2022 ARCADIA □

Edited by Michael Bucknall, Vincent Du, Jacob Egol, Ganon Evans, Jim Fan, Henry Goff, Eric Gunter, Kevin Jiang, Hasna Karim, Caroline Mao, Grant Peet (head), Payton Schubel, Jonathan Shauf, Ashish Subramanian, Kevin Thomas, and Justin Zhang

Written by Josh Abel, Diego Almaraz, Rasheeq Azad, Daniel Cronin, Michael Eng, Ian He, Evan Knox, Ryan Rosenberg, Maya Spencer, Brandon Weiss, Annabelle Yang, Ivvone Zhou, and the editors

Packet 6: ANYWAY, WE'LL TEST WITHOUT THE LEAD-IN FOR NOW AND I CAN EASILY FIND SOMETHING ELSE LATER

Tossups

1. **While guarding over a man from this city, two men discuss dreams in which dressed sheep watch a whale do business and an eagle steals a shield from the market. A man confined to his house in this city unsuccessfully attempts to escape by pretending to be fig-wood smoke. A scholar from this city who was once defecated on by a lizard invents a term for a (*)** female chicken while arguing with the protagonist about the gender of nouns. A man obsessed with this city's legal system holds court at his house for two dogs, one of whom stole a wheel of Sicilian cheese. The protagonist of a play set in this city avoids paying his debts when he and Xanthias burn down the Thinkery. For 10 points, name this Greek city-state and host of the Dionysia, which was frequently satirized in plays by Aristophanes.
ANSWER: **Athens** [or **Athenai**] (The plays mentioned are Aristophanes's *The Wasps* and *The Clouds*.)
<PS, European Literature>

2. **In an early instance of American foreign aid, the United States shipped fifty thousand dollars worth of flour to this modern-day country after a devastating earthquake allowed Domingo de Monteverde to crush an independence revolt. Juan Francisco de León demanded the expulsion of Basques from a city in this country during a rebellion against the Guipuzcoan** ("ghee-POOS-ko-ahn") **Company. After designing this country's tricolor flag, a politician attempted to land in its former colonial capital of (*)** Coro and start a revolt. The "Decree of War to the Death" was signed in this country during the "Admirable Campaign," which was inspired by the earlier liberation efforts of Francisco de Miranda. For 10 points, name this modern-day country, the birthplace of first Gran Colombia president, Simón Bolívar.
ANSWER: **Venezuela** [or Bolivarian Republic of **Venezuela** or República Bolivariana de **Venezuela**]
<GP, World History>

3. **After calibrating and collecting the InvOLS, an atomic force microscope uses this equation to calculate the force applied by the sample. When using the Maxwell-Betti reciprocal work theorem, an ideal body's constitutive equation can be determined from this equation. The inverse of this equation can be written with the compliance tensor. For homogeneous and isotropic materials, the (*)** Lamé parameters define this equation in three dimensions. This equation is not applicable past the proportionality limit, at which this equation's prediction that stress and strain are proportional starts to fail. Integrating this equation will result in a quadratic potential energy expression. For 10 points, name this law that determines the force exerted with respect to displacement for a spring.
ANSWER: **Hooke's** Law [accept $F = kx$; accept $\sigma = c\varepsilon$ ("sigma equals c epsilon")]
<JF, Physics>

4. **Lisa Tessman identifies burdened examples of this concept that allow individuals to fight oppression while still falling short of this concept's ultimate goal. Michael Slote and Linda Zagebski developed an agent-based version of this concept. Whether practical reasoning can guide one to this concept is explored in *Natural Goodness*. An essay arguing that understanding justice requires understanding this concept begins by explaining that contemporary moral philosophy is "not profitable." That essay, (*)** *Modern Moral Philosophy*,

presaged a 20th-century revival of this concept that included thinkers such as G.E.M. Anscombe and Alasdair MacIntyre. Ethical theories based on this concept are often contrasted with "deontological" and "consequentialist" ethics. For 10 points, name this concept central to Aristotle's philosophy, often defined as moral excellence.
ANSWER: **virtue** [accept **virtue** ethics] (*Natural Goodness* is by Philippa Foot.)
<MB, Philosophy>

5. **A text based on this author's work is the setting of a romance that Nikolai Rubinstein featured on his first all-Tchaikovsky concert, "None but the lonely heart." In a motif from a piece based on this author's work, the singer sings, "ha, ha, ha, ha, ha!" on the first five notes of a B minor scale. A work by this author inspired a piece with a "long** [pause]**, short, long" bassline that mimics a heartbeat and climaxes with a *sforzando* on a fully diminished seventh chord, when the singer remembers a kiss. Mussorgsky's *Songs and Dances about Death* includes this author's "Song of the (*)** Flea." An ostinato on the sixteenth notes "F, A, F, E, D, E" underlies a piece that sets a text by this author whose verses all begin, "My peace is gone / My heart is heavy." That lied is sung by one of this author's characters at her spinning wheel. For 10 points, "Gretchen am Spinnrade" sets what German author's *Faust*?
ANSWER: Johann Wolfgang von **Goethe** ("GER-tuh") [prompt on Lev **Mei** or Aleksey **Plescheyev** by asking, "What author's work did he translate?"]
<IZ, Auditory Arts>

