|  |  |
| --- | --- |
| High School Academic Pyramid Questions | **FCAT**  **Round 8** |

1. The Jaffna Peninsula is found on the northern tip of this island, which is connected to its northern neighbor by Adam’s Bridge. The Sinhala people are native to this island, which is found south of the Palk Strait across from Tamil Nadu. It was known for many years as Ceylon. For 10 points, name this island that contains the city of Colombo, found off India’s southern coast.  
ANSWER: Democratic Socialist Republic of **Sri Lanka** [or **Ceylon** until it is read]

What city on the Baltic Sea contains the Hermitage Museum and once was called Leningrad?  
ANSWER: **St. Petersburg**

2. An example of this material from the Pleistocene Era, yedoma, may release environmentally disruptive amounts of methane as a result of rising global temperatures. Unaffected patches known as taliks may form in areas of this material, since the bottom of thermokarst lakes will stay warmer. Plants can grow in its topmost active layer, which seasonally thaws in the summer. For 10 points, name this characteristic of tundra biomes, soil that remains frozen year-round.  
ANSWER: **permafrost**

In what story by William Faulkner does a reclusive Southern woman keep the corpse of Homer Barron on a bed in her house?  
ANSWER: “A **Rose for Emily**”

3. After two participants in this event were killed for abusing the Pomo Indians, the army carried out the Bloody Island Massacre. A version of "Oh Susannah" became the anthem of this event, which was preceded by a similar event in Dahlonega, Georgia. Levi Strauss began making jeans during this event. This event began after James Marshall made a discovery at Sutter's Mill. For 10 points, name this event in which the "forty-niners" travelled to the West Coast in hopes of mining a certain precious metal.  
ANSWER: California **Gold Rush** [or **Gold Rush** of 1849; or **Gold Rush** of 1848; prompt on the gold rush]

What photographer captured a woman with her children during the Great Depression in *Migrant Mother*?  
ANSWER: Dorothea **Lange**

4. This phenomenon occurs when the phase velocity of a wave is changed without impacting the wave's frequency. This phenomenon occurs below the critical angle. The angle of this phenomenon is related to the angle of incidence by the equation n-one sine theta-one equals n-two sine theta-two, or Snell's law, where n is its namesake index. This phenomenon explains the apparent distortion of a pencil dunked in a glass of water. For 10 points, name this bending of light as it passes between media.  
ANSWER: **refraction**

What British right-wing populist party, known for its opposition to European integration, is led by Nigel Farage and uses the pound symbol in its logo?  
ANSWER: **UKIP** [or **United Kingdom Independence Party**]

5. This man’s general Joab objected to this ruler’s weeping over the death of his son Absalom. The prophet Nathan denounced this ruler’s murder of Uriah the Hittite. After becoming the second man to be anointed by Samuel, he achieved fame by killing a champion of the Philistines in single combat. This man succeeded Saul as ruler and his successor was the product of his relationship with Bathsheba. For 10 points, name this biblical king, the father of Solomon.  
ANSWER: **David**

This is a 20-second calculation question. The terminal side of an angle in standard position passes through the point (-5, 5). In radians, what is the measure of the angle?  
ANSWER: **3 pi over 4** radians [or **three-fourths pi** radians]

6. This event had a similar goal to the "Main" and the "Bye" plans. Several participants in this event died in a fire while besieged at Holbeche house. Francis Tresham may have written a letter revealing this event to Lord Monteagle. This event was planned by Robert Catesby, who wanted to install Princess Elizabeth as a Catholic queen. For 10 points, identify this conspiracy against James I which was foiled when Guy Fawkes was discovered with 36 barrels of the namesake explosive.  
ANSWER: **Gunpowder** Plot

This is a 20-second calculation question. Find *x* if 3*x* plus 2 equals 5 *x* plus 4.  
ANSWER: *x* = **-1**

