1. This region contains the Earth's only siderophile (sid-AIR-oaf-eye-el) elements not bonded to oxygen. Eddy currents in one subsection of this region likely interact with its solid layer to create the earth's magnetic field, a theory known as the geodynamo. The topmost portion of this region borders the D-double-prime layer. The border between this region and a cooler, more viscous layer is called the Gutenberg discontinuity. For 10 points, name this layer of the earth's interior that consists of "inner" and "outer" parts and lies below the mantle.
ANSWER: the Earth's **core** [prompt on **outer core** until "solid layer"; prompt on **inner core** until "eddy currents"; do not accept or prompt on either after those words are read]

032-09-7-03101

2. Job Shattuck and Luke Day were both prominent leaders of this event, which was one of the main causes of James Bowdoin's loss to John Hancock as governor. This event, which was largely carried out by debtors, was defeated by Benjamin Lincoln at the Springfield Armory. It was one of the main causes of the Philadelphia Convention, since it proved the dangerous weaknesses of the Articles of Confederation. For 10 points, name this 1786 uprising in Western Massachusetts led by the namesake farmer.
ANSWER: **Shays**'s Rebellion [do not accept or prompt on "Shay;" the person's name is Daniel **Shays**]

064-09-7-03102

3. One member of this team asked his Twitter followers, "Do 'woodchucks' really exist? If so, someone twit me a pic." This team stood by idly as the Raptors' Jarrett Jack tied his shoes on the clock during a blowout. This team, that goes on an annual "Circus" road trip, drafted a point guard whose SAT score got the University of Memphis in trouble. Their roster includes Tyrus Thomas and Joakim (JOE-a-keem) Noah. For 10 points, name these United Center tenants whose roster stars Derrick Rose.
ANSWER: the **Chicago** Bulls [or Chicago **Bulls**]

026-09-7-03103

4. This author noted that "When one is tired of London, one is tired of life," and claimed that "Patriotism is the last refuge of the scoundrel." This writer was the first to refer to John Donne and his contemporaries as the metaphysical poets in his work *Lives of the Most Eminent English Poets*. This man wrote one work about a trip he took to Scotland with a friend. A biography about this man was written by that friend, James Boswell. For 10 points, name this English author of the *Dictionary of the English Language*.
ANSWER: Samuel **Johnson**

045-09-7-03104

5. This man's feats were recorded in an epic poem by Blind Harry. After his most famous victory, the skin of Hugh Cressingham was used to make a belt for this man's sword. However, the loss of Andrew Murray at that battle proved disastrous for this leader at the later Battle of Falkirk. This victor at Stirling Bridge was declared an outlaw in 1304 and executed in 1305, making him a martyr for the Scottish cause. For 10 points, name this man sometimes known as the "Braveheart."
ANSWER: William **Wallace** [prompt on **Braveheart** before it is read]

003-09-7-03105

6. Johann Lambert names a model of its diffuse form. None of this phenomenon occurs when the angle of incidence with a boundary is Brewster's angle. Its "specular" form involves only one incoming and outgoing direction. Its "total internal" form occurs in fiber-optic materials and occurs at angles above the critical angle from the normal. Its "retro" form can be achieved by using three perpendicular mirrors. For 10 points, name this phenomenon, in which light hits a surface and rebounds in the other direction.
ANSWER: **reflection**

7. This person signaled his support for a loosening of censorship in his speech "On the Correct Handling of Contradictions Among the People." This man's third wife became a key figure in the Gang of Four, which helped this man organize the Red Guards in support of the Cultural Revolution. Earlier, this man was a key figure in the Long March, which allowed his party to come to power and launch such programs as the Great Leap Forward. For 10 points, name this politician who died in 1976 after twenty-seven years as the Communist leader of China.
ANSWER: **Mao** Zedong [or **Mao** Tse-tung]

8. The first step of this process involves the carboxylation (car-BOX-ill-AY-shun) of ribulose-1,5-bisphosphate (RIB-yool-os "one, five" bye-FOSS-fate), leading to an unstable six carbon molecule that splits and is eventually converted into glyceraldehyde-3-phosphate (gliss-er-AL-deh-hide "three" FOSS-fate). Six of those G3P molecures are produced by this process's end. Its other products include one carbon available to be converted into a sugar. Rubisco is a catalyst in, for 10 points, what cycle of reactions that takes place in chloroplasts and are part of the dark reactions?
ANSWER: **Calvin** Cycle [prompt on **dark reaction**s before it is read]

