



The Illinois Mathematics and Science Academy of Aurora, IL,



in partnership with Loyola Academy of Wilmette, IL, present

# IMSANITY 3

## -ROUND 5-

### Editors

Noah Prince  
Adam Kalinich  
Sabrina Lato  
Morgan Venkus

### Writers

Lael Costa  
Siva Gangavarapu  
Webster Guan  
Adam Kalinich  
Anton Karpovich  
Sabrina Lato

Nolan Maloney  
Eric Ordonez  
Noah Prince  
Saieesh Rao  
Ian Torres  
Morgan Venkus

*with special contributions from...*

Brad Fischer  
Jacob O'Rourke

## Tossups

- (1) One character prays “Not to pick bad from bad, but by bad mend,” and she’d earlier imitated her mother in singing a song about willows. One character ends this play by taking a vow of silence. A drunk and jealous Roderigo gets in a fight with another character, despite that character’s attraction to Bianca. Before being killed by her husband, Emilia explains the plot to the main character, who asks to be remembered as “one that loved not wisely, but too well,” and things end comparatively well for (\*) Michael Cassio when he becomes governor of Cyprus. Desdemona is strangled because of the allegations of Iago in, for ten points, what Shakespeare play about the title “Moor of Venice”?

**ANSWER:** The Tragedy of Othello, Moor of Venice

- (2) McCabe-Thiele diagrams relate the concentration of components in two different phases undergoing this process, and apparatuses named after Vigreux and Liebig are used in one variation of it. A Perkin triangle setup can be used for air sensitive materials in the “vacuum” variety of this process, and Raoult’s law is key to this process as it describes this process’s (\*) vapor phase. Mixtures upon which this process does not work are called azeotropes. For ten points, name this process whose “fractional” and “simple” varieties can be used to separate two liquids because of differing boiling points.

**ANSWER:** distillation (accept more specific forms such as “binary” and those included in the tossup before mention of “variation”)

- (3) This region is bordered to the north by the Gallatin mountains and to the east by the Absaroka range, in which its namesake river rises. This region’s Shoshone Lake as well as its namesake lake both lie south of its Grand Loop Road, which encircles the Artists Paintpots and the Mud Volcano. The John D. Rockefeller Memorial Parkway runs south from this region to (\*) Grand Teton National Park. Home to the Old Faithful geyser, for ten points, name this first National Park mostly contained in Wyoming.

**ANSWER:** Yellowstone National Park

- (4) The Treaty of Stralsund marked the defeat of Valdemar IV’s attempt to shut this organization down by capturing Visby. The Steelyard was the site of this organization’s main representation in London. Once the Zwin was filled, they diminished their activities in Bruges, but elsewhere, they were enhanced by the development of much larger cog ships. This organization waned when Ivan III captured (\*) Novgorod and its Kontor. Many of its cities adopted a legal model based around that of its center, Lubeck. For ten points, name this trade confederation that existed along the Baltic Sea.

**ANSWER:** Hanseatic League (or Hansa or Hanse)

- (5) **The lamentation following this man’s death was so loud that the Canaanites noted it and referred to the place of his death as Abel Mizraim. This man dreams of God calling to him from the top of a ladder to heaven during his flight from a man with whom he had traded a bowl of stew for a birthright. Before being given a name meaning “one who has prevailed against God” after (\*) wrestling an angel, this man was tricked into marrying Leah before the woman he had worked to marry, Rachel. For ten points, name this biblical patriarch who feuded with his brother Esau and was the son of Isaac and father of Joseph.**

**ANSWER:** Jacob or Ya’akov (or Israel)

- (6) **One campaign this man launched only collected “seashells”. After this man’s death, an attempt to restore the republic was led by Cassius Chaerea. In response to a message from a soothsayer, this man crossed a floating bridge over the Bay of Baiae. His successor was found hiding behind curtains after this emperor’s assassination by Praetorian guards. He was nicknamed (\*) “Little Boots” and was succeeded by Claudius. Notable for attempting to name Incitatus, his horse, the title of Consul, for ten points, name this Roman Emperor known for his insanity.**

