

LONE STAR

Head Edited by Daniel Ma. Edited by Daniel Ma, Thomas Gioia, Michael Yue, Roman Madoerin, Dr. Eric Mukherjee, Robert Condron, Sean Doyle, and Michael Patison. Written by the editors, Jisoo Yoo, Johnny Vasilyev, Nikita Nair, Aayush Goodapaty, Josh Rubel, Ketan Pamurthy, Ned Tagtmeier, Akshay Shyam, and Michael Artlip. Playtested by Dean Ah Now, Hari Parameswaran, and Rohan Venkateswaran.

Packet 6

Only read this packet if the last tossup of the previous round was precipitation.

TOSSUP 1

At this battle, the First Minnesota regiment relieved the III Corps of Daniel Sickles, who lost his leg at the Wheatfield. Brandy Station, the war's largest cavalry engagement, delayed J.E.B Stuart's advance to this battle. This battle saw Joshua Chamberlain's 20th Maine Regiment defend (*) Little Round Top. Cemetery Ridge was attacked in Pickett's Charge in this battle. For 10 points, name this three-day Civil War battle, the "high water mark of the Confederacy," an 1863 Confederate defeat in Pennsylvania.

ANSWER: Battle of **Gettysburg** <Goodapaty>

BONUS

For 10 points each, answer the following about the head of the *Aesir*.

[10] This chief Norse All-father taught humanity the Runes, which he learned by hanging on Yggdrasil for nine days after being injured with his spear, Gungnir.

ANSWER: **Odin** [or **Wotan**]

[10] Another unpleasant experience endured by Odin was when this figure demanded one of Odin's eyes. Odin gave up his eye to drink from this figure's Well of Wisdom.

ANSWER: **Mimir**

[10] In order to keep up to date, Odin receives information about what happens in Midgard from a pair of these animals, whose names are Hugin and Munin.

ANSWER: **ravens** [prompt on **birds**] <Condron>

TOSSUP 2

A play by this author has an "Alternative to the Prologue" that describes Belzanor being warned of a title character's invasion of Egypt. This author of *Caesar and Cleopatra* wrote of Bluntschli's use of ammunition pouches to store sweets, which leads to him being nicknamed "chocolate-cream soldier" by Raina. This author of (*) *Arms and the Man* wrote a play that opens in Covent Garden and centers on a bet between Colonel Pickering and Henry Higgins. For 10 points, name this Irish playwright who wrote of Eliza Doolittle in *Pygmalion*.

ANSWER: George Bernard **Shaw** <Yoo>

BONUS

Lars Porsena was a king of these peoples who ruled from Clusium. For 10 points each:

[10] Name these peoples that fought against the Romans in a namesake "League" while attempting to restore Tarquin the Proud to the throne.

ANSWER: **Etruscans** [accept **Tusci**]

[10] This Roman emperor was the last person to be able to read the Etruscan language. He reigned between Caligula and Nero and co-names the first Roman imperial dynasty with Julius Caesar.

ANSWER: Tiberius **Claudius** Caesar Augustus Germanicus

[10] Etruscan territory roughly covered what is now Tuscany in this modern-day country, the homeland of the Romans.

ANSWER: Italy <Rubel>

TOSSUP 3

Scholarship suggests that this Biblical book was written during the reign of Antiochus IV. The “Additions” to this book include stories about corrupt priests of Bel eating offerings and elders trying to blackmail Susanna into sex. In this book, three men who refuse to worship a golden (*) statue are unharmed by a furnace, and Darius the Mede invades the same night a mystical hand writes Hebrew on Belshazzar’s wall. For 10 points, what book set during the Babylonian Exile is named for a prophet who remains unharmed in a lion’s den?

ANSWER: Book of Daniel <Ma>

BONUS

In one poem, this poet addressed “thin men of Haddam,” who “imagine golden birds.” For 10 points each:

[10] Name this American modernist poet, who included “Disillusionment of Ten O’Clock” and “Thirteen Ways of Looking at a Blackbird” in his collection *Harmonium*.

