

1. This quantity is inversely proportional to temperature by Wien's Law. The ratio of this quantity for light in two different media is the reciprocal of the ratio of the media's indices of refraction. Planck's constant divided by the product of mass and velocity is sometimes known as the "de Broglie" one. It is lower for ultraviolet light than visible light and higher for infrared, and is typically denoted with the Greek letter lambda. For 10 points, name this quantity, equal to the velocity divided by frequency, the distance between two peaks of a periodic wave.

ANSWER: wavelength [accept lambda before it is read]

003-09-1-05101

2. A ship named after this city was burned in Tripoli harbor by Stephen Decatur after the Barbary pirates captured it. General William Howe captured this city, but did not leave it to assist at Saratoga. The battles of Germantown and Brandywine were fought over the defense of this city. This city was the capital of the U.S. from 1790 to 1800. William Paterson proposed the New Jersey plan for the Constitution in this city. For 10 points, name this site of the Continental Congresses, where the Declaration of Independence was signed and the Liberty Bell rung.

ANSWER: Philadelphia

027-09-1-05102

3. A method for obtaining this element from solid materials using three concentric pipes is named for Frasch. Its best-known solid allotrope is an eight atom ring. This element is isolated from a binary compound it forms with hydrogen via the Claus process. It is the most common additive in a process that cures rubber, called vulcanization. This element heavily influences protein structure by forming bonds to itself between different cysteine residues, and it is also present in methionine. For 10 points, name this element also known as brimstone.

ANSWER: sulfur [or S; prompt on brimstone before it is read]

022-09-1-05103

4. This speech uses the word "raca," which is often left untranslated, and it claims "whosoever is angry with his brother will be in danger of judgement." It tells listeners to walk two miles with someone that makes you walk one after saying "whosoever shall smite thee on thy right cheek, turn to him the other also." It opens with a discussion of those who shall "be comforted" and "who shall inherit the earth," which is followed by "Ye are the salt of the earth." For 10 points, name this speech, that includes the Beatitudes, and is delivered by Jesus in Matthew 5 through 7.

ANSWER: the Sermon on the Mount [prompt on the Beatitudes before it is read]

027-09-1-05104

5. One protagonist created by this author travels with Romilayu to Wariri, where he is crowned as the title figure, *Henderson the Rain King*. In another work, this author describes the gangster Rinaldo Cantabile, who befriends the protege of Von Humboldt Fleisher. The title character pursues Charlotte Magnus, Thea, and Stella in that work by this man, *The Adventures of Augie March*. The protagonist of another of this author's novels runs away from commitment with Ramona and is duped by Madeleine and Valentine, who keep custody of his daughter Junie. For 10 points, name this Canadian-born Jewish-American author of *Herzog*.

ANSWER: Saul Bellow [or Solomon Bellows]

019-09-1-05105

6. This event is associated with a shift in the Walker Circulation, which allows warm water to disperse and disrupt the Humboldt Current. It causes increased precipitation across the southern US during winter months, and impacts fishing near Peru and Chile. For 10 points, name this phenomenon characterized by warmer than average water in the Eastern Pacific, whose name comes from the Spanish for “the little boy.”  
ANSWER: **El Niño**-Southern Oscillation

001-09-1-05106

7. This man began work on the *Encyclopedia Africana* after moving to Ghana at the request of Kwame Nkrumah. This man published the pioneering work *The Philadelphia Negro: A Social Study* and an essay on "The Talented Tenth." This man was the first editor of *The Crisis*, a magazine which was written for a group this man started, the NAACP. For 10 points, name this civil rights activist who founded the Niagara Movement in opposition to the Atlanta Compromise of Booker T. Washington, who was also the author of *The Souls of Black Folk*.

