BASK 2015

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Packet 13

Tossups

1. Anwaruddin Muhammed Khan was defeated at the Battle of Adyar by Governor-General Dupleix in the First Carnatic War, a theatre of this war. Thomas Carlyle coined the name for another theatre of this war, where the British wanted to force the Spanish to honor asiento. This war, which included the War of Jenkins' Ear, featured the Battle of Dettingen, the last time that the (*) English king led troops in battle. France gave the barrier towns to the Dutch and Frederick II gained Silesia in the Treaty of Aix-la-Chapelle that ended this war. For 10 points, name this war involving most of Europe that supposedly began over the violation of Salic Law by Maria Theresa.

ANSWER: War of the <u>Austrian Succession</u> [accept <u>First Carnatic</u> War before mentioned] <AB>

2. This number is the output of the Möbius function for a non-squarefree integer. The degree of the polynomial named for this number is defined as either negative one or negative infinity. A special case of the mean value theorem states that a differentiable function must have a derivative of this value between two points of equal value; that theorem is Rolle's theorem. The Dirac delta function is only (*) nonzero with the input of this number. The graph of y equals one over x has asymptotes where x or y equal this value. For 10 points, name this number, which when multiplied by anything gives itself.

ANSWER: <u>zero</u> <SAM>

3. In one novel by this man, a father and his son have their ages altered by 20 years in what is referred to as a switch-over. This author of *The Pinch Runner Memorandum* wrote a novel in which the love interest of the narrator is bitten by a dog, after which she dies. In that novel by this author, the villagers return and kill the Korean army deserter Li, who had helped the reformatory school boys survive after the villagers abandoned them. In a different novel by this author, the teacher (*) Bird struggles with his son's brain hernia. For 10 points, name this Japanese author, whose autistic son Hikari inspired many of his works, such as *A Personal Matter*. ANSWER: Kenzaburo Oe

AND WEIN. INCIDENT

<AB>

4. In Norse mythology, one of these objects named Svalinn is located in front of Sol. A remarkable omen during the reign of Numa Pompilius occurred when one of these objects dropped from heaven. The knight Gawain had a large, red one, which had supposedly belonged to Judah the Maccabee, while Galahad had a white one, on which Joseph of Arimathea had (*) drawn a cross in his own blood. Achilles bore one depicting "two beautiful cities full of people" and a "herd of straight-horned cattle". For 10 points, what type of personal armor is Zeus's Aegis?

ANSWER: shield

 $\langle RK \rangle$

5. During this geological period, precipitation increased during the Carnian Pluvial Event. *Postosuchus* is an example of the rauisuchid archosaurs that lived during this period. The extinction event that preceded this period killed the majority of the proto-mammalian cynodonts. The theropod *Coelophysis* [see-loh-PHI-sis]

lived during this period which saw the rise of the (*) prosauropod *Plateosaurus*. The supercontinent Pangaea broke apart during this period in which the first dinosaurs appeared. For 10 points, name this first geological period in the Mesozoic era that preceded the Jurassic.

ANSWER: <u>Triassic</u> Period

<SAM>

6. One performer of this instrument founded the Silk Road Ensemble and was the soloist of Tan Dun's score for *Crouching Tiger*, *Hidden Dragon*. Benjamin Britten accompanied a Soviet performer of this instrument in a recording of Schubert's Arpeggione sonata, and that performer sheltered Alexander Solzhenitsyn in his home before fleeing the USSR. John Barbirolli and the London Symphony Orchestra recorded Edward Elgar's (*) concerto for this instrument with Jacqueline DuPré as soloist. For 10 points, name this string instrument that Mstislav Rostropovich and Yo-Yo Ma play, lower pitched than a violin or a viola but higher than the string bass.

ANSWER: violoncello

<CD>

7. One of this author's novels contains the section "Three Lives" in which the main character imagines himself living in different eras. In that novel Plinio Designori compares an ivory tower to the setting of Castalia, and the main character becomes the Magister of Ludi. A sign that reads "FOR MADMEN ONLY" is outside the (*) Magic Theatre in one of this author's novels, while in another the Samanas, Kamaswami, and Govinda attempt to guide the title character to enlightenment. This author of *The Glass Bead Game* and *Siddhartha* included the saxophone player Pablo and Harry Haller in his most famous novel. For 10 points, name this author of Steppenwolf.