ANSWER: Wallace Stevens

[10] Another of Stevens’ poems is titled for an “Emperor of” this food. Helen Vendler claimed that a funeral wake is the reason that the title character of that poem “whip[ped] concupiscent curds” to make this cold dessert.

ANSWER: ice cream [accept “The Emperor of Ice-Cream”]

[10] A Stevens poem set at this location features the speaker asking Ramon Fernandez about “glassy lights” and opens by describing a woman who “sang beyond the genius of the sea.” That poem is titled for “The Idea of Order at [this location].”

ANSWER: Key West <Yoo>

TOSSUP 4

The cross product of this quantity with the product of velocity and charge is one term of the Lorentz force. Increasing this quantity causes spectral line splitting in the Zeeman effect. This quantity is the curl of the vector potential. Gauss’ law says that both the surface integral of this quantity with respect to area and the (*) divergence of this quantity are zero. The Biot-Savart law computes this quantity generated by current. The SI unit for this quantity is the tesla. For 10 points, name this field, denoted B, that is contrasted with the electric field.

ANSWER: magnetic field <Shyam>

BONUS

A set of 25 of these pieces was published in 1601 under the title *The Triumph of Oriana*. For 10 points each:

[10] Name this secular unaccompanied form of vocal music popular in the Renaissance.

ANSWER: madrigal

[10] *The Triumph of Oriana* was published in this modern country by Thomas Morley during the Tudor period, possibly in honor of Elizabeth I. Morley also set works by his countryman and contemporary William Shakespeare.

ANSWER: United Kingdom [accept England or Great Britain]

[10] This later English composer was heavily inspired by Tudor music and folk song, deriving his *Fantasia on a Theme by Thomas Tallis* from a hymn written by the title composer.

ANSWER: Ralph Vaughan Williams (“rayf von williams”) [do not accept or prompt on partial answer] <Ma>

TOSSUP 5

Moderator Note: Read score clues slowly.

Composer and type of piece required. The last of these works features a bass recitative opening with a perfect fifth “A to E,” then “D C-sharp D E.” Another one of these works opens with two tutti E-flat major chords and was dedicated to a “great man.” “Merry Gathering of Country Folk” and “Scene By the (*) Brook” are movements in the “Pastoral” one of these works. The motif “short B-flat B-flat B-flat, long G” is found in the fifth of these works. For 10 points, the “Ode to Joy” was written in the last of what works when their composer was already deaf?

ANSWER: **symphonies** by Ludwig van **Beethoven** <Vasilyev>

BONUS

Michael Collins and Eamon de Valera were adversaries in this country’s Civil War. For 10 points each:

[10] Name this country that became independent of its eastern neighbor, the United Kingdom, after a 1919-1921 war. It occupies most of its main island, although a “Northern” part remains part of the UK today.

ANSWER: **Ireland**

[10] Name this first independent government of Ireland. Eamon de Valera’s new constitution in 1937 ended this government, making the country simply called “Ireland” from then on.

ANSWER: Irish **Free State**

[10] The Irish independence movement is commonly given this two-word name, which also names three bills of Parliament regarding Irish autonomy. A “League” named for it was led by Isaac Butt.

ANSWER: **Home Rule** <Ma>

TOSSUP 6

While plundering all ships carrying pilgrims, this person ordered the ship *Miri* to be sunk with all aboard. During his expeditions for Manuel I, this person erected many padraos, including one still standing at Malindi. The *Lusiads* are based on the voyages of this person’s (*) caravels. This explorer passed the Great Fish River, sighted by his compatriot Bartolomeu Dias beyond the Cape of Good Hope, eventually reaching Calicut in 1498. For 10 points, name this Portuguese explorer, the first European to reach India by sea.

