1. In this work, the neck and voice of the protagonist's brother are compared to a bull, and that brother gives political speeches which he phrases carefully to avoid arrest. The protagonist unsuccessfully attempts to convince his sister Gertrude to end her life of prostitution in the city. After the murder of the white activist for racial equality named Arthur Jarvis, the protagonist's son Absalom is the lone culprit sentenced to execution. For 10 points, name this novel following Reverend Stephen Kumalo written by South African author Alan Paton.
ANSWER: ***Cry, the Beloved Country***

014-12-70-05101

2. This organelle's membrane contains a triose phosphate/phosphate antiporter. Proteins are shuffled within it via the twin-arginine translocator system. Proton pumping within this organelle creates one compartment with pH 8 and another with pH 4. Lamellae connect grana within this organelle. P700 and P680 reaction centers are found within the membranes of small sacs within this organelle known as thylakoids. For 10 points, name this photosynthetic organelle.
ANSWER: **Chloroplast**

048-12-70-05102

3. Throughout this novel, the silent and unnamed "Lady in Black" mourns her husband's death. The fourteen-year-old Farival twins play the piano for vacationers in this novel. Its protagonist is the daughter of a Confederate officer known as "the Colonel," and is counseled by Doctor Mandalet. That protagonist has an affair with Alcee Arobin despite her marriage to Leonce and her love for Robert Lebrun. For 10 points, name this Louisiana-set Kate Chopin novel in which Edna Pontellier drowns herself.
ANSWER: *The* ***Awakening***

015-12-70-05103

4. Independently from Joseph Le Bel, he explained optical activity by proposing that certain molecules are shaped like tetrahedrons. His namesake equation uses the enthalpy [EN-thul-pee] change to relate temperature change to the change in the equilibrium constant. The effect of a particular solute species on colligative properties is measured by his namesake "factor." For 10 points, name this Dutch chemist who won the first Nobel Prize in Chemistry.
ANSWER: Jacobus Henricus **van 't Hoff**

024-12-70-05104

5. This man's autobiography includes a list of "Thirteen Virtues" by which he lived his life. As a teenager, he published as Silence Dogood. This inventor of the lightning rod created a political cartoon depicting a severed snake and the caption "Join or Die." The first American ambassador to France, this man created a volunteer fire department and published *Poor Richard's Almanack* in his home city of Philadelphia. For 10 points, name this Founding Father who flew a kite in a storm.
ANSWER: Benjamin **Franklin**

015-12-70-05105

6. The protagonist of this work is forced to drink soup containing live frogs and urine by the other children. Later, the protagonist discovers the ring finger of Sister Dorothea in a field, for which he is convicted of murdering her. The protagonist chooses to stop aging on his third birthday, when he receives the title object. For 10 points, name this novel in which Oskar Matzerath cherishes a certain instrument, a work of Günter Grass.
ANSWER: *The **Tin Drum*** [or *Die **Blechtrommel***]

014-12-70-05106

7. In 2005, this man negotiated with Coca-Cola and Pepsi to remove high-calorie soft drinks from elementary schools, and he worked with George H.W. Bush in relief efforts after Hurricane Katrina. During the UN General Assembly, Barack Obama and Mitt Romney both attended the annual meeting of this man's Global Initiative. He gave the speech nominating Barack Obama at the 2012 DNC. For 10 points, name this philanthropist who served as the 42nd president of the United States.
ANSWER: William Jefferson **Clinton**

080-12-70-05107

8. This character embarrasses himself in Sunday school by claiming David and Goliath were the first two disciples. He witnesses the murder of Dr. Robinson while trying a cure for warts. He witnesses his own funeral, and saves Muff Potter by testifying against Injun Joe. This character gets lost in McDougal's Cave with Becky Thatcher. In the beginning of the novel named for him, he cons his friends into whitewashing a fence. For 10 points, name this friend of Huck Finn in some Mark Twain novels.
ANSWER: Tom **Sawyer** [or **Tom** Sawyer]

