slaying the hound of Culann.

ANSWER: **Cu Chulainn** (accept **Setanta** before mentioned)

**Extra Tossups**

21 **An attempt to resupply this man was halted after a defeat at the Battle of Metaurus River. He also led a decisive victory at the Siege of Saguntum. In another battle, he placed his troops in a V shape with the cavalry on the flanks; the cavalry was then able to swing around and encircle the enemy army. In addition to this man’s decisive victories at the Battle of Lake Trasimene and** Cannae, he lost a battle after loud battle horns caused his elephants to charge into his own cavalry lines. For 10 points, name this man who lost to Scipio at the Battle of Zama, a Carthaginian general who invaded Italy during the Second Punic War.

ANSWER: **Hannibal** Barca

22 **This author discussed his friendship with Oscar Wilde in his autobiography, *Unless the seed dies*. The title character of one of this author’s works shares his name with a character from Virgil’s *Eclogues* who falls in love with Alexis. He wrote about the young love of Jerome and Alissa in another work. In addition to *Corydon* and** *Strait Is the Gate*, he wrote a novel in which the Comte de Passavant travels with Olivier after his rejection by Edouard. In his most famous novel, Michel recounts a fatal bout with tuberculosis to three of his friends. For 10 points, identify this author of *The Counterfeiters* and *The Immoralist*.

ANSWER: Andre **Gide**

23 **Exceptions to this statement occur with systems containing half integer spins which have multiple degenerate ground states. It can be derived by writing one quantity as the integral of the specific heat divided by temperature as temperature goes to zero. It can also be derived by using L’Hopital’s rule on the limits of the change in enthalpy divided by temperature and the negative change in Gibbs free energy divided by temperature. Sometimes called the** Nernst theorem, it is often used to calculate the standard entropy of a substance at any temperature. For 10 points, name this law which states that the entropy of a perfect crystal at absolute zero is equal to zero.

ANSWER: **third law of thermodynamics**

1 The change in this quantity defines reactions as exergonic or endergonic. For 10 points each:

[10] Name this quantity which at constant temperature and pressure is equal to enthalpy minus the product of temperature and entropy.

ANSWER: **Gibbs free energy**

[10] The second partial derivative of Gibbs free energy with respect temperature and pressure is equal to the partial derivative of volume with respect to temperature according to this set of four equations that relate the partial derivatives of entropy, pressure, volume and time.

ANSWER: **Maxwell’s relations** (do not accept “Maxwell’s equations”)

[10] Taking the partial derivative of Gibbs free energy with respect to particle number at a constant pressure and temperature gives the value of this quantity, symbolized with μ (“mu”). Particles moves from areas where this quantity is high to where this quantity is low.

ANSWER: **chemical potential** (prompt on “potential”, do not accept “concentration”)

2 In this work, Jimmy Blevins is killed a by a police officer before the protagonist and his best friend are placed in a Mexican prison. For 10 points each:

[10] Name this first work of the *Border Trilogy* that tells the story of cowboy John Grady Cole.

ANSWER: ***All the Pretty Horses***

[10] *All the Pretty Horses* was a work by this American author who wrote of an unnamed father and son in a post-apocalyptic world in his Pulitzer Prize winning *The Road*.

ANSWER: Cormac **McCarthy**

[10] John Cole and Billy Parham appear in this final member of the *Border Trilogy.* In it, John gets into a fight with a pimp named Eduardo after having an affair with a prostitute named Magdalena.

ANSWER: ***Cities of the Plain***

3 Glaucus fell in love with this nymph, which resulted in her being the target of a goddess’s wrath. For 10 points each:

[10] Identify this nymph who, while bathing, would turn into a six-headed monster.

ANSWER: **Scylla**

[10] Scylla occupies one side of this strait of water separating Italy from Sicily.

ANSWER: Strait of **Messina**

[10] Scylla was targeted by this sorceress, who fell in love with Glaucus. She may be better known for turning members of Odysseus’ crew into pigs.

ANSWER: **Circe**

4 The Telecoms Package is a bill legislating this policy in the European Union. For 10 points each:

[10] Name this policy in which ISP’s or the government cannot place any restrictions on content on the web.

ANSWER: **net**work **neutrality** (accept **internet neutrality**)

[10] Among the proponents of neutrality is this man, the director of the W3C who invented the World Wide Web in 1989.

ANSWER: Tim **Berners-Lee**

[10] The Internet Freedom Preservation Act proposed in 2007 was sponsored in part by this woman, who along with Susan Collins represents Maine in the Senate.

ANSWER: Olympia **Snowe**

5 This man’s first term as Prime Minister ended following a scandal which involved bribes from the Canada Pacific Railway. For 10 points each:

[10] Name this first Canadian prime minister.

ANSWER: John **MacDonald**

[10] In 1869, the newly formed Canadian government bought this region of land around the Hudson Bay that was owned by the Hudson’s Bay Company. The newly acquired land would become parts of Manitoba and Saskatchewan.

ANSWER: Prince **Rupert’s Land**

[10] MacDonald’s two terms as prime minister saw the Red River and North-West Rebellions, both launched by this Metis Indian, the founder of Manitoba who was executed in 1885.