6. **An embassy located in this country was besieged by the "Holger Meins Commando" consisting of Red Army Faction members. A political scientist from this country coined the term "geopolitics" and influenced the name for this country's welfare program. A politician was stabbed by Mijailo Mijailović ("mee-HIGH-lo mee-HIGH-lo-vich") hours before a debate on this country's adoption of the (*)** euro. This country first created an office responsible for public oversight called the Ombudsman and developed the *folkhemmet* welfare state. This country was led for twenty-three years after World War II by Tage Erlander ("TAH-geh air-LAHN-der"). Four hostages appeared to protect a bank robber in this country after the Norr·malms·torg robbery, naming a psychological "syndrome." For 10 points, name this country led by the mysteriously-assassinated Olof Palme.
ANSWER: **Sweden** [or Kingdom of **Sweden** or Konungariket **Sverige**] (Rudolf Kjellén coined the term "geopolitics.")
<GE, European History>

7. **While analyzing a portrait by this artist, Zahira Véliz Bomford argued that a noeud d'amour ("nuh dah-MOOR") ribbon below a rosary identified its subject as the Duchess of Chevreuse. In 2003, Bertamini et al. asked naïve National Gallery observers if a woman painted by this artist is staring at herself in a mirror. This artist used a bronze copy of the *Borghese* ("bore-GAY-zay") *Hermaphroditus* as the model for a portrait that the suffragette Mary (*)** Richardson attacked with a meat cleaver. Portraits of Leopold I's teenage wife in large pink and blue dresses were finished by this artist's student Juan del Mazo. This artist of *Lady With a Fan* and the *Rokeby Venus* appears in front of an easel next to dwarves and royal attendants in a painting for Philip IV. For 10 points, name this artist who depicted the Infanta Margarita in *Las Meninas*.
ANSWER: Diego **Velázquez** [or Diego Rodríguez de Silva y **Velázquez**]
<GE, Visual Arts>

8. **The protagonist of a novel by this author laments her inability to become an ambassador's wife while joking with her husband, who reunited with her while buying tapestries. That woman created by this author moves to France and marries a wealthy aristocrat after the suicide of her husband. Another of this author's protagonists causes an audience to exclaim "Oh!" as she performs in a *tableau vivant* of a Joshua Reynolds painting. A novel by this author ends with a woman from Apex remarrying (*)** Elmer Moffatt. In another novel by this author, the protagonist burns a set of letters revealing Bertha Dorset's affair. That novel by this author ends

as the protagonist is found to be dead from a chloral hydrate overdose by her would-be suitor, Lawrence Selden. For 10 points, name this author of *The Custom of the Country*, who wrote about Lily Bart in *The House of Mirth*.
ANSWER: Edith **Wharton** [or Edith Newbold **Jones**]
<JF, American Literature>

9. **After some instances of this task, onlookers proclaim a phrase translated as "be strong, be strong, and may we be strengthened." Nearby people who witness this task are addressed with the words "*ya'amod*"** ("yah-ah-MODE") **and "*ta'amod*"** ("tah-ah-MODE"). **This task is done seven times rather than five for *yom tov* when a holiday falls on Shabbat, plus once more for the *maftir*. Two *gabbayim* supervise performers of this task, who use a (*)** *tikkun* to prepare. After this task, one object is lifted and dressed during *hagbah* and *gelilah*. Vowels and trope markings must be memorized for this task, which centers on a weekly *parasha* divided into multiple *aliyot* ("ah-lee-YOTE"). This task occurs after its central object is removed from the Ark and processed around a synagogue. For 10 points, what task involves reading the five Books of Moses from a namesake scroll?
ANSWER: **chant**ing **Torah** [or **keriat haTorah**; accept **reciting Torah**; accept answers indicating that someone is **read**ing from a **Torah** scroll or a sefer **Torah**; prompt on cantillation or leyning; anti-prompt (ask, "Can you be less specific?") on becoming a bar/bat mitzvah; reject "memorizing Torah" or "receiving an aliyah"] (The phrase in the first line is "*chazak, chazak, venitchazek*," which congregants say after the end of each book of the Torah.)
<JE, Beliefs>

10. **Horn formulas aid the creation of these constructs via a goal-directed "search." The cut-elimination theorem is used to simplify these constructs created via a formal system that has left and right introduction and elimination rules. Gentzen's sequent calculus is a set of rules for creating these constructs. Reductions of typed lambda terms are equivalent to simplifications of these constructs by the Curry-Howard isomorphism, which treats (*)** programs as these constructs. Isabelle, Lean, and Coq are tools used as "assistants" for creating these constructs. Kenneth Appel and Wolfgang Haken used computers to exhaustively search every case to create one of these constructs for the four-color theorem. For 10 points, name these constructs that can be created using techniques like induction and contradiction.
ANSWER: **proof**s
<KJ, Other Science: Computer Science>

