1. The protagonist of this story dreams about performing an operation on a woman and resolving to continue even when the knife digs all the way to her heart. In this story, the protagonist's wife, Georgiana, dies after drinking a potion he prepares to remove a prominent feature. For 10 points, name this short story about the scientist Aylmer (ALE-mur), a story by Nathaniel Hawthorne titled for the red defect on Georgiana's cheek.
ANSWER: "The **Birth-Mark**"

2. Backcrossing is impossible when this process results in allopolyploidy (AA-loh-PAH-lee-ploid-ee). This process can occur in namesake "zones" during speciation. No interordinal examples of this process are known, and very rare interfamilial examples are observed between guinea fowl and chickens. Unlike most other products of this reproductive process such as the hinny and zedonk, the beefalo is not sterile. For 10 points, name this phenomenon in which two species breed and produce offspring such as ligers and mules.
ANSWER: **hybrid**ization [prompt on **crossing**; prompt on **heterozygote**]

3. In 2012, this country's oppressed Islamic minority, the Rohingya (roh-HING-yuh), rioted in its Rakhine (raa-KEEN) state. A group known as "Merrill's Marauders" fought during World War II in this country, whose namesake "road" helped supply China. U (OO) Thant was a United Nations Secretary-General from this country. Another politician from this country was placed under house arrest for opposing its military junta, which relocated its capital from Yangon to Naypyidaw. For 10 points, name this country, the home of Aung (ONG) San Suu Kyi.
ANSWER: **Burma** [or Republic of the Union of **Myanmar**]

4. Pablo de Sarasate (sah-rah-SAH-tay) refused to play a piece of this kind because it gave a prominent part to the oboe. Beethoven's D major piece in this genre begins with four timpani beats. A set of Baroque pieces of this type depict scenes such as a sleeping dog in spring and raindrops during winter, in movements such as "L'inverno" and "La primavera." For 10 points, name this type of piece, exemplified by Antonio Vivaldi's *The Four Seasons*, which is scored for the smallest string instrument and orchestra.
ANSWER: **violin concerto** [prompt on **concerto**]

5. This actress played aviator Franny Cook in *Sky Captain and the World of Tomorrow*. The actress provided the voice of Master Tigress in the *Kung Fu Panda* film series, and also appeared as Grendel's mother in the 2007 motion capture adaptation of *Beowulf*. This actress played Lara Croft in the *Tomb Raider* film series and directed the 2014 film *Unbroken*. For 10 points, name this actress, who played Maleficent in a 2014 reimagining of *Sleeping Beauty*.
ANSWER: Angelina **Jolie** [or Angelina Jolie **Voight**]

6. The partition coefficient is the relative difference between two values for this property in a liquid-liquid extraction. For a binary ionic compound, this quantity equals the square root of its namesake product constant. Addition of a common ion diminishes this property. According to Henry's Law, this property is proportional to partial pressure of a gas. A substance which lacks this property is usually written with a downward arrow in chemical reactions, indicating precipitation. For 10 points, name this property in which one compound dissolves in another.
ANSWER: **solubility** [or word forms; or **dissolving** until it is read; prompt on **concentration** or **molarity**]

7. This artist included the wire-and-cloth *Fanni, the Belly Dancer* in his namesake animatronic "circus." This man's grandfather sculpted the statue of William Penn on top of Philadelphia City Hall. He created the red painted-steel *Flamingo* for Chicago's Federal Plaza. For the main stairwell of New York City's MoMA, he suspended one of his earliest examples of kinetic sculpture, the wire-and-steel *Lobster Trap and Fish Tail*. For 10 points, name this American sculptor of stabiles and mobiles.
ANSWER: Alexander **Calder** [or Sandy **Calder**]

8. For whole numbers, the gamma function equals this other function. This function appears in the denominator of the probability mass function for the Poisson (pwuh-SAHN) distribution and in the denominator of terms in a Taylor series. This operation on "N minus 1," times N, equals this operation on N. The number of permutations of a set of N distinct objects is equal to this operation on N. For 10 points, name this operation denoted by an exclamation point, which is the product of all whole numbers less than or equal to some number.
ANSWER: **factorial**

9. The Arabic diacritic shadda (SHAH-duh) is used to indicate when these elements are doubled, and in Japanese the sokuon represents elongation of these units. These elements can't be geminated when they are affricates (AFF-ruh-kits). Tremulants are a kind of the liquid type of these elements. Sibilants are a subtype of the fricative kind of these linguistic units. In the English written alphabet, there are eighteen to twenty of these elements, depending on the behavior of the letters "w" and "y." For 10 points, name these speech sounds that are not vowels.
ANSWER: **consonant**s

