

# 2022 SHOW-ME

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## Packet 9

1. In Philadelphia, a business that sells these products gained notoriety for posting billboards that say “I Hate Steven Singer!” Black, Starr & Frost is the oldest continuously operating seller of these products in the United States. These products’ authenticity is tested with pens that measure their thermal conductivity. The Kimberley Process (\*) Certification Scheme affects the sale of these products, fake versions of which often turn skin green due to the use of copper alloys. Slogans for businesses selling these products include “He Went To Jared” and “Every Kiss Begins With Kay.” For 10 points, name these products, which include necklaces and bracelets.

ANSWER: **jewelry** [accept **necklaces** or **bracelets** before mention; accept **rings**; accept **diamonds** or any other **jewels**]

<Other — Rachel Ezrielev> [Ed. Ganon Evans]

1. An oboe solo accompanied by pizzicato strings represents this character’s entrance in a piece by Sergei Prokofiev. For 10 points each:

[M] Name this literary character. A bridal shop employee named Maria who falls in love with a former member of the Jets was based on this literary character.

ANSWER: **Juliet** Capulet [prompt on **Capulet**]

[H] In Prokofiev’s ballet *Romeo and Juliet*, the two title characters first meet at a ball set to this piece. This piece opens with the brass playing a low, dark, pulsating beat before the strings enter with the main melody.

ANSWER: ***Dance of the Knights*** [or ***Montagues and Capulets***]

[E] Leonard Bernstein composed the music to this musical based on *Romeo and Juliet*. Tony and Maria fall in love in this musical despite the rivalry between the Sharks and the Jets, two gangs in its title neighborhood.

ANSWER: ***West Side Story***

<Other Fine Arts — Joy An> [Ed. Ganon Evans]

2. In a story by this author, a man uses a teapot filled with gunpowder to explode a terracotta Venus. A character created by this author spends money saved for a new gun on a dress for his wife. The prostitute Rachel kills a lieutenant with a cheese knife in a story by this author. Cornudet [kor-noo-DAY] whistles “La Marseillaise” [la mar-say-YEZ] in another story by this author, where Elizabeth Rousset (\*) sleeps with a Prussian officer. In a short story by this author of “Mademoiselle Fifi” and “Ball of Fat,” Mathilde Loisel [mah-TEELD lwah-ZELL] attends a Ministry of Education ball. For 10 points, the title piece of lost jewelry is determined to be fake in what author’s story “The Necklace”?

ANSWER: Guy de **Maupassant** [or Henri René Albert Guy de **Maupassant**]

<Mixed Literature — Andrew Gao> [Ed. Joel Miles]

2. For 10 points each, answer some questions about the SAVAK secret police force:

[E] SAVAK was active in this country until its 1979 revolution, which saw the overthrow of its Shah Mohammad Reza Pahlavi. More than 50 Americans were held hostage in this country's city of Tehran.

ANSWER: **Iran** [or Islamic Republic of **Iran** or Jomhuri-ye Eslami-ye **Iran**; accept **Iranian Revolution**]

[M] After SAVAK's dissolution, many of its members became members of SAVAMA, an intelligence agency under this ruler. This first supreme leader of Iran took power in the Iranian Revolution.

ANSWER: Ayatollah **Khomeini** [or Ruhollah **Khomeini** or Sayyid Ruhollah Musavi **Khomeini**; prompt on **Ayatollah**; reject "Khamenei"]

[H] A large 1978 fire in the "Rex" one of these places may have been intentionally set by the SAVAK secret police. Swedish Prime Minister Olof Palme was assassinated while walking home from one of these places.

ANSWER: **cinemas** [or movie **theaters** or the **movies**; accept **Cinema Rex**; accept Grand **Cinema**]

<World History — Andrew Gao> [Ed. Louis Li]

3. **This technique was developed to study a sickle-cell mutation by Cetus Corporation scientist Kary Mullis. A form of this technique uses an Manganese two-plus cofactor, instead of Magnesium two-plus, to purposely induce mutagenesis. Prior to the "extension" step in this technique, a temperature of 40 to 70 degrees Celsius is maintained so that (\*) annealing [uh-NEEL-ing] can occur. Before performing gel electrophoresis, this technique is used to amplify sequences. This technique employs a heat-stable protein from *Thermus aquaticus* to continuously perform replication. For 10 points, name this technique that makes many copies of DNA using a namesake enzyme.**

ANSWER: **PCR** [or **polymerase chain reaction** [puh-LIM-ur-ayss "chain reaction"] ]

<Biology — June Yin> [Ed.]

