



1. **This country's east is home to Boma National Park, just east of which is another country's Gambela National Park. The swampy Sudd is formed where the Sobat river meets the White Nile in this country's north. John Garang proposed building a new capital here at Ramciel, a plan supported by this country's current president, (*) Salva Kiir. For 10 points, identify this African country with its capital at Juba, which in 2011 split from another country that is home to Khartoum.**

ANSWER: Republic of South Sudan [do not accept or prompt on "Sudan"]

233-14-86-13101

2. **This man was commissioned to compose his fifth symphony for his 50th birthday, a national holiday. This composer described a character's murder and dismemberment in the last of a cycle of four pieces, whose often separately performed second part uses the English horn to represent a majestic creature who swims around in the island of the dead. This composer's (*) *Lemminkainen Suite* and "Swan of Tuonela" are inspired by folktales from his home country, whose nationalism he rallied with a symphonic poem censored by Russian authorities. For 10 points, name this Finnish composer of *Finlandia*.**

ANSWER: Jean Sibelius

224-14-86-13102

3. **At the end of the nineteenth century, this country's military engaged in the bloody suppression of a millenarian commune in the War of Canudos. The World War II leader of this Western Hemisphere country ended its conservative "coffee with milk" period and established the Estado Novo. Juscelino Kubitschek ordered the building of a new (*) capital for this country, which was once an empire ruled by Dom Pedro I and II. For 10 points, name this large Portuguese-speaking republic in South America.**

ANSWER: Federative Republic of Brazil [or Republica Federativa do Brasil]

019-14-86-13103

4. **This author wrote about an unnamed character who accidentally corrupts a utopia in his story, "The Dream of a Ridiculous Man." Another character created by this author finds out on the day of his wedding that his bride, Nastasya, has fled with his friend (*) Rogozhin. This creator of the epileptic Prince Myshkin wrote a novel in which Lizaveta and the pawnbroker Alyona are murdered by Raskolnikov. For 10 points, name this Russian author of *The Idiot* and *Crime and Punishment*.**

ANSWER: Fyodor Dostoevsky

227-14-86-13104

5. **This man had a long-running war of vicious insults with Lady Astor. This first-ever person awarded honorary United States citizenship won the Nobel Prize in Literature for his *History of the English-Speaking Peoples*. During his "sinews of peace" speech at Westminster College, he popularized the term (*) "iron curtain." In 1951, he unseated Clement Attlee as Prime Minister, six years after Attlee replaced him midway through the Potsdam conference. For 10 points, name this British leader through almost all of World War II.**

ANSWER: Winston Leonard Spencer Churchill

019-14-86-13105

6. Some who died in this conflict “feed the grass row after rich row” in a poem by Allen Tate. A monument to a commander from this war “sticks like a fishbone in the city’s throat” in a poem by Robert Lowell. Michael Shaara’s *The Killer Angels* is about this conflict. In a novel about this war, the protagonist fights alongside (*) Wilson and watches Jim Conklin die. Henry Fleming fights in, for 10 points, what war, the subject of the novels *Andersonville* and *The Red Badge of Courage*?

ANSWER: the Civil War [or American Civil War]

131-14-86-13106

7. One of this philosopher's books discusses how primogeniture caused a "Discouragement of Agriculture" in a section that follows "On the Natural Progress of Opulence." That book by him posits that specialization occurs first in cities near navigable waters. This author rejected his teacher Thomas Hutcheson's "sixth sense" in his *The Theory of (*) Moral Sentiments*. For 10 points, identify this Scottish philosopher who discussed the division of labor in a pin factory and the "invisible hand" in his anti-mercantilist tract *The Wealth of Nations*.

ANSWER: Adam Smith

233-14-86-13107

8. A five-stage life cycle of this social entity was developed by Paul Glick. This social entity performs almost all social functions in pre-Industrial *gemeinschaft* (guh-MINE-shawft), or village-type, societies. Individuals generally shift from one of these things "of orientation" to one "of procreation." These groups are part of (*) kinship systems, and their "extended" type includes multiple generations. For 10 points, name these social groups, the "nuclear" type of which includes parents and their children.

ANSWER: family [or family unit]

185-14-86-13108

9. The square root of quantity this number times $R T$ all over M is defined as the root mean square speed of a gas. Protons and other baryons are composed of this many quarks. There are this many generations of leptons and quarks, with each generation having two members. Kepler's law of this number states that the square of the orbital period is proportional to the orbit's semi-major axis raised to this power. A space with this many (*) dimensions has time added to it to create a Minkowski space. For 10 points, name this number of laws of motion put forth by Newton.