ANSWER: Louis **Riel**

6 The title of this work was taken from Hart Crane’s poem “The Bridge”. For 10 points each:

[10] Name this work whose seventh section borrows a melody from the Shaker song *Simple Gifts*.

ANSWER: ***Appalachian Spring***

[10] *Appalachian Score* was composed by this American musician who composed *El Salon Mexico* and *Fanfare for the Common Man*.

ANSWER: Aaron **Copland**

[10] The set for *Appalachian Spring* was designed by this Japanese sculptor who often collaborated with the work’s choreographer, Martha Graham.

ANSWER: Isamu **Noguchi**

7 One character in this work, a member of Parliament named Rex Mottram, marries Julia Flyte. For 10 points each:

[10] Name this novel which involves Charles Ryder’s observation of the Marchmain family.

ANSWER: ***Brideshead Revisited***

[10] *Brideshead Revisited* was a work by this English author who wrote about William Boot in a satire on journalism titled *Scoop*.

ANSWER: Evelyn **Waugh**

[10] This other Waugh novel describes a man named Pennyfeather who has to teach at a Welsh school after being kicked out of college for running around campus pantless.

ANSWER: ***Decline and Fall***

8 A typical setup for this thought experiment involves a Geiger counter which shatters a flask containing a poison as soon as it detects poison. For 10 points each:

[10] Name this thought experiment where the namesake creature is simultaneously dead and alive.

ANSWER: **Schrodinger’s cat**

[10] Schrodinger’s cat was developed to illustrate a weakness in this interpretation of quantum mechanics. This interpretation makes use of the correspondence principle and the complementarity principle. It states that any system can be described by a wave-function which, when measured, leads to wave-function collapse.

ANSWER: **Copenhagen** interpretation

[10] This physicist developed an extension to Schrodinger’s cat in which he is told the results of the experiment that someone else is performing, thus raising the question of what actually caused the collapse of the system’s wave-function. That setup is known as this man’s “friend”.

ANSWER: Eugene **Wigner** (accept “**Wigner**’s friend”)

9 This man defeated Gelimer in one battle that came after an earlier victory at the Battle of Ad Decimum. For 10 points each:

[10] Name this victorious commander at the 533 CE Battle of Tricameron.

ANSWER: Flavius **Belisarius**

[10] Earlier, Belisarius put down this 532 uprising in Constantinople fought between the Blue and Green factions who had supported opposing sides of a chariot race.

ANSWER: **Nika** riots

[10] The aforementioned Battle of Tricameron was fought against this Germanic tribe that sacked Rome in 455 and ruled in North Africa until the resurgence of the Byzantine Empire under Justinian.

ANSWER: **Vandal**s

10 One work by this architect is a large glass mega church in Orange County, California. For 10 points each:

[10] Name this American architect of the *Crystal Cathedral* and *The Glass House* in New Canaan, Connecticut.

ANSWER: Philip **Johnson**

[10] Johnson’s *Glass House* was the first winner of this annual architectural award. I.M. Pei won this award in 1978 for his design of the East Building of the National Gallery of Art.

ANSWER: **Pritzker** Prize

[10] The 1987 Pritzker Prize went to this Japanese architect for his St. Mary’s Cathedral in Tokyo. This architect also designed the Hiroshima Peace Monument and the Yoyogi National Gymnasium for the 1964 Tokyo Olympics.

ANSWER: Kenzo **Tange**

11 The protagonist of this work is employed as a secretary to the Marquis de la Mole. For 10 points each:

[10] Name this novel telling of the Parisian life of Julien Sorel.

ANSWER: *The* ***Red and the Black***

[10] *The Red and the Black* was a work by this French author who wrote of a romance between the title character and Octave in *Armance.*

ANSWER: **Stendhal** or Marie-Henri **Beyle**

[10] Stendhal’s *The Charterhouse of Parma* centers on this nobleman whose aunt Gina falls in love Count Mosca. This man is eventually imprisoned in Farnese Tower.

ANSWER: **Fabrizio** del **Dongo** or **Fabrice** del **Dongo** (accept either underlined part)

12 The color of a dog’s coat is common example of this phenomenon. For 10 points each:

[10] Name this phenomenon where the expression of one gene is modified by several other genes.

ANSWER: **epistasis**

[10] Epistasis alters this property, an observed property of an organism determined by its genotype.

ANSWER: **phenotype**

[10] Epistasis is also common among this protein complex found on the cell surface. The type II form of this protein destroys antigens and then displays fragments of them to T-cells to stimulate an immune response.

ANSWER: **major histocompatibility complex** or **MHC**

13 The Treaty of Moultrie Creek was one document signed during a war with this Native American tribe. For 10 points each:

[10] Name that Florida tribe that fought against the U.S. government throughout the 19th century.

ANSWER: **Seminole**s

[10] During the Second Seminole War, Native American forces were led by this man who resisted the Treaty of Payne’s Landing. He died in 1838 after being captured on the orders of General Jesup.