ANSWER: Vasco **da Gama** <Goodapaty>

BONUS

In this technique, samples are loaded into wells after being weighed down with a dye. For 10 points each:

[10] Name this laboratory technique in which fragments of a macromolecule move through a matrix of agarose or polyacrylamide and are separated based on size and charge.

ANSWER: **gel electrophoresis** [prompt on taking a gel; do not accept or prompt on “electrophoresis” as that is not a technique]

[10] Gel electrophoresis is the first step of this other technique, which is used to detect specific proteins in a sample. Though not named for a scientist, it plays on the name of a similar technique which detects specific DNA sequences.

ANSWER: **Western Blot** [accept **immunoblot**]

[10] Northern blots, another play on Edwin Southern’s name, detect these nucleic acids in a sample. These single stranded nucleic acids come in messenger, transfer, and ribosomal types.

ANSWER: **RNA** [or **ribonucleic acid**] <Pamurthy>

TOSSUP 7

While on a walk with Miss Bickerton, a character in this novel with a cramp in her leg from a recent ball is surrounded by a group of beggar gypsies. A piano in this novel is sent anonymously to a character, furthering suspicions that she is in love with (*) Frank Churchill. The protagonist of this novel attempts to convince her friend to marry Mr. Elton, but she ends up with Robert Martin instead. The title character helps Harriet Smith and marries George Knightly in, for 10 points, what Jane Austen novel about a headstrong matchmaker?

ANSWER: Emma <Yoo>

BONUS

Gyroscopes are able to stay standing up due to the conservation of this quantity. For 10 points each:

[10] Name this quantity whose total value is equal to its “spin” and “orbital” components.

ANSWER: angular momentum

[10] The rate of change of angular momentum is equal to this quantity. It equals force cross displacement.

ANSWER: torque

[10] This theorem in Lagrangian mechanics states that all systems with differentiable continuous symmetry properties necessarily have some conservation law associated with them.

ANSWER: Noether's Theorem <Madoerin>

TOSSUP 8

The feasibility of this technique can be determined from a residue curve. One apparatus used in this technique is a tube with indentations called fingers, and is named for Vigreux. Using a molecular sieve or an entrainer allows this process to be conducted on an azeotrope, which deviates from (*) Raoult's law. Crude oil is refined by using this technique's “fractional” form. This technique is also used to create drinks with high alcohol content. For 10 points, name this lab technique that separates liquids by their boiling points.

ANSWER: distillation [prompt on separation, fractionation] <Shyam>

BONUS

In a film partially set in one of these locations in Burma, Nicholson falls on a detonator, destroying a newly built bridge. For 10 points each:

[10] Name this type of place. *The Bridge on the River Kwai* is largely set in one of these places, as is *Stalag 17*, which features American servicemen attempting to escape from one of them.

ANSWER: Japanese prisoner-of-war camp [accept POW camp; do not accept or prompt on “concentration camp”]

[10] This 1963 film depicts American and British troops attempting the title action from a POW camp. During the climax of this film, Steve McQueen jumps a motorcycle over a barbed-wire fence.

ANSWER: *The Great Escape*

[10] Another depiction of a World War II military prison camp is The Hill, starring Sean Connery. Connery is also known for portraying this character known by code number 007 (“double-o-seven”) in 7 movies, including Goldfinger and Dr. No.

ANSWER: James Bond <Patison>

TOSSUP 9

It's not a squirrel, but in an episode of *Community*, Britta dresses up as this animal at a Halloween party ruined by a rabies-like virus. The most famous song of an English rock band named for this animal is “Bang a Gong (Get It On).” A toy one of this animal trips Zurg, who then falls down an elevator shaft, saving (*) Buzz Lightyear. This animal, which is fed goats, throws trailers off cliffs and teams up with a velociraptor to kill a hybrid animal in the *Jurassic Park* franchise. For 10 points, name this large carnivorous dinosaur with notably small arms.