ANSWER: three

121-14-86-13109

10. Channels that allow transport of this molecule have an NPA motif and allow diffusion of other molecules such as glycerol. Tracheids help in the process of transporting this compound. In response to light, photosystem II lyses this compound. During cellular respiration, one run of the electron transport chain results in two molecules of this compound. (*) Turgor pressure is caused by this compound. This compound makes up most of the weight of the human body. For 10 points, name this compound with formula H_2O .

ANSWER: water [or H₂O until it is read; or dihydrogen monoxide]

140-14-86-13110

11. At one point in this novel, the protagonist goes to a cottage marked with the word "HOME" and is pitied by an old man as a "victim of the modern age." That protagonist listens to Otto Skadelig at this novel's end, while he begins this novel hanging out at the Korova (*) Milk Bar with his gang of "droogs." Nadsat is spoken in this book, whose protagonist loves Beethoven but is forced to listen to him while watching violent movies via the Ludovico Technique. For 10 points, name this dystopian novel about Alex, written by Anthony Burgess.

ANSWER: A Clockwork Orange

192-14-86-13111

12. The semi-empirical Weizsacker formula for this thing's mass improves on the earlier liquid drop model of it. This thing is most stable when it has a "magic number" of constituents. An experiment disproving the plum pudding model necessitated this thing's existence, and involved firing alpha particles at a sheet of (*) gold foil. This thing is held together by the strong force, which prevents all the positive particles from flying apart. For 10 points, identify this thing home to protons and neutrons, located at the center of an atom.

ANSWER: atomic nucleus

233-14-86-13112

13. One king of this name calmed an angry crowd by saying "I am your captain, follow me" shortly after having Wat Tyler killed. The first English king of this name put down rebels against his father, Henry II, only to rebel against Henry himself. The last (*) Plantagenet king had this name and was defeated at Bosworth Field. While a man of this name was fighting in the Third Crusade, his brother John seized the throne. For 10 points, give this name shared by several kings of England including one nicknamed "the Lionheart."

ANSWER: Richard [or Richard II until "first" is read]

121-14-86-13113

14. This divinity successfully trapped a dwarf by placing a sticky doll in front of it. In another story, this god's legs become elongated when he ties strings to a set of different pots, while he also tried placing wisdom in a pot. He tricked a python into tying himself around a palm branch and fooled some hornets into thinking it was raining, resulting in his acquisition of all the world's (*) stories. This deity was the son of Asasa Yaa and Nyame. For 10 points, name this West African trickster god, a storyteller who takes the form of a spider.

ANSWER: Anansi

192-14-86-13114

15. This artist spent 20 years creating the tableau *Étant donnés* after supposedly abandoning art for chess. One of his artworks consists of a bicycle fork with a wheel mounted upside down on a stool. Another of his pieces contains a "chocolate grinder" and nine "malic molds" below a mechanical figure called "the (*) Bride". A painting by this artist of *The Large Glass* scandalized visitors to the Armory Show. He also signed an upended urinal with the alias "R. Mutt". For 10 points, name this artist of *Nude Descending a Staircase*, *Fountain*, and many other readymades.

ANSWER: Marcel Duchamp [or Henri-Robert-Marcel Duchamp]

029-14-86-13115

16. **This author wrote a short story about an officer who chooses to commit suicide rather than kill his rebelling friends. This author of “Patriotism” is better known for a novel in which a stuttering acolyte burns down the title structure and a series of novels in which reincarnations of Kiyooki haunt (*) Shigekuni Honda. For 10 points, name this Japanese author of the *Sea of Fertility* tetralogy who wrote about Mizoguchi in *The Temple of the Golden Pavilion*.**

ANSWER: Yukio Mishima [or Kimitake Hiraoka]

230-14-86-13116

17. **A Supreme Court case declaring that people do not "shed their constitutional rights to freedom of speech or expression" at the gates of these places was *Tinker v. Des Moines*. The case *Engel v. Vitale* declared unconstitutional a once-mandatory activity in these places. Harry Byrd led a movement to (*) close these places rather than follow the Supreme Court's opinion in *Brown v. Board of Education*. For 10 points, name this places where officially sanctioned prayer was ruled unconstitutional and desegregation occurred after 1954.**