11. **During this century, the slow working pace of Bransby Cooper was attacked by Thomas Wakley as negligent in a weekly periodical he founded. The work of Waldemar Haffkine during this century was influenced by the outbreak of the third pandemic of bubonic plague. William Perkin accidentally discovered a mauve dye that he nicknamed "Tyrian Purple" during this century while searching for a cure for (*)** malaria. Wakley's periodical founded during this century was named after a scalpel and warned against the "radical" ideas of Joseph Lister. *The Lancet* was first published in this century during which the miasma theory of disease was replaced by germ theory. For 10 points, name this century in which science adapted to diseases brought by the peak of the Industrial Revolution.
ANSWER: **19th** century [or **1800**s] (Wakley lambasted a routine five-minute surgery performed by Cooper that took over an hour and killed the patient.)
<GP, Other History: British>

12. **One form of this process is initiated by stabilin 1 or 2 binding to targets and then activating Rac1. One kind of cell that performs this process fuses granules to the *products* of this process to release myeloperoxidase. Either soluble bridging signals containing this process's namesake "prey-binding domains" or membrane-anchored signals like calreticulin and phospha·tidyl·serine can trigger clearance via this process. Because it destroys C3 convertase, M protein prevents (*)** C3b opsonization and thereby allows *Streptococci* to evade this process. Mast cells and monocytes are among the so-called "professional" cells that

perform this process. A namesake vesicle forms during this process and then fuses with a lysosome to degrade the contents that it takes up. For 10 points, macrophages are known for performing what process of "eating" up large particles and pathogens?

ANSWER: **phagocytosis** [accept professional **phagocyte**s or professional **phagocytic** cells; accept **efferocytosis** or **efferocyte**s; prompt on endocytosis; prompt on apoptotic clearance by asking, "Via what process?"; prompt on answers like killing foreign cells or killing bacteria by asking, "What process precedes killing those cells?"]

<HK, Biology>

13. **Following the death of one of these creatures, a father's failure to release a hound led his family to be cursed for nine generations. One of these creatures was dumped into a well by John Lambton after he fished it up while skipping Sunday mass. Two of these creatures fell into a hidden pool underneath a hill-fort and drank a cauldron of mead after taking the form of pigs. The presentation of the tongue of one of these creatures betrothed King Mark of Cornwall to (*)** Isolde. Yvain befriended a lion after saving it from one of these creatures. Two of these creatures, one red and one white, were discovered under a tower by Merlin at the behest of Vortigern. One of these creatures became enraged after an escaped slave stole a golden cup from its lair; that creature was slain with the aid of Wiglaf. For 10 points, name these "poison-spewing" creatures, one of which killed Beowulf.

ANSWER: **dragons** [accept **lindworm**s; accept **wyvern;** prompt on serpent or snake; prompt on worm; prompt on pig until read by asking, "What creature was the pig originally?"] (Lambton was told to kill the first thing that greeted him or else be cursed. This was supposed to be his hound, but his father forgot.)

<MB, Beliefs>

14. **Gordon Sato's Manzanar Project has established artificial plots of this ecosystem in arid Eritrea, contributing to a local camel-based economy. A natural park named for the Cacheu** ("cah-SHAY-oo") **River is the largest to protect this ecosystem in West Africa in a belt stretching south of the Saloum. Fragmentation of this ecosystem on Borneo has endangered the proboscis monkey. The world's largest example of this ecosystem provided protection to cities like Bagerhat and (*)** Khulna during the 1970 Bhola Cyclone. This ecosystem sequesters the highest value per hectare of blue carbon in the world. The largest example of this ecosystem, located in the Ganges Delta, is the Sundarbans. For 10 points, name this type of coastal wetland forest whose namesake trees possess a dense tangle of roots above the water.

ANSWER: **mangrove** forest [or **mangrove** swamp or **mangrove** thicket or **mangal**; accept Cacheu River **Mangrove**s Natural Park or Parque Natural dos **Tarrafe**s do Rio Cacheu; prompt on jungle or forest or wetland or swamp or thicket by asking, "Characterized by what vegetation?"]

<KT, Geography>

15. **A housekeeper in a play recites a line from this poem to her distraught employer, who can only repeat the phrase "and then you're gone" after her daughter leaves her. A novel set in post-World War** [emphasize] *III* **Australia takes its title from a line in this poem that describes people "gathered on this beach of the tumid river." The title of a Ralph Ellison essay collection alludes to a stanza from this poem that notes, "between the motion / and the act / (*)** falls the shadow." This poem describes its title figures as "shape without form, shade without colour" and "headpiece filled with straw." The refrain "For Thine is the Kingdom" appears italicized in the final section of this poem, which uses the epigraph, "Mistah Kurtz - he dead." For 10 points, the refrain "this is the way the world ends / not with a bang but a whimper" ends what World War I-inspired T. S. Eliot poem?