10. In a story by this author, Doctor Rabin's mental deterioration leads to his death in ward number six. He wrote about Dmitri Gurov's affair with the "Lady with a Lapdog." In a play by this author, Solyony (sul-YAH-nee) and Tuzenbach fight for the love of Irina. This playwright created Konstantin Treplyov (TREH-pul-yof), who kills himself after shooting a bird. Another of his plays concludes with the destruction of a portion of the Ranevskaya (rah-NEV-sky-uh) estate. For 10 points, name this Russian playwright of *The Seagull* and *The Cherry Orchard.*
ANSWER: Anton **Chekhov** [Anton Pavlovich **Chekhov**]

11. These people were targeted by members of the Knights of Labor in the Rock Springs Massacre. The Magnuson Act repealed legislation that targeted these people, and the Burlingame Treaty encouraged these people to settle in the United States. These people, who worked extensively on the Central Pacific Railroad, had their immigration privileges restricted by Chester A. Arthur, who signed their namesake "Exclusion" Act into law. For 10 points, name these people who emigrated from a large East Asian country.
ANSWER: **Chinese**-Americans

12. In a novel set in this country, Bam and Maureen Smales flee their home city in a vehicle called a bakkie (BAH-kee). In another novel set here, Arthur Jarvis, the son of a businessman, is murdered by Absalom. The title character of a novel set in this country is a servant named July. In this country, Reverend Stephen Kumalo heads to the capital to find his son. For 10 points, name this country, the setting of books such as Alan Paton's *Cry, the Beloved Country*, which prominently features apartheid as a theme.
ANSWER: **South Africa**

13. This king used the Blowing Stone to summon troops to the Battle of Ashdown. This ruler translated Pope Gregory's *Pastoral Care* and created a legal code called the *Doom Book*. In the Treaty of Wedmore, this king established Watling Street as a boundary with the Danelaw (DAIN-law) after defeating Guthrum at the Battle of Edington. For 10 points, name this ruler of Wessex who became the first king of England and the only one known as "the Great."
ANSWER: **Alfred** the Great

14. Einstein notation is used to implicitly perform this operation over pairs of repeated indices. One of the axioms of vector spaces is that applying this operation to two vectors always yields a third vector. A capital sigma sometimes represents the repeated application of this operation to form an infinite series. As a child, Gauss apocryphally found a way to do this operation quickly on the numbers 1 through 100. When applied to fractions, it requires finding a common denominator. For 10 points, name this operation which, when applied to 2 and 3, gives 5.
ANSWER: **addition** [or **summation**; or **plus**]

15. This person wrote a letter instructing its addressee to accept the runaway slave Onesimus (oh-NEE-see-mus) as a "dear brother." He stressed the importance of donning the "full armor of God" and explained that "the wages of sin is death." This apostle wrote that "love is patient, love is kind" in his first letter to the people of Corinth. This apostle changed his name from Saul after he was blinded on his way to Damascus. For 10 points, name this author of epistles such as Romans.
ANSWER: **Paul** [or **Saul** until it is read]

1A. What is the term for the process in which a substance transitions directly from a solid to a gas without becoming a liquid?
ANSWER: **sublimation** [or word forms]

1B. What English poet, the sister of a pre-Raphaelite painter, wrote the narrative poem "Goblin Market"?
ANSWER: **C**hristina **Rossetti** [prompt on **Rossetti**]

2A. What mayor of West Berlin and member of the SPD launched the policy of Ostpolitik (OST-"politic") during his time as chancellor of West Germany?
ANSWER: Willy **Brandt**

2B. What square matrix operation is defined for the 2-by-2 matrix "a b, c d" as "a d minus b c"?
ANSWER: **determinant**

3A. This is a 20-second calculation question. The smallest side of a triangle is 3 inches long. Another side is 5 inches long. Give the interval in which the length of the third side must lie.
ANSWER: **between 3 and 8** inches [do not accept "between 2 and 8 inches"]

3B. This is a 20-second calculation question. What is the square root of 64 x to the sixth y to the fourth z to the tenth?
ANSWER: **8 x cubed y squared z to the fifth**

4A. What Hindu festival, celebrated in spring, begins with a bonfire and features participants spraying each other with colors?
ANSWER: **Holi**

4B. What name refers to the region of grassland and savanna that lies immediately south of the Sahara Desert?
ANSWER: the **Sahel**