**ANSWER:** Caligula (accept Gaius Julius Caesar Augustus Germanicus or Gaius, but do not accept or prompt on partial answers)

- (7) **This artist painted Moses passing judgment, saving from judgment, and facing judgment in his *Punishment of the Rebels*, and he painted a youthful martyr in counterpose tied to a tree and pierced by six arrows in his *Saint Sebastian*. This artist depicted a cherub pointing an arrow at the Three Graces while Zephyr abducts Chloris on the right in a painting set in an (\*) orange grove. The most famous painting by this artist shows a woman in white holding a red cloak out as Zephyr blows a nude goddess on a shell into it. For ten points, name this artist of *Primavera* and *The Birth of Venus*.**

**ANSWER:** Sandro Botticelli (or Alessandro di Mariano di Vanni Filipepi)

- (8) **This constellation contains NGC 1514, the Crystal Ball Nebula, whose observation refuted William Herschel’s early theory of nebula formation. One star in this constellation, Elnath, was once also considered part of its neighboring constellation Auriga. Its “T” star is the namesake of a class of contracting protostars. That star lies within this constellation’s Hyades cluster, and it contains the first Messier object, the Crab Nebula. Together with its brightest star (\*) Aldebaran, this constellation also contains M45, or the Pleiades. For ten points, name this zodiac constellation west of Aries, astrologically represented as a bull.**

**ANSWER:** Taurus

- (9) Nancy Lee does not receive an art scholarship in this author's story *One Friday Morning*, and Dr. Brown visits the philanthropist Mr. Chandler in his *Professor*. He wrote "They'll see how beautiful I am / and be ashamed" in a poem which says "They send me to eat in the kitchen /when company comes." This author of the collection *Laughing to Keep from Crying* and *I, Too* wrote "Life for me ain't been no crystal stair" in *Mother to Son*. He heard a musician "down on Lenox Avenue" who was (\*) "droning a drowsy syncopated tune," and in another poem asked "What happens to a dream deferred?" For ten points, identify this poet of *The Weary Blues*, *The Negro Speaks of Rivers*, and *Harlem*.

**ANSWER:** Langston Hughes (accept One Friday Morning or Laughing to Keep From Crying before "this author")

- (10) In his dialogue *Theaetetus*, Plato discusses various definitions of this concept, including things perceived and things in accordance with true judgment, but is unable to come up with a satisfactory definition. In related thought experiments, Descartes hypothesized that all of this entity could result either from dreams or by an all-powerful demon, and Foucault wrote an essay titled for *Archaeology and [this]*. The founder of a field related to this concept, Edmund Gettier, argued that it could not be confused with justified belief. Studied in (\*) epistemology, for ten points, name this concept that one gains through being educated.

**ANSWER:** knowledge (prompt on similar answers)

- (11) One film by this director sees the SS Cotopaxi discovered in the Gobi desert. A scene in another film by this director features a girl who is distinguished by her red coat, which stands out from the otherwise black-and-white shot. This man made a film detailing the *Amistad* case, and he worked with Tom Hanks to produce the miniseries *Band of Brothers*. The fourth installment of one franchise by this director added Shia LaBeouf playing Mutt Williams, the son of the titular character played by (\*) Harrison Ford. The director of *Close Encounters of the Third Kind*, *Schindler's List*, and *Saving Private Ryan*, for ten points, name this man who also directed the Indiana Jones series, *Jurassic Park*, and *Jaws*.

**ANSWER:** Steven Spielberg

- (12) **This deity's namesake Purana contains rituals for the worship of the river Godavari and a hundred and eight names for the solar deity. This deity created Daksha from his thumb and the prajapatis from his forehead. This god advised Bhagiratha that only Shiva could break the fall of the river Ganges, and granted a boon to Ravana that prevented him from being harmed by spirits. This god grew five heads in order to constantly look at Shatarupa, but (\*) Shiva cut one off after this god lied to him. This god's four heads represent the four Vedas, and his consort is Saraswati. For ten points, identify this member of the Trimurti, the Hindu creator god.**