ANSWER: "The **Hollow Men**" (The first clue refers to the ending of *August: Osage County*. The second sentence refers to *On the Beach* by Nevil Shute.)

<HG, British Literature>

16. **A southeastern dialect of this language maintains dot- and colon-shaped diacritics to represent tone, lost in this language's standard dialect. Gari Ledyard argued that consonants in a writing system for this language were derived from the 'Phags-pa** ("POCK-pah") **script. Tense consonants are represented in this language by reduplicating corresponding lax letters. This language's letter** *ieung* ("EE-ung") **is silent in syllable onsets and represents a velar nasal in syllable codas. This language's (*) Revised Romanization** was created to disambiguate letters in its McCune–Reischauer ("RYE-shower") romanization system. The difficulty of the Chinese-based *hanja* writing system for this language inspired the creation of its modern alphabet by Sejong the Great. For 10 points, name this language isolate written with *hangul* ("HON-gull"), spoken on a namesake East Asian peninsula.
ANSWER: **Korean** [or **hangugeo** or **chosŏnmal**; prompt on Jejuan or Jejueo or Jejunmal by asking, "What more widely spoken language is being described?"]
<EG, Social Science>

17. **A song about a "dying" one of these characters is quoted in a ballet suite movement titled "Card Game at Night." One of these characters' lovesickness is represented in a "Nocturne" movement by an oboe and bassoon duet. A ballet centered on these characters was the first to feature tap dancing, performed by the female lead after she mimicks the movements of these characters. The lively final section of a ballet about these characters quotes the song (*)** "Bonaparte's Retreat" during a line dance. Agnes de Mille choreographed a ballet about these characters that includes a "Saturday Night Waltz." A ballet about one of these characters "opens and closes on the open prairie," and another ballet about them ends with a "Hoedown." For 10 points, name these characters that feature in Copland's ballets *Billy the Kid* and *Rodeo*.
ANSWER: **cowboy**s [or **cowgirl**s; accept **roper**s or **wrangler**s; prompt on outlaws]
<EG, Other Arts: Auditory>

18. **The Coldplay song "Kaleidoscope" samples a reading of a poem in this language that begins, "This being human is a guest house." A word in this language that literally translates to "beautiful-eyed" was rendered as "the perfect satisfaction of all our sexual wanting" in this language's poem "Like This." A poem in this language describes a field "out beyond ideas of wrongdoing and rightdoing." Two books discussing the carnal self appear in a long poem in this language whose preface describes a "tale of being (*)** separated" to create the title reed flute. Poems in this language have had their religious elements removed in so-called free-verse "translations" by Coleman Barks, who published his version of this language's *Masnavi*, or *Spiritual Couplets*. For 10 points, name this language used by the Sufi poet Rūmī.
ANSWER: **Persian** [or **Farsi**] (The word in the second sentence is *houri*.)
<JF, World Literature>

19. **An ARSST measures an internal rate of change of this quantity subscripted *S* to determine the size of reactor relief valves. The optimum value of this quantity for a reactor's feed flow can be found by plotting the intersection of the equilibrium conversion curve and an energy balance line. Design of reactors in which this quantity changes with time must consider energy balance in addition to mass balance. *Q*-dot is proportional to the (*)** difference in this quantity. For batch reactors, this quantity is held constant by a surrounding "jacket." This quantity multiplies *R* in the denominator of the exponent in the Arrhenius equation. Runaway reactions occur when increases in this quantity speed up the reaction rate in a positive feedback loop. For 10 points, name this quantity that measures the average kinetic energy of a system.
ANSWER: **temperature** [prompt on T]
<VD, Chemistry>

20. **Anne Kelly Knowles used historical GIS to reconstruct sightlines at this battle, noting that one commander never had a full view of opposing troops despite being atop a Lutheran seminary. In this battle, a**

commander ordered an attack on the far end of an opposing fishhook formation, which was actually well-defended under Strong Vincent. A salient in this battle contained a peach orchard and wheat field and was established by Daniel Sickles. An area of this battle known as (*) "The Angle" contains a copse of trees and a stone wall that Alonzo Cushing defended during the final advance of the losing side. A downhill charge by Joshua Chamberlain's 20th Maine in this battle preserved Union control of Little Round Top. For 10 points, at what battle did Confederate forces lead a doomed assault on Cemetery Hill under the command of George Pickett?
ANSWER: Battle of **Gettysburg**
<RR, American History>

Bonuses

1. This molecule's unique tri·oxane ring is thought to be responsible for its selective toxicity against *P. falciparum*, leading to it largely overtake the riskier quinine in use. For 10 points each:
[10m] Name this malaria drug. Tú Yōuyōu ("yo-yo") won a Nobel Prize for discovering this drug from *qīnghāosù* ("ching-how-SOO"), a Chinese traditional medicinal plant.
ANSWER: **artemisinin** [accept ***Artemisia annua***] (Quinine is also derived from traditional medicinal plants, as cinchona bark has been used by the Quechua for centuries.)
[10e] Artemisinin's mechanism of action likely involves a peroxide being cleaved by hemoglobin to create these species with unpaired electrons, which damage *P. falciparum* proteins.
ANSWER: free **radical**s
[10h] A successful vaccine trial in the Comoros used artemisinin combined with piperaquine, which prevents the biocrystallization of heme into this compound.
ANSWER: **hemozoin** (Since so many malaria drugs, like piperaquine and quinine, target the crystallization of heme to hemozoin, hemozoin is popularly called "malaria's Achilles heel.")
<AS, Chemistry>