7. The woman in Whistler's *Rose and Silver* is decorated in dress from this country. Mary Cassatt and Vincent van Gogh participated in the European craze for art from this country. A genre of woodblock prints from this country has a name meaning "pictures of the floating world." A painting from this country shows a boat about to be encapsulated by the *Great Wave off Kanagawa*. For 10 points, name this home country of Katsushika Hokusai, who depicted *36 Views of Mt. Fuji*.  
ANSWER: **Japan** [or **Nippon**-koku; or **Nihon**-koku]

What figure did John Donne warn, “be not proud,” in the tenth of his *Holy Sonnets*?  
ANSWER: **Death**

8. In this city, the Green Gang helped the government commit a massacre of communists in 1927. Chiune Sugihara, the Japanese consul in Lithuania, helped send Jewish refugees to a ghetto in this Asian city. A 1972 communique was issued in this city during Richard Nixon’s visit to it. The Chinese Communist Party was founded in this city. This city’s International Settlement included a historic area called “the Bund.” For 10 points, name this city on the Yangtze River delta, the largest city in China.  
ANSWER: **Shanghai**

In what satirical Nikolai Gogol novel does Chichikov attempt to get rich by buying up deceased serfs who are still on the tax rolls?  
ANSWER: ***Dead Souls*** [or ***Myortvyjye dushi***]

9. This poem’s speaker questions God’s purpose, asking, “On what wings dare he aspire?” This poem wonders, “What the hammer? What the chain, in what furnace was thy brain?” while addressing the title creature, who exhibits “fearful symmetry.” It is often paired with its author’s poem “The Lamb.” For 10 points, name this William Blake poem about a fearsome feline that is “burning bright in the forests of the night.”  
ANSWER: “The **Tyger**”

What Greek term is used in modern English to mean "excessive pride," such as that displayed by various tragic heroes?  
ANSWER: **hubris**

10. This acoustic instrument was formerly played for the Hold Steady by Franz Nicolay. A musician who plays this instrument sang that he was “off the coast and heading nowhere” in a song recorded with his misnamed “five.” This instrument, which is prominently featured in “Brick” by Ben Folds, also titles a song about a “real estate novelist” and other lonely people “in the mood for a melody.” For 10 points, name this keyboard instrument played by Billy Joel.  
ANSWER: **piano**

From what country do Anthony Bennett and Andrew Wiggins, the last two first overall NBA draft choices, hail?  
ANSWER: **Canada**

11. Eigenvalues are calculated by performing this function on a matrix subtracted by a multiple of the identity matrix. Cramer's rule solves systems of linear equations by taking ratios of these values. The cross product of two vectors is found by computing one of these values, and it can be calculated by cofactor expansion. For 10 points, identify this value which for a 2-by-2 matrix is *a d* minus *b c*.  
ANSWER: **determinant**

What liberal Republican and vice-president of Gerald Ford created the MTA and passed his namesake restrictive drug laws while Governor of New York?  
ANSWER: Nelson Aldrich **Rockefeller**

12. Three characters in this novel are profoundly affected by looking up a tree and seeing their sister’s “muddy quarters.” The businessman Jason narrates its third section. A woman in this novel has an affair with Dalton Ames. Its first two sections are narrated by the mentally handicapped Benjy and the Harvard student Quentin. For 10 points, name this William Faulkner novel about the Compson family.  
ANSWER: *The* ***Sound and the Fury***

What greedy king of Phrygia received the ability to turn everything he touched into gold?  
ANSWER: **Midas**

13. The founder of this company evolved it out of a picture frame making company called Greco Products. It sued Kathleen Sebelius, who was replaced in the suit by Sylvia Burwell. This business' founder, David Green, said his religious beliefs meant he could not follow a mandate regarding access to the morning-after pill. For 10 points, name this arts and crafts store that was the subject of a Supreme Court case about its right to be exempt from the Affordable Care Act.  
ANSWER: **Hobby Lobby**

What is the geometry predicted by VSEPR theory for xenon tetrafluoride, which has two lone pairs and bond angles of 90 and 180 degrees?  
ANSWER: **square planar**

