1. During this battle, John French moved in with the British Expeditionary Force after Allied reconnaissance planes discovered a 30-mile gap between the German First and Second armies. The losing side in this battle retreated 40 miles before successfully entrenching themselves at the Aisne River. The French line at this battle was saved when Joseph Gallieni sent 6,000 reinforcement troops to the front in taxicabs. After losing this battle, Germany had to abandon the Schlieffen Plan. For 10 points, name this 1914 World War I battle that pushed back the initial German march towards Paris.
ANSWER: **First** Battle of the **Marne** [prompt on Battle of the **Marne**]

080-13-76-06101

2. According to Vasari, this artist continually said "speak, speak!" while working on his marble statue of the prophet Habakkuk, often nicknamed "Zuccone" for its bald head. While working in Padua, this artist depicted the "Honeyed Cat," Erasmo de Narni, in the first Renaissance equestrian statue. This artist depicted a Biblical figure with a sword in his right hand and his foot resting on Goliath's head in the first European freestanding nude sculpture since antiquity. For 10 points, name this Italian Renaissance sculptor of *Gattamelata* and a bronze *David*.
ANSWER: **Donatello** [or Donnato di Niccolo di **Betto Bardi**]

023-13-76-06102

3. This city operates the second-largest bike sharing system in the world, known as Velib. Eighteen of the twenty districts of this city were represented in a multi-director cinematic collaboration titled for this city's name and a phrase meaning "I love you." This city houses a major business district called "The Defense," which sits at the westernmost point of the "historical axis." This city also contains the Latin Quarter and includes a public square called the Place (PLAHS) de la Concorde, which sits at one end of the Champs-Elysees (SHAMP elise). For 10 points, name this city, home to the Louvre (LOOV) and Eiffel Tower.
ANSWER: **Paris**

020-13-76-06103

4. One novel by this author ends with a "Ride of the Kings," a noble tradition which Vladimir ignores, preferring to watch motorcycles. In that novel, Marketa receives a postcard reading, "Optimism is the opiate of the people" and "Long live Trotsky" from Ludvik Jahn. Characters in another of this author's novels include a dog that dies of cancer, named Karenin, as well as a professor from Geneva named Franz. This author of wrote about Tomas marrying Tereza in the shadow of the Prague Spring. For 10 points, name this Czech novelist of *The Unbearable Lightness of Being*.
ANSWER: Milan **Kundera**

190-13-76-06104

5. This politician defeated Brian Woodworth for re-election in 2012, despite disappearing for most of the summer and later revealing that he was undergoing treatment for bipolar disorder. In February 2013, this man's wife Sandi was charged with tax fraud. This politician himself is accused of spending ten thousand dollars on "children's furniture" and five thousand on "capes" as part of an investigation into his personal use of campaign funds. For 10 points, name this man, who resigned from his Illinois Congressional seat shortly after his re-election, and is the son of a prominent civil rights leader.
ANSWER: Jesse **Jackson, Jr.** [prompt on **Jackson**]

019-13-76-06105

6. This compound's concentration is not included in the calculation of its dissociation constant, which at 25 degrees Celsius is equal to 1.0 times 10^{-14}. Along with methane, this compound is a standard source of gaseous hydrogen in the Haber-Bosch process. This molecule exhibits a 104.5-degree bond angle between its three atoms, which exemplify a "bent" configuration. This compound is known as the "universal solvent." For 10 points, name this simple compound with formula H_2O.
ANSWER: **water** [or **H_2O** before it is read]

7. This writer adapted elements of the Jerilderie Letter into a novel whose protagonist writes his autobiography for the benefit of his daughter with Mary Hearn. That character created by this man flees with his brother Dan after shooting Constable Fitzpatrick. In another novel by this man, a wealthy heiress bets an Anglican priest that he cannot transport a glass church across the continent. For 10 points, name this Booker Prize-winning novelist of *True History of the Kelly Gang* and *Oscar and Lucinda* who hails from Australia.
ANSWER: Peter **Carey** [or Peter Philip **Carey**]

8. This country is the location of Chan Chan, the largest adobe city in the world, near its city of Trujillo. The Moche civilization was based in this country, and Chiclayo in this country is the site of a Moche tomb for the Lord of Sipan. A set of ruins in this country is located above the Urubamba Valley and was found in 1911 by Hiram Bingham. This country, that contains the western half of Lake Titicaca, also has the former capital of an empire at Cuzco. For 10 points, name this South American country that is the location of Machu Picchu and was once ruled by the Incan Empire.
ANSWER: Republic of **Peru** [or Republica del **Peru**]