2. Robin Skelton proposed that the association of these objects with a certain people derives from farmers who leapt over these objects during the full moon to encourage agricultural productivity. For 10 points each:
[10h] Name these objects that, along with one's body, were greased with a hallucinogenic "flying ointment" containing poisonous plants and children's fat.
ANSWER: **broom**s [or **besom**s; accept **staff**s]
[10e] Brooms or flying goats were used by witches to travel to these meetings where they would kiss the Devil's anus. These debaucherous nocturnal gatherings share their name with an Abrahamic day of rest.
ANSWER: witches' **sabbath**s
[10m] Witches like La Befana rode brooms while entering these non-keyhole structures. A tale about a generous Bishop of Myra tossing gold through windows eventually evolved into him dropping gold down these structures.
ANSWER: **chimney**s (The Bishop of Myra is Saint Nicholas.)
<GE, Beliefs>

3. A manifesto titled for this concept proposed eating in giant aircraft whose seats would "shake out" favoritism towards pasta and make way for enjoying new meals that smelled of ozone. For 10 points each:
[10e] Name this concept, which also names an early 20th-century Italian art movement whose manifesto emphasizes dynamism and asserts that "a racing car… is more beautiful than the *Victory of Samothrace*."
ANSWER: the **future** [accept **Futurism** or **Futurismo**; accept *The **Futurist** Manifesto*; accept *Manifesto of **Futurist** Cooking*; prompt on time]
[10h] The Guggenheim's "Paintings for the Future" exhibition was dedicated to this artist, who stipulated that her work could not be shown for at least twenty years after her death. This artist depicted increasingly abstract swans in one series.
ANSWER: Hilma af **Klint**
[10m] This artist created the stage design for the Cubo-Futurist opera *Victory over the Sun*. A "zero point in painting" that this artist revealed at the Futurist 0,10 ("zero comma ten") exhibition was used as the symbol for the UNOVIS group.
ANSWER: Kazimir **Malevich** [or Kazimir Severinovich **Malevich**]
<AY, Visual Arts>

4. Answer the following about Africans in Renaissance Italy, for 10 points each.

[10h] John Brackett argued that this man's heir Alessandro was the son of the African servant Simonetta. This dedicatee of Machiavelli's *The Prince* married his daughter Catherine to King Henry II of France.
ANSWER: **Lorenzo II** de' Medici [reject "Lorenzo" or "Lorenzo de' Medici"]
[10m] A lifted blindfold was added to depictions of the decapitated head of Moorish slaver Mansour Ben Ismaïl by guerillas on this island led by Pasquale Paoli in a fight against Genoa.
ANSWER: **Corsica** [or **Corse**]
[10e] Marino Sanuto the Younger cites a number of freed Africans working in this profession as *traghettatori*, who traditionally sang Venetian folk songs called barcarolles while transporting passengers.
ANSWER: **gondoliers** [or **ferrymen** or **watermen**; accept descriptions that indicate **rowing** or **operating** a **gondola**]
<GE, European History>

5. Wilkie Collins's novel *No Name* uses this device in the line, "Was it the spectre of the woman? Or the woman herself?," which blurs the line between the narrator and the protagonist. For 10 points each:
[10h] Give this three-word literary term in which a third-person narrator expresses their own thoughts while inhabiting the thoughts and speech styles of a character.
ANSWER: **free indirect discourse** [or **FID**; or **free indirect speech**; or **free indirect style**; or **discours indirect libre**]
[10e] David Lodge argued that free indirect discourse, rather than a single omniscient narrator, characterized 19th-century realist novels in his essay on this George Eliot novel about Dorothea Brooke.
ANSWER: *Middlemarch*
[10m] In this novel, free indirect discourse is used to describe a "tinge of contempt" in rejecting Mr. Lennox's marriage proposal. Margaret Hale moves to the industrial town of Milton in this Elizabeth Gaskell novel.
ANSWER: *North and South*
<GE, British Literature>