14. Information from this organ is transmitted to the magnocellular and parvocellular cells of the lateral geniculate nucleus. The fovea is found in this organ's yellow-colored macula. The conjunctiva covers much of this organ, whose white portion is known as the sclera. Photoreceptors compose much of this structure's retina. For 10 points, name this organ whose pigmented portion is the iris, and which allows you to see.  
ANSWER: the human **eye**

Which Balkan city was Archduke Franz Ferdinand of Austria in when he was shot, indirectly bringing about World War I?  
ANSWER: **Sarajevo**

15. An opera by this composer features Leo Tolstoy, Rabindranath Tagore, and Martin Luther King, Jr. as “spiritual guardians” framing Mahatma Gandhi’s early years in South Africa. This composer wrote another opera directed by Robert Wilson whose scientific subject is represented by the first violin. That opera by him includes five scene-change interludes known as “knee plays.” For 10 points, name this minimalist composer of *Satyagraha* and *Einstein on the Beach*.  
ANSWER: Philip **Glass**

This is a 30-second calculation question. If I have a 10% chance of answering any given tossup, what is the probability that I answer none of the next three tossups, assuming that my performance on each tossup is independent?  
ANSWER: **729/1000** [or **0.729**]

16. This quantity is equal to the negative position derivative of potential energy. Impulse can be calculated as the product of time and this quantity, and power is the dot product of this quantity with velocity. Torque is equal to the cross product of lever arm and this quantity. The net amount of this quantity acting on an object can be analyzed with a free-body diagram. For 10 points, identify this quantity that is measured in Newtons.  
ANSWER: **force**

This is a 30-second calculation question. A circle of radius 2 units is drawn centered at the origin. A chord is formed by intersecting the circle with the line y = 1. What is the length of the chord? Express your answer in simplest radical form.  
ANSWER: **2** times square **root** of **3** units [or **2** times **rad**ical **3** units]

17. In this country, a Dutch battalion’s failure to defend a “safe area” led to the resignation of the Dutch Prime Minister, Willem Kok. A conflict in this country was ended by the Dayton Accords. Ratko Mladic perpetrated the Srebrenica massacre in this country, and carried out a siege of its capital city. This country suffered a 1992 to 1995 war that involved ethnic conflict between Serbs, Croats, and this country’s namesake Muslim ethnic group. For 10 points, name this country whose capital is Sarajevo.  
ANSWER: **Bosnia** and Herzegovina [or **Bosnia**-Herzegovina]

What type of mathematical expression is defined by the comparison of quantities that are different, thus using operators like greater than and less than?  
ANSWER: **inequality**

18. This novel’s narrator says his story will reveal “whether I shall turn out to be the hero of my own life” in its first chapter, “I Am Born.” This novel’s narrator befriends the kind but foolish Mr. Micawber. This novel’s antagonists include Uriah Heep and the title character’s cruel stepfather Mr. Murdstone. For 10 points, name this semi-autobiographical novel about the son of a widow written by Charles Dickens.  
ANSWER: ***David Copperfield***

What president of Egypt signed the Camp David Accords to become the first Arab leader to make peace with Israel, but was assassinated by the Islamic Jihad group two years later?  
ANSWER: Anwar **Sadat**

19. A creator god from this myth system manifests as the sacred bull, Apis. The Ogdoad and Ennead figure in different creation myths from this mythology, which tells of a solar barque that travels through Duat. Its major sun god has a hawk’s head, created the cat goddess Bast, and was syncretized with the god Horus. For 10 points, name this myth system whose sun god, Ra, was the father of pharaohs.  
ANSWER: **Egypt**ian mythology

What term literally translating from Spanish as “free fighting” names a popular Mexican form of professional wrestling, generally performed by masked contestants?  
ANSWER: **Lucha libre**

20. This man wrote about receiving a letter from a child in Yonkers in his essay “An Image of Africa,” which accuses Joseph Conrad of racism. His novel *No Longer At Ease* was a sequel to his best-known novel, whose protagonist is exiled for seven years after killing Ezeudu’s son. This author set that novel in the town of Umuofia, home to Okonkwo. For 10 points, name this Nigerian author of Things Fall Apart.  
ANSWER: Chinua **Achebe** [or Albert Chinualumogu **Achebe**]