**ANSWER:** Brahma

- (13) **This novel twice describes a young girl with a pretty complexion wearing rouge, attributing it the first time to John Polidori. One character in this novel received a 198 on a test after quoting Horace, Virgil, and Cicero. In one scene, the narrator complains that the mayor requires trees to be cut, and another character burns the picture of Napoleon that had been under his mattress. One character rejects his friend Fouque's offer to join the lumber business, though he does get a job as a secretary with the help of Abbe Pirard. When the protagonist is unable to marry (\*) Mathilde de la Mole, he shoots Madame de Renal. For ten points, identify this novel about Julien Sorel written by Stendhal.**

**ANSWER:** The Red and the Black (or Le Rouge et le Noir)

- (14) **This interaction's symmetry group is  $SU(2)$  cross  $U(1)$ . The Cabbibo angle describes the strength of this interaction in quarks. Madame Wu showed that parity violation depends upon this interaction's effects on pions. This force is mediated by W and Z bosons and causes flavor-changing in quarks. An experiment conducted by Salam, Weinberg, and Glashow (\*) united this force with the electromagnetic force. This force is responsible for radioactive decay. For ten points, name this fundamental forces that is dwarfed in comparison to the strong force.**

**ANSWER:** weak nuclear force (or weak interaction)

- (15) **This man stated "I'm so happy I didn't sneeze" prior to a sanitation workers' strike, and in response to criticisms that his plans were "not timely," he wrote that "freedom is never voluntarily given by the oppressor." He made plans for the Poor People's March, carried out after his death, and also helped lead the Chicago Freedom Movement. He died while staying at the (\*) Lorraine Motel after giving the "I've been to the Mountaintop" speech, and he earlier wrote the "Letter from Birmingham Jail". With his partner Ralph Abernathy, he founded the SCLC, and he led a bus boycott in Montgomery. For ten points, name this civil rights advocate who gave the "I Have a Dream" speech.**

**ANSWER:** Martin Luther King, Jr. (or MLK)

- (16) **The receptor for this pathogen to bind to other cells is a sugar called sialic acid. Drugs used to treat this pathogen include oseltamivir and others which block this virus’s M2 surface channel, while a common vaccine used to fight it is TIV. A 1957 epidemic was caused by the (\*) H2N2 form of this virus, and a more recent outbreak was instigated by its original host animal, pigs. Although it can result in pneumonia, its most common symptoms include fever, chills, muscle aches, and irritation of nasal tissue. For ten points, name this virus which caused a “Spanish” outbreak in 1918.**

**ANSWER:** influenza (prompt on “flu” or “flu virus”)

- (17) **This operation is performed iteratively in the Babylonian method for square roots, which performs it on a term and the radicand divided by that term. A famous inequality states that this operation yields a larger value than a similar “geometric” one. The centroid of a triangle can be computed by performing this operation on the (\*) coordinates of the vertices. The Law of Large Numbers states that the expected value is approached by this operation performed on the sample data. The axis of symmetry of a parabola can be found by performing this operation on the roots. For ten points, identify this type of average contrasted with modes and medians.**

**ANSWER:** arithmetic mean (prompt on “average” before mention)

- (18) **The title character of one work is told this action is “unlawful appropriation of lost property,” and in another story, Miss Tina does this after Julia Bordeau’s death. One character compares this action to amazing conducting and calls it “a pleasure”. In addition to being done in *The Aspern Papers* and *Hedda Gabler*, Max Brod was supposed to perform this action, but proved himself an awful friend to Franz Kafka and did the opposite. The priest and housekeeper of (\*) *Don Quixote* do this, although they save *Tirant lo Blanc*. This action appeared in a novel where Guy Montag, a former fireman, stops doing this. For ten points, identify this action that *Fahrenheit 451* was named for.**

**ANSWER:** burning books (accept anything equivalent to “destruction by fire” for “burning” and alternatives like “manuscripts” in place of “books”)