3. A 2016 study estimated that this value was less than three for 65 percent of 133 popular GitHub projects. For 10 points each:

[H] What value, defined as the minimum number of project members that have to suddenly disappear before the project is stalled, draws its name from members being hit by a certain vehicle?

ANSWER: **bus factor** [accept **bus problem**; or **bus number**; or **lottery factor**; or **truck factor**; or **truck number**; or **lorry factor**]

[E] The bus factor is a measurement of this quantity, which is how likely losses are. Investors often perform an analysis of this quantity and reward.

ANSWER: **risk** [prompt on **uncertainty**]

[M] In the first notion of the bus factor, Michael McLay theorized what would happen to this computer language if Guido van Rossum was hit by a bus. Lines in this whitespace-dependent language do *not* end with a semicolon.

ANSWER: **Python** [accept Iron**Python**; accept **NumPy**]

<Other — Vincent Wang> [Ed. Ganon Evans]

4. **Parakramabahu VI rose to power after this dynasty defeated the Kotte kingdom. This dynasty's last emperor was found hanging from a tree in Jingshan Park. A giraffe from Malindi was considered a Mandate of Heaven during this dynasty, whose Emperor Yingzong was captured by Esan Taishi in the Tumu Crisis. This dynasty's first leader won the Battle of Lake Poyang as a commander of the (\*) Red Turbans. Seven treasure voyages led by Zheng He [jung HUH] were conducted during this dynasty. In this dynasty, Nanjing was replaced as the capital by the Forbidden City in Beijing. For 10 points, name this dynasty that was succeeded by the Qing.**

ANSWER: **Ming** dynasty [or **Ming** chao]

<World History — Aatreya Bhattacharyya> [Ed. Louis Li]

4. As animals in this phylum are difficult to tell apart, its number of species could range from 40,000 to over 1 million. For 10 points each:

[H] Name this phylum of small elongated animals with a flexible cuticle. Its members include the model organism *C. elegans* [see EL-uh-ganz].

ANSWER: **nematodes** [NEE-muh-tohds] or **Nematoda** [or **roundworms**]

[E] Many nematodes or roundworms engage in this type of relationship, in which the nematode benefits by harmfully residing inside a host.

ANSWER: **parasitism** [or **parasitic** relationship or being a **parasite**]

[M] Some of these organisms use their thread-like hyphae [HI-fee] to capture and eat nematodes. These organisms create underground networks called mycelia [my-SEE-lee-uh].

ANSWER: **fungi** [or **fungus**]

<Biology — June Yin> [Ed.]

5. **This deity cursed Lamia with insomnia, causing the woman to turn into a child-eating monster. After hitting two mating snakes with a stick, Tiresias was turned into a woman by this deity. The Milky Way was created when this deity pulled a baby from her breast. This deity was suspended in the sky by golden chains and anvils as punishment for rebellion. This deity sent the hundred-eyed (\*) Argus to watch over Io. This “cow-eyed” deity’s chariot was pulled by peacocks. The Nemean Lion and Hydra were sent by this deity to fight Hercules, the bastard son of her husband. For 10 points, name this Greek goddess of childbirth and wife of Zeus.**

ANSWER: **Hera** [prompt on **Juno**]

<Mythology — Ganon Evans> [Ed.]

5. In a poem by this author, the speaker says, “There is grief in the sound, there is guilt in the fame” because “I Speak Not, I Trace Not, I Breathe Not Thy Name.” For 10 points each:

[H] Name this poet, who described how “the Angel of Death spread his wings on the blast” and “[t]he Assyrian came down like the wolf on the fold” in the poem “The Destruction of Sennacherib.”

ANSWER: Lord **Byron** [or George Gordon **Byron**, 6th Baron Byron]

[M] In this poem by Byron, the title action is done “like the night / Of cloudless climes and starry skies [as] all that’s best of dark and bright / Meet in her aspect and her eyes.”