ANSWER: public schools

121-14-86-13117

18. **This scientist's best known invention was made possible by the work of Ascanio Sobrero, and he added diatomaceous (DIE-a-tom-AYSH-ous) earth to stabilize a mixture into gelignite. This man's most-famous venture resulted from a premature obituary, which described him as a "merchant of death", due to his invention of explosives like (*) dynamite. For 10 points, identify this Swedish scientist created a namesake foundation to award prizes yearly in Chemistry, Physics, and Physiology or Medicine.**

ANSWER: Alfred Bernhard Nobel

234-14-86-13118

19. **The Infrastructure Consortium for Africa was launched at a 2005 meeting of this body at Gleneagles. This body's 2013 president made transparency and fighting tax evasion priorities for a 2013 meeting in Lough Erne. It was superseded as the main (*) economic forum for wealthy nations after its 2009 Pittsburgh summit. For 10 points, name this forum of industrialized nations with fewer members than the G20.**

ANSWER: G8 [or Group of Eight; do not accept "Group of Seven" or "G7"]

153-14-86-13119

20. **One painting from this art movement shows a smattering of bones belonging to a near-endangered species, and was created by an immigrant from Solingen, Germany. Luminism was an offshoot of this art movement, which included an artist who painted a lone column in *Desolation* and a headless statue in *Destruction*. That artist of (*) *The Course of Empire* depicted a riverbend after a thunderstorm in *The Oxbow*. Their members included Albert Bierstadt and Asher Durand. For 10 points, Thomas Cole headed what group of American landscape painters?**

ANSWER: Hudson River School

020-14-86-13120

21. **In one of this author's plays, Mrs. Cheveley attempts to fund a canal in Argentina by blackmailing the protagonist, Robert Chiltern. This author wrote a letter to Alfred Douglas titled *De Profundis*. Lord Darlington appears in one of this man's plays, in which Mrs. Erlynne is revealed to be the title character's mother. In his most famous play, Jack (*) Worthing and Algernon Moncrieff discover that they are brothers. For 10 points, name this Irish playwright whose works include *Lady Windermere's Fan* and *The Importance of Being Earnest*.**

ANSWER: Oscar Wilde

192-14-86-13121

22. This scientist's "golden rule" was developed in the process of creating a theory of beta decay that incorporated the neutrino, a particle whose name he coined. This scientist is the namesake of the institution home to the Tevatron, which is a "lab" in Illinois. This man names a set of statistics used to describe particles that obey the (*) Pauli exclusion principle, with Dirac. For 10 points, name this Italian physicist who directed the first self-sustaining nuclear fission reaction at the University of Chicago.
ANSWER: Enrico Fermi

189-14-86-13122

23. The immediate cause of this event was Mary of Modena producing an heir. The target of this event issued two Declarations of Indulgence and imprisoned seven bishops for seditious libel. In the wake of this event, a document was drafted that forbade the king from maintaining a standing (*) army in a time of peace without the consent of Parliament. After this event, the English monarch was forbidden to be Catholic, a restriction still in place today. For 10 points, name this event which saw James II replaced on the throne by William and Mary.
ANSWER: Glorious Revolution [or Bloodless Revolution; or Revolution of 1688; prompt on descriptive answers such as "the deposition of James II"]

230-14-86-13123



1. This woman's son Caesarion was killed after she and her lover lost a battle. For 10 points each:

[10] Identify this final queen of Egypt, who had affairs with a number of Roman leaders before committing suicide by letting snakes bite her.

ANSWER: Cleopatra VII Philopator

[10] Cleopatra's younger brother had this very common Egyptian name. A second-century scientist with this name wrote the inaccurate astronomy manual, the *Almagest*.

ANSWER: Ptolemy [or Claudius Ptolemy]

[10] To seduce Julius Caesar, Cleopatra allegedly had herself delivered into his palace hidden in this manner, though it may have involved bed-sheets instead.

ANSWER: rolled up in a carpet [or equivalents]

233-14-86-13201

2. The protagonist of this novel believes that an evil ghost lives in the house at 124 Bluestone Road. For 10 points each:

[10] Name this book about the former slave Sethe, who attempts to kill her children. Baby Suggs and Denver are two characters in this novel.

ANSWER: Beloved

[10] This African-American author wrote *Beloved*. She also wrote about Milkman Dead in *Song of Solomon*.

ANSWER: Toni Morrison

[10] In *Beloved*, this ex-slave's visit with Sethe makes her remember life on the Sweet Home plantation. This character becomes Sethe's lover, much to the dismay of Denver.

ANSWER: Paul D.