9. The Kufa (KOO-fuh) version of this text settles on dividing it into 6,236 ayahs (eye-AHZ), the largest of the four competing numbers. Other systems include a way to read it in one week, which divides it into seven manazils (muh-NAH-zeelz), and a way to read it in a month, comprised of thirty juz (JEWZ). The most frequently used chapterization of this book creates sections such as "The Key" and "The Cow," called suras (SOO-rahz). For 10 points, name this sacred text which was revealed in the early seventh century by Gabriel to Muhammad, in Islamic belief.
ANSWER: al-**Quran** [or The **Koran**]

10. This poet started an epic in Latin about Masinissa (MASS-in-ISS-uh), Sophonisba (SEW-fon-IZ-buh), and Scipio Africanus, entitled *Africa*. This author of the "Letter to Posterity" wrote the biographical collection *Concerning Famous Men*. This poet of the *Canzoniere* (CON-zo-NAY-ray) mentored Boccaccio (boh-CAH-chee-oh) and addressed many of his poems to his beloved Laura. For 10 points, name this Renaissance Italian poet who wrote in the vernacular rather than Latin, and perfected a namesake type of sonnet divided into sections of eight and six lines.
ANSWER: **Petrarch** [or Francesco **Petrarca**]

11. Motoo [moe-TOE-oh] Kimura's neutral theory states that this phenomenon is the main cause of molecular evolution. In one type of this phenomenon, a small number of individuals start a new population; that type is known as the founder effect and can result from a population bottleneck. Its effects are greater in small populations, and it is one of the influences which can cause deviation from Hardy-Weinberg equilibrium. For 10 points, name this phenomenon involving chance variations in allele frequency.
ANSWER: genetic **drift** [or allelic **drift**]

12. This battle saw the early death of Ariabignes (err-ee-AA-big-neez) and a feint attack to escape Ameinias (aa-MAIN-ee-as), inspiring the losing commander to note "my men have become women, and my women men." The losers of this battle included Mardonius and Queen Artemisia. This battle was fought betweem Artemisium and Mycale (mee-CAL-ay) respectively. The victors in this battle, led by Themistocles (thuh-MIST-oh-cleez), defeated a larger fleet off an island near Athens. For 10 points, name this major Greek naval victory in the Persian Wars.
ANSWER: Battle of **Salamis**

13. In one novel by this author, the Magistrate attempts to return a crippled, blinded girl to her people following Colonel Joll's brutality. This author of *Waiting for the Barbarians* wrote about Lucy welcoming her father David Lurie to her home, after David loses his job as a professor for seducing a student. For 10 points, name this South African author of *Disgrace* and a work about a harelipped gardener, *Life & Times of Michael K*.
ANSWER: John Maxwell **Coetzee**

14. Central to this type of device is an actuator, also called a voice coil. On Windows machines, these hardware pieces use FAT32 or NTFS file systems. Virtual memory allows the computer to store pages on these as opposed to RAM. The use of multiple ones is allowed via RAID technology, and most modern ones use the Serial ATA interface. For 10 points, name this piece of computer hardware, which consists of a read-write head and a series of platters and has a capacity typically measured in gigabytes.
ANSWER: **hard drive** [or **hard disk** drive; or **HD**D]

15. The Palermo stone is an early record of the existence of this deity, whose popularity skyrocketed after the Ennead and Ogdoad merged. This deity's wife traveled to Byblos to find his body after his brother locked him in a coffin and threw it into the river. A fish devoured one of his organs after this figure's outraged brother chopped and dismembered him into fourteen pieces. Afterwards, this god was reassembled with the missing part replaced by gold by that wife, Isis. For 10 points, name this Egyptian god of the dead and father of Horus.
ANSWER: **Osiris** [accept **Usiris**, **Asar**, **Aser**, **Ausar**, **Ausar**, **Wesir**, **Usir**, **Usire**, or **Ausare**]

1A. Name the river, south of the Potomac, which crosses the northern part of Virginia from Chester Gap in the Blue Ridge Mountains to the Chesapeake Bay.
ANSWER: **Rappahannock** River

1B. What nation, once ruled by the Taliban, will soon be the target of a troop surge ordered by President Obama?
ANSWER: Islamic Republic of **Afghanistan** [or Jomhuri-ye Eslami-ye **Afghanestan**]

2A. In what play by Thornton Wilder does the Stage Manager introduce the audience to Grover's Corners, where George Gibbs and Emily Webb live?
ANSWER: *Our Town*

2B. An example of one type of structure this artist created is *Flamingo*, and an example of the other is *Lobster Trap and Fish Tail*. Name this inventor of stabiles and mobiles.
ANSWER: Alexander **Calder**