ANSWER: “**She Walks in Beauty**”

[E] Byron dedicated a tale in verse titled for “The Prophecy of [this author]” to Countess Teresa Guiccioli. This author described a woman named Beatrice guiding him through Paradiso in *The Divine Comedy*.

ANSWER: **Dante Alighieri** [accept either underlined portion]

<Poetry — Rachel Ezrielev> [Ed. Ganon Evans]

6. **This composer created a piece inspired by star charts called *Atlas Eclipticalis*. This composer collaborated with Merce Cunningham on several works based on the *I Ching*. Performers change the amplitude and station on radios in this composer’s *Imaginary Landscapes*. This composer wrote a number of piano pieces for David (\*) Tudor, including one inspired by the sound of his nervous system. Objects like bolts and screws are placed between the strings in a number of this composer’s works for prepared piano, such as *Sonatas and Interludes*. In one of this composer’s works, the performer sits in silence for the title amount of time. For 10 points, name this American composer of 4’33” [four minutes, thirty-three seconds].**

ANSWER: John **Cage**

<Auditory Fine Arts — Joy An> [Ed. Ganon Evans]

6. Descendants of convicts known as “currency lads” carried out raids on feral horses called brumbies in the bush and this region. For 10 points each:

[E] Name this region where jackaroos established “cattle empires” around stations. The disastrous Emu War occurred in this rural region of central Australia.

ANSWER: the **outback**

[M] While at an outback station, Banjo Paterson wrote this “unofficial Australian anthem” which describes a “jolly swagman camped by a billabong.” This song’s title refers to the motion of a “tucker bag” containing a “jumbuck.”

ANSWER: “**Waltzing Matilda**”

[H] Chinese competition during gold rushes in outback areas led to this policy. Under this policy, migrants could be forced to take a language test from any European country in order to enter.

ANSWER: **White Australia**

<European History — Ganon Evans> [Ed. Louis Li]

**7. In this novel, one character dreams of a nude woman trying to "keep [him] out of the clock" before he has sex with his daughter Matty Lou. The protagonist of this novel steals electricity from Monopolated Light and Power using 1,369 light bulbs. The protagonist of this novel, who works at (\*) Liberty Paints, accidentally mentions "equality" instead of "responsibility" in a speech given after a battle royale with nine of his schoolmates. The protagonist of this novel claims he has the title trait because "people simply refuse to see" him. For 10 points, name this novel by Ralph Ellison about an unnamed black man.**

ANSWER: ***Invisible Man*** [reject "*The Invisible Man*" which is a different novel by H.G. Wells.]

<Long Fiction — Vincent Wang> [Ed. Joel Miles]

7. Who doesn't love particles in stars? For 10 points each:

[E] Stars below 1.3 solar masses use a type of nuclear fusion that combines these particles to produce helium. These particles are the positive baryons found in nuclei.

ANSWER: **protons** [accept **proton**-proton chain]

[H] Inside a neutron star, interactions between protons and neutrons create this extremely hard material, whose strange structures and varied subtypes led it to be partly named for a type of food.

ANSWER: **nuclear pasta** [prompt on nuclear **spaghetti**, nuclear **gnocchi**, nuclear **waffles**, nuclear **lasagna**, nuclear **defects**, nuclear **anti-spaghetti**, or nuclear **anti-gnocchi** by asking “what is the broader term?”]

[M] Red supergiant stars create successively more massive elements by adding these particles to a nucleus. These particles made of two protons and two neutrons are emitted in the least energetic type of radioactive decay.

ANSWER: **alpha** particles [or **helium nuclei**]

<Physics — Brendan Fuller> [Ed. June Yin]

**8. James Jones' book “Bad Blood” describes an experiment at this location that led to the Belmont Report. The Jesup Wagon taught farming techniques to sharecroppers near this location. Robert Robinson Taylor designed labs at this location where a scientist developed over 300 (\*) peanut-based products. The “Red Tails” was the nickname for an all-Black group of airmen trained at this university where George Washington Carver taught. Black men near this location were injected with syphilis in an unethical experiment. For 10 points, name this historically Black university in Alabama founded by Booker T. Washington.**

ANSWER: **Tuskegee** University [or **Tuskegee** Institute; accept the **Tuskegee** Airmen]

<American History — Ganon Evans> [Ed. Louis Li]

8. Sixteenth notes played underneath the lyrical theme of this piece represent rolling waves. For 10 points each:  
[H] Name this concert overture and early tone poem. This piece was inspired by a composer's trip to a sea cave in Scotland.

