1. Activation frames are stored in this type of data structure. Adding and removing those frames is called winding and unwinding, respectively, and this stores memory concerning a program's subroutines. Programs such as Java have a "peek" function which allows the top value in one of these structures to be accessed without being removed. The most basic operations on this structure are "push" and "pop." For 10 points, name this last-in-first-out data structure.
ANSWER: **stack** [or call **stack**]

121-13-76-07101

2. This man used an ellipsoid with a ridge down the middle and one end flattened in his sculpture *The Newborn*, and he depicted Marie Bonaparte gazing at herself in a mirror in *Princess X*. This man built a war memorial at Targu Jiu that includes *The Stone Table* and the *Endless Column*. One sculpture by this man, consisting of an abstracted vertical wing, was taxed as a kitchen appliance because customs officials refused to believe it was art. For 10 points, name this Romanian sculptor of the *Bird in Space* series.
ANSWER: Constantin **Brancusi**

195-13-76-07102

3. A subgroup of this ethnicity uses the distinctive "tifinagh" alphabet, and these people speak Kabyle and other Amazigh languages. This ethnicity engages in a kind of political meeting called a "jama'ah." Subgroups of these people include the Shawia, the Rif, and the Tuareg. These people, descended from the classical Numidians, live in the Maghreb region, and they comprised the major part of the "Moor" identity that controlled Islamic Europe in the Middle Ages. For 10 points, identify this ethnicity which is prevalent in Morocco and Algeria and found throughout North Africa.
ANSWER: **Berber**s [or **Amazigh** until it is read; or **Imazighen** until "Amazigh" is read; or **Tuareg** until "Kabyle" is read; prompt on **Moor**s until it is read; do not accept or prompt on "Arabs"]

019-13-76-07103

4. A followup to this process may include an oxidative burst. This process follows opsonization, which can be carried out by antibodies. Antigen presentation in dendritic cells follows this process, which is also carried out by neutrophils. This process uses the creation of pseudopods to surround the target, and is followed by fusion of the resulting namesake organelle with a lysosome. For 10 points, name this form of endocytosis in which a vesicle is formed from the intake of a pathogen.
ANSWER: **phagocytosis** [prompt on **endocytosis** until mention]

140-13-76-07104

5. In a John Cheever story titled for this kind of setting, Miss Dent gets revenge on her predatorial old boss Blake by forcing him into the mud at gunpoint. Flannery O'Connor's novel *Wise Blood* opens in this kind of setting. In the beginning of *Atlas Shrugged,* Dagny Taggart gets into a confrontation with an engineer in one of these places. Hercule Poirot discovers that Cassetti was killed by twelve co-conspirators in an Agatha Christie novel with this kind of setting. For 10 points, name this kind of vehicle that titles Christie's *Murder on the Orient Express.*
ANSWER: a **train** [or **trains**; or **locomotives**; or a **train** car; or the **railroad**]

080-13-76-07105

6. Irreversible steps in this pathway include the decarboxylation of alpha-ketoglutarate. Near the end of this pathway, the cofactor FAD helps ubiquinone oxidate succinate to fumarate. The products of this pathway include three NADH molecules and one GTP molecule. The first reaction in this pathway uses oxaloacetate and the acetyl CoA produced by glycolysis. This pathway is followed by the electron transport chain. For 10 points, name this cycle central to cellular respiration.
ANSWER: **Krebs cycle** [or **citric acid cycle**]

7. In one poem, this man notes "how vainly men themselves amaze to win the palm, the oak, or bays." In another of his poems, the speaker tells the title creatures, "Your courteous lights in vain you waste, for Juliana here is come." This poet of "The Garden" and "The Mower to the Glow-Worms" famously wrote, "The grave's a fine and private place, but none I think do there embrace." That poem begins by wishing he and the title character had "but world enough, and time." For 10 points, name this English poet of "To His Coy Mistress."
ANSWER: Andrew **Marvell**

8. These types of equations are constraints for functions whose maximums are found through the simplex method. The ordinary least squares method finds this type of equation that minimizes the distance between its y-values and those of a sample. If a set of them is expressed in matrix form, their solutions can be found by putting the matrix into reduced row echelon form. Cramer's rule is another method to solve for a system of equations of this type. They can be written in the point-slope form, or the slope-intercept form. For 10 points, name these polynomials of degree one.
ANSWER: **linear** equation