ANSWER: **Osceola**

[10] Among the members of the Seminole tribe was this earlier tribe that lived in northern Georgia and southern South Carolina. They fought British settlers in South Carolina in a namesake 1715-1717 war and then fled south into Florida.

ANSWER: **Yamasee**

14 One group of works by this artist includes *The Savage State* and ends with *Desolation*. For 10 points each:

[10] Name this artist of *The Course of Empire* and *The Voyage of Life* series.

ANSWER: Thomas **Cole**

[10] Cole was a leading figure in this American art school which also included the artist of *Kindred Spirits*, Asher Durand.

ANSWER: **Hudson River** School

[10] This German artist showed five ships to represent different parts of life in his similarly titled *The Stages of Life.* He also painted *The Sea of Ice* and *Wanderer above the Sea of Fog.*

ANSWER: Caspar David **Friedrich**

15 The Kurgan theory is one hypothesis into the origin of this dialect. For 10 points each:

[10] Name this theorized language which as its name suggests, gave rise to a family of languages which includes the Romance languages and the Celtic languages.

ANSWER: **Proto-Indo-European** language or **PIE** (do not accept “Indo-European” language)

[10] Among the linguists who developed the idea of the Proto-Indo-European language was this Swiss linguist and author of *Course in General Linguistics*.

ANSWER: Ferdinand de **Saussure**

[10] Nouns in the theorized Proto-Indo-European language have a least eight ways to indicate this property; there are nominative and accusative forms of this property which describes how a noun or pronoun is related to other words in the sentence.

ANSWER: grammatical **case**

16 For ten points each, answer the following questions about a common topic in literature.

[10] In this Orhan Pamuk novel, Ka goes to the border city of Kars to learn about a series of suicides. There, he meets Kadife, who takes her headscarf off during a performance of *The Spanish Tragedy*.

ANSWER: ***Snow***

[10] Wealthy ballet expert Shimamura meets the geisha Komako in the title location of this novel by Yasunari Kawabata.

ANSWER: ***Snow Country***

[10] This author wrote about the Buddhist patriarch Huineng in *Snow in August*. He is the only person of Chinese descent to win a Nobel Prize in Literature, which he won mainly for *Soul Mountain.*

ANSWER: **Gao** Xingjian

17 This religion worships groups known as nanchons, each composed of several loas. For 10 points each:

[10] Name this religion practiced primarily in West Africa and Haiti.

ANSWER: **Voodoo**

[10] In Haitian Voodoo, this head of the Guede is the loa of the dead and wears a tuxedo, a black top hat and dark glasses.

ANSWER: Baron **Samedi**

[10] This man is the supreme god in Haitian voodoo. His power is so great that he cannot be directly contacted by humans and thus created the loas as intermediates.

ANSWER: **Bondye**

18 Answer these questions about Irish Home Rule, for 10 points each.

[10] Irish home rule was heavily supported by this Liberal, a four time prime minister and rival of Benjamin Disraeli.

ANSWER: William Ewart **Gladstone**

[10] The Irish Parliamentary Party advocating Home Rule was founded by this member of Parliament whose career saw a scandal following his affair with Kitty O’Shea.

ANSWER: Charles **Parnell**

[10] Members of the Irish National Invincibles killed Irish Home Secretary Lord Cavendish and Thomas Burke in this 1882 set of stabbings that took place in Dublin.

ANSWER: **Phoenix Park** Murders

19 Answer these questions about the states of India, for 10 points each:

[10] India’s second most populous states, Maharashtra, is home to this largest Indian city.

ANSWER: **Mumbai** or **Bombay**

[10] India’s smallest state, it was ruled by the Portuguese for 450 years after being taken back by Indian forces in 1961’s Operation Vijay.

ANSWER: **Goa**

[10] This western state is Indian’s largest by area; it covers most of the Thar Desert and is home to the Chittorgarh Fort and the city of Jaipur.

ANSWER: **Rajasthan**

20 This set is defined as an ordered paired (M,d) such that among other criteria, for any two elements x,y in M, d(x,y) (“d of x, y”) is always greater than or equal to zero. For 10 points each:

[10] Name this type of set that defines distances between two elements of the set.

ANSWER: **metric** space

[10] One common metric is taking this function of the difference between x and y. For any real number x, this function equals x if x is greater than or equal to zero and equals negative x if x is less than zero.

ANSWER: **absolute value** function

[10] A subset U of a metric space M has this property if for every x in U, there is a ball centered at x with a radius greater than zero that is contained in U.

ANSWER: **open** set

**Tiebreaker Bonus**

21 Identify these American poets of the 20th century, for 10 points each.

[10] This poet killed herself in 1963 after writing poems like “The Munich Mannequins” and “Daddy”. She also wrote about Esther Greenwood in *The Bell Jar*

ANSWER: Sylvia **Plath**

[10] This poet wrote of a candle that burns at both ends in “First Fig” from her collection *A Few Figs from Thistles*.

ANSWER: Edna St. Vincent **Millay**

[10] This poet wrote “I, who choose two times to kill myself” in her work “The Double Image”. This suicidal poet also wrote *The Death Notebooks* and won the Pulitzer Prize winning collection *Live or Die*.

ANSWER: Anne **Sexton**