5A. What scientist names the force exerted on a charge by electric and magnetic fields?
ANSWER: Hendrik **Lorentz** [Hendrik Antoon **Lorentz**]

5B. Sculptures such as *Laocoon* (lay-AH-coh-on) *and his Sons* and the *Winged Victory of Samothrace* (SAH-moh-thrace) were produced in what cosmopolitan period of Greek art, which followed the Classical period?
ANSWER: **Hellenistic** period

6A. What Jewish American author wrote such novels as *American Pastoral* and *Portnoy's Complaint*?
ANSWER: Philip **Roth**

6B. In what Harold Pinter play do the hitmen Ben and Gus receive instructions to kill one another through the title contraption?
ANSWER: *The **Dumb Waiter***

7A. Name the restaurant which introduced a "never-ending pasta pass" in September 2014 to go along with its unlimited breadsticks and soup.
ANSWER: **Olive Garden**

7B. Provide the English translation for the feeling that a German person has if he is "wutend," (VOO-tend) a French person has if he is "fache" (FAHSH) or a Spanish person has if he feels "enojado" (ey-noh-HA-doh).
ANSWER: **angry**

8A. This is a 30-second calculation question. Points A and B on circle O are chosen such that angle AOB measures 60 degrees. The lines tangent to circle O at points A and B intersect at point C. If circle O has a radius of 3 units, what is the perimeter of quadrilateral OACB? Express your answer in simplest radical form.
ANSWER: **6 plus 2** times the square **root** of **3** [or **6 plus 2** times **rad**ical **3**]

8B. This is a 30-second calculation question. If cosine to the fourth of theta minus sine to the fourth of theta equals negative one-third, then what is cosine of two theta?
ANSWER: **-1/3** [or **negative one-third**]

9A. What kind of poem or stanza is composed of three lines and may or may not follow the same rhyming scheme?
ANSWER: **tercet** [or **terza rima**; or **tristich**]

9B. What Arizona Republican Presidential candidate was criticized for his willingness to use nuclear weapons in the 1964 "Daisy" political advertisement?
ANSWER: Barry **Goldwater** [Barry Morris **Goldwater**]

10A. What series of fortifications, named for the French Minister of War who ordered their construction, were bypassed by Germany marching through Belgium instead in 1940?
ANSWER: **Maginot Line**

10B. What country's president, Blaise Compaore (com-POW-ray), was removed from power in October 2014 after he attempted to extend term limits to maintain his hold on the presidency?
ANSWER: **Burkina Faso**

1. This island's sulfur-rich Ijen (IH-jen) region is home to a crater that emits blue flames. Eugene Dubois (doo-BWAH) first discovered *Homo erectus* fossils on this island. A Buddhist temple named Borobudur (BORE-uh-buh-door) is located near this island's center. This island, whose major cities include Surabaya (sur-uh-BUY-uh), is separated by the Sunda Strait from Sumatra (soo-MAH-truh). For 10 points, name this most populous island in the world, an Indonesian island home to Jakarta and known for coffee production.
ANSWER: **Java**

2. In a speech given in Canada, this person said "Some chicken! Some neck!" This person's "Sinews of Peace" speech coined term for a border extending from "Stettin to Trieste" (TREE-est). He declared "Never was so much owed by so many to so few" and once promised that he had "nothing to offer but blood, toils, sweat, and tears." Other speeches by this leader include the lines "We shall fight them on the Beaches" and "This was their finest hour." For 10 points, name this prime minister who led Britain during World War II.
ANSWER: Winston **Churchill** [Winston Leonard Spencer-**Churchill**]

3. A play about this man ends with the declaration that "we cannot call a mortal being happy" until he has died. This character is told that a plague in his home kingdom is due to an unpunished murderer. He erroneously believes himself to be the son of Polybus. This man blinds himself after he realizes he murdered Laius (LAI-us). He dies at Colonus (cuh-LOH-nus), leaving behind his daughter Antigone (an-TIG-uh-nee). For 10 points, name this king of Thebes (THEEBZ) who kills his father, marries his mother Jocasta, and stars in two plays by Sophocles.
ANSWER: **Oedipus**

4. This man pushed the limits of 78 RPM records with his long piece "Creole Rhapsody." This musician attempted to distill the black American experience into a jazz symphony titled *Black, Brown, and Beige.* This man made his career playing white audiences at the Cotton Club, where he met his wife Mildred Dixon. This man's signature piece was a standard composed by his collaborator Billy Strayhorn, whose title references a New York City subway line. For 10 points, name this pianist, known for his renditions of "Mood Indigo" and "Take the "A" Train."
ANSWER: Duke **Ellington** [or Edward Kennedy **Ellington**]