9. A museum of this mountain range is found at Blue Mountain Lake. Both of the wollastonite mines in the U.S. are in this mountain range. One peak in this mountain range is named for its near-vertical side as Whiteface Mountain. This range contains recreational hotspots around the Saranac River, Lake George, and Lake Placid. It was formed as part of the Canadian Shield rather than the Appalachians, and it extends from the St. Lawrence valley near Lake Champlain to the Mohawk valley. For 10 points, name this mountain range of northeastern New York.
ANSWER: **Adirondack** Mountains [or the **Adirondacks**]

10. One example of this device uses a parabolic primary mirror and hyperbolic secondary mirror and was invented by Laurent Cassegrain. There are three primary types of this device: refracting, reflecting and catadioptric. Hans Lipperhey is commonly associated with the invention of this device. An improved version of this device that consisted of a convergent objective lens and a divergent eyepiece lens was created by Galileo. For 10 points, identify this device commonly used to magnify and observe astronomical objects.
ANSWER: optical **telescope** [or reflecting **telescope** before it is read]

11. A leader of this country was arrested while campaigning for the National Anti-Reelection Party. That leader of this country was killed during the Ten Tragic Days. After one man from this country attacked Columbus, John Pershing was sent into this country to track him down. La Linea is the street gang associated with the Juarez drug cartel in this country, which is currently waging a war on drugs. Past revolutionaries in this country include Porfirio Diaz and Pancho Villa. For 10 points, name this country that, along with the US and Canada, is part of NAFTA.
ANSWER: **Mexico** [or **United Mexican States**; or **Estados Unidos Mexicanos**]

12. The probability the time-averaged value for this property takes a given value over the probability it takes the opposite value follows an exponential function, as shown in the fluctuation theorem. The H-theorem shows the change of this property in an ideal gas is irreversible. The H-theorem was developed by the same man who defined this property as the logarithm of available microstate times Boltzmann's constant. Clausius define it as the line integral of change in heat over temperature. The second law of thermodynamics states this value must universally be increasing. For 10 points, name this measure of a system's disorder.
ANSWER: **entropy**

13. In this film, Jane Lynch's character repeatedly punches another character in the face until they can grab Laffy-Taffy and escape from some quicksand. In one scene of this film, graffiti reading "Aerith Lives" can be seen in Central Station. This movie's title character drops stalactites made of Mentos into Diet Cola Mountain to cause an eruption and destroy the invading Cy-Bugs; he also helps Vanellope defeat King Candy in a race inside the game *Sugar Rush*. For 10 points, name this 2012 Disney movie about an arcade villain who wants to be a hero.
ANSWER: *Wreck It Ralph*

14. This god warned Zeus against marrying Thetis for fear it would result in a son more powerful than his father. This god created the precedent of offering bones wrapped in fat as a gift to the gods instead of meat, and he was the brother of Epimetheus. In one legend, he warns his son Deucalion of a great flood. Pandora was created on Zeus' orders as punishment for the actions of this Titan, who was ultimately bound to a mountain in the Causcaus and has an eagle eat his immortal liver. For 10 points, name this Greek Titan who was punished for his gift of fire to humanity.
ANSWER: **Prometheus**

15. The track of these particles represents the "spur" in the spur model. Sodium-22 is commonly used to produce these particles, whose destruction in PALS is marked by the emission of a 511keV photon. Carl Anderson discovered these particles that were predicted by Paul Dirac. Penning traps are used to bring these particles together with more massive ones to create anti-hydrogen. These particles, and their more abundant counterpart, are typically produced by pair production. For 10 points, name this positively charged anti-particle that is the "opposite" of an electron.
ANSWER: **positron**

1A. What Mozart opera contains the Queen of the Night, who sings the "O zittre nicht" aria?
ANSWER: *The **Magic Flute*** [or *Der **Zauberflote***]

1B. Name the "venerable" writer whose *Ecclesiastical History of the English People* gives many details on the development of religion and government in early England.
ANSWER: Venerable **Bede** [or **Beda**]

2A. James McInerney's *Bright Lights, Big City* and Italo Calvino's *If on a winter's night a traveler* both employ narration from what unusual perspective?
ANSWER: the **second person**

2B. What Mexican muralist showed a doctor and nurse vaccinating an infant in his *Detroit Industry Murals*?
ANSWER: Diego **Rivera**

3A. This is a 20-second calculation question. Jessica can mow the lawn in 3 hours. Working together, Jessica and Nick can mow the lawn in 2 hours. How long would it take Nick to mow the lawn by himself?
ANSWER: **6** hours

