

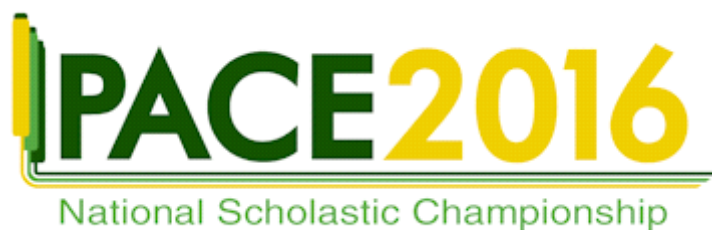
2016 NSC - Official Scoresheet

Round	12	Room	
Bracket			
Reader			

Team									Team								
Player Names																	
Q#					Bonus	Steals	Ques. Total	Run. Score					Bonus	Steals	Ques. Total	Run. score	
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	Substitutions before Tossup 11								Substitutions before Tossup 11								
	Out:				In:				Out:				In:				
	Out:				In:				Out:				In:				

Circle winning team above. Clearly mark if game goes to OT/SD. Fill out "Point totals" row completely. If there are substitutions, please note tossups by each player in "20s" and "10s" rows. Below is for Tab Room use only:

RH	RS	BH	BS	Left	Right	BH	BS	RH	RS
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PACE NSC 2016 - Round 12 - Tossups

1. In the "laser" type of these devices, the gain medium typically has a P-I-N structure. In the hydraulic analogy, these devices are compared to a check valve, which only opens when the pressure difference is of the right magnitude and sign. These devices are symbolized by a triangle whose tip touches a straight line parallel to the base of the triangle. The 2014 (*) Nobel Prize in Physics was awarded to Akasaki, Amano, and Nakamura for developing a "blue" form of one type of these devices. A single p-n junction serves as one of these devices, which let current through under forward bias. For 10 points, name this circuit element which allows current to flow through in only one direction, whose "light-emitting" variant is used in modern light bulbs.

ANSWER: **diodes** [accept **light-emitting diodes** or **LEDs**, prompt on **p-n junctions**] <Busse>

2. This author described Caliban pretending to be a Pakistani waiter and Stalin being cheered by crowds in the Luxembourg Gardens in a novel published in 2015, *The Festival of Insignificance*. A novel by this author describes an island inhabited by nudist children, which Tamina escapes before drowning. One of his books features seven sections including "The Angels," "Litost," and "Lost Letters." In a novel by this author, an artist (*) photographs another woman wearing her grandfather's bowler hat. In that novel, a couple dies in a car crash shortly after putting down the dog Karenin. Sabina, Tomas, and Tereza feature in that novel by this author. For 10 points, name this author of *The Book of Laughter and Forgetting* and *The Unbearable Lightness of Being*.

ANSWER: Milan **Kundera** <Brownstein>

3. A freed slave and hairdresser who took a surname honoring this other person was declared "Venerable" by Pope John Paul II in 1996 for his extensive charity work in New York. This leader initially served as a doctor in a force which had coalesced after the sacrifice of a black pig in the "Crocodile Woods" by Dutty Boukman. This leader was betrayed and sent off to a freezing fort in the Jura Mountains after surrendering to Charles Leclerc. Yellow fever (*) destroyed the forces sent to defeat this man, whose lieutenants Alexander Petion, Henri-Christophe, and Jean-Jacques Dessalines all ruled his country after his death. This person became the leader of an uprising in the colony of Saint-Domingue. For 10 points, name this former slave who led the Haitian Revolution.

ANSWER: Toussaint L'**Ouverture** [or François-Dominique Toussaint **Louverture**; or Toussaint **Bréda**; prompt on **Toussaint**] <Brownstein>

4. The inhabitants of one of these places enjoyed tricking visitors into greeting dressed-up wooden mannequins and sitting on extremely hot rocks. A deity filled a conch shell with bees in order to trick an inhabitant of one of these places into providing him with the materials to make the humanity of the fifth-sun. Hun-Came (hoon kah-may) and Vucub-Came (voo-koob kah-may) ruled one of these locations that was home to trials such as the (*) Cold House, the Dark House, and the Bat House. The lords of one of these places were defeated by the Hero Twins in order to avenge the sacrifice of their father. Psychopomps such as Xolotl (shoh-LOH-tul) provided access to these locations, which included the Aztec Mictlan and the Mayan Xibalba (shee-BAL-bah). For 10 points, name these locations that are often called "realms of the dead."