3A. Described in part by General Circulation Models, this phenomenon is classified by the Koppen system. What is this term for the average weather of a region?
ANSWER: **climate**

3B. What pop star's much-criticized dance at the 2009 Teen Choice Awards occurred during her performance of "Party in the U.S.A."?
ANSWER: Miley **Cyrus**

4A. This is a 10-second calculation question. Find the least common multiple of 6, 9, and 15.
ANSWER: **90**

4B. This is a 10-second calculation question. What is the amplitude of the function $y = 3$ plus 5 times the cosine of 2x?
ANSWER: **5**

5A. This critic argues that Falstaff represents self-satisfaction and Hamlet represents self-dissatisfaction. Identify this author of *The Anxiety of Influence*.
ANSWER: Harold **Bloom**

5B. This poetic device has a "slant" form, where the words do not match perfectly in sound. Name this phenomenon that also has "perfect" forms known as "masculine," "feminine," and "dactylic."
ANSWER: **rhyme** [or **rhyming**]

6A. This is a 20-second calculation question. Subtract: $(7x^3 - 5x^2 - x - 6) -(x^3 - 4x^2 + 7)$.
ANSWER: $6x^3 - x^2 - x - 13$

6B. This is a 20-second calculation question. You drove 131.1 miles on 9.5 gallons of gas. What is your gas mileage in miles per gallon?
ANSWER: **13.8**

7A. Southern forms of this language use "halt" where the north and center use "eben" (AY-ben). Identify this language with Pomeranian, Swabian, and Swiss dialects.
ANSWER: **German** [or **Deutsch**]

7B. What French biologist created a rabies vaccine and is the namesake of a process to kill microorganisms in milk?
ANSWER: Louis **Pasteur**

8A. In December 2009, this team's current quarterback, Aaron Rodgers, alleged that Seattle Seahawks defensive end Daryl Tapp bit him during a 2008 game. Name this team that faced the Arizona Cardinals in the 2009 NFC playoffs.
ANSWER: **Green Bay** Packers [or Green Bay **Packers**]

8B. This condition results from a deficiency in hexosaminidase (HEX-ohs-uh-MEEN-id-aze) alpha, a lysosomal (LYE-so-ZOH-mal) enzyme. Identify this disease, which causes a characteristic red spot on the retina and usually causes death by age five.
ANSWER: **Tay-Sachs** disease

9A. This is a 30-second calculation question. Find the distance between the points (2, 2) and (4, 9).
ANSWER: **square root of 53**

9B. This is a 30-second calculation question. How many different distinguishable letter patterns can be formed from the letters in the word VIRGINIA?
ANSWER: **6720**

10A. Identify the principle that implies Fermat's principle of least time and states that every point on a wavefront is a source of a new set of waves.
ANSWER: **Huygens**-Fresnel principle

10B. The changes in two forms of this quantity, named for Marshall and Hicks, are related by the Slutsky equation. Name this quantity, which is represented by a curve that slopes downward from left to right.
ANSWER: **demand**

1. This composer wrote a "Gardens in the Rain" for his piano suite suite *Estampes* (ay-STOMP). One of his works has movements like "Nuages" (new-AHJ) and "Sirenes" (see-REN) and is called *Nocturnes*. One of his works includes the movement "The Play of the Waves." This composer of *Children's Corner* wrote a "Passepied" (pass-PY) for his *Suite Bergamasque*, which also contains a movement based on a Verlaine poem that depicts moonlight. For 10 points, name this French impressionist composer of "La Mer" and "Claire de Lune."
ANSWER: Achille-Claude **Debussy**

022-09-7-03117

2. This author wrote about Ernest Everhard's attempt to resist a fascist world takeover in *The Iron Heel*. One short story by this author concerns a man whose failure to complete the title action causes that character's death by freezing. In another of his novels, the murder of John Thornton by the Yeehat Indians causes Buck to live in the wilderness. This man set many of his stories, including "To Build a Fire," in the Yukon. For 10 points, name this American author of *The Call of the Wild*.
ANSWER: Jack **London** [or John Griffith **Chaney**]

004-09-7-03118

3. In honor of an address given to this organization by Ralph Waldo Emerson, it publishes a journal called *The American Scholar*. This group's name is said to have come from the initials of its Greek motto, which roughly translates to "Philosophy, the guide of life." This honorary scholarship society began in 1776 as a secret literary and social club. Founded at the College of William and Mary, it was the first-ever fraternity in the U.S. For 10 points, identify this prestigious organization for high-achieving liberal arts students.
ANSWER: **Phi Beta Kappa**