015-12-70-05108

9. This region's Lark Quarry contains thousands of fossilized footprints from a dinosaur stampede. This region is home to the largest population of feral camels in the world, which were imported from Afghanistan. The world's first comprehensive air ambulance program, the "flying doctor" service, was created to service its inhabitants. Its "Red Centre" is home to a monument known to indigenous inhabitants as Uluru, Ayer's Rock. Dingoes and kangaroos inhabit, for 10 points, what thinly-populated region in the interior of Australia?
ANSWER: the Australian **Outback** [or Queensland before "camels" is read; prompt on Australia]

080-12-70-05109

10. According to legend, this ruler wielded a sword named Joyeuse. He brought scholars such as Alcuin of York and Einhard to his court at Aachen (AH-kun). His grandsons Lothair I, Louis the German, and Charles the Bald divided his kingdom in the Treaty of Verdun. This man's lieutenant Roland was ambushed at the Battle of Roncevaux Pass. Leo III crowned him Emperor on Christmas in 800 CE. The son of Pepin the Short and grandson of Charles Martel, for 10 points, name this great Carolingian monarch.
ANSWER: **Charlemagne** [or **Charles I**; or **Charles the Great**; or **Charles le Grand**; or **Carolus Magnus** ; or **Karl der Grosse**; prompt on **Charles**]

015-12-70-05110

11. If one knows this value for a principal axis, one can use Steiner's theorem to calculate it for a parallel axis. The discrete form of this quantity is the sum of the product of mass with distance from the principal axis squared. Commonly derived values for this quantity include two-fifths m r-squared for spheres and one-half m r-squared for disks and cylinders. For 10 points, name this rotational analogue of mass.
ANSWER: **moment of inertia**

147-12-70-05111

12. Phycobiliproteins confer this property on organisms. This adjective describes a spot indicating sign of Tay-Sachs disease on the retina. On a computer, the maximum value for this property alone is given by the Hex code #FF0000. Along shores, this property's namesake "tides" are caused by algal blooms of this color. For 10 points, name this visual property of a multi-Earth-sized storm in Jupiter's atmosphere known as this kind of "great" "spot".
ANSWER: **red**ness [or being **red**]

104-12-70-05112

13. This composer used a *largo alla siciliana* tempo for "La Paix," the third movement of a composition celebrating the end of the War of Austrian Succession. He also wrote three suites named for their use in a concert for George I on a barge on the Thames. This composer of *Music for the Royal Fireworks* and *Water Music* also wrote an oratorio featuring a famous *"Hallelujah" Chorus.*For 10 points, name this German-born British composer of *Messiah.*
ANSWER: George Frideric **Handel**

014-12-70-05113

14. This character buys a pair of horses and talks to them for four hours a day as a result of the extreme misanthropy he experiences after the Portuguese captain Don Pedro de Mendez transports him home. This character helps defeat the Blefuscudian navy while allied with the residents of Lilliput, and he is repulsed by the similarity between humans and the savage Yahoos. For 10 points, name this character whose "travels" are recounted in a novel by Jonathan Swift.
ANSWER: Lemuel **Gulliver** [or **Lemuel** Gulliver]

014-12-70-05114

15. The title character of this play ends one soliloquy by requesting, "Shine out, fair sun, till I have bought a glass, that I may see my shadow as I pass." That title character describes how "Our stern alarums" are "changed to merry meetings" in the soliloquy that opens the play, beginning, "Now is the winter of our discontent made glorious summer by this sun of York." For 10 points, name this Shakespearean history about a villainous king who dies after exclaiming, "A horse! A horse! My kingdom for a horse!"
ANSWER: ***Richard III***

014-12-70-05115

1A. What country's president Meles Zenawi died in August 2012 and sent troops into neighboring Somalia in 2006?
ANSWER: **Ethiopia**

1B. What Polish astronomer proposed a heliocentric theory in his *On the Revolutions of the Celestial Spheres?*
ANSWER: Nicolaus **Copernicus**

2A. What Blizzard game, released in 2012, follows the Nephalem in his quest to defeat the title demon?
ANSWER: ***Diablo III***

2B. What lake in Oregon contains Wizard Island and fills the caldera created by an eruption of Mount Mazama?
ANSWER: **Crater** Lake

3A. What British philosopher and proponent of utilitarianism wrote the tract *On Liberty*?
ANSWER: John Stuart **Mill**

3B. This is a 20-second calculation question. Find the area, in square inches, of a trapezoid with base lengths 6 inches and 10 inches, and a height of 4 inches.
ANSWER: **32** square inches