ANSWER: **underworlds** [or **hells**; accept answers like "**realms** of the **dead**" until "realms" is read; prompt on **afterlife**] <Jose>

5. The fallacy of the four terms might occur when making use of this technique, which is discussed in Jean Buridan's *Treatise on Consequence*. The so-called "mood" of this technique depends on which type of propositions one uses, and is easily remembered using the vowels A, E, I, and O. The enthymeme was a specific form of these tools, which were classified into (*) twenty-four distinct types by medieval philosophers. These constructs, which were introduced in Aristotle's *Prior Analytics*, consist of a major premise and a minor premise from which one draws a conclusion. For 10 points, name this form of argument taking the form of "All humans have hands; Socrates is a human; thus, Socrates has hands."

ANSWER: **syllogisms** <Jose>

6. A narrator of this novel praises Ernest Oppenheimer for proposing that mines be built after gold is discovered at Odendaalsrust. The main character of this novel laughs until he is sore after children in a tiny village are given gifts of milk by a farm owner. This novel ends after the protagonist prays on a hilltop at dawn as he waits for his son to be executed. In this book, a trial that ends with the acquittal of the two accomplices (*) Matthew and Johannes Paffuri is taken up *pro deo* by Mr. Carmichael. At the opening of this novel, Theophilus Msimangu sends his fellow priest Stephen a letter asking him to come to Johannesburg. For 10 points, name this novel in which Absalom Kumalo is sentenced to death for killing Arthur Jarvis, written by Alan Paton.

ANSWER: ***Cry, the Beloved Country*** <Jose>

7. In the *Ninth Bridgewater Treatise*, Charles Babbage proposed the principle of "replication" to estimate the age of strata using these features. Jacobus Kapteyn analyzed the data from these things in Holland and Germany to argue that precipitation occurs in a cycle of twelve and a half years. The widths of these objects are visualized on a skeleton plot, which allows one to use "cross-dating" to assign an exact date to when these things were (*) formed. A narrow series of these features that are "crowded" together is indicative of a drought. Temperature and the amount of rainfall affect the distribution of these objects, which are visible in the cambium. For 10 points, Dendrochronology (DEND-row-crow-nahl-o-gee**) is a process of dating that makes use of what circular patterns found in wood?**

ANSWER: tree **rings** [prompt on **trees**] <Jose>

8. During this conflict, a young boy in Genoa threw a stone at foreign occupiers, starting a revolt that kicked Antoniotto Botta out of the city. Ludwig Andreas Khevenhuller captured Munich on the day of Charles VII's coronation during this conflict. A failed French invasion of Britain during this conflict would have been led by Maurice de Saxe, who also led troops at its Battle of Fontenoy. The last British (*) monarch to personally lead his troops into battle did so during this war's Battle of Dettingen. This war secured Frederick the Great's control over Silesia, and resulted from an exception to Salic law permitted by the Pragmatic Sanction. For 10 points, name this war fought over Maria Theresa's ascension to the throne of Vienna.

ANSWER: War of the **Austrian Succession** <Golimlim>

9. It's not Lake Superior, but this sea contains St. Matthew Island, where overpopulation combined with extreme weather caused the island's reindeer population to fluctuate from 29 to 6,000 to 42 over the course of two decades. In 1943, American and Japanese fleets fought one of the few surface engagements of World War II around this sea's (*) Commander Islands, formerly home to the extinct Steller's sea cow. During the Cold War, the strait at the northern end of this sea was divided by the "Ice Curtain," which separated the Big and Little Diomedede Islands. This sea, which lies south of the Chukchi Sea, is named after a Danish explorer who explored nearby Kamchatka for Peter the Great. For 10 points, name this sea separating Russia from Alaska.