5. This golfer carried a pager with him during the 1999 U.S. Open in case his wife went into labor. This golfer beat Ernie Els by one stroke to win the 2004 Masters. This golfer criticized U.S. captain Tom Watson's leadership style after he and partner Keegan Bradley were held out of both Saturday matches of the 2014 Ryder Cup. At the 2013 British Open, this golfer rallied from five strokes back on Sunday to win the tournament. For 10 points, name this five-time major tournament champion, who is nicknamed "Lefty."
ANSWER: Phil **Mickelson** [Philip Alfred **Mickelson**]

6. Some of these agents contain excipients (eck-SIP-ee-ents) that can cause anaphylaxis (AA-nuh-fuh-LACK-sis) in people with egg allergies. These materials can be enhanced with adjuvants (AA-joo-vunts). BCG is an example of the attenuated form of these agents. Their effectiveness was first shown when Edward Jenner noted a link between cowpox infection and resistance to smallpox. One of these substances was developed by Jonas Salk. For 10 points, name these agents found in booster shots that stimulate immunity to diseases such as polio.
ANSWER: **vaccine**s

7. This man personally tortured participants in a revolt that was put down by Patrick Gordon. This ruler established the nine collegia and organized his court with the Table of Ranks. As a boy, he directed mock battles with his toy army and was controlled by his half-sister Sophia. He worked in a shipyard while leading his Grand Embassy to the West, after which he instituted a beard tax on his country's boyars. For 10 points, name this reforming tsar known as the "Great."
ANSWER: **Peter** the **Great** [or **Peter I**; or **Peter** after "Great" is read; prompt on Peter until "Great" is read]

8. Using an appropriate transformation, one can define physical laws to be the same in reference frames named for this property. In general relativity, the equivalence principle links the notion of gravitational mass and mass named for this property. The rotational analogue of mass is named after the moment of this property. It is described by Newton's first law, which states that an object will maintain a given velocity unless acted on by an external force. For 10 points, name this property that causes objects to resist changes in motion.
ANSWER: **inertia**

9. This man remarked in 2009 that he wouldn't "go anywhere in confined places right now," prompting an apology from Robert Gibbs. While speaking at Harvard, he made a profane joke about his job while talking to a student council member. This politician apologized in 2014 for suggesting that Turkey was the U.S.'s "biggest problem" in regards to the Syrian Civil War, one of many gaffes possibly preventing him from receiving the Democratic Presidential nomination in 2016. For 10 points, name the current Vice-President of the United States.
ANSWER: Joe **Biden** [Joseph Robinette **Biden**, Jr.]

10. A man in this short story passes by a tulip plant which is said to be haunted by the ghost of Revolutionary War traitor John André. Another character in this story is rumored to be a Hessian (HESH-in) soldier who was hit by a cannonball in a nameless battle of the Revolution. The protagonist of this story wishes to marry Katrina Van Tassel, but is scared out of town by Brom Bones. For 10 points, name this story about Ichabod Crane and the ghostly Headless Horseman, written by Washington Irving.
ANSWER: "The **Legend of Sleepy Hollow**"

11. This god hid with Thetis (THEE-tis) after being driven out of Thrace, leading him to trick Lycurgus (LYE-kur-gus) into butchering his son with shears after mistaking him for a patch of ivy. Followers of this god engaged in the sparagamos (spuh-RAH-guh-mos) ritual. Acoetes (aa-coh-EE-teez) warned a group of pirates not to kidnap this god, who turned the pirates into dolphins. This god was born after the true sight of Zeus incinerated his mother, Semele (SEH-muh-lee). For 10 points, name this final Olympian, the Greek god of wine.
ANSWER: **Dionysus** [or **Bacchus** until "Zeus" is read]

12. This city is home to a museum of regional art, the MALBA. During the 1970s and 80s, mothers organized in this city to protest the disappearance of their children, meeting on the Plaza de Mayo in front of this city's presidential residence, the Casa Rosada (CAH-suh roh-SAH-duh). Residents of this city are called porteños (por-TANE-yohs), as this city once served as an important port for Europeans heading to South America. For 10 points, name this city, located on the Rio de la Plata across a bay from Montevideo, that is the capital of Argentina.
ANSWER: **Buenos Aires**

13. The dot product of two vectors equals the product of their magnitudes times this function. Given two sides of a triangle and the angle between them, a law named for this function computes the length of the third side. Its reciprocal is the secant, and this function's first zeroes are at "plus or minus pi over 2 radians." This function appears in the denominator of the definition of tangent. For 10 points, name this trigonometric function equal to the length of the adjacent side over the hypotenuse.
ANSWER: **cosine** [do not accept "sine"]