6. A 1966 paper titled for "The Influence of [these constructs] on Visual Perception" documented a study that subjected individuals to the Muller-Lyer and Sander Parallelogram illusions. For 10 points each:
[10h] Name these constructs. Hazel Markus introduced the "4 I's" model of a cycle named for these constructs as part of her work in a subfield of social psychology named for these constructs.
ANSWER: **culture**s [accept word forms like **cultural**; accept "The Influence of **Culture** on Visual Perception"; accept **culture** cycle; accept **cultural** psychology]
[10m] Psychologists such as Richard Nisbett have found that this bias is more common in individualistic cultures than collectivist ones. Lee Ross defined this bias as overestimating the role of other peoples' individual factors while underestimating situational and societal contributions.
ANSWER: fundamental **attribution** error [or **FAE** or **attribution** effect; reject "self-serving bias"]
[10e] This country is frequently cited as having an individualistic culture, scoring the highest for individualism in Geert Hofstede's cultural dimensions analysis. Markus and Philip Zimbardo researched at a university in this country.
ANSWER: **United States** of America [or United States of **America**; or **US** or **USA**]
<EK, Social Science>

7. While the California High-Speed Rail is projected to create some environmental benefits, one potential drawback is the degradation of the habitat of this species. For 10 points each:
[10e] Name these orange-and-black insects famous for a seasonal migration to Mexico.
ANSWER: **monarch** butterflies [or *Danaus **plexippus** plexippus*; prompt on *Danaus*]
[10h] The project may also disrupt many of these areas, which allow animals like mountain lions to move between areas, further fragmenting populations and decreasing gene flow.

ANSWER: **wildlife corridor**s [or **habitat corridor**s or **dispersal corridor**s or **green corridor**s or **biological corridor**s or **migration corridor**s]
[10m] Another concern is that the railway will disrupt acres of this biome, which, in North America, is unique to California. This shrubland biome features a Mediterranean climate and plants adapted to surviving wildfires.
ANSWER: **chaparral**
<AS, Biology>

8. This politician was arrested while reading the First Amendment to IWW longshoreman during the Liberty Hill strike by a police officer who said, "We'll have none of that Constitution stuff." For 10 points each:
[10m] Name this founder of the EPIC movement. Greg Mitchell's book *The Campaign of the Century* documents how Hollywood producers helped Frank Merriam beat this progressive in the 1934 California Governor's Race.
ANSWER: Upton **Sinclair** [or Upton Beall **Sinclair**, Jr.]
[10h] Sinclair profiled how William Fox helped install this official during a financial war against Louis Meyer. Joseph Breen enforced this official's "Magna Charta," which was promulgated to save public reputation after Fatty Arbuckle murdered Virginia Rappe ("rap-PAY").
ANSWER: Will **Hays** [or William Harrison **Hays**; accept the **Hays** Code]
[10e] As a muckraker, Sinclair "aimed at the public's heart and by accident…hit it in the stomach" with this novel whose depiction of the Chicago meatpacking industry led to the passage of the Pure Food and Drug Act in 1906.
ANSWER: The ***Jungle**
<GE, American History>

9. In March 2022, many Ukrainians on Instagram criticized Russia by quoting a poet with this *first* name with lines like "From the Moldavian to the Finn / All silent are in all their tongues." For 10 points each:
[10h] Give this first name of the poet who wrote "The Caucasus." A character with this first name inspired by Cossack legends tells his son Andriy, "I gave you life, I will also kill you!"
ANSWER: **Taras** [accept **Taras** (Hryhorovych) Shevchenko or Kobzar **Taras** or **Taras** Bulba]
[10e] This author changed his novel *Taras Bulba* in 1842 to remove some Ukrainian themes. This author expounded upon those political views in his novel *Dead Souls.*
ANSWER: Nikolai **Gogol** [or Nikolay Vasil'yevich **Gogol**; or Mykola Vasil'ovych **Hohol**]
[10m] This author praised Gogol as "so unusual…I am [unable] to get over it." While in Odessa, this author continued a novel with alternating masculine and feminine rhymes whose title character shuns Tatyana and kills a poet in a duel.
ANSWER: Alexander **Pushkin** [or Alexander Sergeyevich **Pushkin**] (The novel is *Eugene Onegin*.)
<AS, European Literature>

10. A motif based on this word is "sighed" throughout Mahler's ninth symphony, possibly alluding to "leave-taking or the grave." For 10 points each:
[10h] Give this word whose syllables are inscribed under a descending third, fifth, and sixth that imitates a posthorn call from Archduke Rudolf's carriage in a piece by a different composer.
ANSWER: **lebewohl** ("lay-buh-VOLE") [prompt on **farewell** or "Les **Adieux**"]
[10e] "Lebewohl" is written under the first three chords of "Les Adieux" ("layz ah-DYOO"), one of these solo pieces by Beethoven that also include "Pathétique" and "Moonlight."
ANSWER: **piano sonata**s [prompt on sonatas]
[10m] Beethoven also rhythmically states "lebewohl" in the theme and variations from his "Harp" string quartet, which like "Les Adieux," he wrote in this key. This is also the key of Beethoven's "Eroica" symphony.
ANSWER: **E-flat major** [or **Es-Dur**; prompt on E-flat or Es]
<JE, Auditory Arts>