What snail-shaped organ in the inner ear, divided into the scala media, scala tympani, and scala vestibuli, is the primary organ responsible for hearing?  
ANSWER: **cochlea**

21. A checkerboard variant of this technique is used in ELISA. This technique is also known as volumetric analysis. Another version of this process uses bromthymol blue or phenolphthalein, which change colors at the endpoint, one drop before the equivalence point is reached. For 10 points, name this lab technique which uses a buret to determine the concentration of a reactant by adding it to another solution with a known concentration.  
ANSWER: **titration**

The Shifta War was fought in Northern Kenya by a group with origins in what other African country, whose capital is Mogadishu?  
ANSWER: **Somalia**

22. This city's army was defeated by King Gelon at the Battle of Himera. The decapitated head of a general from this city was thrown into his camp after the Battle of the Metaurus River. Cato the Elder ended all of his speeches with a request for this city's destruction. This city won the Battle of Cannae but lost at the Battle of Zama to Scipio Africanus. For 10 points, name this city whose army was led by Hannibal Barca during one of the Punic wars it fought with Rome.  
ANSWER: **Carthage**

What actor, who will play Lex Luthor in 2016’s *Batman v. Superman,* previously portrayed Mark Zuckerberg in *The Social Network?*  
ANSWER: Jesse **Eisenberg** [Jesse Adam **Eisenberg**]

23. This character changed her skin color in a 1970 story called "I Am Curious (Black)." In older appearances, she was the romantic rival of Lana Lang. In a recent film appearance, this character assists in the defeat of General Zod and is played by Amy Adams. This female character is generally a co-worker of Clark Kent at the *Daily Planet.*. For 10 points, name this reporter and love interest of Superman.  
ANSWER: **Lois** Lane [or Lois **Lane**]

What two-word English phrase is translated into Mandarin as “Shengri kuai le” (SHEN-juh-ruh kwai LUH) and istranslated in Spanish idomatically as “Feliz cumpleanos” (feh-LEECE coom-play-AHN-yoce)?  
ANSWER: "**happy birthday** to you"

24. This body of water contains an island home to a valuable predator-prey relationship between wolves and moose, Isle Royale. This lake’s water flows into its southeastern neighbor via the Soo Locks on the St. Marys River. The cities of Thunder Bay and Duluth are on this body of water, which is the largest freshwater lake by surface area on Earth. For 10 points, name this largest of the Great Lakes.  
ANSWER: Lake **Superior**

What country's 2009 non-democratic change of government and subsequent violence in the San Pedro Sula area has caused it to be a major contributor to the U.S. border refugee crisis?  
ANSWER: **Honduras**

25. Damage to this tissue in Crush syndrome of rhabdomyolysis can be measured by creatine kinase levels. Weakening of this tissue is caused by a group of diseases characterized by mutations in dystrophin and whose best known example was elucidated by Duchenne. Most examples of the striated type of this tissue have voluntary contractions, with the exception being that located in the heart. For 10 points, name this type of tissue classified as smooth, cardiac, or skeletal, the latter of which lets one move around.  
ANSWER: **muscle** tissue [or skeletal **muscle** tissue; or smooth **muscle** tissue; or cardiac **muscle** tissue]

This is a 20-second calculation question. What is the range of the function given by "f of *x* equals 2 plus 4 times sine of 2 *x*"?  
ANSWER: **-2 to 6, inclusive** [or **[-2,6]**; prompt on **-2 to 6**]

26. This composer's first piano quartet ends with a "Rondo alla zingarese." His fourth symphony, in E minor, ends with a passacaglia that goes through thirty variations. This composer's third symphony was built around the motif F-A-F, for “free but happy.” He quoted the beer-drinking song "Gaudeamus Igitur" in a piece in gratitude of his honorary doctorate from the University of Breslau. For 10 points, name this German composer of the *Academic Festival Overture* and a well-known“Lullaby.”  
ANSWER: Johannes **Brahms**