ANSWER: Hermann Hesse

<KS>

8. The RaLa Experiment tested devices that initiate this process. One quantity important for this process is inversely proportional to density squared and includes a fudge factor for deviations from spherical geometry. For this process to be sustained, the effective (*) neutron multiplication factor must be greater than or equal to one. Boron is used to capture neutrons released as a byproduct of this process. This process can only occur past the critical mass, and it often takes place in breeder reactors. The most common fuel for this process is enriched uranium-235. For 10 points, name this process in which the nucleus of an atom splits into smaller parts. ANSWER: nuclear fission

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 $\langle SAM \rangle$

9. This man included a set of fictional lectures to the Symparanekromenoi and an essay on the sexuality of music in one of his books. This man asked, "Is there a Teleological Suspension of the Ethical?" as the first of three *Problemata* in one of his books. This man considered (*) despair as one not aligning himself with God, thus committing sin. This man discussed Agamemnon's sacrifice of Iphigenia and Abraham's sacrifice of Isaac to contrast the Knight of Faith with the Knight of Infinite Resignation in his book *Fear and Trembling*. For 10 points, name this existentialist Danish philosopher.

ANSWER: Søren Aabye Kierkegaard

<SAM>

10. This country is home to the Cradle of Humankind, a group of limestone caves so named because it's home to around 40% of the world's human ancestor fossils. The Karoo, whose name comes from the Khoikhoi word for "desert," is an arid region in this country, where white rhinos can be found in (*) Kruger National Park. The Kimberley diamond mines are located in the Northern Cape province of this country, whose ethnic

population includes many Bantu-speaking groups. For 10 points, name this country with three capitals at Bellefontaine, Pretoria, and Capetown.

ANSWER: Republic of South Africa

 $\langle JD \rangle$

11. One artist from this country painted the Dropout Bear being launched from a cannon in his "Superflat" style on the cover of Kanye West's album *Graduation*. An artist born in this country had people cut off pieces of her clothing in the *Cut Piece*. This nation's "Pictures of the Floating World" genre of woodblock print is exemplified by an image of three (*) boats about to be hit by a wave, with a snow-capped mountain in the background, entitled *The Great Wave of Kanagawa*. For 10 points, name this home country of Takashi Murakami, Yoko Ono, and Katsushika Hokusai, the painter of *Thirty-Six Views of Mount Fuji*.

ANSWER: Japan

<CD>

12. The main source of this element in ore is composed of the minerals gibbsite, boehmite, and diaspore. It's not sodium or calcium, but this element is a cation in the minerals that make up the continuous branch of Bowen's reaction series. The natural pH indicator *Hydrangea macrophylla* changes color due to the presence of this element in the soil. This element is the cation in a mineral that becomes red due to the presence of chromium and measures a (*) 9 on the Mohs scale of mineral hardness. This element is extracted in the Bayer process and refined in the Hall-Héroult process. For 10 points, name this element found in corundum and bauxite with chemical symbol Al.

ANSWER: <u>aluminum</u> [prompt on "Al"]

<SAM>

13. The death of a friend causes the protagonist of this novel to conclude that "The spirit gone, the rest is garbage." That friend dies under a parachute because he says he is cold. The hero of this novel moves a piece of string in order to cancel a mission. Colonel Cathcart offers the protagonist a deal before the latter is stabbed by (*) Nately's whore. Major deCoverly's first name in this novel is always replaced with dashes, and that character is the executive assistant of Major Major Major Major. The title of this Pianosa-set work refers to a situation in which one's claim of insanity paradoxically proves one's sanity. For 10 points, name this Joseph Heller novel about fighter pilot John Yossarian.

ANSWER: Catch-22

<AB>

14. Churchill refers to this man as a "singular genius" with a "cold passion" before quoting him as saying that his country "must never let Russian friendship grow cold." This leader was challenged to choose which of two sausages had trichinella by Rudolf Virchow, a long-time opponent of this man who eventually supported the May Laws promulgated by this man's education minister Adalbert (*) Falk. Virchow was the first person to refer to this man's struggle against the Catholic Church's influence cas a "Kulturkampf." This man claimed that the questions of the age will be settled by "blood and iron." For 10 points, name this "Iron Chancellor" of Prussia.