11. In a story titled for this faculty, a boy tells the narrator that he has created a new numbering system by giving the numbers names like "Maximo Perez" or "The Railroad." For 10 points each:
[10m] Name this faculty possessed by Ireneo Funes ("FOON-ace"), who gains this faculty after he falls off a horse and receives a copy of Pliny's *Historia Naturalis*.
ANSWER: perfect **memory** [accept equivalents like strong **memory** or photographic **memory**; accept "Funes the **Memorious**"]
[10e] The story "Funes the Memorious" was written by this Argentinian author, who included it in his collection *Ficciones* ("ficks-YO-nace") along with stories like "The Library of Babel."
ANSWER: Jorge Luis **Borges**
[10h] In another Borges story, Hermann Sorgel receives the memory of this person, gradually becoming so disturbed by this person's memories that he desperately calls random people to give it away.
ANSWER: William **Shakespeare**
<HG, World Literature>

12. Julius S. Scott uses this phenomenon to title a book examining the spread of information among Black people during an event that another historian called "the only successful slave revolt in history." For 10 points each:
[10m] Name this phenomenon that Harold MacMillan earlier likened to the "growth of national consciousness" to title a speech about African decolonization.
ANSWER: **wind** [accept *The Common **Wind***; accept "**Wind** of Change"]
[10h] Scott's book was influenced by this other historian, who argued that "had the masses been black, the French Revolution would have gone down as a race war" in a book about the aforementioned slave revolt.
ANSWER: C.L.R. **James** [or Cyril Lionel Robert **James**]
[10e] James's book about the Haitian Revolution is titled for a "Black" instance of this political club responsible for much of the Reign of Terror. Maximilien Robespierre purged the Girondins ("jee-ron-DAN") from this political faction.
ANSWER: **Jacobins** [accept *The Black **Jacobins***; accept **Jacobin** Club]
<HG, World History>

13. When motivating these sets, Steven Strogatz writes that the "flaky, layered structure" of a croissant is one of these sets for the "pastry map." For 10 points each:
[10h] Name these infinite sets of noninteger dimension that can only arise in dissipative dynamical systems, as a consequence of Liouville's theorem. For the Hénon map, this set resembles a boomerang.
ANSWER: **strange attractor**s [prompt on fractals; prompt on attractors]
[10e] The term "strange" for fractal attractors of chaotic maps was coined in a 1974 paper by Ruelle and Takens that modeled *this* phenomenon. This phenomenon of chaotic, irregular fluid flow arises at a high Reynolds number.
ANSWER: **turbulence** [or word forms, like **turbulent** flow]
[10m] This founder of chaos theory names a strange attractor with a butterfly-shaped phase portrait. This meteorologist also coined the phrase "butterfly effect."
ANSWER: Edward **Lorenz** [or Edward Norton **Lorenz**]
<VD, Physics>

14. In "Incorporating [this concept]," Asha Persson discusses this concept in relation to lipodystrophy in response to HIV treatment, describing it as beneficial and detrimental to the same person at the same time. For 10 points each:
[10h] Give this Greek term. In an essay, another thinker explains how this concept is "the difference of difference," as analyzed in a story in which Theuth presents a gift that is this concept.
ANSWER: **pharmakon**
[10e] This thinker compared pharmakon to writing in "Plato's Pharmacy." This French postmodernist author of *Of Grammatology* developed the method of deconstruction.

ANSWER: Jacques **Derrida**

[10m] In "Plato's Pharmacy," Derrida proclaims pharmakon to be one of these things, as it is "the representative of a representative." Derrida's critique of Ferdinand de Saussure argues that Saussure's theory leads to an infinite chain of these things.

ANSWER: **signifier**s [prompt on <u>sign</u>s by asking, "Which component of signs?"]

<EG, Philosophy>

15. Pillow shading is a technique often associated with amateurs in this medium. For 10 points each:

[10m] Name this medium that often requires artists to draw anti-aliasing by hand to avoid jaggies. Artists in this medium compensate for limited palettes with dithering and upscale artworks using the nearest neighbor algorithm.

ANSWER: **pixel** art [accept **dot** art; accept **pixel** pushing; prompt on <u>digital</u> art; prompt on <u>computer</u> art]

[10h] The "Godfathers of Pixel" helped popularize the art by creating massive scenes named for a portmanteau of pixels and this other technique. Robert Barker's painting of Edinburgh coined the name for this technique which relies on image stitching for VR art.

ANSWER: **panorama**s [accept word forms such as **panoramic** painting or **panoramic** photography; accept ***Pixelrama**s*]

[10e] A figure inspired by *Wanderer Above the Sea of Fog* and a skull on fire appear in two Kristoffer Zetterstrand paintings made in pixel art for this game for his once brother-in-law Notch.

ANSWER: ***Minecraft**

<IH, Other Arts: Visual>

16. In one book, this medical anthropologist describes working with traditional priest-doctors called *oungan*s to address the illness *move san*. For 10 points each:

[10h] Name this author of *AIDS and Accusation* and *Partner to the Poor*. In *Mountains Beyond Mountains*, Tracy Kidder chronicles this late anthropologist's work distributing second-line antibiotics for multidrug-resistant tuberculosis.

