



1. The inequality named after one of these shapes states that the absolute value of quantity x plus y is less than or equal to the absolute value of x plus absolute value of y . Two of these figures are not necessarily congruent if SSA is satisfied, but they are if SAS is. The Euler line goes through their incenter, orthocenter, and centroid. For 10 points, what are these polygons whose area equals one-half base times height?

ANSWER: triangles

233-13-93-02101

2. This man adopted the Creek Indian boy Lyncoya after he was orphaned in a battle, and he executed the British agents Arbuthnot and Ambrister during a military raid, causing an international crisis. This man lost his first run for President to John Quincy Adams due to what he called a "Corrupt Bargain." For 10 points, identify this President nicknamed "Old Hickory" whose issuing of the Specie Circular may have ruined the presidency of his successor, Martin Van Buren.

ANSWER: Andrew Jackson

135-13-93-02102

3. Organic mechanisms depict the "movement" of these particles with curvy arrows. These particles were discovered in Crookes tubes. "Scanning" and "tunneling" microscopes use these particles. They are described by four quantum numbers. By setting the radius of orbit equal to an integral multiple wavelength, Bohr was able to derive a model where these particles are in fixed orbits. For 10 points, name these negatively charged particles in a "cloud" outside the nucleus.

ANSWER: electrons

190-13-93-02103

4. In an opera by this composer, Queen Tye joins the title character and his wife at the Window of Public Appearances. The phrase "Bank robbery is punishable by twenty years in federal prison" is repeated in another of his operas, whose libretto employs solfège symbols. That opera by him includes the section "I Feel the Earth Move" and has its acts separated by Knee Plays. For 10 points, name this minimalist composer of *Satyagraha*, *Akhenaten*, and *Einstein on the Beach*.

ANSWER: Philip Glass

224-13-93-02104

5. Beta-mercaptoethanol and this compound were used to denature proteins in Anfinsen's experiment. Wohler disproved vitalism by synthesizing this compound, which he called ammonium cyanate. ADH controls how much of this compound is secreted into the Loop of Henle. It's produced in the liver by the ornithine cycle. Fish simply excrete ammonia, rather than this compound, while birds use uric acid. For 10 points, name this nitrogenous compound mixed with water to form urine.

ANSWER: urea

190-13-93-02105

6. This European city featured numerous searchlights that formed the "cathedral of light," one of Albert Speer's architectural designs. A movie with scenes at the Luitpold Arena was set here and directed by Leni Riefenstahl. The film *Triumph of the Will* documents a rally held in this city, which was where Hermann Goering and Rudolf Hess were put on trial. For 10 points, name this German city, whose Palace of Justice hosted post-World War II war crimes trials.

ANSWER: Nuremberg

052-13-93-02106

7. Meromictic types of these geologic structures are stratified, and their topmost layer is called the epilimnion. During the fall overturn, the thermocline in these structures disappears. Buildup of point bars creates oxbow types of these structures from a meander. Retreating glaciers can create the kettle type of these structures, an artificial type of which may be called a reservoir. For 10 points, identify these landlocked bodies of water such as Ontario and Erie.

ANSWER: **lakes** [prompt on **ponds**]

228-13-93-02107

8. At one point in the work in which he appears, this character recalls his childhood admiration for a certain timpanist. Earlier, he tells another character that he has just had an operation on his clavichord, and he tells Mrs. Morrow that he has a brain tumor using the alias "Rudolf Schmidt." He meets up with Carl Luce, talks about *Romeo and Juliet* with a nun, and has a conversation with Phoebe after being expelled from Pencey. For 10 points, name this narrator of *The Catcher in the Rye*.

ANSWER: **Holden** Caulfield [or **Holden Caulfield**; prompt on **Caulfield**]

142-13-93-02108

9. Thomas Gates attempted to abandon this colony, but it was saved by the timely arrival of Baron de la Warr. Under Governor William Berkley, it was burned down during Bacon's Rebellion. Earlier, John Rolfe pioneered the cultivation of tobacco in this colony. A "Starving Time" was provoked in this colony by hostility from the nearby Powhatan. For 10 points, name this Virginia settlement that was the first permanent English settlement in America.