ANSWER: Otto Eduard Leopold von Bismarck

 $\langle AB \rangle$

15. Members of the genus *Sphenodon* in this taxonomic class are native to New Zealand. Members of an order in this class are the only ectotherms to possess a four-chambered heart. An organism in this class squirts acidic blood from its eyes to deter predators and is called the horned devil. (*) Van der Waals forces enable some members of this taxonomic class to use hairs called setae to cling to walls. The Gila monster is a venomous member of this class, though the venom-producing ability of a species in this class native to Komodo is disputed. For 10 points, name this class of vertebrates that includes tuataras, crocodiles, and lizards.

ANSWER: **Reptilia** [or **reptile**s]

 $\langle BZ \rangle$

16. Ben Mezrich alleged that this man ate koala meat on the yacht of a Sun Microsystems executive. After being dumped by a girl from BU who says she likes men who row crew, this man drunkenly uses Livejournal while incorporating his friend's chess-ranking algorithm into a website that allowed users to rank the attractiveness of girls on his campus. While being deposed, he attacked the (*) "Match.com for Harvard guys" that he was hired to develop. He is told to "Drop the 'the" by Sean Parker, who assists this man in removing Eduardo Saverin from their company's board, and he was sued by the Winkelvoss twins. For 10 points, name this man portrayed by Jesse Eisenberg in *The Social Network*, who created Facebook.

ANSWER: Mark Zuckerberg

 $\langle CD \rangle$

17. During one of these conflicts, a coalition force under Michael Seymour captured the Dagu forts. That war is also known as the Arrow War, referring to a boat that was captured at its outset. Despite numerical superiority, the Eight Banners of one side in these conflicts were outmatched by the opposing side's more advanced rifles. Large quantities of a certain (*) commodity were destroyed at Humen in an incident prompting the first of these wars. The Treaties of Tianjin and Nanjing were two of the "unequal treaties" signed during these wars. For 10 points, name these conflicts in which European powers prevented China from stopping the trade of the namesake drug.

ANSWER: Opium Wars

<AB>

- 18. This poet described Charles Lamb's joy at leaving the city while he despairs at being left in nature in "This Lime-Tree Bower My Prison." This man wrote about Life-in-Death and Death playing a dice game for the souls of men stranded in the Doldrums, a place where there is (*) "Water Water everywhere, / And all the boards did shrink; / Water, water, every where, / Nor any drop to drink." In that poem by this man, a wedding-guest is accosted by a man who shot an albatross. For 10 points, name this poet of *The Rime of the Ancient Mariner*. ANSWER: Samuel Taylor Coleridge <CD>
- 19. This holiday names a triduum that begins on a holiday remembering Jesus washing his disciples' feet. The Harrowing of Hell is believed to have ended on this holiday, when a rock on Joseph of Arimathea's donated land was discovered missing. Forty Days before this holiday, some churches rub (*) ashes in the shape of a cross on parishioners' foreheads, marking the beginning of Lent. A week before this holiday is a day commemorating Christ's entry into Jerusalem. Maundy Thursday, Holy Saturday, Palm Sunday, and Good Friday all happen within the week preceding this holiday. For 10 points, name this holiday commemorating Jesus's Resurrection.

ANSWER: Easter

<CD>

20. This group killed five members of the Communist party in the Greensboro massacre. Superman radio programs revealed this group's code words after they were infiltrated by Stetson Kennedy, as they later

would be by Jerry Thompson. This organization, whose first incarnation was targeted by the Force Acts, was founded at Stone Mountain by a group of men including (*) Nathan Bedford Forrest. One leader of this group described himself as a "racial realist." That man, David Duke, lead this organization after the cross-burning antics that they became known for. For 10 points, name this American hate group, famous for their white hoods. ANSWER: the <u>Ku Klux Klan</u>

<AB>

Bonuses

1. Name the following positions in the U.S. Cabinet for 10 points each:

[10] This Cabinet position's first holder, James Forrestal, had campaigned against its creation as Secretary of the Navy. Ashton Carter is the current holder of this position, who commands the Army, Air Force, and Navy. ANSWER: Secretary of **Defense**

[10] The Affordable Care Act's execution was overseen by Kathleen Sebelius, who has since been replaced by Sylvia Burwell as this Cabinet member. This person's executive department has oversight over the FDA.

ANSWER: Secretary of **Health and Human Services** [do not prompt on partial]

[10] The first woman appointed to the U.S. Cabinet, Frances Perkins, held this post. The Public Works Administration and Civilian Conservation Corps were established by this office during the New Deal.