ANSWER: *The **Hebrides*** [or ***Hebrides Overture***; accept ***Fingal's Cave***]

[M] *The Hebrides* is an orchestral piece by this German composer. Other travel-inspired pieces by this composer include his fourth symphony, nicknamed the *Italian Symphony*.

ANSWER: Felix **Mendelssohn**

[E] The rumble of the waves depicted in *The Hebrides* is represented by the timpani, part of this family of instruments. Other orchestral instruments in this family include the cymbals and the triangle.

ANSWER: **percussion**

<Auditory Fine Arts — Joy An> [Ed. Ganon Evans]

9. **A USGS flume used to simulate these events is located in Blue River, Oregon. The largest of these events to occur on land affected Heart Mountain in modern-day Wyoming. Changes in pore water pressure are the main cause of these events. Liquefaction can lead to these events during an earthquake, while (\*) lahars are examples of these events caused by a volcanic eruption. Man-made slopes such as the Panama Canal often suffer from these events during filling. For 10 points, what compound word is generally used to describe downslope mass movements like rockfalls and debris flows?**

ANSWER: **landslides** [or **slope movements**; accept **mudslides**; accept **debris flows** before "Heart Mountain"; prompt on **mass wasting** or **slope failure**; prompt on **mass movements** before "mass movements"; reject "sinkholes"]  
<Earth Science — Nathan Nicholas> [Ed. June Yin]

9. Answer the following about House Republicans who voted to impeach Donald Trump, for 10 points each:

[E] In 2021, Adam Kinzinger accepted a committee seat investigating this event, then announced his retirement shortly after. Trump's second impeachment focused on his role in this event.

ANSWER: **January 6th** capitol **riots** [or **January 6th** or **1/6** or **capitol riots**; accept answers implying an **attack** on, **insurrection** in, or **protest** at the United States **Capitol** Building; prompt on just **insurrection**]

[H] After voting to impeach, this representative from Grand Rapids, Michigan lost his 2021 primary to John Gibbs. He shares his surname with a Michigan supermarket chain owned by the same family.

ANSWER: Peter **Meijer**

[M] The only pro-impeachment House Republicans who didn't get primaried are Dan Newhouse from Washington and David Valadao from this state. Kevin McCarthy and Nancy Pelosi also represent this state.

ANSWER: **California** [or **CA**]

<Current Events — Connor Lee> [Ed.]

10. **A controversial sculpture of this man showing him semi-nude and enthroned while pointing to the sky and cradling a sheathed sword was by Horatio Greenough and depicts this man as Zeus. Another sculpture of this man depicts him in front of a plow, gripping the fasces [FASS-eez] with his left hand, and was by Jean-Antoine Houdon [oo-don]. This man features in a painting where someone in front of him kicks a piece of (\*) ice away. That painting by Emanuel Leutze [LOY-tzuh] depicts him triumphantly standing in a boat in front of a partially unfurled American flag. For 10 points, name this man depicted "crossing the Delaware," the first president of the United States.**

ANSWER: George **Washington**

<Visual Fine Arts — Michael Eng> [Ed. Gabe Forrest]

10. A 2012 edition of this novel includes 47 alternate endings its author wrote before he was satisfied with the final version. For 10 points each:

[M] Identify this novel that features characters like the surgeon Lieutenant Rinaldi and the nurse Catherine Barkley. This novel is a recollection of the narrator’s experiences as an ambulance driver during World War I.

ANSWER: *A Farewell to Arms*

[E] This American novelist and journalist wrote *A Farewell to Arms*. This author also wrote about the fisherman Santiago in *The Old Man and the Sea*.

ANSWER: Ernest Hemingway

[H] Hemingway is also known for creating this writing technique. This minimalistic style, which only explicitly includes “1/8” of the details, leads readers to infer the narrator Frederick Henry’s thoughts in *A Farewell to Arms*.