This is a 20-second calculation question. Find the zeroes of the function given by f of *x* equals "*x* squared plus 4 *x* minus 12."  
ANSWER: *x* = **-6** and *x* = **2**

27. This country was the home of the writer whose *Elements of Pure Economics* developed general equilibrium theory. An eighteenth-century economist from this country posited that "supply creates its own demand," and another Enlightenment movement from this country believed that agriculture is the ultimate source of all value. For 10 points, name this home country of the physiocrats, Jean-Baptise Say, and the radical economics of a 1789 "revolution."  
ANSWER: **France**

What book by Italo Calvino alternates between first chapters of fictional novels and sections written in the second person?  
ANSWER: ***If on a winter’s night a traveler*** [or ***Se una notte d'inverno un viaggiatore***]

28. In this novel, a character possesses a magic hairball that he claims can predict men’s fortunes. This novel’s protagonist is mistaken for his friend by Silas and Sally Phelps. It depicts the long-running feud between the Shepherdsons and Grangerfords. The protagonist of this novel helps Jim escape down the Mississippi River on a raft. For 10 points, name this novel by Mark Twain.  
ANSWER: *The Adventures of* ***Huckleberry Finn*** [or ***Huck Finn***]

In translation, which specific amino acid-carrying molecule binds to the P site at an AUG codon?  
ANSWER: **tRNA** [or **transfer RNA**]

29. An attack on this mythological figure created the Erinyes, or Furies. This father of Iapetus banished his hundred-handed children, the Hecatonchires, to Tartarus. His imprisonment of those and other children like the Cyclopes prompted his son to castrate him with a sickle, leading to the birth of Aphrodite. With Gaia, this god fathered Titans like Cronus, who overthrew him. For 10 points, name this primordial Greek sky god and namesake of the seventh planet from the sun.  
ANSWER: **Uranus**

Name the woman who was transformed into a weeping rock after boasting that her fourteen children made her superior to Leto.  
ANSWER: **Niobe**

30. The narrow windows of buildings at this location reflected the fear of heights of architect Minoru Yamasaki. On the upper floors of a building at this location, people could eat at a restaurant called Windows on the World. In 1993, this location was bombed by Middle Eastern terrorists using a Ryder truck filled with explosives. For 10 points, name this building complex whose extremely tall Twin Towers were destroyed in the September 11, 2001, terrorist attacks.  
ANSWER: **World Trade Center** [or **WTC**; or **Twin Towers** until it is read]

What coinage law, an executive order by Andrew Jackson, required land payments be made in precious metal and led to the Panic of 1837?  
ANSWER: **Specie Circular**

31. The coast of this area features a dense fog known as camanchaca, and it is home to the Very Large Telescope and the Escondido copper mine. A giant hand sculpture was built in this desert near the coastal city of Antofagasta, and it is home to the “flowering desert” during El Niño years. It is bounded by the Andes and the Chilean Coast range, and some of its weather stations have never received rainfall. For 10 points, name this so-called “driest place on Earth.”  
ANSWER: **Atacama** Desert

Count Mole and Talleyrand oversaw the foreign affairs of what French “citizen king” who established the July Monarchy after succeeding Charles X?  
ANSWER: **Louis Philippe** I of France

32. This quantity can be calculated as the infinite sum of one over *n* factorial. This constant appears in all solutions to the differential equation *y*-prime equals *y*, and it is defined as the limit as *n* approaches infinity of one plus one over *n*, all to the power of *n*. This constant is the base of the natural logarithm. For 10 points, identify this mathematical constant approximately equal to 2.718.  
ANSWER: **e** [or **Euler**'s **number**; or **Napier**'s **constant**]

What literary term denotes a figurative comparison between two things, usually using “like” or “as”?  
ANSWER: **simile**

33. An author from this country used the “heteronym” Bernando Soares as the attribution for *The Book of Disquiet*. This country’s national epic, written by Luis vaz de Camoens, is called *The Lusiads*. A Nobel Laureate from this country wrote a book in which an entire city, excepting the doctor’s wife, becomes subjected to an epidemic of blindness. For 10 points, name this Iberian nation, the home country of Jose Saramago.  
ANSWER: **Portugal** [or **Portuguese Republic**]