ANSWER: Secretary of Labor

 $\langle EX \rangle$

- 2. Answer some questions about the movies of Woody Allen, for 10 points each:
- [10] Allen's *Love and Death* heavily parodies the literature of this modern day country. Pierre Bezhukov concocts a plan to assassinate Napoleon in *War and Peace*, a novel by Leo Tolstoy, who was a native of this country.

ANSWER: Russia [do not accept "USSR"]

[10] Along with F. Scott Fitzgerald, the protagonist of Allen's *Midnight in Paris* also meets this author, whose real life works include *The Killers* and *A Moveable Feast*.

ANSWER: Ernest Hemingway

[10] The title character of Allen's *Hannah and Her Sisters* plays the lead role in this Henrik Ibsen play. This play ends with a famous door slam as Nora decides to leave her husband, Torvald.

ANSWER: A **Doll's House** [or **Et dukkehjem**]

 $\langle EX \rangle$

- 3. Bonus: This man proposed that societies begin by having mechanical solidarity, a cohesiveness from people sharing the same traits, to organic solidarity, a cohesion caused by people needing others to be able to perform specialized tasks for them. For 10 points each:
- [10] Name this French sociologist who studied "social facts" in works such as *The Division of Labor in Society*.

ANSWER: Emile Durkheim

[10] Emile Durkheim argued that this phenomenon, when somebody ends their life, is caused either because of anomic, egoistic, altruistic, or fatalistic reasons.

ANSWER: Suicide

[10] In *Suicide*, Durkheim claimed that this sect of Christianity sees a lower incidence of suicide because they exert greater social control than their rival groups.

ANSWER: Catholic ism

- 4. This religion includes the Hanbali, Hanafi, Maliki, and Shafi'i schools of jurisprudence, and the majority of Oman practices its Ibadi sect. For 10 points each:
- [10] Name this religion, whose five pillars include recognizing that there is no god but God, and which believes the Qu'ran is the literal word of God.

ANSWER: Islam

[10] Another pillar of Islam is this arabic word meaning "Alms-giving," which dictates that 2.5 percent of one's total property be donated every year.

ANSWER: Zakat

[10] Another pillar of Islam is sawm, the practice of fasting during this month which ends on Eid al-Fitr.

ANSWER: Ramadan

<CD>

5. Bok globules are small, star-forming molecular clouds, which are found in this region of space. For 10 points each:

[10] Name this region of space that is not actually empty, but filled with diffuse gas. *Voyager* was the first manmade object to reach it.

ANSWER: **interstellar medium** [or **ISM**]

[10] Chemical surveys of the interstellar medium have recently been looking for these molecules, which are believed to be crucial for astrobiology. The simplest one is glycine.

ANSWER: amino acids

[10] Astrochemical observations of the ISM are typically conducted in this wavelength range. ALMA is a telescope that operates in this range, that has longer wavelengths than infrared.

ANSWER: radio

 $\langle SV \rangle$

6. *click click*, you're on camera! Answer some questions about the field of war photography, for 10 points each.

[10] Photographer Robert Capa's series *The Magnificent Eleven* was taken from a landing craft during this conflict. Capa was part of the second wave of troops attacking Omaha Beach during this war.

ANSWER: World War II

[10] During the battle of Iwo Jima, Joe Rosenthal took an iconic photo of five marines raising the U.S. flag atop this mountain to the lower left of the island.

ANSWER: Mount Suribachi

[10] Roger Fenton photographed two versions of *Valley of the Shadow of Death* during this conflict, with and without cannonballs in the frame, the title of which was influenced by a Tennyson poem regarding this war.

ANSWER: Crimean War

 $\langle EX \rangle$

7. Bonus: A statue found in Mohenjo-daro is named for a girl performing this action. For 10 points each:

[10] Name this action, that names a 10.5 centimeter tall bronze statue of a girl wearing a necklace with her hand on her hip. A second, similar statue was uncovered, and a life sized replica exists in modern day Mohenjo-daro.

ANSWER: dancing

[10] Mohenjo-daro and Harappa are the two major cities of a civilization named for this river's valley.

ANSWER: **Indus**

[10] One of the best preserved structures in Mohenjo-daro is a "great" one of these. These in Rome were a main center of social life, and they included the frigidarium, tepidarium, and caldarium.

ANSWER: baths [or bathhouses]

<AB>

- 8. Bonus: Answer the following about the effects of alcohol on the body, for 10 points each:
- [10] Alcohol is metabolized in this largest internal organ of the human body. Excessive alcohol consumption can lead to cirrhosis, in which this organ suffers extensive scarring.