4A. This is a 20-second calculation question. If the sine of an angle is 3/8 (three over eight) and its tangent is 3/2 (three over two), what is the cosine of the angle, in simplest terms?
ANSWER: **1 over 4** [or **1/4**]

4B. Which holiday celebrated the Sunday before Easter commemorates Jesus's ride on a donkey?
ANSWER: **Palm Sunday**

5A. What programming language was created by Bjarne Stroustrup (YARN strow-STROOP) in order to add classes and objects to an earlier programming language?
ANSWER: **C++** [do not accept or prompt **C**]

5B. Shane Lechler and Zoltan Mesko play what position which occasionally attempts coffin corners?
ANSWER: **punter**

6A. When counting around the face of a twelve-hour clock, one uses what kind arithmetic in which the congruence of one number is given in relation to another number, in this case twelve?
ANSWER: **mod**ular arithmetic

6B. Name the Italian who wrote about a group of ten youths fleeing the plague and telling one hundred stories in *The Decameron.*
ANSWER: Giovanni **Boccaccio** (buh-KAH-chee-oh)

7A. This is a 30-second calculation question. Reduce the quantity 3 + 4i divided by 2 - 5i to standard form.
ANSWER: **(-14 + 23i)/29** [or **-14/29 + 23i/29**]

7B. This is a 30-second calculation question. If two six-sided dice are rolled, what is the probability that exactly one of the dice will be a two?
ANSWER: **five-eighteenths** [or **0.277**7 repeating; or **0.278**]

8A. The natural acidity of rainwater is mostly due to what dominantly emitted greenhouse gas?
ANSWER: **carbon dioxide** [or **CO_2**]

8B. The USS *Yorktown* sunk in what June 1942 American naval victory that marked a turning point in the Pacific Theater?
ANSWER: Battle of **Midway**

9A. What Greek analog of Cupid is the son of Aphrodite?
ANSWER: **Eros**

9B. What husband of Skyler goes by the name of "Heisenberg" in his meth cooking operation and is the principal character in *Breaking Bad*?
ANSWER: Walter **White** [or **Walt**er White]

10A. What South American country lost over half of its population during the War of the Triple Alliance?
ANSWER: Republic of **Paraguay** [or Republica del **Paraguay**]

10B. Name the country in which the efforts of Giuseppe Garibaldi and Count Cavour resulted in unification during the Risorgimento.
ANSWER: **Italy** [or **Italian Republic**; or Repubblica **Italia**na]

1. An orbit with this shape requires a velocity of square root of 2 mu over r and is called an escape orbit. These shapes have eccentricity of one. This figure is defined as the locus of points equidistant from a focus and a directrix. When ignoring air resistance, this is the shape of the path of a projectile. When written as a function of x, the formula x equals negative b over two a gives the axis of symmetry for these figures. For 10 points, name this shape, an example of which is the graph of y equals x squared.
ANSWER: **parabola**

131-12-70-05117

2. This thinker considered the development from totemism of the title phenomenon used to create a sense of communal security in his study *The Elementary Forms of Religious Life.* In another work, he theorized the breakdown of societal norms, a state called *anomie,* as one of the chief causes of the title phenomenon, which also appears in altruistic, egoistic, and fatalistic varieties. For 10 points, name this French sociologist who wrote *Suicide.*
ANSWER: Emile **Durkheim**

014-12-70-05118

3. Disagreement over the spoils system led this party to split into Stalwart and Half-Breed factions. Its first presidential candidate was California explorer and military leader John C. Fremont. The first President from this party faced Stephen Douglas in a series of Senate debates. Ulysses S. Grant was elected President as a member of this party, which gained the nickname "Grand Old Party." For 10 points, name this political party that Thomas Nast represented with an elephant.
ANSWER: **Republican** Party [accept **GOP** or **Grand Old Party** before mentioned]

015-12-70-05119

4. After being frightened by a certain discovery, the protagonist of this work digs an underground cave into which he herds his goats every night. Having become a successful plantation owner in Brazil, the protagonist departs on an ill-fated expedition to gather slaves. Not long after seeing a human footprint in the sand, the title character saves a man from a group of cannibals and bestows on him the name Friday. For 10 points, name this novel about an English castaway written by Daniel Defoe.
ANSWER: ***Robinson Crusoe***