Which illustrious family of Swiss mathematicians included Jacob, who developed the calculus of variations, and his brother Johann?  
ANSWER: **Bernoulli** family

34. A philosopher from this country introduced the notion of logocentrism in a book which was translated by Gayatri Spivak; that book pioneered deconstructionism in linguistics and was called *Of Grammatology*. Another philosopher from this country stated "One is not born, but rather becomes, a woman" in her *The Second Sex*. For 10 points, name this country of origin of Jacques Derrida and Simone de Beauvoir.  
ANSWER: **France**

What English director of *Blade Runner* and *Alien* won an Oscar for his depiction of Maximus’ vengeance against Commodus in *Gladiator?*  
ANSWER: Ridley **Scott**

35. Despite the Clark Memorandum being issued during his term, this leader withdrew troops from Nicaragua and Haiti. His Vice President, Charles Curtis, was the first Vice President of significant Native American heritage. This president ordered Douglas MacArthur to disperse the Walter Waters-led Bonus Army and defeated the “Happy Warrior,” Al Smith, in the 1928 election. For 10 points, name this president in office at the start of the Great Depression.  
ANSWER: Herbert **Hoover** [Herbert Clark **Hoover**]

This is a 30-second calculation question. A shelf contains two red books, three blue books, and one green book. What is the probability that the three books on the left half of the shelf are, in some order, a green book, a red book, and a blue book?  
ANSWER: **3/10** [or **6/20**; or **36/120**; or **0.3**; or **30%**]

36. Dietrich Bonhoeffer's *The Cost of Discipleship* focuses on this event, which included a discussion of the “foolish man, who built his house upon the sand.” John Winthrop's “A Model of Christian Charity” echoes this event's message about a “city on a hill” and declaration that “you are the light of the world.” Its discusses the peacemakers and the meek, whom its speaker promised “shall inherit the earth.” The Eight Beatitudes were related in, for 10 points, what major address by Jesus in the Book of Matthew, delivered on the side of a hill?  
ANSWER: The **Sermon on the Mount**

This is a 30-second calculation question. A regulation baseball has a circumference of 9 inches. What is the surface area of the baseball, assuming the ball is perfectly spherical? Express your answer in terms of pi.  
ANSWER: **81 over pi** square inches [or **81 divided by pi** square inches]

37. At this novel’s opening, it is noted that a wild rose-bush has taken root near the entrace to a local prison. One of this novel’s main characters is sworn to secrecy by a doctor who is actually her husband in disguise. Another character in this novel persuades Governor Bellingham not to take Pearl away from her mother. For 10 points, name this novel about the adulteress Hester Prynne written by Nathaniel Hawthorne.  
ANSWER: *The* ***Scarlet Letter***

What seismic scale differs from the Richter scale in that it measures the intensity, and thus the effects, of an earthquake?  
ANSWER: Modified **Mercalli** Intensity scale [or **Mercalli**-Cancani-Sieberg scale; or **Mercalli**-Wood-Neumann scale]

38. The city of Semipalatinsk in this country inspired a worldwide anti-nuclear movement after being subjected to hundreds of Soviet nuclear tests. This country's language is similar to Nogai Kipchak, and its highest point is Khan Tengri in the Tian Shan mountains. The Syr Darya flows east through this country from the northern Aral Sea. This home to Lake Balkash is the largest landlocked country in the world by area. Long led by Nursultan Nazarbayev, for 10 points, name this country whose capital was moved from Almaty to Astana in 1997.  
ANSWER: **Kazakhstan**

What largest of the Ryukyu Islands in southern Japan is known for a bloody two-month battle near the end of World War II, as well as the longevity of its native residents?  
ANSWER: **Okinawa**