ANSWER: liver

[10] In the human body, ethanol is metabolized into acetaldehyde via an enzyme of this type. This kind of enzyme catalyzes an oxidation reaction by removing the namesake element from the substrate.

ANSWER: dehydrogenase

[10] Unlike ethanol, methanol is metabolized into this toxic compound, which is the simplest aldehyde. The conversion of this compound to formic acid causes the blindness observed in those who have ingested methanol.

ANSWER: formaldehyde

 $\langle BZ \rangle$

9. This commander at the Battle of the Cowshed used the principles of Julius Caesar to beat back an attack led by Mr. Jones. For 10 points each:

[10] Name this character who teaches various animals how to read and write, but who is eventually outmaneuvered by Napoleon in a 1945 allegorical novella.

ANSWER: Snowball

[10] Snowball appears in this author's novella *Animal Farm*. This author of *The Road to Wigan Pier* also created the character of Winston Smith in his dystopian 1984.

ANSWER: George Orwell [accept Eric Arthur Blair]

[10] In 1984, Winston Smith lives in Airstrip One, a part of the super-state of Oceania. Name either of the other two nations that Oceania is locked in a perpetual cycle of conflict and war with.

ANSWER: Eurasia or Eastasia

 $\langle EX \rangle$

- 10. Bonus: This battle resulted in the Geneva Accords and set a boundary at the 17th parallel. For 10 points each:
- [10] Name this battle, at which France was defeated, the first time that a colonial resistance force won a major pitched battle. The winning commander was Vo Nguyen Giap.

ANSWER: Battle of Dien Bien Phu

[10] This country was split into North and South portions after the Battle of Dien Bien Phu. The Southern portion was governed from Saigon until it was captured by the communist North despite the efforts of the U. S.

ANSWER: Vietnam

[10] Saigon was renamed after this leader of communist Vietnam. His petitions were ignored at the Versailles Conference, which was probably a bad idea since he ended up getting them by force.

ANSWER: Ho Chi Minh

<AB>

11. A positive value for the cosmological constant gives an energy associated with this medium. For 10 points each: [10] Name this medium that is devoid of matter.

ANSWER: vacuum

[10] This most powerful vacuum achievable in a laboratory setting is characterized by pressures less than ten to the minus nine torr and usually requires multiple pumps to achieve.

ANSWER: ultra-high vacuum [or UHV]

[10] In the Casimir effect, two metal plates in vacuum are attracted to each other due to the presence of virtual examples of these particles. Two of these massless particles are produced in electron-positron annihilation.

ANSWER: photons

<SAM>

- 12. Bonus: This action's codename was Operation Neptune Spear, and a picture titled *Situation Room* shows a roomful of national security advisors watching over this action. For 10 points:
- [10] Name this May 2011 action carried out by the US Navy Seals. The target of this action had masterminded the 9/11 plot against the World Trade Center.

ANSWER: killing of Osama bin Laden

[10] This then-Secretary of State is seen covering her mouth in the *Situation Room*, though she claimed seasonal allergies. This woman is currently the frontrunner for the 2016 Democratic presidential nomination.

ANSWER: **Hillary Clinton** [accept either underlined name]

[10] Osama bin Laden's private compound was located in this Pakistani city approximately 100 kilometers north of Islamabad.

ANSWER: Abbottabad

<EX>

13. Bonus: In this opera, B. F. Pinkerton signs out a 999 year lease on a house in Nagasaki. For 10 points each:

[10] Name this opera in which the American Lieutenant Pinkerton marries the Japanese bride Cio-Cio San.

ANSWER: Madama Butterfly

[10] In this aria from Act II of *Madama Butterfly*, Cio-Cio San details to Suzuki how, after she sees his ship's smoke on the horizon, her husband will greet her, calling her "Dear Wife" and "Orange Blossom."

ANSWER: "Un Bel Di, Vedremo" [or "One Fine Day Will Come"]

[10] This man composed the operas Tosca, Turandot, and Madama Butterfly.

ANSWER: Giacomo Puccini

<KS>

- 14. This constant is equal to approximately 53 picometers, the most probable distance between the proton and the electron in a ground-state hydrogen atom. For 10 points each:
- [10] Identify this constant named for a Danish physicist.

ANSWER: Bohr radius

[10] Bohr's model of the hydrogen atom superseded the now-obsolete Plum Pudding model of the atom devised by this physicist credited with discovering the electron.