014-12-70-05120

5. One of this man's poems is addressed to "You who hear the sound, in scattered rhymes, of those sighs on which I fed my heart." His poems often used paradoxical images such as freezing fires to symbolize love. Many of this man's poems were inspired by a sighting on Good Friday of a beautiful woman named Laura. A volta between the octave and the sestet characterizes a poetic form he innovated. For 10 points, name this Italian humanist who developed one of the major types of sonnet.
ANSWER: **Petrarch** [or Francesco **Petrarca**]

014-12-70-05121

6. Takahashi and Yamanaka turned fibroblasts into these cells by using retroviruses to express four genes, including SOX2 and Klf4. "Hematopoietic" ones in the bone marrow give rise to all different kinds of blood cells. These cells are pluripotent, since when one divides, one daughter cell remains one of them while the other becomes something else. Possible applications for these cells include curing Parkinson's disease and muscular dystrophy. For 10 points, name this type of cells whose "embryonic" variety is the subject of controversial but promising research.
ANSWER: **stem cells** [accept more specific answers]

080-12-70-05122

7. The operator for this quantity is equal to negative i times h-bar times quantity r cross grad. This quantity is equal to the time derivative of the torque. Kepler's equal area law can be derived from the conservation of this quantity, which is also responsible for the fact that a skater spins faster when they pull their arms in. This quantity is equal to the moment of inertia times the angular velocity. For 10 points, name this quantity symbolized L, which is a rotational analogue the product of mass and velocity.
ANSWER: **angular momentum** [prompt on **momentum**; do not accept "linear momentum"]

048-12-70-05123

8. In this story, a time before such modernizations as replacing traditional wooden chips with pieces of paper is recalled by Old Man Warner. Its publication caused an unprecedented number of cancelled subscriptions to *The New Yorker*. In this story, Tessie Hutchinson protests “it isn’t fair, it isn’t right” after drawing a paper marked with a black spot. For 10 points, name this short story in which a small town ritually stones an unlucky citizen written by Shirley Jackson.
ANSWER: “The **Lottery**”

015-12-70-05124

9. One sculpture by this man depicts six leaders offering themselves up to execution at the hands of Edward III. He included *The Three Shades* in a large bronze doorway whose other scenes include miniature versions of his most famous works. His other sculptures include a marble one of Paolo and Francesca embracing and another of Dante resting his chin on the back of his hand. For 10 points, name this French sculptor of *The Kiss* and *The Thinker*.
ANSWER: Auguste **Rodin**

014-12-70-05125

10. A naïve derivation of the entropy of these substances shows that it is negative infinity at absolute zero, but that result can be corrected by deriving the Sackur-Tetrode equation. These substances have a compressibility factor of one. The dimensionless heat capacity of these substances is equal to either 3/2 or 5/2 depending on whether they are monatomic or diatomic. These substances have very small molecules and no attractive or repulsive forces between molecules, and generally follow the kinetic-molecular theory. For 10 points, name these substances governed by a namesake equation of state written P V equals n R T.
ANSWER: **ideal gas**

048-12-70-05126

11. Much of this artist’s work is housed at a namesake museum in St. Petersburg, Florida. Owner of a pet ocelot named Babou, this artist created a *Lobster Telephone* and included a self-portrait in *Swans Reflecting Elephants*. In his best known painting, a branch protrudes from a wooden surface on the left, as ants crawl over a closed time piece and three watches appear to melt. For 10 points, name this Spanish surrealist and mustache aficionado, the creator of *The Persistence of Memory*.
ANSWER: Salvador **Dali**

015-12-70-05127

12. Supreme Court Justice Samuel Chase's close ties to this party were the reason for his unsuccessful impeachment. The "midnight judges" were mostly members of this party. One leader of this party wrote the *Report on Manufactures* and spearheaded the First Bank of the United States. A President of this party signed the Alien and Sedition Acts and lost to Thomas Jefferson in 1800. For 10 points, name this party whose membership included Alexander Hamilton and John Adams.
ANSWER: **Federalist** Party