ANSWER: iceberg theory [or theory of omission]

<Long Fiction — Yash Mandavia> [Ed. Joel Miles]

11. **One of these things was advocated in response to Jerome-Napoleon Bonaparte’s marriage to Betsy Patterson. Gregory Watson advocated for one of these things after getting a “C” on a college paper over a 200-year-old one of these things. One of these things was created to supersede the Supreme Court’s ruling in *Chisholm v. Georgia*. One of these things was successfully opposed by Phillis (\*) Schafly and another one was repealed in 1933. The last of these things was passed in 1992, while a failed addition to them was named the “Equal Rights” one of these things.** For 10 points, name these things, ten of which are included in the Bill of Rights.

ANSWER: Constitutional Amendments [or Amendments to the US Constitution; prompt on Bill of Rights before mention; prompt on amendments or specific amendments like the First Amendment with “Amendments to what?”; prompt on the Equal Rights Amendment with “Amendment to what?”]

<American History — Connor Lee> [Ed. Louis Li]

11. Rajas and tamas are dominant frequencies created in Hindu temples while blowing into a conch shell called the shankha sacred to this deity. For 10 points each:

[E] Name this Preserver God who makes up the Trimurti with Brahma and Shiva.

ANSWER: Vishnu

[H] Because they arose from the ocean, the word “shankha” often appears in the names of these beings. These mortal enemies of Garuda are gigantic serpents that were used to physically churn the Ocean of Milk.

ANSWER: nagas [accept nagi or nagini]

[M] Shankas are also sacred to the “God” of this bitter drink, which is drunk by Brahmins during rituals and gave the gods their immortality. Aldous Huxley borrowed its name for a hallucinogenic drug in *Brave New World*.

ANSWER: soma [accept the Soma God]

<Religion — Ganon Evans> [Ed.]

12. **A woman in this play who rings a doorbell in a “Wagnerian manner” is pleased to learn that another character smokes and knows nothing. A character in this play attributes an inscription in his cigarette case to his aunt, who lives in Tunbridge Wells. In this play, a character who was found in a (\*) hand-bag in Victoria Station as a baby has his marriage proposal rejected by Lady Bracknell. A character in this play creates a fictional invalid [IN-vuh-lid] friend, Bunbury, to escape social obligations and wishes to marry Cecily Cardew.** For 10 points, name this play in which Algernon [AL-jur-non] and Jack both claim to have the title first name, written by Oscar Wilde.

ANSWER: *The Importance of Being Earnest*

<Drama — Neal Joshi> [Ed. Joel Miles]

12. In a Facebook live, the creator of this product questioned why she needed FDA approval, because this product “don’t contribute to your health.” For 10 points each:

[H] Name this food product created by Chef Carly Pii that gained infamy as it was shipped with no refrigeration despite containing dairy. Its color derives from dragon fruit added to honey.

ANSWER: **Pink Sauce** [prompt on partial answers]

[E] Comparisons of Pink Sauce have ranged from Peptobismol to Tubby Custard, an ice cream consumed by Tinky-Winky on this children’s show. Its opening depicts a sun with a baby’s face rising over a field with rabbits.

ANSWER: **Teletubbies**

[M] An actually good reddish-pink food is this vegetable used to make borscht. This vegetable, “Bears,” and “Battlestar Galactica” are the three favorite things of Dwight Schrute, who owns a farm for it on *The Office*.

ANSWER: **beets** [or **beetroot**; accept specific types of beets such as garden **beet** or dinner **beet**; accept **Beets**, Bears, and Battlestar Galactica]

<Pop Culture — Ganon Evans> [Ed.]

13. **In certain materials, this quantity has an imaginary part describing a process in which flux intensity gradually decreases through a medium, known as attenuation. A change in this quantity may be induced through the presence of an electric field in the Kerr effect. A higher value of this quantity leads to a decreased critical angle required for (\*) total internal reflection.** The ratio of this quantity in two different materials equals the ratio of the sine of their angles of incidence, per Snell’s law. For 10 points, name this dimensionless quantity equal to the ratio of the speed of light in a vacuum to that in a given medium.

ANSWER: **index** of **refraction** [or **refractive index**; prompt on **n**; prompt on **IOR**]

<Physics — Yash Mandavia> [Ed. June Yin]

13. The Pecos Classification divides these people’s history into early “basketmaker” eras and later periods which included Popé’s Rebellion. For 10 points each:

[E] Name these people of the Southwestern U.S. who are the ancestors of tribes like the Hopi and Zuni. These people were named by the Spanish for the adobe communities they built at sites like Mesa Verde.