149-14-86-13202

3. The first of these policies implemented collectivization by "liquidating" the kulaks. For 10 points each:

[10] Name these series of short-term time-limited goals implemented in the Soviet Union to pursue "Socialism in One Country." They involved central planning and rapid industrialization.

ANSWER: Five-Year Plans [or Pyatiletka]

[10] The first Five-Year Plan was implemented by the Soviet dictator, the successor of Lenin, who frequently purged the Communist Party.

ANSWER: Joseph Stalin [or Iosif Vissarionovich Dzhugashvili]

[10] The Five-Year Plans were a response to this economic policy implemented by Lenin in 1921 as a form of state capitalism, backing away from Communism.

ANSWER: New Economic Policy [or NEP; or Novaya Ekonomicheskaya Politika]

190-14-86-13203

4. This character joins the Rhine River Three band with Klepp and Scholle. For 10 points each:
[10] Name this diminutive character, whose lovers include Maria Truczinski and Sister Dorothea, the latter of whom is murdered in the novel in which this character appears.

ANSWER: **Oskar** Matzerath [or Oskar **Matzerath**]

[10] Oskar Matzerath is the protagonist of *The Tin Drum*, a work by this German novelist.

ANSWER: Günter **Grass**

[10] One of Grass's novels is set during the Thirty Years War, which also occupied this Enlightenment playwright of *Don Carlos* and *William Tell*.

ANSWER: Friedrich **Schiller**

229-14-86-13204

5. Answer the following about Plato's philosophical writings, for 10 points each.

[10] Most of Plato's writings feature this man, Plato's teacher, engaging in question-heavy dialogues. Athens sentenced this man to die by drinking poisonous hemlock.

ANSWER: **Socrates**

[10] In this Platonic dialogue, Socrates joins several men at Agathon's house as they talk drunkenly about the nature of love. Its name now describes academic conferences or debates generally.

ANSWER: the **Symposium** [or **Sympousion**]

[10] This dialogue by Plato recounts Socrates's theory that the soul is immortal and endlessly reincarnated, which he shares at his deathbed.

ANSWER: the **Phaedo**

104-14-86-13205

6. This organization was refounded in 1915 at Stone Mountain, Georgia. For 10 points each:

[10] Name this organization, which includes ranks such as Grand Dragon and Grand Cyclopes. It is led by a Grand Wizard and its members wear white hoods.

ANSWER: **Ku Klux Klan** [or **KKK**; prompt on the **Klan**]

[10] This film by D.W. Griffith romanticized the Ku Klux Klan and was notoriously endorsed by Woodrow Wilson.

ANSWER: *The **Birth of a Nation***

[10] The Ku Klux Klan was originally founded in 1867 by this former Confederate general, who perpetrated the Fort Pillow massacre and was known as the "Wizard of the Saddle."

ANSWER: Nathan Bedford **Forrest**

186-14-86-13206

7. Seven solid blue lines and one blue line broken in two delineate this man's painting *Blue Poles*. For 10 points each:

[10] Name this 20th century abstract expressionist American painter, nicknamed "Jack the Dripper."

ANSWER: Jackson **Pollock**

[10] Jackson Pollock signed this painting of his with two handprints in its upper right hand corner. Clement Greenberg gave this painting its nickname due to its light pinkish color.

ANSWER: **Lavender Mist** [or **Number 1**, 1950]

[10] Jackson Pollock employed this style of painting, by which he spontaneously dribbled, threw, flung, and otherwise violently tossed paint on a canvas.

ANSWER: **action** painting

149-14-86-13207

8. This solid is the subject of the Banach-Tarski paradox. For 10 points each:

[10] Identify this three-dimensional object whose surface is the set of points equidistant from the center. Great circles can be drawn on this solid.

ANSWER: 2-**sphere** [prompt on "ball"; prompt on "globe"]

[10] Spherical geometry is a geometry that fails to obey this man's axioms, since the notion of parallel lines and the triangle inequality do not hold. His fifth postulate is also named for Playfair.

ANSWER: **Euclid** [or non-**Euclidean** geometries]

[10] The sphere named for this man is a generalization of the complex plane. He may be better known for his namesake zeta function and namesake sums used to approximate integrals.

ANSWER: Bernhard **Riemann**

234-14-86-13208

9. This punctuation does not need to come at the start of a sentence if the interrogative word is not there.

For 10 points each:

[10] Name this punctuation mark that can be combined with a similar exclamation mark at the start of sentences in a language whose Castilian form is governed by a Royal Academy.