ANSWER: Paul **Farmer** [or Paul Edward **Farmer**]

[10e] *AIDS and Accusation* follows how stigma against this Caribbean country as a source of AIDS arose due to racist perceptions of its practice of Vodou.

ANSWER: **Haiti** [or Republic of **Haiti** or République d'**Haïti** or Repiblik d **Ayiti**]

[10m] In *Partner to the Poor*, Farmer discusses how "epic poverty and inequality" indirectly caused a structural form of this concept. Napoleon Chagnon controversially claimed that Yąnomamö society has uniquely high levels of this concept due to biological differences.

ANSWER: **violence** [accept structural **violence**; prompt on <u>savage</u>ry]

<AS, Social Science>

17. These topological spaces can be viewed as consisting of many copies of a given space arranged "over" a base space and glued together. For 10 points each:

[10h] Name those topological structures, consisting of a total space that continuously surjects onto a base space, along with a local trivialization that shows the total space to be locally homeomorphic to a product space.

ANSWER: **fiber bundle**s [prompt on <u>bundle</u>s]

[10m] The Hopf fibration describes the 3-sphere as a fiber bundle over the 2-sphere, whose fibers are *this* space. The Mobius strip is a fiber bundle over this space, and can be deformed into this space by "collapsing" its width.

ANSWER: the **circle** [accept **1-sphere**]

[10e] For a differentiable manifold, the tangent bundle is a fiber bundle over the manifold, whose fibers are spaces of *these* things. These things specify a magnitude and a direction along the manifold.

ANSWER: **vector**s [accept tangent **vector**s or **vector** bundle]

<RA, Other Science: Math>

18. The "hibernation" of the shining-bronze cuckoo determined the planting and harvesting of this crop with Māori called *kumara*. For 10 points each:
[10m] Name this crop whose drought-resistant nature made it invaluable to Polynesians. The similarity of the Quechua and Māori words for this crop have spawned theories about South America's interaction with Polynesians in pre-Columbian times.
ANSWER: **sweet potato**es [or ***I**pomoea **batatas**; reject "potato"]
[10e] Sweet potato farming displaced taro and yam on this island, where the Rapa Nui built *moai*.
ANSWER: **Easter** Island
[10h] Sweet potatoes were introduced during this island's "Ipomoean ("ip-uh-MEE-un") revolution" and the resultant population growth led the Enga to develop the Great Ceremonial Wars to keep the peace. Agriculture was independently developed at Kuk Swamp on this island.
ANSWER: **New Guinea** [accept **Papua**]
<AS, Other History: Ancient>

19. Transgender rights activists have advocated for the adoption of trash cans in men's bathroom stalls to facilitate the disposal of these items. For 10 points each:
[10e] Name this general set of items. In 2020, Scotland became the first country to make these items, made by companies like Always and Kotex, free.
ANSWER: **menstrual** hygiene **product**s [accept equivalents like **period product**s; accept specific types of menstrual products like **tampon**s or menstrual **pad**s or **menstrual cup**s; prompt on answers like feminine hygiene products or personal care products or toiletries]
[10h] In this Jordanian refugee camp, nonprofits have improved access to menstrual products with Aruna·chalam Murugan·antham's low-cost pad machine. This camp is the largest in the world for Syrian refugees.
ANSWER: **Za'atari** refugee camp [or mukhayyam az-**Za'tari**]
[10m] Freweini Mebrahtu won the CNN Hero of the Year award for her reusable pad, which has lowered school absences in this country. After her election as president of this country, Sahle-Work Zewde ("zow-DAY") committed to improving gender equality with this country's 2019 Nobel Peace Prize-winning prime minister.
ANSWER: **Ethiopia** [or Federal Democratic Republic of **Ethiopia** or Ye**Ityop'p'ya** Federalawi Demokrasiyawi Ripeblik or Rippabliikii Federaalawaa Dimokraatawaa **Itiyoophiyaa**] (The Nobel Peace Prize-winning prime minister is Abiy Ahmed.)
<AS, Current Events>

20. At the end of a story by this author, Aunt Rose says the title phrase to her disinterested niece Lillie after recalling her affair with the vaudeville actor Vlashkin. For 10 points each:
[10h] Name this prolific short story author, who wrote about the experience of the American Jewish diaspora in stories like "A Conversation With My Father," "The Used-Boy Raisers," and "Good-bye and Good Luck."
ANSWER: Grace **Paley**
[10m] Paley used this adjective to describe "Changes at the Last Minute" in the title of her second collection. This adjective describes an object that the Westcotts use to eavesdrop on their neighbors in a John Cheever story.
ANSWER: **enormous** [accept "The **Enormous** Radio" or ***Enormous** Changes at the Last Minute*]
[10e] This author championed Paley's early work and used his alter ego Nathan Zuckerman to portray the Jewish-American experience in his novel *American Pastoral*. He also wrote *Portnoy's Complaint*.
ANSWER: Philip **Roth** [or Philip Milton **Roth**]
<HG, American Literature>