ANSWER: Ancestral **Pueblo** [or **Puebloans**; or **Anasazi**; or **Chaco**; accept the **Pueblo** Revolt; prompt on the **San Juan Valley** Culture]

[M] Deb Haaland, a member of the Laguna Pueblo, became the first Native American to serve as a cabinet secretary when she was nominated to oversee this department responsible for federal lands and reservation diplomacy.

ANSWER: Department of the **Interior**

[H] The Hopi use sacred rooms called *kivas* for rituals involving these ceremonial dolls made from cottonwood. These dolls typically hang from the rafts of Hopi homes.

ANSWER: **kachina** dolls [or **katsina**s; or **tithu**; or **katsintithu**]

<American History — Ganon Evans> [Ed. Louis Li]

14. **This director used footage from an erupting Mount Etna in a setting that represents a character’s descent to Hell. The climax of this director’s breakout film pays homage to a battle scene from *The Dam Busters*, while the film’s opening draws from Kurosawa’s *The Hidden Fortress* by following two unassuming characters. This director applied the monomyth from (\*) *The Hero with a Thousand Faces* to the genre of action films.** This director of *American Graffiti* chose James Earl Jones to voice an iconic villain and hired John Williams to compose scores that include the “Imperial March.” For 10 points, name this director of *Star Wars*.

ANSWER: George **Lucas** [or George Walton **Lucas** Jr.]

<Other Fine Arts — June Yin> [Ed. Ganon Evans]

14. Hard soft acid-base theory can predict the behaviors of different reactions. For 10 points each:

[H] Due to its softness, sodium can be combusted in excess oxygen to form a salt of this polyatomic anion [AN-eye-on]. Adding two hydrogen atoms to this ion gives a compound that is degraded by catalase [CAT-uh-layss].

ANSWER: **peroxide** [per-OX-eyed] ion [or  $\text{O}_2^-$ ; accept hydrogen **peroxide**; reject “superoxide (ion)”]

[E] In contrast, this other metal has hard ions that form simple oxides when combusted. Ions of this alkali [AL-kuh-lie] metal are found in cell phone batteries.

ANSWER: **lithium** [or **Li**]

[M] Lithium ions are harder than sodium ions as they form these entities less readily. London dispersion forces are caused by temporary examples of these things, which consist of a positive charge connected to a negative charge.

ANSWER: **dipoles**

<Chemistry — Michael Eng> [Ed. June Yin]

15. **This philosopher’s views were interpreted by Christine Korsgaard using the practical contradiction method. This philosopher argued that each person has self-governing rationality, which makes them equally deserving of respect. Existing in this philosopher’s “kingdom of ends” requires acting by specific principles. One “perfect (\*) duty” defined by this philosopher may entail not lying to a murderer. In his *Groundwork of the Metaphysics of Morals*, this philosopher argued that one must act following maxims that could become a universal law, his categorical imperative. For 10 points, name this German philosopher who wrote *Critique of Pure Reason*.**

ANSWER: Immanuel **Kant**

<Philosophy — Vik Wei> [Ed. Joel Miles]

15. An author with this surname created Hashi and Kiku, who move to the chemical wasteland of Toxitown after being abandoned in the title device. For 10 points each:

[M] The author of *Coin Locker Babies* has what surname, shared by an author who depicted Toru Watanabe moving on from his friend Kizuki’s suicide in his novel *Norwegian Wood*?

ANSWER: **Murakami** [accept Haruki **Murakami** or Ryu **Murakami** or **Murakami** Haruki or **Murakami** Ryu]

[E] In Ryu Murakami’s novel *Coin Locker Babies*, Hashi becomes a rock star managed by Mr. D, who claims his name stands for this Transylvanian vampire created by Bram Stoker.

ANSWER: Count **Dracula**

[H] *Coin Locker Babies* concludes with Hashi in one of these places. In *Norwegian Wood*, Naoko [now-koh] visits one of these places called the Ami Hostel, where she meets the music teacher Reiko.