ANSWER: **Jamestown** Colony

139-13-93-02109

10. In one novel by this writer, a door tied with a crepe streamer is compared to a porch dangled with dead cucumber vines as the title character imagines the death of his wife Zeena. In another novel by this writer, May Welland remains a loyal wife despite her suspicions that her cousin Countess Ellen Olenska is having an affair with her husband Newland Archer. For 10 points, name this American writer who wrote *Ethan Frome* and *The Age of Innocence*.

ANSWER: Edith **Wharton** [or Edith Newbold **Jones**]

130-13-93-02110

11. This protein, stored biologically as a hexamer, has histidine residues coordinated to zinc atoms, which break apart in its active monomeric form. Because this protein only has fifty-one amino acids, it was the first protein to be sequenced, by Frederick Sanger in 1951. Overproduction of it may lead to hypoglycemia. This hormone prompts the liver to uptake glucose as glycogen. For 10 points, name this protein which, like glucagon, is synthesized in the pancreas.

ANSWER: **insulin**

190-13-93-02111

12. The only member of this group to die was Charles Floyd, who succumbed to illness despite taking the "thunder clappers" created by Benjamin Rush. Its leaders negotiated an alliance with the Hidatsa people while wintering at Fort Mandan. Civilians associated with this group included the slave York and the trapper Toussaint Charbonneau, whose wife Sacagawea lent valuable translation skills. For 10 points, name this group which explored the Louisiana Purchase.

ANSWER: **Lewis and Clark** expedition [or **Corps of Discovery**]

015-13-93-02112

13. This man wrote a parody of Robert Southey's eulogy for George III called *The Vision of Judgment*. This poet of *Manfred* also created a man who is kidnapped by his lover Haidee's pirate father and who is easily seduced by women, inverting the Spanish legend. This poet wrote *Childe Harold's Pilgrimage* and *Don Juan* (JOO-uhn). For 10 points, name this philandering Romantic poet who died in the Greek War of Independence.

ANSWER: Lord **Byron** [or George **Gordon**]

030-13-93-02113

14. Hiram Bingham discovered a city of this empire which is believed to have been built for Emperor Pachacuti (PACH-uh-koo-tee). This empire used knotted ropes called quipu (KEE-poo) for record-keeping. A conflict in this empire pitted Huascar (HWASS-car) against a man who was captured at Cajamarca (ca-ha-MAR-ka) and ransomed for a roomful of gold, Atahualpa (aht-uh-WALL-puh). For 10 points, name this empire which contained Machu Picchu, and was located in modern-day Peru.

ANSWER: **Incan** Empire

122-13-93-02114

15. Velocity is crossed with this phenomenon in the definition of the Lorentz force. This phenomenon is related to electric current by Ampere's law, and Faraday's law relates the change in it to the production of a voltage. Inductors store energy in this phenomenon, which is typically called the B or H field. It can be measured in gauss or teslas. For 10 points, identify this phenomenon whose namesake lines connect the north and south poles of a magnet.

ANSWER: **magnetic field** [or **B field** until it is read; or **H field** until it is read]

234-13-93-02115



1A. What mountain in Argentina is the highest peak in the Andes?

ANSWER: Aconcagua

1B. What British physicist came up with a namesake law of cooling and realized gravitational force varied with the inverse-square of distance?

ANSWER: Isaac Newton

2A. This is a 20-second calculation question. What is the area of a rhombus with two sixty degree angles and sides of length 2?

ANSWER: 2 times the square root of 3

2B. This is a 20-second calculation question. What is the cosecant of the third-quadrant angle whose tangent is 4/3?

ANSWER: -5/4

3A. What city was the site of a fatal July 6, 2013, plane crash involving Asiana Airlines Flight 214?

ANSWER: San Francisco

3B. What Heian-era woman wrote the early Japanese novel *The Tale of Genji*?

ANSWER: Lady Murasaki [or Murasaki Shikibu]

4A. Lord Dunmore's 1775 seizure of Williamsburg's munitions re-entered the public conscience after what first doll in the American Girls Collection was written to have experienced it?