- (19) **This man hanged Xicotencatl the Younger, who earlier tried to prevent this man from forming an alliance that helped him win the Battle of Otumbo. Panfilo de Narvaez’s forces were defeated by this man, who lost many men during La Noche Triste. After a victory at Tabasco, he gained the interpreter La Malinche. Tricks this man used included sailing before Governor Velasquez could revoke commission and founding the city of (\*) Veracruz to undermine his authority. He was mistakenly perceived as a serpent-feathered god by the opposing people. For ten points, name this conquistador who conquered the Aztec Empire.**

**ANSWER:** Hernan Cortes

- (20) One opera by this man ends with a composer pondering whether or not he is a genius after poisoning his rival. This composer of *Mozart and Salieri* wrote a work with a movement that begins with cadenzas for five groups of instruments and closes with a gypsy song. Another piece by this man opens with a descending E-D-C-A-sharp theme in the bass and includes a movement titled *The Kalendar Prince*. This composer of *Capriccio espagnol* is most famous for an interlude in which a (\*) frantic melody represents the title insect. For ten points, name this composer of *Scheherazade* and *The Tale of Tsar Saltan*, which contains the *Flight of the Bumblebee*.

**ANSWER:** Nikolai Rimsky-Korsakov

- (21) This man's empire defeated its neighbours at the Battle of Xiangyang and that enemy was finally decimated at the naval Battle of Yamen. This man's rule saw Nayan's rebellion and he named Wonjong as the Goryeo king. A war between him and Ariq Boke laid waste to his empire's capital, later replaced by the city of Dadu. He attempted to conquer Java, and the destruction of his fleet was hailed as the divine notion of (\*) kamikaze by the Japanese. His court entertained a Venetian explorer, Marco Polo. For ten points, name this founder of the Yuan Dynasty, the grandson of Genghis Khan.

**ANSWER:** Kublai Khan

## Bonuses

- (1) It claimed that a certain man's real crimes boiled down to knowing several languages and being well-informed. For ten points each:
- [10] Identify this open letter in which its author, Emile Zola, performed the title action against Lieutenant Colonel du Paty de Clam for masterminding a scheme and against General Billot for hiding the truth.
- ANSWER:** J'Accuse (or I Accuse)
- [10] *J'Accuse* was written concerning this event in French history. The namesake of this event was a Jewish army officer sentenced to life on Devil's Island for espionage and treason, even though Major Esterhazy was the true culprit.
- ANSWER:** Dreyfus Affair
- [10] Alfred Dreyfus drew suspicion in part because he was from this region, which the Germans took control of following the Franco-Prussian War.
- ANSWER:** Alsace (or Elsass, prompt on "Alsace-Lorraine")
- (2) Answer the following about particle physics for ten points each.
- [10] This current model in particle physics splits 16 base particles into three categories. It contrasts Fermions with Bosons.
- ANSWER:** Standard Model
- [10] Three of these supposedly elementary particles are bound together by gluons to form baryons. Protons are formed by two of the up variety and one of the down, and the class of Fermions can be split into leptons and these particles.
- ANSWER:** quarks
- [10] This flavor of quark is the most massive and has a charge of positive two thirds.
- ANSWER:** top
- (3) Identify the following about proofs of the Pythagorean Theorem for ten points each.
- [10] Perhaps the easiest proof involves dropping an altitude to the hypotenuse to split the original triangle into two other triangles with this relationship and then making use of the fact that their side lengths are in proportion.
- ANSWER:** similarity
- [10] Another proof makes use of this formula for the area of a triangle in terms of its side lengths and semiperimeter.
- ANSWER:** Heron's Formula
- [10] A proof of the Theorem using a right trapezoid with base lengths  $a$  and  $b$  and height  $a + b$  is attributed to this United States President.
- ANSWER:** James A. Garfield