ANSWER: J. J. Thomson

[10] This formula is used to calculate the wavelength of photons emitted via quantum leaps in the Bohr model. Its namesake constant is symbolized R.

ANSWER: **Rydberg** formula

 $\langle RK \rangle$

- 15. This book includes a group of wheelchair assassins from Quebec. For 10 point each:
- [10] Name this novel, primarily centered on the Incandenza family and their activities at the Enfield Tennis Academy. Before a disfiguring accident caused her to veil her face, Madame Psychosis starred in the title film.

ANSWER: *Infinite Jest*

[10] *Infinite Jest* was written by this author and essayist who committed suicide in 2008. He wrote about going on a cruise in "A Supposedly Fun Thing I'll Never do Again."

ANSWER: David Foster Wallace

[10] Wallace wrote an essay asking the reader to "Consider" this crustacean. In it, he asks if it is "all right to boil a sentient creature alive just for our gustatory pleasure?" The essay originated following his trip to Maine.

ANSWER: lobster

 $<\!\!AB\!\!>$

- 16. Answer some questions about the Evolution Championship Series in fighting games, or EVO, for 10 points each:
- [10] Armada and Hungrybox faced off in the Grand Finals of this 15-year old game at EVO 2015. Techniques such as wave-dashing can be found in this game, which includes many Nintendo characters such as Mario and Pikachu.

ANSWER: Super Smash Bros. Melee [prompt on "Super Smash Bros"]

[10] Capcom characters fight characters from this comic book company in another game on the EVO lineup. This rival of DC Comics has published characters such as Spider-Man, Iron Man, and the Fantastic Four.

ANSWER: <u>Marvel</u> Comics [accept <u>Ultimate Marvel vs. Capcom 3</u>; accept <u>UMvC3</u>]

[10] The tenth installment of this video game series was introduced to EVO 2015. Characters such as Sub-Zero and Scorpion appear in this series, which frequently garners notoriety for its often vicious "fatality" finishing moves.

ANSWER: Mortal Kombat

 $\langle EX \rangle$

17. This play's chorus is made up of the title figures, who hunt Orestes for murdering his mother. For 10 points each: [10] Name this third play in Aeschylus's *Oresteia* trilogy.

ANSWER: The **Eumenides**

[10] This mother of Orestes was murdered after she killed her husband Agamemnon and had an affair with Aegisthus. Her ghost rouses the Eumenides at the opening of the play.

ANSWER: Clytemnestra

[10] This goddess, the daughter of Zeus, casts the deciding vote to acquit Orestes. Her symbol is the owl, and she was a virginal goddess of wisdom.

ANSWER: Athena

<CD>

- 18. Bonus: The blind Demodocus served as a bard for these people. For 10 points each:
- [10] Name these people, whose king Alkinous hospitably received Odysseus and sent him on a ship to Ithaca. Nausicaa, a princess of these people, was the first to see Odysseus on their island.

ANSWER: Phaeacians [or Phaiakians; or Scherians]

[10] The bard Phemius was the only person associated with this group of people to be spared by Odysseus. This group of men competed for the hand of Penelope, believing Odysseus to be dead.

ANSWER: **suitor**s of Penelope [or **proci**; or **mnesteres**]

[10] This king of Sparta entertains Telemachus with a bard after the latter asks this man for news about Odysseus. However, this man is unable to tell Telemachus much, having been stranded in Egypt with his wife Helen.

ANSWER: Menelaus

 $\langle BZ \rangle$

- 19. Numbers which are the product of three primes have this many factors. For 10 points each:
- [10] Identify this number. An extension of the complex numbers with this many basis elements is denoted O.

ANSWER: eight

[10] The octonions can also be considered an extension of this other number system, denoted H. They were developed by William Rowan Hamilton.

ANSWER: quaternions

[10] Quaternion multiplication notably does not have this property, which says that a times b equals b times a.

ANSWER: commutativity [accept word forms]

- 20. Bonus: An event named for this time period ended with Alexander Kerensky's government being replaced. For 10 points each:
- [10] Name this time period, that also names a 1905 manifesto granting liberties including suffrage.

ANSWER: October

[10] The October Revolution was led by this faction against the provisional government. This faction opposed the Julius Martov-led Mensheviks.

ANSWER: Bolsheviks

[10] The October Revolution followed the February Revolution that overthrew Nicholas II, the last Romanov tsar of this country.

ANSWER: Russia

<AB>