ANSWER: Felicity Merriman [or Felicity Merriman]

4B. Identify the island whose namesake Vespers involved the massacre of Frenchmen in a revolt against the Angevin king Charles I.

ANSWER: Sicily [or Sicilia]

5A. What English engineer created the world's first computer with his "difference engine"?

ANSWER: Charles Babbage

5B. In German, the choice of which article, "der," "die," or "das," is correct is governed by what property of a noun?

ANSWER: grammatical gender

6A. Name the Renaissance sculptor of *Gatamellata* ("GAH"-tah mel-"LAH"-tah) and a bronze *David*.

ANSWER: Donatello [or Donato di Niccolo di Betto Bardi]

6B. Which American actor has starred as Sherlock Holmes and played Tony Stark in three *Iron Man* films?

ANSWER: Robert John Downey Jr.

7A. According to Sigmund Freud, what section of the psyche is driven by the pleasure principle and satisfies libido?

ANSWER: id

7B. What African country's Westgate shopping mall was attacked by an Islamic militant group in September 2013, resulting in over 60 deaths?

ANSWER: Kenya

8A. What lake sits in the caldera of the collapsed volcano Mount Mazama in Oregon?

ANSWER: **Crater** Lake

8B. What poetic foot consists of a stressed syllable followed by an unstressed one?

ANSWER: **trochee**

9A. This is a 30-second calculation question. Find all values between 0 and 180 degrees for which sine squared of x equals 3 times cosine squared of x.

ANSWER: **60** and **120** degrees [both answers required, do not prompt on just one]

9B. This is a 30-second calculation question. If a data set consists of 5 distinct positive integers, with mean 7, what is the largest the median could be?

ANSWER: **9**

10A. The Super Bowl championship is named for what legendary coach of the Green Bay Packers, who won the first two Super Bowls?

ANSWER: Vince **Lombardi**

10B. What Mesopotamian hero befriends Enkidu and spurns Ishtar in a namesake epic?

ANSWER: **Gilgamesh**



1. One type of this phenomenon involves internal conversion and can be caused by neutron capture. In another type of this phenomenon, a positron and a neutrino are emitted and the atomic number decreases by 1. This property is exhibited when an energetic helium nucleus is emitted from an atom of uranium-238. Some isotopes of lighter elements also have this property, which enables carbon dating. For 10 points, alpha and beta decay are forms of what decomposition of unstable atomic nuclei?

ANSWER: **radioactivity** [or **radioactive** decay]

142-13-93-02117

2. At the beginning of this play, a man refers to a woman as his “little squirrel.” It ends with a woman saying she has “never exchanged one serious word” with her husband. A character in this play is Dr. Rank, who suffers from syphilis. The protagonist illegally borrows money from her husband’s work and is blackmailed by Krogstad. This play ends with a woman slamming the door as she walks out on her banker husband. For 10 points, name this Henrik Ibsen play about Torvald and Nora Helmer.

ANSWER: A ***Doll's House*** [or ***Et dukkehjem***]

052-13-93-02118

3. Nine of these pieces appear in the *Goldberg Variations*, each with an increasing interval size. More complex types of this technique include mensuration, retrograde, and inversion. "Frere Jacques" and "Row, Row, Row Your Boat" are the most famous pieces to use this technique, in which an imitation of a melody is played some time after it is first introduced. For 10 points, name this technique used in the most famous piece by Pachelbel.

ANSWER: **canon**

063-13-93-02119

4. In one of these passages, a widow annoys an indifferent judge persistently enough that he eventually gives her justice. In another of these passages, a man envies his pigs the pods they eat after he squanders his inheritance. One of these passages praises a man who helps a robbery victim by the roadside. These passages include ones about the Prodigal Son and the Good Samaritan. For 10 points, name these short, often allegorical stories related to the disciples by Jesus.