ANSWER: **Bering** Sea <Wang>

10. An artist from this country added the caption "They are perfectly safe. This is a still" to his painting of two nude men about to be attacked by a leopard. A German-born artist who worked in this country painted an obese nude woman lying on a couch in *Benefits Supervisor Sleeping*. An unmade bed makes up the installation *My Bed* from this country. Chinese artist Ai Weiwei used porcelain sunflower seeds to fill (*) Turbine Hall in this country. An artist born in this country featured a yellow diving board in his painting *A Bigger Splash*. Members of this country's YBA movement have won a prize named for the painter of *The Fighting Temeraire* and *The Slave Ship*. For 10 points, name this country home to Lucian Freud, Tracey Emin, David Hockney, and J.M.W. Turner.

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

11. This composer gave a Wales-inspired melody to the solo viola in the slow opening of a one-movement piece scored for string quartet and string orchestra. Like Ravel, he composed an *Introduction and Allegro* in 1905. He included several instances of a "Windflower" theme in his violin concerto and used woodwind thirty-second notes to gently parody his friend (*) Dora Penny in another piece. His E minor cello concerto was revived by an acclaimed recording headed by Jacqueline du Pré. He portrayed his editor Augustus Jaeger as the title mighty hunter in the "Nimrod" movement of his *Enigma Variations*. He also wrote six pieces commonly used as incidental music for graduation ceremonies. For 10 points, name this English composer of the *Pomp and Circumstance* marches.

ANSWER: Edward **Elgar** [or Edward William **Elgar**] <Kim>

12. In a story from this collection, Kathleen's mother refuses to let her daughter participate in her third concert until she is paid in full. In another story in this book, a man who drinks with Ignatius Gallaher becomes frustrated after his reading of Byron's poetry causes his child to cry. This collection begins with a youth learning of the death of Father (*) Flynn. Stories in this collection include "A Mother" and one about Little Chandler, "A Little Cloud." The last story in this collection is set at the Morkan sisters' annual dance, and ends with an image of snow falling on the grave of Michael Furey's grave, a youthful love of Gabriel Conroy's wife. "The Sisters" and "The Dead" bookend, for 10 points, what short story collection by James Joyce?

ANSWER: Dubliners <Jose>

13. Special benches named for these places were established in universities as part of a *numerus clausus* policy. The head of one of the councils of elders set up in these places gave the "Give Me Your Children" speech. In one of these places, members of the ZOB committed mass suicide at the Mila 18 bunker after being surrounded by Jurgen Stroop's forces. At memorial to an event that occurred in one of these places, Willy Brandt performed his "kniefall." (*) Irene Sendler smuggled 2,500 children out of one of these places. The residents of one of these places were deported to a camp at Treblinka after an unsuccessful 1943 uprising in Warsaw. For 10 points, name this type of place where Jews were forced to live before being sent to death camps in Nazi-occupied Europe.

ANSWER: Jewish ghettos <Brownstein>

14. An eight-hour film depicting the "photo-drama" of this act was made by Charles Taze Russell. Among the Albigenians, this act was said to have been done by the old God, and is why angels are trapped in bodies. A kabbalistic doctrine about this event is described by the phrase "yesh me-Ayin." The phrase "Tohu wa-bohu" appears in a narrative about this act, and translates as (*) "formless and empty." The Fourth Lateran Council ruled that this act occurred *ex nihilo*. This act, part of which involved making "the greater light to rule the day" and the "lesser light to rule the night" featured the command "Be Fruitful and Multiply" at the end of its fifth and sixth Days. For 10 points, name this event depicted in the first chapter of Genesis, which began with God stating "Let there be light!"

ANSWER: The Creation of the World or Universe [do not accept or prompt on "The Creation of Mankind"] <Jose>

15. In corporate finance, these things create a namesake "shield," which enables companies to increase their value by taking on more debt. Consumers might not respond to current changes in these things because they take future government actions into account, according to a theory promoted by Robert Barro known as "equivalence." The (*) burden of these things falls more heavily on the more inelastic actor in a supply and demand chart, where these things form a "wedge" between the two curves. Negative externalities can be resolved by the "Pigouvian" variety of these policies. According to the controversial Laffer Curve, lessening the burden of these policies may counterintuitively increase government revenue. For 10 points, name these policies that are enforced by the IRS.