39. This novel’s protagonist thinks about how his marriage has fallen apart while eating at Davy Byrne’s pub. It ends with the word “Yes,” the final word of a soliloquy given by the protagonist’s wife Molly. Set entirely on the day June 16, 1904, this novel follows Leopold Bloom. For 10 points, name this modernist novel by James Joyce, inspired by the *Odyssey.*  
ANSWER: ***Ulysses***

What adjective describes the human body in the title of a Walt Whitman poem that declares, “The armies of those I love engirth me”?  
ANSWER: **electric**

40. In February 2013, this company was bought by 3G Capital and Berkshire Hathaway. On the cover of *The Who Sell Out.* Roger Daltrey is sitting in a tub of this company’s baked beans. This company’s potato products are sold under the Ore-Ida brand. It has naming rights to an NFL stadium where Troy Polamalu and Ben Roethlisberger play. For 10 points, name this Pittsburgh-based food company whose fifty-seven varieties include tomato ketchup.  
ANSWER: H. J. **Heinz** Company

What works of literature came in “mystery,” “morality,” and “miracle” genres in medieval England?  
ANSWER: **play**s [or **theater**; or **drama**]

*End of regulation round*.

Extra. During one of these periods, the "anxious seat" technique was debated at the New Lebanon Conference. One of these periods was caused by Theodore Frelinghuysen's rise to prominence. The "burnt-over district" developed in New York during the second of these periods. In one of these periods, "old lights" clashed with "new lights" and Jonathan Edwards gave his "Sinners in the Hands of an Angry God" speech. For 10 points, name these periods of religious revival in Early American history.  
ANSWER: **Great Awakening**s [or First **Great Awakening**; or Second **Great Awakening**]

Extra. The action of this compound can be inhibited by Raloxifine and Tamofixen. The synthesis of this compound includes an androstenedione intermediate in theca interna cells. This compound controls the thickening and growth of the endometrium. It's not progesterone, but a decline in this compound's synthesis causes menopause. Osteoperosis in older women is associated with a deficiency in it. For 10 points, name this female sex hormone which promotes ovulation.  
ANSWER: **estrogen**

Extra. This man's headquarters, the Wolf's Lair, featured a heavy conference table, which saved his life when during the July 20 plot, a bomb went off in the room. He dictated his memoirs while in prison to his aide Rudolf Hess. That imprisonment came after this man's failed "Beer Hall Putsch" (poot-sch). This man committed suicide after marrying Eva Braun. He wrote the autobiography *Mein Kampf*. For 10 points, name this Nazi leader during World War II.  
ANSWER: Adolf **Hitler**

Extra. This letter denotes algebras closed under countably many set operations. The spectrum of a matrix is denoted by this letter. Like pi for products, this letter appears to simplify certain lengthy expressions, in which case one writes the lower and upper bounds above and below its top and bottom arms. This letter is also used to represent the standard deviation. For 10 points, what letter denotes sums because it is the Greek equivalent of S?  
ANSWER: **sigma**

Extra. In a painting by this man, a pulled-back curtain reveals a young boy pointing at his axe. Three old women look at the viewer while standing in front of Emmanuel Leutze’s *Washington Crossing the Delaware* in this Iowa native’s *Daughters of Revolution*. This Regionalist painter’s best-known painting shows his balding dentist holding a pitchfork in front of the title architectural style. For 10 points, name this painter of *American Gothic*.  
ANSWER: Grant **Wood**

Extra. What J.S. Bach collection contains twenty-four preludes and twenty-four fugues, one in each major and minor key?  
ANSWER: *The* ***Well-Tempered Clavier*** [or *Das* ***Wohltemperierte Klavier***]

Extra. John takes five math tests. If he averages a score of 88 on the first four tests, what score will he need on his fifth test for his overall average to be 90?  
ANSWER: **98**

Extra. What organic compound, with formula C2H5OH, is extracted from corn or, more commonly, produced using yeast?  
ANSWER: **ethanol** [or ethyl **alcohol**]

Extra. Find a number *x* such that 3 over quantity 2*x* plus 3 equals 2 over quantity *x* plus 3.  
ANSWER: *x* = **3**