ANSWER: **parables**

014-13-93-02120

5. The Sackur-Tetrode equation gives this quantity for an ideal gas. The derivative of temperature with respect to pressure equals the derivative of volume with respect to this quantity by the Maxwell relations. Boltzmann derived this quantity as proportional to the natural log of the number of microstates. The second law of thermodynamics states that it increases with time in a closed system. For 10 points, name this physical quantity that measures the total disorder of a system.

ANSWER: **entropy**

127-13-93-02121

6. This thinker believed that sympathy works by turning "ideas" of another person's passion into what he called "impressions" in the mind. Summaries of this man's work ended the "dogmatic slumber" of Immanuel Kant. He allowed induction only in the case of a "missing shade of blue" in a book drawing on his earlier *Treatise of Human Nature*. For 10 points, name this Enlightenment empiricist skeptic who wrote an *Enquiry Concerning Human Understanding* in his native Scotland.

ANSWER: David **Hume**

104-13-93-02122

7. An antagonist in this poem, a descendant of Cain pained by drunken singing, was re-imagined in a novel by John Gardner. This poem, which begins by praising Scyld Scefing (SHIELD SHEAF-ing) and includes the skeptical Unferth, was retranslated in 1999 by Seamus Heaney. Its title hero, who dies fighting a dragon, comes from Geatland to the hall of Heorot and slays the beastly mother of his first opponent, Grendel. For 10 points, name this Old English epic.

ANSWER: **Beowulf**

104-13-93-02123

8. These compounds usually have low-energy LUMOs. Inorganic examples of these compounds include boron trifluoride and ammonium chloride. Adjacent electronegative elements increase the strength of these compounds because they can better stabilize a negative charge. These substances can accept electrons according to the Lewis theory but are often proton donors in solution. For 10 points, name these compounds which turn litmus paper red and taste sour.

ANSWER: Lewis **acids** [or Bronsted-Lowry **acids**; or Arrhenius **acids**]

190-13-93-02124

9. A novel by this man tells the story of Joel Knox discovering his homosexuality while growing up in Louisiana. In addition to writing *Other Voices, Other Rooms*, this man described Alvin Dewey's tracking of Perry Smith and Eugene Hickock for the murder of the Clutter family in another work. For 10 points, name this author who created Holly Golightly, the author of *In Cold Blood* and *Breakfast at Tiffany's* who was the basis for Dill in *To Kill a Mockingbird*.

ANSWER: Truman **Capote**

123-13-93-02125

10. A function F taking in this type of data as inputs equals x times F plus x prime times F prime, according to Shannon's expansion theorem. An expression outputting this type of data appears in the first line of a while loop. Conjunction and disjunction are operations applied to this type of data, which Ludwig Wittgenstein first manipulated in "tables". For 10 points, name this type of data which can only take on two values, true and false, named for a British logician.

ANSWER: **Boolean** data [or **logical** data; or **true and false** before mention; prompt on "truths"]

190-13-93-02126

11. This letter denotes the quotient of the minimum and maximum stresses in a fatigue test. At constant pressure, heat capacity of an ideal gas equals five-halves times a quantity symbolized by this letter. The correlation coefficient is represented by this letter. Species which reproduce quickly and provide little paternal nurturing are described by this letter, as opposed to K . The side chain of an amino acid is symbolized with this capital letter. For 10 points, name this letter which denotes the gas constant.

ANSWER: **r**

190-13-93-02127

12. Henry and Bill only appear in the beginning of this novel, but are introduced to Kiche, this title character's mother, who kills their dogs. Lip-lip leads the others in his village in tormenting him. He is first traded when Grey Beaver goes to Fort Yukon and passes him to Beauty Smith, who is interested in using him for fights. This book's title character is eventually tamed by Weedon Scott, who takes him in and integrates him into his family. For 10 points, name the Jack London book about dog that is part-wolf.

ANSWER: **White Fang**

147-13-93-02128

13. This country's northernmost point is a cape named after the philanthropist Morris Jesup. The capital of this country was originally known as "Godt-Haab." It is home to the world's largest national park, and its northern peninsula is named "Peary Land" after the explorer Robert Peary. This island's name was supposedly given by Erik the Red as a way to attract settlers. For 10 points, name this largest island in the world, which despite greater autonomy, is still controlled by Denmark.