ANSWER: taxes <Wang>

16. According to legend, the first soldier whose cannon fire hit the former residence of Governor Thomas Nelson, Jr. in this city received a five guinea reward from Nelson. During a battle in this city, Robert Abercromby rallied his troops with the line, "Push on my brave boys, and skin the bastards!" Crucial defensive points for this city were Redoubts Nine and Ten. An apocryphal story holds that the band of the losing army at a (*) siege in this city played "The World Turn'd Upside Down." An army was trapped in this city following Admiral de Grasse's victory at the Battle of the Chesapeake. Lord North proclaimed, "Oh God, it's all over" after a battle fought here that resulted in the Treaty of Paris. For 10 points, name this site of Cornwallis' surrender to George Washington.

ANSWER: **Yorctown** <Bentley>

17. Every species in the Irving-Williams series has this charge. The two charged species in a Daniell cell both have this charge. In acid, manganese reacts from +7 oxidation state to this oxidation state, where it is colorless. Ions with this charge must be added to coordinate DNA polymerase during (*) PCR. Water hardening agents usually have this charge. Unusually, mercury's lowest oxidation state forms a diatomic ion with this charge. In carbon monoxide, carbon's oxidation state is this value. Nickel and zinc acquire this oxidation state after they lose their 4s electrons. For 10 points, name this value, the charge normally acquired by alkaline earth metals such as magnesium and calcium.

ANSWER: **+2** [or **2+**; or **positive two**; prompt on **two**] <Silverman>

18. A form of this protein purified from urine is marketed as Bravelle. Secretion of this molecule is activated by activin and inhibited by inhibin. Granulosa cells, found between the cumulus and the theca, secrete anti-Müllerian hormone to oppose this other hormone. In males, receptors for this protein are only found on Sertoli cells. A low frequency pulse of GnRH enhances production of this protein, since although it does not "surge", its level is maximized on (*) day 14. A very high level of this hormone in the blood is a common diagnostic for menopause. The namesake structure targeted by this hormone was discovered by de Graaf and encases the oocyte. For 10 points, name this gonadotropic reproductive hormone produced in the anterior pituitary with luteinizing hormone.

ANSWER: **follicle-stimulating hormone** [or **FSH**] <Silverman>

19. On Thanksgiving Day, this atheist chooses not to sleep with a friend of Dori Duz, and instead has a debate with her, claiming that the God in whom he does not believe is actually sadistic. This man is arrested after the brutal murder of the maid Michaela. The novel in which this character appears begins by stating "It was love at first sight" to describe this man's relationship with Chaplain Tappan. When this character realizes that (*) Orr is alive, he plans an escape to Sweden. This man's training lieutenant commander is obsessed with throwing parades and is named Lieutenant Scheisskopf. This B-25 Bombardier is stationed on the island of Pianosa and cannot get out of flying missions. For 10 points, name this protagonist of Joseph Heller's *Catch-22*.

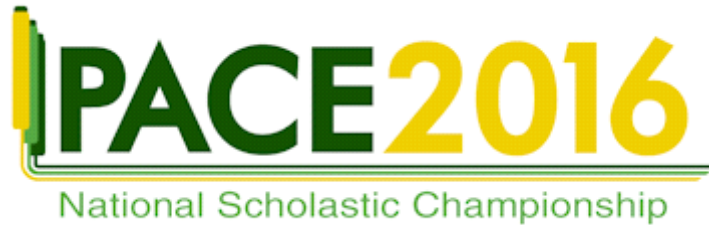
ANSWER: John **Yossarian** [prompt on **John**] <Jose>

20. This opera closes with a "soothing story" that "banish[es] the disturbing thoughts of the day" and "put[s] at ease our ruffled spirits." During a part of this opera taking place at a trial, its characters sing the song "I Feel the Earth Move." When this five-hour opera premiered at the Avignon Festival, the audience was free to come and go as it pleased since there is no intermission in it. This opera, in which a character says "Mr. (*) Bojangles" 58 times, is the first entry in the so-called "Portrait Trilogy" of its composer, which also includes the operas *Satyagraha* and *Akhenaten*. Multiple solfege ("soul**"-**fehj**) syllables are repeated in this plotless opera's "knee plays." For 10 points, name this minimalist opera composed by Philip Glass, which is named for a nuclear physicist.**

ANSWER: **Einstein on the Beach** <Jose>

21. Prophecies condemning the poor treatment of a person of this name got the nun Elizabeth Barton executed. A woman with this first name wrote bestselling devotionals such as *Prayers or Meditations* and *The Lamentation of a Sinner*. A woman of this first name was serving as regent when the Earl of Surrey won the Battle of Flodden Field. The refusal of (*) Clement VII to grant a dispensation *against* a woman with this name during the "King's Great Matter" led to the passage of the Act of Supremacy. This was the name of the widow of Prince Arthur, whose second husband tried to annul their marriage in order to marry Anne Boleyn. For 10 points, give this name of woman surnamed Howard and Parr, as well as a princess from Aragon, all three of whom were Henry VIII's wives.