3B. This is a 20-second calculation question. If the hypotenuse of a right triangle is 10 and the sine of angle A is 0.4, what is the length of the side opposite angle A?
ANSWER: **4**

4A. Name the last leader of West Germany, who co-engineered the Maastricht Treaty with Francois Mitterand.
ANSWER: Helmut **Kohl**

4B. What Greek letter names a bacteriophage discovered by Esther Lederberg and is also used to represent wavelength in physics?
ANSWER: **lambda**

5A. Lily Bart becomes indebted to Gus Trenor in what novel by Edith Wharton?
ANSWER: *The **House of Mirth***

5B. What European country's far-right, anti-Semitic Jobbik Party was embarrassed in 2012 when prominent member Csanad Szegedi (ZAH-nad CHEG-uh-dee) was discovered to be Jewish?
ANSWER: **Hungary** [or **Magyarorszag**]

6A. What group of enzymes add phosphate groups to other molecules?
ANSWER: **kinase**s

6B. Name this type of "paradise" that titles a Coolio song and whose type of "rap" was pioneered by NWA.
ANSWER: **gangster** [or **gangsta**]

7A. What quarterback started for the Alabama Crimson Tide in both their 2012 and 2013 national championships games?
ANSWER: Raymond Anthony "AJ" **McCarron**

7B. What Biblical figure resolved an argument over who the mother of a child was by threatening to have the infant cut in half?
ANSWER: **Solomon** [or **Jedidiah**]

8A. Every Shostakovich symphony but the fourteenth includes what largest, lowest-pitched brass instrument?
ANSWER: **tuba**

8B. What operation is denoted with bars around a number and returns the corresponding positive number when applied to a negative number?
ANSWER: **absolute value** [or **modulus**]

9A. This is a 30-second calculation question. An unfair coin is twice as likely to land tails as heads. If it is flipped three times, what is the probability of getting exactly one head?
ANSWER: **4/9** [or **12/27**]

9B. This is a 30-second calculation question. The longest diagonal of a regular hexagon has length 8. Find the area of the hexagon.
ANSWER: **24** times the square **root** of **3** [or **24 radical 3**]

10A. The Irish verb "a léamh," the French verb "a lire," and the Italian verb "leggere" all mean what in English?
ANSWER: "to **read**"

10B. What German-language poet wrote *The Sonnets to Orpheus* and the *Duino Elegies*?
ANSWER: Rainer Maria **Rilke**

1. A "superheavy" entity of this kind may contain both a branching nucleus and a coda; the other segment present in the general structure of these entities is the onset. Hermann Ebbinghaus developed learning and forgetting curves by memorizing "nonsense" ones. "Open" ones may have up to four different tones in Mandarin Chinese. Tablets unearthed in Ur reveal the shift from pictograms to these in depicting writing. These units appear in five-seven-five fashion in haikus. For 10 points, name these component bits of words, two of which are found in the word "water."
ANSWER: **syllable**s

020-13-76-07117

2. In one play by this writer, the title character's daughter Petra loses her job as a teacher after her father goes against the wishes of her uncle Peter, the mayor. That play by this writer follows Doctor Stockmann trying to get his town to replace pipes contaminating the town's baths. Another play by this writer includes a character who borrowed money from Krogstad using her father's name and ends with Torvald being left by Nora Helmer. For 10 points, name this Norwegian playwright of *An Enemy of the People* and *A Doll House.*
ANSWER: Henrik **Ibsen** [or Henrik Johan **Ibsen**]

023-13-76-07118

3. Pure species are ignored during the computation of this value because they have no activity. The change in Gibbs free energy is equal to negative RT times the natural log of this value. Comparing this value to the reaction quotient is used to apply Le Chatlier's law, and this quantity is usually calculated as products over reactants. For 10 points, name this quantity used to characterize reactions in which the forward and reverse rates are equal, usually symbolized K.
ANSWER: **equilibrium** constant [or **mass action** constant; accept **K** before it is read; accept **reaction quotient** or **Q** before it is read]

048-13-76-07119

4. In 2011, this company was led out of bankruptcy after the resignation of CEO Gerard Arpey. The departing CEO of this company, Tom Horton, will give control to Doug Parker under a new arrangement, spurred after it fell behind Southwest to become the fourth-busiest domestic carrier. For 10 points, name this company which announced a merger with US Airways in 2013, which will create the largest air transport company in the U.S.
ANSWER: **American** Airlines