ANSWER: William Edward Burghardt **Du Bois**

030-09-1-05107

8. One composer from this country wrote “The Viennese Musical Clock” and often names a method of hand signs to represent solfege. Another composer from this country wrote *Mikrocosmos* and *Music for Strings, Percussion, and Celesta*. One composer from this country wrote the Faust-inspired *Mephisto Waltzes*. That composer also wrote a work that adapts the Rakoczy March, and is part of a collection of 19 works named after this country. For 10 points, name this home of Zoltan Kodaly, Bela Bartok, and Franz Liszt, who wrote Rhapsodies named after this place.

ANSWER: **Hungary**

027-09-1-05108

9. Players in this team's minor league system include shortstop Tim Beckham and pitcher Wade Davis. The ground rules for this team's home stadium mention the "A," "B," and "C" catwalks. One pitcher for this team, drafted first overall in 2007, famously struck out J.D. Drew in the 2008 playoffs. This team's third baseman won the 2008 American League Rookie of the Year award. For 10 points, name this team, which includes David Price and Evan Longoria and plays its home games in Tropicana Field, and who won the 2008 American League championship.

ANSWER: **Tampa Bay** Rays [or Tampa Bay **Rays**]

038-09-1-05109

10. When invoking these structures in x86 (x-eighty-six), one must first back up registers like EBX onto the stack and then use the call instruction. A common technique inlines them and it is common in some languages to “overload” them. When lacking in a bound type they are known as “void,” while normally they take in arguments or parameters and have a return value. For 10 points, name this programming construct that has inputs and outputs.

ANSWER: **function** [or **procedure**; or **method**; or **subroutine**]

001-09-1-05110

11. One character in this novel remembers his stolen gloves while walking forty-one blocks to the Edmond Hotel. The protagonist gives two nuns ten dollars after discussing *Romeo and Juliet* with them. Other characters in this work include the cab driver Horowitz and the protagonist's brother DB, a Hollywood screenwriter. That character becomes very uncomfortable when he finds Mr. Antolini stroking his head, and he spends time with his sister Phoebe after being expelled from Pencey Prep. For 10 points, name this novel about Holden Caulfield, by J.D. Salinger.

ANSWER: *The **Catcher in the Rye***

015-09-1-05111

12. This man's ministers included the statesman Jean-Baptiste Colbert. This man's nobles led the Fronde (FRAWND) rebellion early in his reign against his regent, Cardinal Mazarin. This man neutralized the nobles' power by compelling local lords to live in a palace he built. His "endless wars," such as the War of the Grand Alliance and a war competing for the crown of Spain, ruined his country's finances. Also known as the "Sun King," for 10 points, what French ruler led his nation for over seventy years until 1715 and built the palace of Versailles (ver-SIGH)?

ANSWER: **Louis XIV** [prompt on **Louis**]

045-09-1-05112

13. This painter of *Old Woman Frying Eggs* depicted a pale skinned Bacchus partying with a bunch of drunks in *Los Borrachos*. This artist painted Cupid holding up a mirror in his *Rokeby Venus*. This artist depicted the victory of Ambrosio Spinola over the Dutch in *The Surrender at Breda*. In his most famous work, this artist depicts himself wearing a cross and holding a palette. That painting also includes a girl stepping on a dog and a dwarf, who serves as an attendant to the Infanta Margarita. For 10 points, name this court painter to Philip IV and artist of *Las Meninas*.

ANSWER: Diego **Velazquez**

015-09-1-05113

14. In this novel, Nanny arranges the protagonist's marriage to Logan Killicks after the protagonist is caught kissing a boy over her gatepost. This novel's protagonist grows unhappy with her second marriage's basis in "foot kissing" because Joe Starks commands her to hide her hair in public. This protagonist's third husband is bit by a rabid dog when he is escaping a hurricane, and that man is shot by the protagonist, who is acquitted by an all-white jury and lives out her days in Eatonville, Florida. For 10 points, name this novel about the wife of "Tea Cakes," Janie Crawford, a work by Zora Neale Hurston.