ANSWER: **Catherine** [or **Catherine** of Aragon; or **Catherine** Parr; or **Katherine** Howard; or **Catalina**] <Brownstein>



PACE NSC 2016 - Round 12 - Bonuses

1. In this book's preface, the author states "The knight of knowledge must be able not only to love his enemies, but also to hate his friends." For 10 points each:

[10] Identify this book examining the author's own career and titled for a phrase spoken by Pontius Pilate. It was written in 1888, but not published until 1908.

ANSWER: **Ecce Homo**

[10] *Ecce Homo* was the last lucid book written by this German philosopher, who then went insane. *Ecce Homo's* last chapter "Why I Write Such Good Books" discusses the inspiration for this man's *Untimely Meditations*.

ANSWER: Friedrich Wilhelm **Nietzsche**

[10] In the chapter "Why I Am a Destiny" from *Ecce Homo*, Nietzsche asserts that this man is the "exact reverse of an immoralist." Nietzsche wrote a philosophical novel titled "Thus Spake" this man.

ANSWER: **Zarathustra** [or **Zoroaster**] <Jose>

2. During a performance of this play that offends Gertrude, the title character states "The lady doth protest too much." For 10 points each:

[10] Name this fictional play-within-a-play, also called *The Mousetrap*, which is used to "catch the conscience of the king" in the play in which it appears.

ANSWER: *The **Murder of Gonzago***

[10] This indecisive prince of Denmark stages a performance of *The Murder of Gonzago* to ascertain the guilt of his uncle, King Claudius.

ANSWER: **Hamlet**

[10] Claudius leaves the performance of *The Murder of Gonzago* after a scene in which poison is poured into this part of the king's body, mirroring the real method by which Hamlet senior was murdered with hebonna.

ANSWER: his **ear** <Jose>

3. This character gets the ability to defy the laws of gravity in the play *A Stroll in the Air*. For 10 points each:

[10] Name this fictional absurdist character, who also appears in the author's other plays *The Killer* and *Rhinoceros*.

ANSWER: **Berenger**

[10] This Romanian playwright, who wrote in French, created the character of Berenger. Berenger does not appear in his *The Bald Soprano*.

ANSWER: Eugene **Ionesco** [or Eugen **Ionescu**]

[10] Berenger pleads with the title character of this Ionesco play, who lures his victims to their deaths by offering to show them "a picture of the colonel" before drowning them.

ANSWER: *The **Killer*** [or ***Tueur sans gages***; or *The **Killer without Reason***; or *The **Killer without Cause***] <Jose>

4. Answer the following about spectrophotometry, for 10 points each:

[10] Spectrophotometers can be used alongside this law to determine the concentration of a sample. This law is written "A equals epsilon b c," where epsilon is the molar absorptivity constant.

ANSWER: **Beer's law**

[10] The most common form of spectrophotometry analyzes the sample using light in the visible range and in *this* region of the spectrum, typically at light wavelengths between 100 and 400 nanometers.

ANSWER: **ultraviolet** [or **UV** light]

[10] The purity of this substance can be tested by using spectrophotometry to measure the A260/280 ratio. Treating this substance with bisulfite is used to determine where methyl groups have been added to it.

ANSWER: **DNA** [or **deoxyribonucleic acid**] <Busse>

5. This psychologist introduced the idea of "self-efficacy," or the belief that one can achieve one's own goals. For 10 points each:

[10] Name this psychologist, who had children observe an individual yell "sock him" as the individual punched the namesake toy in the Bobo Doll experiment.

ANSWER: Albert **Bandura**

[10] Bandura's discovery that violence could be learned through observation contradicted this school of psychology, whose proponents, like B. F. Skinner, emphasized the role of reward and punishment in learning.