ANSWER: **inverted question mark** [or descriptive equivalents such as **upside-down question mark**; or **signo de apertura de interrogación invertido**; do not accept or prompt "question mark"]

[10] Inverted question and exclamation marks appear in the written form of what language, that ranks second worldwide in total native speakers?

ANSWER: **Spanish** [or **Español**]

[10] The use of this mark in Spanish came about from monks using it to represent that a letter was repeated but the second occurrence was being omitted. Today it only is used above the "n" in Spanish to form the "eñe" (EN-yay).

ANSWER: **tilde**

023-14-86-13209

10. These organisms are located at the base of a food web or food chain. For 10 points each:

[10] Name these organisms which produce energy from non-living things, unlike heterotrophs. They may be phototrophs or chemotrophs.

ANSWER: **autotrophs**

[10] The accumulation of biomass is measured by this quantity, the amount of carbon accumulated per unit area per unit time. The net amount of this is an indicator of how much CO₂ is being removed from the atmosphere.

ANSWER: **primary production** [or **PP**; or **gross primary production**; or **net primary production**; or **NPP**; or **GPP**]

[10] A common rule of thumb is that *this percent* of biomass consumed is transferred as usable energy between trophic levels. That limits the size of most food chains to four.

ANSWER: **10%** [or **1/10**; or **0.01**]

190-14-86-13210

11. In a story by this author, Vashti and Kuno live in underground cells until the title catastrophe, "The Machine Stops." For 10 points each:

[10] Name this British author of *The Eternal Moment and Other Stories*. Aziz is wrongly accused of raping Adela while they explore the Marabar Caves in this man's novel *A Passage to India*.

ANSWER: E. M. **Forster**

[10] Aziz is a member of this profession. In a work by H. G. Wells, a person with this profession performs animal vivisections on his namesake island.

ANSWER: **doctor** [or **physician**; or obvious equivalents]

[10] Charles is imprisoned for the death of Leonard Bast at the end of this Forster novel. Margaret Henry's marriage unites the Wilcox and Schlegel families in the title house.

ANSWER: **Howards End**

232-14-86-13211

12. This gland develops in Rathke's pouch. For 10 points each:

[10] Identify this small gland at the base of the hypothalamus, which is divided into anterior and posterior lobes.

ANSWER: **pituitary** gland

[10] The pituitary releases a hormone to stimulate this other endocrine organ, which can develop goiter if one doesn't get enough iodine.

ANSWER: **thyroid** gland

[10] The pituitary also secretes this hormone, which stimulates the production of corticosteroids by the namesake glands. Low levels of this hormone can cause Addison's disease.

ANSWER: **adrenocorticotrophic** hormone [or **ACTH**; or **corticotropin**]

234-14-86-13212

13. This character's former husband Allan killed himself after she claimed that he disgusted her. For 10 points each:

[10] Name this character, who is raped by her sister Stella's husband Stanley Kowalski. This character says she has "always depended on the kindness of strangers."

ANSWER: Blanche **DuBois** [or **Blanche** DuBois]

[10] This American playwright of *The Night of the Iguana* wrote about Blanche DuBois's visit to New Orleans in *A Streetcar Named Desire*.

ANSWER: Tennessee **Williams**

[10] This Williams play focuses on Amanda Wingfield's attempt to find a "gentleman caller" for her daughter Laura, who owns the title collection.

ANSWER: *The* **Glass Menagerie**

186-14-86-13213

14. He was the father-in-law of Richard Wagner, who married this composer's daughter Cosima. For 10 points each:

[10] Name this composer of the "Mephisto Waltzes" and the *Faust Symphony*. This virtuoso also arranged Beethoven's symphonies for piano.

ANSWER: Franz **Liszt**

[10] Liszt composed a series of nineteen "Rhapsodies" named for this country, his home. Zoltan Kodaly also hailed from this nation.

ANSWER: **Hungary** [or **Magyarország**]

[10] These 21 works by Brahms were almost all based on Hungarian czardas or other folk songs. The fifth of these works begins with a dotted quarter note, eighth note theme.

ANSWER: **Hungarian Dances** [or **Ungarische Tänze**]

190-14-86-13214

15. This novel's protagonist reads a newspaper clipping about a Czech crime while in prison. For 10 points each:

[10] Identify this novel in which the apathetic Meursault complains about the heat during his mother's funeral, and later shoots an Arab on the beach.