045-09-7-03119

4. This man wrote about a conscientious objector who "was more brave than me, more blond than you" in his poem "i sing of Olaf glad and big." Zulu and the jester Surplice (sur-PLEECE) are among the characters in La Ferte Mace (fert MOSS) concentration camp in this author's autobiographical novel *The Enormous Room*. Another poem by this man begins "anyone lived in a pretty how town." For 10 points, name this American poet who often shunned traditional punctuation and capitalization.
ANSWER: Edward Estlin **Cummings**

030-09-7-03120

5. This type of function is asymptotically equal to a recurrence of F of N over 2 plus a constant. The complex form of this function for a given input can have infinite outputs separated by multiples of two pi. Its derivative is equal to one over x and the sum of two of these on values x and y is equal to this function of x times y. Changing the base of this operation by dividing it by its value for the new base. For 10 points, name this type of function that is that returns the inverse of an exponential and comes in natural and log varieties.
ANSWER: **logarithm** [or **log**; accept **natural logarithm** and variants]

001-09-7-03121

6. In Act IV of this play, one character declares "We are such stuff as dreams are made on." One character meets the jester Trinculo and the butler Stephano and drunkenly offers to become their slave. That character and Ariel were condemned by Sycorax. The presumed death of Alonso's son leads Alonso inland, where he finds Ferdinand performing tasks for the island's ruler, the exiled Duke of Milan. That figure, Prospero, eventually reclaims his kingdom from Antonio in, for 10 points, what play about a brutal storm by William Shakespeare?
ANSWER: *The **Tempest***

7. One event of this type was named for the Stono River, and another was named for the German Coast. Another of these events failed after floods washed out the bridges leading into Richmond. Denmark Vesey and Gabriel Prosser were two men who led this kind of event. The leader of another of these events dictated his "confession" from Southampton County Jail. For 10 points, name these uprisings, whose most effective example in Virginia was led in 1831 by Nat Turner.
ANSWER: **slave rebellion**s [accept **slave revolts**, **slave uprisings**, or any other clear equivalents]

8. While bathing on Cithaeron (kith-AY-er-on), this goddess turned a spying hunter into a stag, who was then devoured by his own hounds. She turned the mother of Arcas into a bear and killed a hunter who tried to seduce her follower Opis. One woman insulted this goddess's mother by boasting of her own 14 children. This slayer of Actaeon (ACK-tay-on) and of Niobe's (nye-OH-beez) children was born on a floating island to Leto along with her twin brother. For 10 points, name this daughter of Zeus and sister of Apollo who was the Greek goddess of fertility and the hunt.
ANSWER: **Artemis** [accept **Diana** before "Greek" is read]

9. This substance is combined with organomagnesium bromides to give carboxylic acids. As a supercritical fluid, it is used to decrease the viscosity of crude oil. As well as ethanol, this substance is produced in the fermentation of glucose by yeast. Its structure is predicted to be linear due to its two double bonds. In the presence of water, this triatomic substance is in equilibrium with carbonic acid. For 10 points, name this gas, symbolized CO_2 (see oh two).
ANSWER: **carbon dioxide** [accept **CO_2** before it is read]

10. This musician quoted the hymn *Gaudeamus Igitur* (GOW-dee-ah-muhs ih-gih-tour) in a work written in response to an honorary doctorate this man received from Breslau. This man created a work in imitation of a Catholic mass using texts from the Luther Bible titled *A German Requiem*. He composed the *Tragic* and *Academic Festival* overtures. His first symphony was nicknamed "Beethoven's Tenth." For 10 points, name this German composer known for his *Lullaby*.
ANSWER: Johannes **Brahms**

11. In 2004, a man claiming to be "Jude Finisterra" caused a drop in stock prices with a hoax announcement about an event which took place in this city. Residents of this city still suffer birth defects due to groundwater contamination from the forty-five tons of methyl isocyanate which were released from an insecticide plant here. Anywhere from three to fifteen thousand people in this capital of Madhya Pradesh were killed by, for 10 points, the 1984 leak from a Union Carbide plant in what Indian city?
ANSWER: **Bhopal**

12. One painting by this man shows an exchange between Maurice of Nassau (NASS-aw) and Ambrosio Spinola. This artist painted a portrait of his slave Juan de Pareja (pah-RAY-huh). Irish painter Francis Bacon based a series of works on this artist's portrait of Pope Innocent X. One of his paintings shows himself at the left next to a large canvas, a mirror showing the reflection of the king and queen in the background, and the Infanta Margarita in the center. For 10 points, name this Spanish artist who served in the court of King Philip IV and painted *Las Meninas*.
ANSWER: Diego **Velazquez** [accept Diego Rodríguez de Silva y **Velázquez**]