ANSWER: **behaviorism** [or word forms; do not accept "behavioralism"]

[10] Children developed aggressive attitudes towards the opposing "out-group" in this psychology experiment conducted by Muzafer Sherif. It was conducted in a namesake state park and tested realistic conflict theory.

ANSWER: **Robbers Cave** Experiment <Jose>

6. Routh's rule states that this quantity will be unchanged if an object is "stretched" in a direction that is parallel to the axis of rotation. For 10 points each:

[10] Name this quantity, often symbolized with an uppercase I, that is often considered to be the angular analogue of mass.

ANSWER: **moment of inertia** [do not accept or prompt on inertia]

[10] Give your answer in terms of d and m . For a second parallel axis that is a distance d away from the initial axis, the moment of inertia for an object of mass m , around the second axis will be equal to the moment of inertia around the first axis plus *this* function.

ANSWER: **md squared**

[10] The parallel axis theorem applies to only these ideal physics objects, in which the distance between any two points on them remain constant.

ANSWER: **rigid** body <Jose>

7. Due to their economic domination of the Southern Great Plains, this tribe's territories were controversially called an "Empire" in a 2008 book by Pekka Hämäläinen. For 10 points each:

[10] Name this Native American tribe known for leading horse raids on Mexican and Texan settlements during the early 19th century.

ANSWER: **Comanche**

[10] During the 18th century, the Comanche entered the Southern Great Plains and displaced this other Native American tribe. A leader of this tribe succeeded Mangas Coloradas and surrendered to Nelson Miles in Skeleton Canyon in 1886.

ANSWER: **Apache**

[10] The Comanche originally entered the Great Plains after breaking off from the Shoshone people, whose most famous member was this female translator who aided the Lewis and Clark expedition.

ANSWER: **Sacagawea** [or **Sakakawea**] <Wang>

8. This piece's third movement begins with a theme played in canon by its three solo instruments - flute, violin, and harpsichord. For 10 points each:

[10] Name this D major piece whose first movement includes a lengthy unaccompanied cadenza for the solo harpsichord.

ANSWER: **Brandenburg Concerto No. 5** [prompt on partial answer; accept word forms like the **fifth Brandenburg Concerto**]

[10] This German Baroque composer wrote the *Brandenburg Concertos*.

ANSWER: J.S. **Bach** [or Johann Sebastian **Bach**]

[10] The closing movement of the first *Brandenburg Concerto* alternates one of these 3/4 time pieces with a polonaise and two trios. A popular one in G for piano was composed by Ignacy Paderewski.

ANSWER: **minuet** <Kim>

9. A mosaic of Orpheus can be found in one of these structures in Woodchester, and the largest one of these built in Britain may be the Fishbourne Roman Palace. For 10 points each:

[10] Name these large country homes used by wealthy ancient Romans. One of these built by Hadrian can be found in Tivoli.

ANSWER: **villas** [or **villae**]

[10] This emperor's palace in modern-day Split, Croatia, is partly based on the design of villas. This emperor tried to stabilize the Roman economy by issuing the Edict on Maximum Prices.

ANSWER: **Diocletian** [or **Diocles**; or Gaius Aurelius Valerius **Diocletianus** Augustus]

[10] Many Roman homes contained a collecting basin of rainwater called an *impluvium* in one of these rooms. These places were often the most richly decorated area of a home, and often contained wax busts of the owner's ancestors.

ANSWER: **atrium** [or **atria**] <Jose>

10. Answer the following about the role of sweeping in various religions, for 10 points each.

[10] Jain monks sometimes sweep the ground in front of them to avoid injuring insects, in accordance with this principle of non-violence common to Jainism, Hinduism, and Buddhism.

ANSWER: **ahimsa** [prompt on translations such as **non-injury**]

[10] One of this country's "new religions," Tenrikyo, stresses the importance of sweeping the eight "dusts of the mind." In 1986, Ryuhō Okawa founded the Happy Science movement in this country.

ANSWER: **Japan** [or **Nippon**]

[10] During the Qingming festival in China, objects belonging to these people are swept. These people are also honored by the burning of joss paper.

ANSWER: **ancestors** [or obvious equivalents of **dead** people; or **ghosts**] <Brownstein>

11. Despite initial reservations about meeting her again, this novel's main character ends up marrying his childhood friend Moushumi. For 10 points each:

[10] Name this novel, in which Ashima gives the nickname Gogol to her child, who grows up and goes to Yale.