- (4) It takes up nearly 300 square feet at the Museo Reina Sofia in Madrid. For ten points each:  
 [10] Identify this painting in black, gray, and white. It is illuminated by a single lightbulb and a candle lowered from the attic and the left side contains a bull, a horse, and a disembodied head.  
**ANSWER:** Guernica  
 [10] This Spanish cubist artist of *Girl with Mandolin* and *The Old Guitarist* painted *Guernica* to raise awareness about the Spanish Civil War.  
**ANSWER:** Pablo Picasso  
 [10] This artist of *Violin and Candlestick* and *Fruitdish and Glass* co-developed the cubist style with Picasso.  
**ANSWER:** Georges Braque
- (5) The speaker of this poem wears a gown of gossamer and a tippet of tulle. For ten points each:  
 [10] Identify this poem, where the speaker “paused before a house that seemed the swelling of the ground” in a carriage that held “but just ourselves, and immortality.”  
**ANSWER:** Because I Could Not Stop For Death  
 [10] *Because I Could Not Stop for Death* was written by this reclusive poet, who asked in another poem “What would you do with me if I came ‘in white?’” and “Would you come to Amherst?”  
**ANSWER:** Emily Dickinson  
 [10] Emily Dickinson addressed her poem *If you saw a bullet* to this man, the subject of several of her poems. In one unsent letter addressed to him, she asks “oh! Did I offend it?” and refers continually to Daisy.  
**ANSWER:** Master
- (6) The second part of this work features a tenor solo in which “thou shalt break them with a rod of iron”. For ten points each:  
 [10] Name this oratorio depicting the birth of Christ, which contains the *Hallelujah Chorus*.  
**ANSWER:** Messiah HWV 56  
 [10] This Baroque composer of *Messiah* also wrote three suites for George III boating along the river Thames, *Water Music*.  
**ANSWER:** George Frideric Handel  
 [10] This Baroque composer wrote over three thousand works, including the first viola concerto and the suite *Tafelmusik*, or *Musique de Table*. He was a friend of Handel, who appreciated this man’s study of intervals.  
**ANSWER:** Georg Philipp Telemann

- (7) Aphrodite punishes the cruel maiden Anaxarete with this transformation, and Apollo used this transformation on Cragaleus for awarding the city of Ambracia to Herakles. For ten points each:
- [10] Name this transformation which also afflicted Polydectes and Phineus.  
**ANSWER:** stone (accept equivalents including “petrification” and “turning to stone”)
- [10] Polydectes and Phineus were among the hapless enemies turned to stone by Perseus using the snake-covered head of this gorgon, whom he earlier killed.  
**ANSWER:** Medusa
- [10] This woman was also turned to stone after she boasted that her sons and daughters were superior to Apollo and Artemis. Her rock weeps rainwater to mourn her dead children.  
**ANSWER:** Niobe
- (8) He lost his friend Ikemefuna, and his father believed that he was too much like his grandfather, Unoka. For ten points each:
- [10] Identify this character who converted to Christianity, married Hannah, and fathered Obi, the protagonist of *No Longer at Ease*.  
**ANSWER:** Nwoye (or Isaac)
- [10] Nwoye left his family in this novel, which focuses on Okonkwo, who is exiled for seven years after his gun misfires and hangs himself after killing a messenger.  
**ANSWER:** Things Fall Apart
- [10] *Things Fall Apart* and *No Longer at Ease* were both written by this Nigerian author who wrote about Chris Oriko, Beatrice Okoh, and Ikem Osodi in *Anthills of the Savannah*.  
**ANSWER:** Chinua Achebe (or Albert Chinualomugo Achebe)
- (9) As the oldest president, he once said “I have left orders to be awakened at any time in case of national emergency, even if I’m in a cabinet meeting.” For ten points each:
- [10] This president woke up to one national emergency by launching the war on drugs, and dealt with the Evil Empire of the USSR by creating the SDI, nicknamed “Star Wars.”  
**ANSWER:** Ronald Wilson Reagan
- [10] One national emergency Reagan dealt with was this Caribbean island nation of ninety thousand that really needed invading in 1983 during Operation Urgent Fury.  
**ANSWER:** Grenada
- [10] Another national emergency was the 1981 strike of these workers, whom Reagan called “a peril to national safety” and ordered back to work. Anyone who refused was fired and replaced.  
**ANSWER:** air traffic controllers (accept PATCO, prompt on anything vague involving the air travel industry, but do not accept anything which includes “pilots”)