14. Despite one of these things claiming to be unique, five thousand of these specific objects are found by a resident of Asteroid B-612. This item appears in the title of a novel narrated by Adso of Melk. Despite its vanity and goading, the title boy regrets leaving one of these things back home in Antoine de Saint-Exupery's *The Little Prince*. A series of deaths are investigated by Franciscan friar William of Baskerville in a novel with this plant in its title. For 10 points, name this flower whose "name" titles a novel by Umberto Eco.
ANSWER: **rose** [or *The Name of the **Rose***; prompt on **flower** until it is read]

15. Near this colony, Thomas Morton's Merrymount settlement held drunken parties under a giant maypole. Many residents of this colony had previously lived in Leiden (LYE-den). This colony is described in the text *Mourt's Relation* and in the journal of its governor William Bradford. Miles Standish served as a military adviser for this colony, and it was also aided by King Massasoit (MAH-suh-SOY-it) and Squanto. For 10 points, name this colony which was governed by the Mayflower Compact and inhabited by the Pilgrims.
ANSWER: **Plymouth** Bay Colony [or New **Plymouth**; do not accept "Massachusetts"]

1. This symphony's first movement opens in Adagio tempo with the unusual time signature 4/8. It's not by Tchaikovsky, but this symphony's "Allegro con fuoco" (FWO-coh) finale opens in the home key of E minor. In the second movement of this symphony, the main theme is introduced by an English horn solo. That theme from this symphony was later used for the melody of the song "Goin' Home." For 10 points, name this final symphony by Antonin Dvorak (duh-VOR-jack), which was inspired by folk music of America.
ANSWER: *New World* Symphony [or *From the New World*; or *Z noveho sveta*; or **Dvorak's 9**th symphony; or **9** or **ninth** after "Dvorak" is read]

2. A quantity named for this scientist is equal to charge times h-bar over two times the rest mass. That quantity, which describes the magnetic moment of an electron, is known as his namesake "magneton" (MAG-nuh-tahn). This scientist, with Heisenberg, developed the Copenhagen interpretation of quantum mechanics, which theorizes that unobserved quantum particles simultaneously exist in all possible states. For 10 points, name this Danish physicist who proposed that electrons traveled in circular orbits around an atomic nucleus.
ANSWER: Niels **Bohr** [Niels Henrik David **Bohr**]

3. Several countries avoided participating in this war at the Nyon conference. After the outbreak of this war, 510 tons of gold were shipped to Moscow by the Negrin (nay-GRIN) government. The term "fifth column" was coined during this war, which American volunteers called the Abraham Lincoln Brigades participated in. In this war, the Carlist faction fought alongside the Falange (fuh-LONJ) party. The German Condor Legion bombed Guernica during this war. For 10 points, name this conflict that led to the formation of Francisco Franco's dictatorship.
ANSWER: **Spanish Civil** War

4. At the beginning of this poem, the speaker observes he had "abandoned the true way" in "the middle of life's journey." This poem's speaker encounters a leopard, a lion, and a she-wolf who halts his ascent before he meets his literary idol. The narrator of this poem passes under a gate inscribed, "Abandon all hope, you who enter here," and is led through nine circles of Hell by Virgil. For 10 points, name this first part of *The Divine Comedy* by Dante.
ANSWER: *Inferno* [or *The Divine **Comedy*** until it is read; or *La Divina **Commedia*** until "Divine Comedy" is read]

5. This composer's only piano concerto begins with a timpani roll that crescendos into a loud A minor chord played by the entire orchestra. "Wedding Day at Troldhaugen" is one of this composer's *Lyric Pieces* for solo piano. This composer's incidental music to a Henrik Ibsen play includes pieces such as "Anitra's Dance" and "Morning Mood." For 10 points, name this Norwegian composer whose incidental music to *Peer Gynt* includes "In the Hall of the Mountain King."
ANSWER: Edvard **Grieg** [Edvard Hagerup **Grieg**]

What landform, which includes the Keweenaw (KEE-wuh-naw) Peninsula and is known for the distinctive accent of its residents, is separated from the rest of its state by the Straits of Mackinac (MAH-kin-aw)?
ANSWER: **Upper Peninsula** of Michigan

This is a calculation question. Suppose that you have a set of four data points. All you know is that the range is 20 and one of the data points is 70. What is the difference between the maximum and minimum possible values of the mean of the set?
ANSWER: **30**