ANSWER: The **Stranger** [or L'**Etranger**]

[10] *The Stranger* was written by this French-Algerian author, who also wrote about the judge-penitent Jean-Baptiste Clamence in his *The Fall*.

ANSWER: Albert **Camus**

[10] In *The Stranger*, Meursault dates this woman, with whom he often goes swimming at the beach. Meursault tells this woman that love "doesn't mean anything."

ANSWER: **Marie** Cardona [or Maria **Cardona**]

229-14-86-13215

16. Arthur Schlesinger wrote a book entitled *The Age of* this man. For 10 points each:

[10] Name this hero of the Battle of New Orleans who served as the first Democratic president of the United States.

ANSWER: Andrew **Jackson**

[10] Andrew Jackson lost this election to John Quincy Adams, supposedly because of a "corrupt bargain." This is typically viewed as the last election of the First Party System.

ANSWER: Presidential Election of **1824**

[10] During his presidency, Andrew Jackson fought with this president of the Second Bank of the United States. In one cartoon, this man's head is depicted at the center of a many headed snake and wears a top hat.

ANSWER: Nicholas **Biddle**

149-14-86-13216

17. Like the Chimera, this child of Echidna has three heads. For 10 points each:

[10] Identify this massive dog from Greek Myth, who sits at the edge of the river Styx guarding the entrance to Hades.

ANSWER: **Cerberus** [or **Kerberos**]

[10] This hero was ordered to capture Cerberus as the final of the twelve labors assigned to him by Eurystheus. His other tasks included killing the Hydra and cleaning the Augean stables.

ANSWER: **Heracles** [or **Hercules**]

[10] After Heracles brought back Cerberus, Eurystheus was so scared that he performed this action. He also did this after Heracles returned from his first labor wearing the pelt of the Nemean Lion.

ANSWER: **hiding** in a wine**jar** [accept obvious equivalents, prompt on just **hiding**]

233-14-86-13217

18. The Scottish pikemen at this battle were no match for the bill-wielding English. For 10 points each:

[10] Name this battle, which saw James IV of Scotland killed and his forces routed. Despite its name, it actually took place just outside Braxton.

ANSWER: Battle of **Flodden** Field

[10] Flodden Field was the climactic battle of James's invasion campaign against this king, whose six wives included Catherine of Aragon and Anne Boleyn.

ANSWER: **Henry VIII** [prompt on **Henry**]

[10] James invaded to distract Henry from the war named for the League of Cambrai, an alliance formed against this Italian city, a "most serene" maritime republic.

ANSWER: **Venice**

233-14-86-13218

19. Kryder's law describes how the areal storage density of these devices has increased at a stunning rate since the introduction of the first of them, the IBM 350, in 1956. For 10 points each:

[10] Identify these computer components, which use rotating platters covered with magnetic material and a read/write head to store and retrieve data.

ANSWER: **hard disk drive** [or **HDD**; or **disk drive**; or **computer disk**; prompt on **magnetic** drives]

[10] This type of increasingly popular data storage device contains no moving mechanical parts, instead using integrated circuit assemblies and NAND-based flash memory to achieve persistent data storage.

ANSWER: **solid state** drives [or **SSDs**; or **solid state** disks; prompt on "electronic disks"]

[10] The fact that solid state drives have no mechanical seek times means that they are relatively unaffected by this process, in which related data is no longer laid out sequentially after becoming more disordered over time.

ANSWER: file system **fragmentation** [or data **fragmentation**; prompt on "file system aging"; accept word forms of "fragmentation"; do not accept "defragmentation"]

029-14-86-13219

20. This force is described by Amontons's and Coulomb's laws. For 10 points each:

[10] Identify this force that opposes the motion of solid objects in contact. It has kinetic and static forms.

ANSWER: **friction**

[10] The force of friction equals the coefficient of friction times this force, which has the same magnitude as weight but faces upward. It is equivalent to the force a surface exerts perpendicular to an object.

ANSWER: **normal** force

[10] Skin friction is closely related to this phenomenon, whose magnitude is given by Stokes's law. Air resistance is a classic example of it.

ANSWER: **drag**

234-14-86-13220

21. This state's highest point is the boringly named High Point. For 10 points each:

[10] Identify this Northeastern state which also contains Newark and Trenton.

ANSWER: **New Jersey**

[10] This state's High Point University is located within its western "Piedmont Triad."

ANSWER: **North Carolina**

[10] High Point is also a region of this King County city, which is also home to the Experience Music Project and a Rem Koolhaas-designed library.

ANSWER: **Seattle**

233-14-86-13221