- (10) According to legend, the world will end when priests solve this problem with 64 disks. For ten points each:
- [10] Name this mathematical puzzle where disks of different radius are moved between three vertical rods in such a way that no disk is ever placed on top of a smaller one.
- ANSWER:** Towers of Hanoi (or Hanoi Towers)
- [10] Perhaps the easiest solution to the Towers of Hanoi problem utilizes this method in which the solution for  $n$  disks depends on the solution for  $n - 1$  disks. In general, this method works by showing that if a statement is true for  $n - 1$ , then it is also true for  $n$ .
- ANSWER:** recursion or induction
- [10] The minimum number of steps to solve the Towers of Hanoi problem with  $n$  disks is one less than this function of  $n$ . This function also counts the binary lists of length  $n$ , which is the basis of another solution to the Towers of Hanoi problem.
- ANSWER:** 2 to the power of  $n$  (accept equivalents, such as the  $n$ th power of two, do not prompt on or accept “ $2^n$ ”)
- (11) One character describes pleasant days spent drinking coffee and reading Homer, and he later recites aloud part of Ossian. For ten points each:
- [10] Identify this novel in which the title character falls in love with Albert’s wife, Lotte, and commits suicide.
- ANSWER:** The Sorrows of Young Werther (or Die Leiden des jungen Werthers)
- [10] *The Sorrows of Young Werther* is a work by this German author who wrote about Gretchen and a character who trades his soul to Mephistopheles in *Faust*.
- ANSWER:** Johann Wolfgang von Goethe
- [10] Goethe was part of the literary movement Sturm und Drang, whose name came from this author’s play of the same name. This author also retold the story of Faust in *Faust: His Life, Deeds, and Descent Into Hell*.
- ANSWER:** Friedrich Maximilian von Klinger
- (12) Answer some questions about New Amsterdam for ten points each.
- [10] This Dutch settler bought the island of Manhattan for about 60 guilders, and was the first leader of New Amsterdam. He later led New Sweden.
- ANSWER:** Peter Minuit
- [10] This peg-legged last leader of New Amsterdam angered his citizens by restricting alcohol and freedom of religion. He ultimately surrendered the town to England.
- ANSWER:** Peter Stuyvesant
- [10] Peter Stuyvesant built a defensive palisade for New Amsterdam along this street. Nowadays, it is New York’s financial center.
- ANSWER:** Wall Street

(13) Answer the following about the economics of famine for ten points each.

[10] In his book *An Essay on the Principle of Population*, this British economist argued that geometric population growth and linear agricultural growth would lead to famine and disease.

**ANSWER:** Thomas Malthus

[10] In response to the Irish Potato Famine, British Prime Minister Robert Peel repealed this set of grain tariffs which had made importation of food prohibitively expensive.

**ANSWER:** Corn Laws

[10] This man wrote in his book *Poverty and Famines* that famine was caused by insufficient means of food distribution, as in the 1943 Bengal famine.

**ANSWER:** Amartya Sen

(14) Answer the following questions about the immune system for ten points each.

[10] Name these molecules that are displayed by foreign pathogens and aid in adaptive immunity. B and T cells contain receptors for them.

**ANSWER:** antigen

[10] These specialized cells play an important role in innate immunity, as they engulf foreign particles and pathogens through phagocytosis.

**ANSWER:** macrophages

[10] This immune cell promotes the activation of other disease-fighting cells. These cells are activated when they bind to antigens and MHC molecules on antigen-presenting cells and releases cytokines.

**ANSWER:** Helper T-cell

(15) The most prominent part of this work is a set of hymns called the Gathas. For ten points each:

[10] Name this set of holy texts of a middle eastern religion that also contain the Vendidad.

**ANSWER:** Avesta

[10] The Avesta is the holy text of this monotheistic Persian religion that worships an embodiment of goodness, the creator god Ahura Mazda.

**ANSWER:** Zoroastrianism

[10] To prevent the dead from being defiled by putrefaction and because their fire-worship discourages cremation, Zoroastrians use these structures to expose their dead to scavengers.

**ANSWER:** Towers of Silence (or dakhma)

(16) The main character tries to kill himself when he hears Otto Skadelig's Symphony Number Three. For ten points each:

[10] Identify this novel, which begins with Alex and his droogs committing robbery, rape, and murder. The title comes from a book F. Alexander was writing.