ANSWER: **T. rex** [accept **Tyrannosaurus** rex; prompt on dinosaur] <Shyam>

BONUS

Jacques Cartier began this country's colonization of the New World. For 10 points each:

[10] Name this country that was kicked out of continental North America after a war named for it and "Indians."

Following that war, it relinquished Quebec and Louisiana to Britain and Spain respectively.

ANSWER: **France**

[10] This later French explorer founded Quebec in 1608, also exploring the Great Lakes and a lake in northern New York and Vermont that now bears his name.

ANSWER: Samuel de **Champlain**

[10] This French missionary, with Jolliet, led the first European expedition on the Upper Mississippi, accessing the watershed through the Wisconsin and Chicago Portages. He now names the largest private university in Wisconsin.

ANSWER: Father Jacques **Marquette** <Ma>

TOSSUP 10

One work about these things describes students who "begin beating [one of them] with a hose to find out what it really means," and is by Billy Collins. These things "should not mean / but be," according to an Archibald MacLeish work. Another work describes "imaginary gardens with real toads" in these things, begins (*) "I too, dislike it," and is by Marianne Moore. Horace wrote a book on the *Art of* these literary works. For 10 points, name these literary works whose subtypes include the villanelle and the sonnet.

ANSWER: **poems** [or **poetry**; accept *Ars Poetica*; prompt on less specific answers like writings] <Tagtmeier>

BONUS

The author of this poem died before he could write its 1000th line. For 10 points each:

[10] Name this poem in four cantos which begins, "I was the shadow of the waxwing slain / By the false azure in the windowpane." A foreword and commentary to this poem was written by the supposed exiled king of Zembla.

ANSWER: "**Pale Fire**"

[10] This author included John Shade's title fictional poem in his novel *Pale Fire*. In another novel, this author wrote about the fictional playwright of *The Enchanted Hunters*, Clare Quilty.

ANSWER: Vladimir Vladimirovich **Nabokov**

[10] This best-known novel by Vladimir Nabokov depicts Humbert Humbert's indecent fascination with the title underaged girl.

ANSWER: **Lolita** <Nair>

TOSSUP 11

Drugs that inhibit enzymes that add this chemical group end in the suffix "-nib." This group is added to tyrosine, serine, or threonine. Glucose with this group attached is the initial reactant in a cytosolic pathway named for pentoses and this group, and it is added to glucose in the first step of (*) glycolysis by hexokinase. A sugar, a nitrogenous base, and this group characterize a nucleotide. Three copies of this group are found in ATP. For 10 points, name this anion that consists of 4 oxygen atoms bonded to a central phosphorus.

ANSWER: **phosphate** [or phosphoryl] <Shyam>

BONUS

While this galaxy is the largest in size in the Local Group, the Milky Way is thought to be more massive than it due to its higher amounts of dark matter. For 10 points each:

[10] Name this galaxy, the nearest large spiral galaxy to the Milky Way, which it is currently approaching at a rate of 100 to 140 kilometers per second. It is the 31st of the Messier Objects.

ANSWER: **Andromeda** galaxy [accept **NGC 224**; prompt on Messier 31]

[10] This scientist discovered that the Andromeda nebula is actually a galaxy, settling part of the Great Debate. He also names a diagram that splits into two parts at the S0 node and distinguishes between ellipticals and spirals.

ANSWER: Edwin Powell **Hubble**

[10] Hubble proved that many astronomical objects previously thought to be nebulae were galaxies by using the strong relationship between luminosity and pulsation period of these kinds of stars to measure distance.

ANSWER: **Cepheid** variables [prompt on variable stars] <Yoo>

TOSSUP 12

The number of unit squares crossed by the diagonal of an m by n rectangle is m plus n minus this value. Any integers a and b will have multiples “ax” and “by” that sum to this value, by Bezout’s identity. This value can be computed by the (*) Euclidean algorithm or by looking at the largest exponents of every shared prime factor of the inputs. When this value is equal to one for a pair of numbers, they are relatively prime. For 10 points, name this largest integer that divides all of a set of integers.