9. This man interprets himself as the snake in one of his mother's dreams. His sister realizes he must be near when she finds a lock of hair and footprints similar to her own. At the beginning of another work, he tries to find sanctuary in Apollo's temple at Delphi to escape the title figures, who track him down by following the scent of his mother's blood. Apollo successfully defends this man in *The Eumenides,* the last part of a trilogy named for him. For 10 points, name this son of Agamemnon who kills his mother Clytemnestra in *The Libation Bearers* by Aeschylus.
ANSWER: **Orestes**

10. One member of this family names the temperature at which a ferromagnetic material becomes paramagnetic. Two brothers with this last name discovered piezoelectricity, which would be used in a very sensitive electrometer to discover two new elements. A husband and wife team with this last name created new radioactive elements by bombarding elements with alpha particles. One person with this last name is the only one to have one two Nobels in the sciences. For 10 points, identify this last name of the husband and wife team that discovered radium and polonium.
ANSWER: **Curie** [prompt on **Joliot**-Curie]

11. Emily Dickinson had this author's poem "No Coward Soul Is Mine" read at her funeral. She and her younger sister invented a fantasy world they named "Gondal." One of her characters marries Isabella Linton as part of his plan for revenge. This author, who used the pen name Ellis Bell, wrote a novel which is narrated in sections by the servant Nelly Dean and a gentlemanly tenant of Thrushcross Grange named Mr. Lockwood. In that novel by this author, Catherine Earnshaw marries Edgar Linton despite her powerful love for the orphan Heathcliff. For 10 points, name this author of *Wuthering Heights.*
ANSWER: **E**mily **Bronte** [prompt on **Bronte**]

12. This President defended a newly-announced dam from accusations that it was a pork-barrel project by saying "a rising tide lifts all boats." Ted Sorensen wrote many speeches for this President, including one given at American University to announce the Nuclear Test Ban Treaty. At Rice University, he said some decisions were made "not because they are easy, but because they are hard." Many people mistakenly believed he called himself a jelly doughnut during a speech in Berlin. For 10 points, name this President who, in his inaugural address, said "Ask not what your country can do for you, ask what you can do for your country."
ANSWER: **J**ohn Fitzgerald **Kennedy** [or **J**ack **Kennedy**; or **JFK**; prompt on **Kennedy**]

13. An extremely strong class of these substances includes n-butyllithium and one named for Schlosser. In one classification system, the "soft" type of these substances has higher-energy highest occupied molecular orbitals, or HOMO, than the "hard" type. These substances were classified by Lewis as electron pair donors, and the Bronsted-Lowry system classifies these substances as proton acceptors. For 10 points, name these substances characterized by high pH's that are contrasted with acids.
ANSWER: **base**s

14. The men's doubles phase of this tournament was the only Grand Slam won by the Bryan twins in 2012. Following this tournament, both Kim Clijsters (CLIGH-sters) and Andy Roddick retired. It was the first Grand Slam since the 2004 French Open in which neither Roger Federer nor Rafael Nadal reached the final. Serena Williams won this tournament in 2012 for the fourth time, and the men's phase was the first tournament won by a British player since 1936. For 10 points, name this tennis tournament, won by Andy Murray in 2012, which is the last Grand Slam each year and is played in Queens, New York.
ANSWER: the 2012 **U.S. Open**

15. The "directional" form of this operation dots the gradient with a vector over the vector's magnitude. The gradient consists of a vector where each component was created with the "partial" version of this operation. When applied to compositions of functions, it can be found with the chain rule. It can only be applied to continuous functions and yields e to the x when applied to e to the x. Leibniz's notation of d over dx is used for this operation. For 10 points, name this mathematical operation that finds the instantaneous rate of change of a function, which is the inverse of integration.
ANSWER: partial **derivative** [or partial **differentiation**]

1A. What French philosopher discussed the idea of Jeremy Bentham's Panopticon in his work *Discipline and Punish*?
ANSWER: Paul-Michel **Foucault**

1B. In which Shakespeare romance does Antigonus "exit, pursued by a bear" while under orders from Leontes?
ANSWER: *The **Winter's Tale***

2A. What set of numbers consists of either the positive or non-negative integers and can be synonymous with whole numbers?
ANSWER: **natural** numbers

2B. What island nation was the site of the New Order when ruled by Suharto and Sukarno?
ANSWER: Republic of **Indonesia** [or Republik **Indonesia**]

3A. What term is given to the situation where a program tries to store more data than a buffer can hold, corrupting or overwriting data in adjacent buffers?
ANSWER: **overflow**

3B. What protein shell covering a virus is usually helical or icosahedral in shape?
ANSWER: **capsid**