**ANSWER:** A Clockwork Orange

[10] *A Clockwork Orange* was written by this author. He wrote the Enderby quartet under the pseudonym Joseph Kell.

**ANSWER:** Anthony Burgess

[10] Readers of the American edition (and watchers of the film) never read the last chapter, where this character is reintroduced with his wife, Georgina. Earlier, he'd appeared with Alex, Dim, and Georgie.

**ANSWER:** Pete

(17) Compounds with this structure generally have poor electrical conductivity because of the lack of delocalized electrons. For ten points each:

[10] Name this bond pattern in which repeating formula units form large macromolecules. Unlike ionic solids, the formula units are covalently bonded to each other, and one example of a solid with this bond pattern is quartz.

**ANSWER:** network covalent bonding (or network covalent solid)

[10] The most famous example of network covalent bonding occurs in this valuable organic compound, in which sp<sup>3</sup> hybridized carbon atoms form a lattice.

**ANSWER:** diamond

[10] Decomposition of diamonds into this other electrically conductive allotrope of carbon is spontaneous, though very slow. Its carbon atoms are bonded in sheets rather than a lattice, and it soft enough to use as pencil lead.

**ANSWER:** graphite

(18) Make statues, not war. For ten points each:

[10] Name this Shogun and second great unifier, who made a giant statue of the Buddha with the weapons he collected in his "sword hunt" and launched two failed invasions of Korea.

**ANSWER:** Toyotomi Hideyoshi (accept either underlined portion, accept in either order)

[10] Hideyoshi ordered his tea master Sen no Rikyu, his heir Hidetsugu, and basically all of his rivals to take this action, forms of which include seppuku.

**ANSWER:** suicide (seppuku is ritualistic suicide by sword to the stomach, so accept more specific answers along those lines)

[10] This leader defeated the Toyotomi clan at the Battle of Sekigahara, bringing an end to the Sengoku period and unifying Japan under his namesake Shogunate.

**ANSWER:** Tokugawa Ieyasu (accept either underlined portion, accept in either order)

- (19) This film caused demonstrations and riots in the Arabic-speaking World in September 2012. For ten points each:
- [10] Name this inflammatory film that was posted on the internet and depicts a certain religious figure having sex and another talking to a donkey.  
**ANSWER:** Innocence of Muslims (accept The Real life of Muhammad)
- [10] After the riots, Mohamed Morsi demanded that the United States prosecute those responsible for the film. Morsi succeeded Hosni Mubarak in 2012 to become the fifth president of this country.  
**ANSWER:** Egypt
- [10] This Florida pastor of Dove World Outreach Center supported the film. He declared himself to be an independent candidate in the 2012 election and planned to burn Qu'rans in 2010.  
**ANSWER:** Terry Jones
- (20) His *Will o' the Wisp* was taken from a Manuel de Falla ballet. For ten points each:
- [10] Identify this jazz trumpeter who included that song on his *Sketches of Spain* album. This man's nonet recorded the album *Birth of the Cool*.  
**ANSWER:** Miles Davis
- [10] The tracks *Freddie Freeloader* and *Flamenco Sketches* appear on this other Miles Davis album.  
**ANSWER:** Kind of Blue
- [10] This man played piano on *Kind of Blue*. He later released *Portrait in Jazz* with his namesake trio.  
**ANSWER:** Bill Evans
- (21) The Kepler spacecraft aims to discover new earth-like planets using a method of observing these events. For ten points each:
- [10] This event occurs when planets pass in front of a star, partially blocking its light output. This occurred for Venus in 2004 and 2012.  
**ANSWER:** planetary transit
- [10] This other method of extrasolar planet detection does not require Earth to be in the target's orbital plane, but it can only give a "mass sine i" value.  
**ANSWER:** radial velocity method (or wobble method)
- [10] Finding the radial velocity of a star depends on measuring its periodic redshift and blueshift, a consequence of this phenomenon applied to light.  
**ANSWER:** Doppler effect or shift