ANSWER: **Greenland** [or **Kalaallit Nunaat**]

052-13-93-02129

14. An annual prize named for this painter is awarded to the best artist under 50. He made a watercolor of the 1834 burning of the Houses of Parliament, which he then developed into two different paintings. In another painting by this artist, sailors prepare for an approaching typhoon by throwing slaves overboard. This "painter of light" depicted a train on the Great Western Railway barreling into the foreground of one of his landscapes. For 10 points, name this painter of *Rain, Steam, and Speed*.

ANSWER: John Mallord William **Turner**

190-13-93-02130

15. The Slaughter-House cases largely stripped the power of this amendment's Privileges and Immunities Clause. Rulings under this amendment are often later applied to Washington D.C. under the Fifth Amendment, since both have Due Process clauses. This amendment may be best known for its Equal Protection Clause, which prevents state discrimination against protected classes. For 10 points, name this amendment to the Constitution which granted freed slaves citizenship.

ANSWER: **Fourteenth** Amendment

015-13-93-02131



1. These organisms have two mating types: a and alpha. The first eukaryotic genome to be sequenced was of one of these organisms. *S. pombe* is one of these organisms, which also include *Candida albicans* and *Saccharomyces cerevisiae*. These organisms metabolize glucose to carbon dioxide and ethanol, reproduce by budding, and are classified as both ascomycotes and basidiomycotes. For 10 points, name these unicellular fungi which undergo fermentation.

ANSWER: **yeasts** [or *Saccharomyces cerevisiae* before mention; or *Saccharomyces pombe* before mention; prompt on "fungi"; prompt on "ascomycotes" or "Ascomycota"; prompt on "basidiomycotes" or "Basidiomycota"]

190-13-93-02132

2. This party's views were explained in the Tamworth Manifesto, and it was the target of the Midlothian campaign. A leader of this party split his party by repealing the Corn Laws and earlier founded the London Metropolitan Police Force. During the late 1800's, a leader of it was the main rival of William Gladstone. This party is also known as the "Tory Party." For 10 points, name this British political party of Robert Peel and Benjamin Disraeli, which opposed the Liberal Party.

ANSWER: **Conservative** and Unionist Party of the United Kingdom [or **Tory** until mentioned]

052-13-93-02133

3. This property defines the threshold where pahoehoe lava changes to a'a lava. Substances that include long-chain alkane molecules have high values for this property because of hydrogen bonds. This property always decreases as temperature as temperature increases and is measured in Poise. Stokes's law describes this property in laminar flow and Reynolds's number is a dimensionless parameter of the ratio of this property. For 10 points, name this internal resistance to flow in fluids.

ANSWER: **viscosity**

124-13-93-02134

4. This author wrote a satire of the misogynist mindset in a work in *Corbaccio*, or *The Crow*. Another of his poems was the basis for Chaucer's *The Knight's Tale* and another tells the story of Troilo and Creseida. This author of *Teseida* and *Il Filostrato* is better known for a set of stories, including that of the Patient Griselda, told by ten people fleeing the plague. For 10 points, name this medieval Italian author of the *Decameron*.

ANSWER: Giovanni **Boccaccio**

040-13-93-02135

5. At the end of this novella, the narrator's "indistinct and silent" demeanor is compared to "the pose of a meditating Buddha." This novella begins with a description of a "cruising yawl" called the *Nellie* on the Thames. One character in this novella lies to a woman by telling her that the final words of a dead man were her name, when they were in fact "The Horror! The Horror!" For 10 points, identify this novella about an ivory trader named Kurtz and a man named Marlow in the Belgian Congo, a work by Joseph Conrad.

ANSWER: ***Heart of Darkness***

189-13-93-02136

What English philosopher described the *tabula rasa* in his *An Essay Concerning Human Understanding*?

ANSWER: John **Locke**

This is a calculation question. From a standard deck of cards, diamonds are removed until the probability of drawing one is less than 1/6. How many diamonds are removed?

ANSWER: **6**