13. An orangutan commits the titular crimes in this man's "The Murders in the Rue Morgue." One poem by this author laments the loss of a maiden living in a "kingdom by the sea." Another poem by this man sees the titular creature sit on a bust of Pallas after coming "rapping, rapping at [a] chamber door." For 10 points, name this American author who wrote about the loss of Virginia Clemm in the poem "Annabel Lee" and lamented the loss of Lenore in the poem "The Raven."
ANSWER: Edgar Allan **Poe** [accept "The **Murders in the Rue Morgue**" before mentioned]

14. The protagonist of this opera sneaks into the apartment of Donna Anna, kills the Commandant in a duel, and attempts to steal Zerlina from her peasant fiancé, Masetto. The servant Leporello sings "The Catalogue Aria" and dresses up as the title character of this opera, so that his master can seduce Donna Elvira's maid. In its final act, the ghost of the Commandant orders the title character to repent for his sins, but he refuses and is dragged into Hell. For 10 points, name this opera about a rakish nobleman, by Wolfgang Amadeus Mozart.
ANSWER: *__Don Giovanni__*

15. This country's forces stopped invading Italy after losing the Battle of Fornovo, thwarting the plans of this country's king, Charles VIII, to conquer Naples. This country's Wars of Religion pitted the Duke of Guise (GEEZ) against three kings named Henry. The last of those kings, Henry IV, ended the conflict by proclaiming that this country's capital was "worth a mass." For 10 points, name this country whose Protestants were known as Huguenots.
ANSWER: **France**

1. Changing this situation to make the reward worth more than the temptation creates a stag hunt, which has two Nash equilibria as compared to one for this situation. Merrill Flood, Melvin Dresher, and Robert Axelrod were among the scholars who studied this scenario as applicable to nuclear arms. The "tit for tat" strategy is one approach to this situation. For 10 points, identify this fundamental game theory problem, in which two suspects must each choose to defect or cooperate.
ANSWER: the **prisoner's dilemma**

019-09-7-03132

2. This element, whose main source is from spodumene (SPAHD-yoo-meen), has a hydroxide salt used to purify air by absorbing carbon dioxide. At room temperature it is the only metal that will react with nitrogen gas and citrate and carbonate salts of this element are used to treat bipolar disorder. This element, which has a diagonal relationship with magnesium, is placed at the top of the metal reactivity series, explaining its usage in high power rechargeable batteries. For 10 points, name this alkali metal with atomic number 3 and chemical symbol Li.
ANSWER: **lithium** [accept **Li** before it is read]

064-09-7-03133

3. In one work by this man, townspeople question their beliefs after the Elder Zosima's corpse begins to decay. This author created a parable where Jesus is arrested in Spain and questioned by the Grand Inquisitor. In another of this man's works, Porfiry Petrovich investigates the murder of a pawnbroker. This author created the patriarch Fyodor and his four sons and the murderous Raskolnikov (RAS-kohl-nee-KOFF). For 10 points, name this Russian author of *The Brothers Karamazov* (KUH-ra-ma-SOFF) and *Crime and Punishment*.
ANSWER: Fyodor Mikhaylovich **Dostoyevsky**

052-09-7-03134

4. This range is divided into the Cordilleras (CORE-dee-YER-ahs) Occidental and Oriental. This mountain range contains the land that is farthest from the earth's core, Mount Chimborazo (CHIM-bore-AH-zoh). The Atacama desert lies to the west of the dry part of these mountains. The lost city of Machu Picchu lies within this mountain range, which is also the origin of alpacas and llamas and the site of Santiago, Chile. For 10 points, name these mountains, which run through western South America.
ANSWER: **Andes** Mountains

059-09-7-03135

5. The early years of this condition were chronicled by Randy Shilts's *And the Band Played On*. Karposi's Sarcoma frequently accompanies this disease, which is treated with HAART and AZT therapy and which attacks CD4+ T lymphocytes. This disease is believed to have originated in chimpanzees in Sub-Saharan Africa, where it is most prevalent today, and many of the initial infections occurred through blood transfusions. For 10 points, name this sexually transmitted disease which attacks the immune system and is caused by the HIV virus.
ANSWER: **AIDS** [or **A**cquired **I**mmune **D**eficiency **S**yndrome; or **A**cquired **I**mmuno**D**eficiency **S**yndrome; accept **HIV** or **H**uman **I**mmunodeficiency **V**irus until mentioned]

059-09-7-03136