4A. This is a 20-second calculation question. A circle with center O has area 25 pi, and minor arc AB has length 2 pi. Find the measure of angle AOB.
ANSWER: **72** degrees [or **2 pi / 5** radians]

4B. This is a 20-second calculation question. Let theta be the arccosine of the quantity negative square root of two, divided by two, close quantity. Find the tangent of theta.
ANSWER: **-1** [do not accept "1"]

5A. Simone de Beauvoir's *The Mandarins* and Jack Kerouac's *On the Road* are examples of what kind of "novel with a key," in which real people and events are slightly fictionalized using new names?
ANSWER: *roman à clef*

5B. What is the English word for the item known as a "gömlek" in Turkish, "hemd" in German, or "camisa" (cah-MEE-sah) in Spanish?
ANSWER: a **shirt**

6A. Which state saw a rebellion led by Denmark Vesey and was represented by Preston Brooks, Robert Hayne, and John C. Calhoun?
ANSWER: **South Carolina**

6B. What 2012 film about a CIA plot centering on a fake movie used to rescue diplomats during the Iran hostage crisis was directed by Ben Affleck?
ANSWER: *Argo*

7A. Name the bridge, which was surpassed as the longest arch span in the world by Shanghai's Lupu Bridge in 2003, and carries U.S. Route 19 at a nearly nine hundred foot height near Fayetteville, West Virginia.
ANSWER: the **New River Gorge** Bridge

7B. What astronomical term, usually used in reference to stars, describes the proportion of an object's matter not made up of hydrogen and helium?
ANSWER: **metallicity**

8A. This is a 30-second calculation question. What is the domain of the function natural log of the quantity negative x squared plus 2 x plus 3?
ANSWER: **-1** is **less than x** which is **less than 3** [or **(-1,3)**; or **-1 to 3** exclusive; do not accept anything including "less than or equal to"]

8B. This is a 30-second calculation question. How many distinct ways are there to arrange the letters in the name AMANDA?
ANSWER: **120**

9A. What term is used to describe a layer of soil that is distinct texturally from the layers above and below it?
ANSWER: soil **horizon**

9B. What variable is graphed on the y-axis, against quantity demanded or supplied on the x-axis, on supply and demand curves?
ANSWER: **price**

10A. What Greek god killed three of the Cyclopes in revenge for the death of his son Asclepius and slaughtered the children of Niobe with his sister Artemis?
ANSWER: **Apollo**

10B. Name the 532 CE revolt that grew out of the Hippodrome and declared Hypatius the new emperor before Justinian's forces put it down.
ANSWER: **Nika** revolt

1. The Civil War Battle of South Mills was fought near one of these features in the Great Dismal Swamp built along two states' border. Several corrupt contractors overcharged for repairs on these structures in a "ring" busted by Samuel J. Tilden. Gouverneur Morris chaired a commission for another of these structures, which had a Grand Celebration topped with a "Wedding of the Waters.". One of these was the brainchild of DeWitt Clinton, and another was returned to its home country by Jimmy Carter. For 10 points, name these structures, including the Erie and Panama, that link two waterways.
ANSWER: **canal**s

020-13-76-06117

2. An insufficient amount of this phenomenon causes lengthening of internodes and chlorosis, which are two parts of etiolation. Using agar blocks, Fritz Went showed that auxins were responsible for triggering growth in the direction of this phenomenon. The Calvin cycle occurs independently of this phenomenon. This phenomenon is responsible for the excitation of P680 and P700 reaction centers within the thylakoid membrane of a chrloroplast. For 10 points, name this energy source which plants use to drive photosynthesis.
ANSWER: **light** [accept **photosynthesis** till mention]

048-13-76-06118

3. In Islam, this man is credited with having built the current Kaaba with one of his sons. That son received water from the nearby Zamzam Well, after this man brought him and his mother Hagar to Mecca. This man's other son had a name meaning "he laughs" after the reaction of this man and his wife to the news that she would have a child in her old age. This man was commanded to sacrifice that son on Mount Moriah as a proof of his love for God, but was stopped at the very last moment by an angel. For 10 points, name this first patriarch, the father of Isaac.
ANSWER: **Abraham** [or **Abram**; or **Ibrahim**]

121-13-76-06119

4. In January 2013, a large number of manuscripts were destroyed in this country when the Ahmad Babu Institute was burned down. The ongoing Operation Serval in this country is targeting both Ansar Dine and the national movement for the liberation of Azawad, two groups that parted ways after cooperating on an insurgency. Dissatisfaction with government handling of the rebellion led this country's army to overthrow president Amadou Toumani Touré in March 2012. For 10 points, name this African country in which the French have intervened to stop northern rebels from forming a breakaway Islamist state.
ANSWER: Republic of **Mali** [or Republique du **Mali**; or **Mali** ka Fasojamana]