019-13-76-07120

5. This governor signed a "Therapeutic Abortion Act" proposed by Anthony Beilenson, though he later announced he was pro-life. This man also enacted the first no-fault divorce law in the United States. He sent riot police into People's Park on "Bloody Thursday" and cracked down on the Free Speech Movement on a college campus. This governor unseated Pat Brown, promising to "send the welfare bums back to work," though he was mocked for previous work such as having the starring role in the movie *Bedtime for Bonzo*. For 10 points, name this Governor of California who became President in 1981.
ANSWER: Ronald Wilson **Reagan**

080-13-76-07121

6. This organ is surrounded by lymphatic capillaries known as lacteals. I cells in the mucosal epithelium of this organ secrete the hormone cholecystokinin. The autoimmune celiac disease drastically changes the morphology of this organ, the site of sodium bicarbonate and vitamin B12 absorption. This organ's surface area is greatly expanded by villi. This organ consists of three main segments: the ileum, the jejunum, and the duodenum. For 10 points, name this digestive organ that follows the stomach and precedes a "large" variant in the GI tract.
ANSWER: **small intestine** [prompt on **intestine**; do NOT accept **large intestine**]

7. In this poem, a character who "rode over Connecticut in a glass coach" makes a mistake about "the shadow of his equipage." The speaker of this poem does not know "which to prefer, the beauty of inflections or the beauty of innuendoes." This poem's subject "marked the edge of one of many circles," "sat in the cedar limbs," and "whirled in the autumn wind." This poem opens by noting that "among twenty snowy mountains, the only moving thing was the eye of" the title creature. For 10 points, name this poem in which Wallace Stevens provides a variety of perspectives on the title bird.
ANSWER: "**Thirteen Ways of Looking at a Blackbird**"

8. She's not Demeter, but this deity breathed perfume on the maidservants of a queen after her attempt to make that queen's son immortal was interrupted. This goddess' name means "throne" and her symbol was a tiet. After a snake poisoned him, Ra revealed his secret name to this goddess in return for an antidote. This goddess went on a search for 14 body parts, but only found 13 because one was eaten by a fish. After reviving her husband, who was killed by Set, this goddess gave birth to Horus. For 10 points, name this sister and wife of Osiris, a mother god in Egyptian mythology.
ANSWER: **Isis**

9. This quantity is plotted on the Y axis against entropy in a diagram used to find the "dryness fraction", the Mollier diagram. The Joule-Thompson process keeps this quantity constant. The change in this quantity can be calculated through the Born-Haber cycle using Hess' law. This quantity minus temperature times entropy gives the Gibbs free energy. For 10 points, name this quantity whose change is used to characterize whether a reaction is endo- or exothermic, usually symbolized H.
ANSWER: **enthalpy** [accept **H** until read]

10. One participant in this scandal wrote the "Dear Handsome" letter. Henry Hyde asked 81 questions to another participant in this scandal. Bob Livingston resigned his position to try and set an example for the man focused on in this scandal. The charges in this scandal were called a "vast right-wing conspiracy" by the wife of a man who said "it depends on what the meaning of the word 'is' is." This scandal was brought to light by Linda Tripp giving tapes to Kenneth Starr. For 10 points, name this scandal that helped lead to articles of impeachment when an intern had an affair with Bill Clinton.
ANSWER: Monica **Lewinsky** scandal [or **Monicagate**; or **Zippergate**; accept equivalent answers that mention Monica **Lewinsky**]

11. A newspaper editor refused to speak at this location unless the words "Arm Yourselves and Appear in Full Force" were removed from posters. John Altgeld pardoned the three surviving men of the eight convicted for crimes committed at this place. One of those men, August Spies (SHPEES), edited the *Arbeiter-Zeitung*, which announced a meeting here after Spies heard of workers killed at a McCormick Harvesting Machine plant. Samuel Fielden was speaking here when a policeman was killed, setting off a riot. For 10 points, name this site of a bombing at a Chicago labor protest in 1886.
ANSWER: **Haymarket** Square [prompt on **Chicago** or **Illinois**]

12. This man, along with George Chapman, was arrested for their response to *Westward Ho* called *Eastward Ho.* In one of his plays, Master Lovewit's house is appropriated by the con artist Subtle, who pretends to make the philosopher's stone. In another play by this man, Bonario stops the title character from raping Celia. In that play, a rich man pretends to be on his deathbed to receive gifts from Corvino, Corbaccio, and Voltore. For 10 points, name this contemporary of Shakespeare who wrote *The Alchemist* and *Volpone.*
ANSWER: Ben **Jonson**