ANSWER: **mental hospital** [accept mental **asylums** or **sanatoriums**; accept obvious equivalents like **madhouses**; prompt on **hospitals**]

<Long Fiction — Rachel Ezrielev> [Ed. Joel Miles]

16. **This country’s “Road of Bones” highway leads to its city of Magadan. The Permian Extinction may have been caused by a region of “traps” in this country found near the longest estuary in the world. A lake in this country is home to the Nerpa, the only known species of freshwater seal. This country and Japan dispute the Southern (\*) Kuril Islands, and its island of Sakhalin is home to its largest pacific port. The city of Yakutsk in this country is considered the coldest on average in the world. For 10 points, name this country that contains Lake Baikal, whose city of Vladivostok is the final stop of the Trans-Siberian railway.**

ANSWER: **Russia** [or **Russian** Federation or **Rossiyskaya** Federatsiya or **Rossiya**]

<Geography — Connor Lee> [Ed. Ganon Evans]

16. This series includes a painting in which two men trapped knee-deep in sand battle with weapons called *Fight with Cudgels*. For 10 points each:

[H] Name this series of pieces painted directly onto the walls of the artist's house, the Quinta del Sordo. Another piece in this series, *Witches' Sabbath*, depicts Satan in the form of a goat.

ANSWER: **Black Paintings**

[M] This deaf Spanish artist included *Saturn Devouring His Son* in his *Black Paintings*.

ANSWER: Francisco **Goya** [or Francisco José de **Goya** y Lucientes]

[E] Goya's *The Disasters of War* series protests this leader's invasion of Spain during the Peninsular War. In a Jacques-Louis David painting, this French emperor is depicted crossing the Alps.

ANSWER: **Napoleon** Bonaparte [accept **Napoleon I**]

<Visual Fine Arts — Neal Joshi> [Ed. Gabe Forrest]

17. This author wrote, "I will not look at the gold of evening which falls" in "Tomorrow, At Dawn," which was written to eulogize his daughter Léopoldine. In a novel by this author, a character writes "The cops are here" to prove her literacy before her parents enlist the gang Patron-Minette to kill the protagonist. This author created Éponine and the (\*) Thénardiens [the-nahr-dee-YAYS], who abuse Fantine's daughter before she marries a man who goes by Father Madeleine. In a novel by this author, Inspector Javert drowns in the Seine after pursuing the criminal Jean Valjean. For 10 points, name this author of *Les Misérables* [lay miz-ur-ah-BLUH].

ANSWER: Victor (-Marie) **Hugo**

<Mixed Literature — Rachel Ezrielev> [Ed. Ganon Evans]

17. In 1735 John Harrison invented an accurate clock, or chronometer [kruh-NAH-muh-tur], that allowed for accurate calculations of this quantity while at sea. For 10 points each:

[E] Name this quantity that is defined as zero at the prime meridian.

ANSWER: **longitude**

[H] To the nearest whole degree, how many degrees of longitude apart are two places on Earth that experience a 1-hour difference in time? You have 10 seconds.

ANSWER: **15** degrees longitude (360 degrees \* 1 hr / 24 hr = 15 degrees)

[M] On the celestial sphere, this quantity which is analogous to longitude equals zero where the vernal equinox intersects the ecliptic. This value is paired with declination to describe a star or planet's location.

ANSWER: **right ascension** [prompt on **RA**]

<Earth Science — June Yin>

18. A theorem named for Dirichlet [deer-rush-lay] states that one of these things will contain infinitely many prime numbers. In an extension to Szemerédi's [seh-meh-ray-dee's] theorem, the existence of arbitrarily long ones of these things in the prime numbers was proved by Ben Green and Terence Tao in 2004. The sum of the members of one of these things is given by average of the smallest and largest terms multiplied by the (\*) number of terms. These sequences have a common difference between consecutive terms. For 10 points, name these sequences that include "1, 3, 5, 7, 9," typically contrasted with geometric sequences.

ANSWER: **arithmetic sequences** [or **arithmetic progressions**; accept **arithmetic** alone after "sequences"; prompt on **sequences** or **progressions**]

<Math — Vincent Wang> [Ed. Joy An]

18. In this story, a descendent of the supercomputer Multivac [multi-vak] proclaims, “Let there be light!” after finding a solution by sifting through all of its data. For 10 points each:

[H] Name this short story by Isaac Asimov in which Multivac is asked whether or not there is a way to reverse entropy.