020-13-76-06120

5. Inspired by a Theodore Roosevelt speech, this man composed "The Strenuous Life." A conjurer named Zodzetrick tries to sell a bag of luck to the title character, who is saved from being thrown into a hornet's nest, in his opera *Treemonisha*. Marvin Hamlisch won an Academy Award for orchestrating this man's music in his film score for *The Sting*. This man performed as a touring musician in Sedalia, Missouri, whose Maple Leaf Club provided the name for one of his early compositions. His most recognizable piece is "The Entertainer." For 10 points, name this composer known as the "king of ragtime."
ANSWER: Scott **Joplin**

030-13-76-06121

6. One character in this play learns that his affair with a woman named Alberta resulted in her death while giving birth to Raynell. The main character of this play gives money to his musician son Lyons and spends a lot of his time talking to Bono, a coworker at the sanitation department. At the end of this play, Gabriel blows his horn to open the gates of heaven. Cory wants to go to college to play football, but instead joins the marines after fighting with his father, who once played in the Negro Leagues. For 10 points, name this play set in the 1950s about Troy Maxson and written by August Wilson.
ANSWER: *Fences*

7. A mayor from this state named Frank Zeidler carried out an aggressive annexation plan and was the last socialist mayor of a major American city. A Senator from this state was nicknamed "Young Bob" and was defeated by a man who made an inflammatory speech to the Republican Women's Club of Wheeling, West Virginia. That other Senator from this state was asked, "Have you left no sense of decency?" by Army attorney Joseph Welch after leading a Red Scare. For 10 points, name this state that was represented in the U.S. Senate by Robert La Follette and Joseph McCarthy.
ANSWER: **Wisconsin**

8. The enzyme that adds these entities to one molecule contains TERT and TERC components and was discovered in *Tetrahymena* by Carol Greider and Elizabeth Blackburn. T loops form at the ends of these entities, whose uncapping can cause apoptosis. The shortening of these entities results in the Hayflick limit on cellular replication. In *A. thaliana*, these entities consist of a repeating TTTAGGG sequence, while in humans they consist of a repeating TTAGGG sequence. For 10 points, name these nucleotide sequences that protect the ends of chromosomes from deterioration.
ANSWER: **telomere**

9. In a costume party in this game, the player must talk to a man in a rabbit mask to find out whether to go after Lydia, Esma, or Waverly Boyle. An episode of this game is set in the sewers, where the player can choose to kill Granny Rags, Slackjaw, or neither to get the Master Key. It is set in a city patrolled by the Tallboys, which is threatened by a plague engineered by Lord Regent Hiram Burrows in the wake of the murder of the Empress. For 10 points, name this 2012 Arkane Studios game whose protagonist is Corvo Attano, an assassin in the city of Dunwall.
ANSWER: *Dishonored*

10. In one painting by this man, two cherubs with bows in the top left fly over a woman waving a red shawl and clutching the horns of a bull wearing a garland. In another of his paintings, the title figure dressed in red and a blue mantle stands on a cloud as the apostles below frantically gesture up to her. This painter of *The Rape of Europa* and the *Assumption of the Virgin* also depicted a servant searching a large chest in the background of a painting of a nude goddess holding roses and reclining on a couch. For 10 points, name this Renaissance Venetian painter of *Venus of Urbino*.
ANSWER: **Titian** [or Tiziano **Vecellio**; or Tiziano **Vecelli**]

11. The partial derivative with respect to time of the density of particles experiencing this phenomenon is related to the mass diffusivity times the second partial derivative of their density with respect to x. The time-evolution of this phenomenon is well described by the Langevin equation. The random walk paradigm is used to model this phenomenon, whose description, along with that of Special Relativity and the photoelectric effect, made up Einstein's annus mirabilis papers. This phenomenon occurs to particles suspend in a fluid that are hit by that fluid's particles. 10 points, pollen randomly moving across water is an example of what type of motion?
ANSWER: **Brownian** motion

12. In this novel, the suicide of McWatt occurs after he accidentally kills Kid Sampson. In this novel, Captain Flume is afraid his throat will be slit open by a character whose family always had to move when oil was discovered named Chief White Halfoat. Another character in this novel tells Appleby that he has flies in his eyes and uses his perceived clumsiness to escape to Sweden. That character in this novel, Orr, is stationed on Pianosa with Milo Minderbinder, Major Major, and Yossarian. For 10 points, name this satirical novel set in World War II by Joseph Heller.
ANSWER: *Catch-22*