ANSWER: their **greatest common factor** [or **greatest common divisor**, or **GCF**, or **GCD**] <Mukherjee>

BONUS

The 1659 Treaty of the Pyrenees concluded disputes about this kingdom’s division. For 10 points each:

[10] Name this kingdom in the Basque country that emerged from the Kingdom of Pamplona, many of whose rulers were named Sancho. Its autonomy was lost when Ferdinand and Isabella conquered it in 1512.

ANSWER: **Navarre**

[10] This Navarrese house ruled France beginning with Henry of Navarre’s victory in the French Wars of Religion. Its rule ended in the French Revolution, although it had a namesake “restoration” after the fall of Napoleon.

ANSWER: **Bourbon**

[10] This “Sun King” was the longest-ruling Bourbon monarch. His absolutism manifested itself in the creation of the Palace of Versailles and his declaration, “I am the State.”

ANSWER: **Louis XIV** [prompt on partial answer] <Ma>

TOSSUP 13

The Teutonic Order donated the Nydegg church in this country’s capital, also home to the Bear Pit, a bear-only zoo on the Aar River. The Gotthard Base Tunnel, the world’s longest, connects this country to its southern neighbor. This country hosts the World Economic forum in Davos and the International (*) Olympic Committee in Lausanne. Romansh is one of the four official languages of this country, a confederation of cantons. For 10 points, name this European country with capital Bern, known for being neutral during wars.

ANSWER: **Switzerland** <Rubel>

BONUS

A radio mast in this city was the tallest manmade structure in the world prior to its collapse in 1991. For 10 points each:

[10] Name this capital city on the Vistula River. The most famous anti-Nazi Jewish uprising occurred in this city’s ghetto, where the Muranów neighborhood was built after the war using “rubble-concrete” from the destroyed buildings.

ANSWER: **Warsaw**

[10] Warsaw is the capital of this country.

ANSWER: Republic of **Poland**

[10] The Vistula empties into the Baltic at this Polish port city. It is the largest city in Pomerelia, the easternmost portion of Pomerania, and was formerly called Danzig.

ANSWER: **Gdansk** <Ma>

TOSSUP 14

In one painting by this artist, logging scars spell “Noah” or “Shaddai” when read in different directions. In a series by this artist, a boulder atop a crag identifies the common valley setting, which undergoes “The Savage State” and “Desolation” in *The Course of Empire*. Another painting by this artist features a tiny self-portrait on a rock with an (*) easel after a storm shattered the trees at the title feature. For 10 points, name this American artist who painted the Connecticut River Valley in *The Oxbow* and founded the Hudson River School.

ANSWER: Thomas Cole <Vasilyev>

BONUS

Members of this religion use internal alchemy to attain immortality, which requires purifying one’s body, often by eating valuable substances such as jade or gold. For 10 points each:

[10] Name this religion in which the struggle between *yin* and *yang* is represented by the *taijitu*.

ANSWER: Taoism [or Daoism]

[10] This founder of Taoism wrote that “The Tao that can be told is not the eternal Tao” in the *Tao Te Ching*.

ANSWER: Lao Tzu [or Laozi]

[10] This Taoist philosopher used the example of Cook Ting cutting up an ox without looking to illustrate the concept of *wu wei* in a book named for him. After waking up, he wondered if he was a man who had dreamt of being a butterfly or a butterfly dreaming of being a man.

ANSWER: Zhuangzi [or Zhuang Zhou] <Tagtmeier>

TOSSUP 15

In this story, a “groan of mortal terror” is described as coming “from the bottom of the soul when overcharged with awe.” The narrator of this story recounts opening a “very, very little crevice” in a lantern after sneaking it into a room for seven previous nights. The sound of a (*) watch “enveloped in cotton” is described by the protagonist of this story, who obsesses over a pale blue “vulture eye” and finally tells three policemen to “tear up the planks!” For 10 points, name this Edgar Allen Poe short story titled for a murdered old man’s beating organ.