ANSWER: “The **Last Question**”

[M] In this book series by Asimov, psychohistorian Hari Seldon [Harry SELL-dun] creates the title secret society after predicting the Galactic Empire’s imminent downfall.

ANSWER: **Foundation** series

[E] Asimov devised three laws governing the actions of these mechanical beings. The name for these beings was coined in Karel Čapek’s *R.U.R.* [R-U-R].

ANSWER: **robots** [accept three laws of **robotics**; accept Rossum’s Universal **Robots**]

<Mixed Literature — June Yin> [Ed. Joel Miles]

19. **According to Cassius Dio, because citizens cheered “Eight!” as this ruler returned to Rome, he gifted eight hundred sesterces to everyone. Avidius Cassius attempted to overthrow this husband of Faustina the Younger. The Plague of Galen killed this ruler’s co-emperor Lucius Verus. While fighting the Marcomannic Wars against tribes along the Danube, this emperor paused at Carnuntum. This heir of (\*) Antonius Pius, whose death marked the end of the Pax Romana, advised readers of his treatise to reject emotions. For 10 points, name this last of the Five Good Emperors who detailed Stoicism in his *Meditations*.**

ANSWER: **Marcus Aurelius** Antoninus Augustus

<European History — Ganon Evans> [Ed.]

19. Paul Romer used oral hydration therapy for diarrhea as an example of an endogenous [en-DAH-jen-uss] variable in this economist’s namesake model. For 10 points each:

[H] Name this economist, who with Trevor Swan, argued that measures like population growth and technological progress lead to long-run economic growth.

ANSWER: Robert **Solow** [“Solo”] [accept **Solow**-Swan Model]

[M] According to Solow, population growth and technological innovation allow for long-run economic growth beyond what is possible with these two variables. Along with land, these two variables are the factors of production.

ANSWER: **labor** and **capital** [accept **L** for labor and **K** for capital; prompt on partial answers]

[E] The Ramsey growth model differs from Solow-Swan by accounting for this activity. High interest rates lead people to avoid consuming goods and instead perform this activity by placing their money in banks.

ANSWER: **savings** [accept word forms like **save** money; accept **accumulation**]

<Social Science — Ganon Evans> [Ed. June Yin]

20. **Commentaries in the Great Treatise on how to perform this activity recommend the “six aspects” in one part of it to better achieve the “four frames of reference.” *Shikantaza* is a sedentary form of this practice known as *zazen* amongst Japanese practitioners. *Samatha* and *Vipassana* are two forms of this activity. Achieving *samadhi* through performing a type of this activity called (\*) *dhyana* is the final step in the Eightfold Path. Classical texts recommended the lotus position and practicing mindful breathing during this activity. The mantra “Om” is often chanted by Buddhist monks performing, for 10 points, what type of intense internal thought?**

ANSWER: **meditation** [accept word forms like **meditating**; accept **introspection**; accept **reflection**; accept **contemplation**; accept *samatha* or *vipassana* or *dhyana* until read; prompt on **concentration** or **thinking**; prompt on **breathing** before mention with “During what activity are you breathing?”]

<Religion — Ganon Evans> [Ed. Ganon Evans]

20. This medieval leader was the subject of a Soviet film that allegorized Russia defeating German invaders. For 10 points each:

[H] Name this *knyaz* [knn-YAHZ] of Novgorod who tricked Teutonic Knights into fighting on Lake Peipus and then drowning due to heavy armor in the Battle on the Ice.

ANSWER: Alexander (Yaroslavich) **Nevsky**

[E] The Teutonic and Livonian Orders carried out a “Northern” of one of these campaigns against Baltic pagans. Cries of “Deus Vult” [DAY-uss woolt] accompanied Pope Urban II’s call for the first of these holy wars.

ANSWER: **Crusades** [accept Northern **Crusade**; accept First **Crusade**]

[M] Alexander Nevsky befriended Sartaq Khan and paid tribute to this Khanate, which controlled much of Russia before the Slavic population freed itself from the “Tatar Yoke” in the 15th century.

ANSWER: **Golden Horde**

<European History — Ganon Evans> [Ed.]