13. The strength of the electric field times this quantity over a constant equals the surface charge on a material exhibiting piezoelectricity. The maximum value of this quantity that a material can take before fracturing is known as its ultimate strength. The shear form of this quantity is equal to the shear rate times a viscosity constant. Young's Modulus equals the ratio of this quantity to strain, which is commonly graphed against this quantity. For 10 points, name this quantity that represents the internal forces exerted on particles by their neighbors.
ANSWER: **stress**

14. One character in this novel proposes a Persian carpet as a metaphor for life. That character is named Cronshaw. After the protagonist of this novel leaves for Paris, Fanny hangs herself. The protagonist of this novel loved the much older Miss Wilkinson. The waitress Mildred Rogers is another love interest of this novel's club-footed protagonist, who ultimately proposes to Thorpe's daughter, Sally Athelny. For 10 points, name this semi-autobiographical novel about Philip Carey, written by W. Somerset Maugham.
ANSWER: *Of Human Bondage*

15. This man thinks it ominous that the innkeeper of the place he is staying at is named Peter Coffin, and Peleg is unimpressed by his service in the merchant service. At the Spouter-Inn, he tries to convince his roommate of the foolishness of fasting during Ramadan. Elijah warns this man and that roommate that their souls are in peril after they agree to ship with a certain vessel. By holding on to a coffin that was originally a small boat, this sailor is the only man to survive the sinking of the *Pequod*. For 10 points, name this narrator of *Moby-Dick*.
ANSWER: **Ishmael** [prompt on the **narrator of *Moby-Dick*** until it is read]

1. In an opera based on a work by this man, a soprano sings "Salce!" in an increasingly desperate tone in the Willow Song aria. In another opera based on his works, Ford sings È sogno? o realtà" after learning of the title character's plan to seduce Ford's wife. Felix Mendelssohn's "Wedding March" is included in a suite for incidental music for a play by this man. A character created by him is the protagonist of Verdi's last opera, based on scenes from *Henry IV* and *The Merry Wives of Windsor.* For 10 points, name this author whose plays were adapted into operas such as *Falstaff* and *Otello.*
ANSWER: William **Shakespeare**

121-13-76-06132

2. This man seized power in a coup largely financed by his mistress Harriet Howard. He appointed the liberal Emile Ollivier as a Prime Minister. This ruler's "Grand Scheme for the Americas" involved appointing Maximillian I to rule Mexico. He commissioned Baron Haussman to modernize the capital of his empire with building projects. This man was overthrown after losing the Battle of Sedan during the Franco-Prussian War. For 10 points, name this ruler of the Second French Empire who was the nephew of the loser at Waterloo.
ANSWER: **Napoleon III** [or Charles **Louis-Napoleon** Bonaparte; prompt on **Bonaparte**; do not accept "Napoleon"]

052-13-76-06133

3. This organ contains the perisinusoidal space, also known as the space of Disse, contain fat-storing cells called Ito cells. Other cells in this organ include specialized stellate macrophages known as Kupffer cells. This organ connects to the diaphragm at its "bare area." Blood is conducted to this organ by the hepatic portal vein, and cirrhosis of this organ is commonly caused by alcoholism. For 10 points, identify this vital organ which produces bile.
ANSWER: the **liver**

126-13-76-06134

4. This novel describes one character in terms of Plato's concept of "natural depravity: depravity according to nature." The protagonist of this novel experiences a false sense of relief when he is told, "Handsomely done, my lad!" after spilling his soup. When the protagonist of this novel is offered a pair of coins to participate in a mutiny, he goes into a fit of stuttering. Later, Captain Vere sympathetically argues the necessity of hanging the title sailor for killing the master-at-arms, John Claggart. For 10 points, name this novella by Herman Melville.
ANSWER: *Billy Budd*

014-13-76-06135

5. One form of this type of radiation was first observed by the Vela satellites. That form of this type of radiation is thought to occur when rapidly rotating, high mass stars undergo a supernova or when binary neutron stars merge. That form is this radiation's namesake bursts. This kind of radiation is not deflect by magnets and was discovered by Paul Villard. When this type of radiation enters a solid, pair production is commonly observed. For 10 points, identify this very high frequency radiation that is more penetrating than alpha and beta radiation.
ANSWER: **gamma** radiation [or **gamma ray**s]

066-13-76-06136

What "belt" of small objects that lies outside the orbit of Neptune is home to the dwarf planets Pluto, Haumea and Makemake?
ANSWER: Edgeworth-**Kuiper** belt

This is a calculation question. How many sides does a regular polygon have if each of its interior angles measures 178 degrees?
ANSWER: **180**