ANSWER: “The Tell-Tale Heart” <Nair>

BONUS

The NBA officially returned to play on July 30, but all players were quarantined at this location before play started. For 10 points each:

[10] Name this “Happiest Place on Earth,” a massive amusement park in Orlando, Florida whose Wide World of Sports complex hosted all the remaining NBA games for the 2019-2020 season.

ANSWER: Disney World [prompt on Disney; do not accept or prompt on “Disneyland”]

[10] This Brooklyn Nets point guard called for players to boycott the restart in support of the Black Lives Matter movement. This player suggested that players create a new league as a part of his stance against returning to play.

ANSWER: Kyrie Andrew Irving

[10] This Utah Jazz center was the first NBA player to have tested positive for COVID-19, causing the league to shut down immediately. This man touched all the microphones at his press conference when mocking the severity of the virus and infected his teammate Donovan Mitchell.

ANSWER: Rudy Gobert-Bourgarel <Rubel>

TOSSUP 16

This monarch fought the Rough Wooing against his northern neighbor and faced a rebellion called the Pilgrimage of Grace. This ruler held a summit with a southern neighbor at the Field of the Cloth of Gold. For

presenting him a new wife who was too ugly, this monarch executed (*) Thomas Cromwell. This monarch dissolved all Catholic monasteries in his country, naming himself Supreme Head of the English Church to divorce Catherine of Aragon. For ten points, name this Tudor king who had six wives, many of whom were divorced or beheaded.

ANSWER: **Henry VIII** [prompt on Henry] <Rube!>

BONUS

This character's love letters are read at an inn by Joshua Jopp, causing townspeople to create effigies of him and his lover Lucetta La Sueur for use in a Skimmington Ride. For 10 points each:

[10] Name this title character who auctions off Susan and the infant Elizabeth-Jane for 5 guineas.

ANSWER: **Michael Henchard** [accept either underlined name; prompt on the Mayor of Casterbridge]

[10] Michael Henchard appears in *The Mayor of Casterbridge*, a novel by this writer. That novel, *Far From the Madding Crowd*, and *Jude the Obscure* are set in the fictional county of Wessex.

ANSWER: Thomas **Hardy**

[10] The title character of this other Hardy novel is arrested at Stonehenge after killing Alec and fleeing with Angel Clare. This novel's title character gives birth to the illegitimate son Sorrow in its section "Maiden No More."

ANSWER: **Tess of the D'Urbervilles: A Pure Woman Faithfully Presented** <Gioia>

TOSSUP 17

This politician asked William Barr if he had fully reviewed the Mueller Report, to which he responded "no." This politician received backlash from Dianne Feinstein for refusing to seek the death penalty after the murder of police officer Isaac Espinoza. An op-ed by John Eastman, eventually repudiated by (*) *Newsweek*, challenged this woman's ability to serve as President because her parents were not citizens at the time of her birth. For 10 points, name this Indian-American California senator, who Joe Biden selected as his running mate.

ANSWER: Kamala **Harris** <Tagtmeier>

BONUS

A giant copy of this text, made by Umar Aqta, was made for a ruler who was not impressed with one small enough to fit on a signet ring. For 10 points each:

[10] Name this text, the holy book of Islam. Creating copies of it was instrumental in the development of Arabic script.

ANSWER: **Quran**

[10] This art form, whose name means "beautiful writing," is utilized in making copies of the Quran. Due to the importance of the written Quran and ban on depiction of humans, this art form is extremely prominent in Islamic art.

ANSWER: **calligraphy**

[10] Islamic calligraphy is often integrated into these decorative motifs consisting of curled lines imitating intertwined vines. Debussy wrote two musical works named for them, aiming to simulate them aurally.