ANSWER: *The **Namesake***

[10] This Indian-American author of the short story collection *The Interpreter of Maladies* wrote *The Namesake*.

ANSWER: Jhumpa **Lahiri** [or Nilanjana Sudeshna Jhumpa **Lahiri**]

[10] In 2015, Lahiri wrote a *New Yorker* article titled "Teach Yourself [this language]" announcing she would only write in this language in the future. Petrarch wrote his *Canzoniere* in a medieval form of this language.

ANSWER: **Italian** [or **Italiano**] <Alston>

12. This activity was practiced by thousands of underlings of a woman known as Ching Shih. For 10 points each:

[10] Name this activity practiced by the Japanese *wokou*, who were a major issue during the reign of the Jiaping Emperor of the Ming dynasty.

ANSWER: **piracy** [or anything indicating being a **pirate**, **buccaneer**, **corsair**, or other obvious equivalents; prompt on raiding, marauding, stealing, or similar answers]

[10] Asian pirates often used these Chinese sailing vessels known for their paneled, square sails.

ANSWER: **junks**

[10] The pirate Chen Zuyi, who ruled the city of Palembang, was defeated and executed during one of the "treasure voyages" of this eunuch admiral of the Ming dynasty.

ANSWER: **Zheng** He <Brownstein>

13. This work greatly outclassed Mark Catesby's earlier *Natural History of Carolina, Florida and the Bahama Islands*. For 10 points each:

[10] Identify this four-volume set of life-size paintings depicting creatures such as the Carolina parakeet and the Louisiana heron.

ANSWER: *The **Birds of America***

[10] Although this artist created the paintings of *The Birds of America* by shooting the subjects and affixing them to a board, he is nonetheless the namesake of a bird conservation society.

ANSWER: John James **Audubon**

[10] Many of the paintings in *The Birds of America*, such as the one of the American swallow-tailed kite, were made using this technique. The washes in this technique are generally transparent, although adding a material such as lead white will make the washes opaque.

ANSWER: **watercolor** <Bentley>

14. This country's government has employed a system capable of man-in-the-middle-powered DDOS attacks on websites dubbed the Great Cannon. For 10 points each:

[10] Identify this country which also operates the Great Firewall to suppress information about topics critical of Xi Jinping's administration.

ANSWER: **China** [or People's Republic of **China** or **PRC**]

[10] In 2015, the Great Cannon was used against this company, headed by Chris Wanstrath. This company has become the de-facto standard for collaborating on programming projects.

ANSWER: **github** [do not prompt on "git"]

[10] Github was targeted by malicious code inserted into this Chinese search engine company. This company's public face is Robin Li and greatly benefited from Google's withdrawal from mainland China.

ANSWER: **Baidu**, Inc. <Bentley>

15. This god's possessions include the *alipes*, or winged sandals, and the *petasus*, or winged cap. For 10 points each:

[10] Name this Greek messenger god.

ANSWER: **Hermes** [or **Mercury**]

[10] Hermes's other symbols include this winged staff that is entwined by a pair of serpents. It was conflated with the staff of Asclepius and thus has now become a symbol of the medical profession.

ANSWER: **caduceus** [or **caducei**]

[10] In the longer of the Homeric hymns to Hermes, Hermes invents the first lyre by stringing cowgut across an oxhide-covered one of these animal body parts.

ANSWER: tortoise **shell** [or turtle **shell**] <Jose>

16. Muirhead's inequality generalizes this mathematical statement to vectors and is often called the "bunching method." For 10 points each:

[10] Name this statement which for two numbers x and y states that x plus y divided by two is always greater than or equal to the square root of x times y .

ANSWER: **arithmetic mean-geometric mean** inequality [or **geometric mean-arithmetic mean** inequality; or **AMGM** or **GMAM** inequality; accept answers indicating the **arithmetic mean is greater than or equal to the geometric mean**]

[10] One proof of the AM-GM inequality makes use of Jensen's inequality, which concerns the integral of a function of this type. Any line segment connecting two vertices of this type of polygon does not leave it.

ANSWER: **convex** function [or **convex** polygon]

[10] A proof of the AM-GM inequality using both backwards and forwards induction was given by this French mathematician, who also co-names another inequality about the inner product operation with Hermann Schwarz.