015-12-70-05128

13. Words of this type whose first principle part ends in "-do" tend to have second principle parts ending in "-dinis", and special ones with an "i-stem" have an ending in "ium" rather than "um." These words fit into five declensions, and besides the locative and the vocative, they have nominative, genitive, dative, accusative, and ablative forms that make up their five cases. For 10 points, name these words that denote persons, places, or things in a dead language spoken by the Romans.
ANSWER: Latin **noun**s [or third declension **noun**s before "declensions" is read; or **nomina**]

080-12-70-05129

14. The male lead in this opera sings of his secret love in “Se quel gerrier io fossi” in the first act. That love of his sings the aria “O patria mia” prior to the appearance of her father, Amonasro. In this opera, the jealous princess Amneris fails to save the Captain of the Guard to whom she is betrothed from execution by being sealed underground. The title character dies in the tomb with that man, Radames. For 10 points, name this Giuseppe Verdi opera about an Ethiopian princess.
ANSWER: ***Aida***

014-12-70-05130

15. These regions can contain extremely flat, sea-like areas called ergs. Wind blowing through these regions can produce a 450 Hz signal that resembles "singing" or "booming." Plants like yuccas and agaves can thrive in these areas, where animals like kangaroo rats adapt by burrowing. The largest one on Earth is, by one definition, Antarctica, but more traditional examples include the Chilean Atacama. For 10 points, the African Sahara is an example of what class of arid region?
ANSWER: arid **deserts**

080-12-70-05131

1. This law implies the existence of zero-point energy in the quantum harmonic oscillator, and the paper that introduced it also introduced the idea of wavefunction collapse. This law can be derived by finding the commutator of two non-commuting conjugate variables, like time and energy, and sets a lower bound of h-bar over 2. For 10 points, name this law from quantum physics, which in one formulation states that it is impossible to know the exact position and momentum of a particle at the same time.
ANSWER: **Heisenberg uncertainty** principle

048-12-70-05132

2. One disease affecting this organ is its namesake "pinprick condition." Angiotensin-converting enzyme is primarily found in this organ. This organ's capacity can be measured using tidal volume, and its function can be measured using spirometry. Diseases affecting it include cystic fibrosis and emphysema. This organ is covered by a membrane called the pleura, and gas exchange in this organ takes place in the alveoli. For 10 points, name these organs of respiration.
ANSWER: **lung**s

024-12-70-05133

3. This woman was apprehended after the unsuccessful Flight to Varennes. Her son became known as the "Lost Dauphin." This woman was the daughter of Holy Roman Emperor Francis I and Maria Theresa. According to an apocryphal story, this woman responded to reports that the peasants had no bread to eat by declaring, "Let them eat cake." For 10 points, name this Austrian wife of Louis XVI who was executed along with her husband in the Reign of Terror during the French Revolution.
ANSWER: **Marie Antoinette** [prompt on **Marie**; prompt on **Antoinette**]

015-12-70-05134

4. When this behavior occurs in fungi and plants, the result is known as a mycorrhiza. Lynn Margulis proposed that the "endo" form of this behavior explains the origin of some organelles. Varieties of this behavior include commensalism and parasitism. The clownfish and the sea anemone exhibit the mutualistic form of this behavior. For 10 points, name this behavior in which two different species live together, often both benefiting from the relationship.
ANSWER: **symbiosis**

024-12-70-05135

5. This man wrote “They’ll see how beautiful I am and be ashamed” in his poem “I, Too, Sing America.” Discovered by Vachel Lindsay while working as a busboy, this poet wrote about hearing “a drowsy syncopated tune” on Lenox Avenue in “The Weary Blues.” Another of his poems asks, “does it dry up like a raisin in the sun? or fester like a sore- and then run?” For 10 points, name this man who asked “What happens to a dream deferred?”, the greatest poet of the Harlem Renaissance.
ANSWER: Langston **Hughes** [or James Mercer Langston **Hughes**]

015-12-70-05136

This is a calculation question. Find the length of a ladder against a 10 meter rock wall if it makes a 30 degree angle with the ground.
ANSWER: **20 m**eter

What novelist wrote *Ethan Frome* and described the marriage of Newland Archer and May Welland in *The Age of Innocence*?
ANSWER: Edith **Wharton** [or Edith Newbold **Jones**]