ANSWER: **arabesques** <Ma>

TOSSUP 18

Maruv withdrew from this event due to being used as a “political tool” to stop the Russian annexation of Crimea. This event’s *E Depois do Adeus* was used as a signal for the Carnation Revolution that overthrew the Estado Novo dictatorship in Portugal. Conchita Wurst won this event in 2014, cementing her as a worldwide (*) gay icon. Since 2015, Australia has competed in this longest-running annual TV musical competition, despite geographic ineligibility. For 10 points, name this contest that ABBA won by singing Waterloo, a European song contest.

ANSWER: **Eurovision** <Rubel>

BONUS

This thinker advocated nuclear proliferation in response to events such as the Cuban Missile Crisis, arguing that “the presence of nuclear weapons prevented escalation from major skirmish to full-scale war.” For 10 points each:

[10] Name this thinker who pioneered neorealism in his *Theory of International Politics*.

ANSWER: Kenneth **Waltz**

[10] Waltz referred to these things as the second image of war in a book titled *Man, [this thing], and War*. Max Weber defined these things as having a “monopoly on the legitimate use of physical force within a given territory.”

ANSWER: **states** [accept **Man, the State, and War**]

[10] Waltz theorized that the international system is one of these systems since there is no overarching governing body. In politics, this term refers to societies without governments.

ANSWER: **anarchy** [accept word forms like **anarchic**] <Tagtmeier>

TOSSUP 19

This thinker claimed it is impossible to describe “correctness” in the case of marking a calendar with an “S.” Saul Kripke formulated a skeptical interpretation of this thinker’s rule-following considerations. A consequence of that interpretation is that private (*) languages are impossible, as illustrated with this thinker’s thought experiment of a beetle in a box. The work of this philosopher’s late period is collected in his *Philosophical Investigations*. For 10 points, name this Austrian philosopher who wrote the *Tractatus Logico Philosophicus*.

ANSWER: Ludwig **Wittgenstein** <Condron>

BONUS

In this play, an attempt by the old men to retake the Acropolis is foiled by a group of women who douse the men’s fiery timbers with water. For 10 points each:

[10] Name this play about the title character’s plot to end the Peloponnesian War by means of women withholding sex from their husbands.

ANSWER: **Lysistrata**

[10] Lysistrata is a play by Aristophanes, an ancient Athenian writer whose works were mostly in this genre. In contrast with tragedies, plays in this genre are usually more lighthearted and generally have happier endings.

ANSWER: **comedies** [or **comedy**]

[10] This other play by Aristophanes describes a different and unrelated effort to end the Peloponnesian War. The title character of this play is trapped in a cave by the personification of War before she is saved by Trygaeus.

ANSWER: **Peace** <Yoo>

TOSSUP 20

This city was supplied water by two parallel aqueducts built on artificial islands. Much information about this city comes from a work by Bernardino de Sahagun, the Florentine Codex. This city was divided into four camps, each with 20 calpulli, and contained the (*) chinampa floating gardens. This city was the location of La Noche Triste, a massacre of invaders on its causeways, and was where Montezuma II was stoned to death after Hernan Cortes's expedition. For 10 points, name this capital of the Aztecs, over which Mexico City was built.

ANSWER **Tenochtitlan** <Goodapaty>

BONUS

This scientist names a decomposition that resolves a 3D vector field as a curl-free vector field plus a divergence-free vector field. For 10 points each:

[10] Name this physicist. A quantity named for this scientist measures the amount of work obtainable from a closed, isothermal, isochoric system.

ANSWER: Hermann von **Helmholtz** (that quantity is Helmholtz free energy)

[10] The Gibbs-Helmholtz equation gives the temperature dependence of Gibbs free energy for one of these substances. These substances can be represented by the equation $PV=nRT$.

ANSWER: **ideal gases**

[10] A modification of the ideal gas law named for this scientist features a and b terms. This scientist also names weak intermolecular interactions, a type of which are London dispersion forces.

ANSWER: Johannes Diderik **van der Waals** <Pamurthy>