13. One constant associated with these systems is denoted by zeta and is equal to a certain coefficient c over two times the square root of a constant times mass. If these systems have an intermediate quality factor they are said to be critically damped. Electrical versions of this system include RLC circuits. When this type of system is displaced from its equilibrium position, it experiences a restoring force F, proportional to the displacement x. For 10 points, name this kind of system, examples of which include springs and pendulums.
ANSWER: simple **harmonic oscillator**

14. George Stanley is taken into custody in this play in order to blackmail his father into supporting the protagonist. In this work, Tyrell states that "the tyannous and bloody act is done." Lady Anne calls one figure in this play a "foul toad" in rebuffing a marriage proposal, and Clarence is murdered by agents of the title character in the Tower of London. The protagonist of this play cries, "A horse, a horse! My kingdom for a horse!" and the families of York and Lancaster are united in the final act. For 10 points, name this Shakespeare history about a villainous English king.
ANSWER: *Richard III*

15. This President appointed the Seneca Indian Ely S. Parker as Commissioner of Indian Affairs. In his first run for the presidency, he defeated Horatio Seymour, and in his bid for reelection he defeated the editor of the *New York Tribune*, Horace Greeley. His Private Secretary Orville Babcock was implicated when this President's Secretary of the Treasury Benjamin Bristow exposed the Whiskey Ring scandal. His administration was also rocked by the Credit Mobilier scandal. For 10 points, name this President who commanded the Union army in the Civil War.
ANSWER: Ulysses S. **Grant** [or Hiram Ulysses **Grant**]

1. Alternating dark and light bands that occur as small wave crests in these objects are called ogives. Streams that originate from these objects often have multiple small channels separated by temporary islands and are called braided streams. Till deposited by these objects can create moraines. These objects form when their ablation is less than the accumulation of snow, which is why global warming is causing many of them to shrink. For 10 points, name these large permanent blocks of ice found on land.
ANSWER: **glaciers**

149-13-76-07132

2. This ruler granted a charter to the town of Gothenburg and he married Maria Eleonora of Brandenburg. This man intervened in a war after the Battle of Wolgast, which saw the defeat of Christian IV of Denmark. This ruler and his daughter who succeeded him were both assisted by the chancellor Axel Oxenstierna. This leader was killed at the Battle of Lutzen while fighting against the forces of Albrecht von Wallenstein, a general for the Holy Roman Empire. For 10 points, name this Swedish king who fought in the Thirty Years' War.
ANSWER: **Gustavus Adolphus** [or **Gustav II Adolf**; prompt on **Gustavus**; prompt on **Gustav**]

014-13-76-07133

3. The protagonist of this short story recalls sledding into town with a boy who had shot his abusive master from the Forks, only for the boy to be arrested. A boy named Molo changes the dressings of this story's protagonist, the lover of a rich woman named Helen he calls the "Memsahib." In this story, Harry thinks of "all the stories that he meant to write" as he dies of gangrene contracted during a safari. For 10 points, name this short story by Ernest Hemingway set on a mountain in Africa.
ANSWER: "The **Snows of Kilimanjaro**"

080-13-76-07134

4. Congenital disorders of this organ include the relatively benign fusion called the "horseshoe" type of this organ. The function of this organ is regulated by aldosterone, which is secreted in response to angiotensin II. This organ secretes hormones such as erythropoietin and renin. The functional unit of this organ includes Bowman's capsule, which encloses the glomerulus. For 10 points, name this organ containing nephrons that filters waste products such as urea from the blood, producing urine.
ANSWER: **kidney**

014-13-76-07135

5. In this novel, Mr. Macy often tells stories in the Rainbow Inn. In this novel, a member of the Dissenting Chapel named William Dane accuses another character of theft. Another character in this novel passes out from opium while traveling to the Red House, and the son of Dolly Winthrop, Aaron, marries a woman whom Nancy Lammeter refused to adopt. In this novel, the remains of Dunsey are found in a quarry beside the title character's stolen gold. For 10 points, name this novel about the title weaver who cares for Eppie, a work by George Eliot.
ANSWER: *Silas Marner*

030-13-76-07136

The Kibuli Mosque and Makerere University are found in what national capital, the largest city on Lake Victoria?
ANSWER: **Kampala**

This is a calculation question. A triangle has sides of length 2 and 3, with a 60 degree angle between those two sides. Find the length of the third side of the triangle.
ANSWER: square **root** of **7** [or **radical 7**]