ANSWER: Augustin-Louis **Cauchy** <Jose>

17. In 2000, Douglas Hanahan and Robert Weinberg published a classic paper in *Cell* titled "The Hallmarks of Cancer." For 10 points each:

[10] One listed hallmark was that cancer cells evade this process in response to DNA damage. It is often considered programmed cell death, as opposed to necrosis.

ANSWER: **apoptosis**

[10] The paper also mentions that cancer cells are capable of infinite cell division, likely due to their over-expression of this enzyme, which adds sequences to the end of chromosomes to prevent them from shortening.

ANSWER: **telomerase**

[10] The authors also noted that cancer cells stimulate this process due to lack of available nutrients deep inside a tumor. This process is normally activated by VEGF in hypoxic tissues.

ANSWER: **angiogenesis** [or **vasculogenesis**; prompt on forming blood vessels or similar answers] <Silverman>

18. In honor of this family, the architect Filarete designed an ideal city in the shape of an eight-point star. For 10 points each:

[10] Name this family. A member of this family, Francesco, became duke of a city previously ruled by the Viscontis.

ANSWER: **Sforzas**

[10] Francesco Sforza established his control over this city, the current capital of Lombardy, by becoming friends with Cosimo Medici of Florence and marrying his daughter to Alfonso II of Naples.

ANSWER: **Milan** [or **Milano**]

[10] "Francesco Sforza came to power by deposing a "Golden Republic" named for this historical person. The republic named for this person was led by 24 "Captains and Defenders of Liberty."

ANSWER: St. **Ambrose** [or Golden **Ambrosian** Republic; or Aurea Repubblica **Ambrosiana**] <Brownstein>

19. This poet's penchant for making up words to fit rhymes is exemplified in a line describing sins of commission as "what you are doing when you are doing something you ortant." For 10 points each: [10] Identify this humorous American poet of "Portrait of the Artist as a Prematurely Old Man." Each stanza of his baseball poem "Line-Up for Yesterday" opens with a line such as "C is for Cobb" or "G is for Gehrig".

ANSWER: Ogden **Nash** [or Frederic Ogden **Nash**]

[10] Perhaps Nash's most famous poem is "Reflection on Ice-Breaking" where he declares that "liquor is quicker" than this dandy food.

ANSWER: **candy**

[10] Nash riffed on a popular Joyce Kilmer poem titled for one of these plants with the lines, "I think I shall never see, a billboard as lovely as" one of them.

ANSWER: a **tree** [accept **trees**; do not accept or prompt on synonyms or more specific answers]

<Bentley>

20. The Fairfield Industrial Dog Object, aka FIDO, is a large sculpture of a dog made out of this material. For 10 points each:

[10] Name this material used to sculpt the Inkpot Madonna. Donatello used this material to make a sculpture of the Penitent Magdalene.

ANSWER: **wood** [or **limewood** or **poplar** or **recycled hardwood**]

[10] Some Native American tribes, including the Kwakiutl and Tlingit, made these tall sculptures, on which depictions of ancestors or other sacred spirits are shown. Contrary to popular belief, the ordering of figures on them does not necessarily correlate with importance.

ANSWER: **totem poles**

[10] This sculptor made a crucifix out of wood that currently hangs in the Santo Spirito. His other sculptures include the *Dying Slave* and a depiction of the prophet Moses with horns.

ANSWER: **Michelangelo** [or Michelangelo di Lodovico **Buonarroti** Simoni] <Jose>

21. Answer the following about the Fighting Instructions, which governed how the British navy fought during the Age of Sail, for 10 points each.

[10] The Fighting Instructions mandated that ships form a line so that that these weapons could be used from the broadside position. Powder boys were tasked with bringing the gunpowder used to fire these weapons.

ANSWER: naval **cannons** [prompt on naval artillery]

[10] The Instructions mandated that British ships line up on this side of the enemy, the opposite of the French preference. Fighting on this side made it virtually impossible for a British captain to retreat from battle.

ANSWER: on the **weather** gage [or **upwind**; or **windward**]

[10] An early version of the Instructions was drafted by a man with this ducal title. A house of this name lost the English throne when Richard III was killed at the Battle of Bosworth Field.

ANSWER: **York** <Bentley>