ANSWER: **Their Eyes Were Watching God**

027-09-1-05114

15. This country was diplomatically isolated because of the Hallstein Doctrine. A 1953 uprising in this country was brutally crushed by Walter Ulbricht. Ulbricht was succeeded as leader of this country by Erich Honecker. This country's secret police force was called the Stasi. Better diplomatic relations with this country were established by Wily Brandt's Ostpolitik. In 1990, this country ceased to exist after a merger. For 10 points, name this Warsaw Pact member that built a wall around its capital, East Berlin.

ANSWER: **East Germany** [or **Ostdeutschland**; or **German Democratic Republic**; or **GDR**; or **Deutsche Demokratische Republik**; or **DDR**]

021-09-1-05115

1A. It forms at the confluence of the Monogahela and Allegheny. Name this river that forms the border between Illinois and Kentucky.

ANSWER: Ohio River

1B. An October 2009 "awareness month" is dedicated to fighting what disease, also targeted by the Susan G. Komen organization?

ANSWER: breast cancer [prompt on cancer]

2A. A September 2009 Congressional bill would revoke all government funding for what organization, which was accused of fraudulently registering voters and offering tax advice to a prostitution ring?

ANSWER: ACORN [or Association of Community Organizations for Reform Now]

2B. What 2009 Pixar film features an old man named Carl who attaches ten thousand helium balloons to his house, as well as a stowaway young boy named Russell?

ANSWER: Up

3A. What geologic entities are layers of porous rock surrounded by an impermeable layer that contain water?

ANSWER: aquifers

3B. What author of *Critique of the Gotha Program* advanced the labor theory of value in his magnum opus, *Das Kapital*?

ANSWER: Karl Marx

4A. This is a 10-second calculation question. Evaluate the expression  $x^2 - 3x + 4$  when  $x = -2$ .

ANSWER: 14

4B. This is a 10-second calculation question. What is one and seven-eighths divided by three-fifths?

ANSWER: 3 1/8 [or 25/8 or 3.125]

5A. An abjad is a writing system that only depicts these sounds. "Impure" ones use diacriticals to depict the sounds they omit, as in Arabic and Modern Hebrew. Name this type of letter.

ANSWER: consonants

5B. What painter of *The Woman in the Green Dress* is better known for a work which gave a name to an art movement, *Impression: Sunrise*?

ANSWER: Oscar-Claude Monet [or Claude Oscar Monet]

6A. This is a 20-second calculation question. Use the formula  $F = 1.8C + 32$  to find the equivalent Fahrenheit temperature to -15 degrees Celsius.

ANSWER: 5 degrees Fahrenheit

6B. This is a 20-second calculation question. A recipe that feeds twelve people calls for two and a half cups of flour. How many cups of flour does the same recipe need to feed thirty people?

ANSWER: **6 1/4** [or **6.25** or **25/4**]

7A. Identify the physical quantity whose conservation is demonstrated by the changing speeds of orbiting planets according to Kepler's Second Law.

ANSWER: **angular momentum** [prompt on **momentum**]

7B. Its stock characters include Pantalone and Pulcinella, as well as the roguish buffoon Scaramouche. Name this form of Italian theatre.

ANSWER: **commedia dell'arte**

8A. *Northanger Abbey* satirizes this genre of literature. Name this fusion of horror and romance exemplified by Horace Walpole's *The Castle of Otranto* and Anne Radcliffe's *The Mysteries of Udolfo*.

ANSWER: **Gothic** literature

8B. The Lyon hypothesis states that all but one X chromosome forms one of what entities during embryogenesis, making it inactive and generally inert?

ANSWER: **Barr bodies**

9A. This is a 30-second calculation question. If your local restaurant gives you a choice of three different kinds of burgers, two different sides, and six different drinks for your combo meal, how many different meals are available to purchase?

ANSWER: **36**

9B. This is a 30-second calculation question. What is the measure of each interior angle of a regular octagon?

ANSWER: **135 degrees**

10A. This university recently graduated quarterback Tyler Palko but is better known for a basketball team that made it to the Elite Eight and just lost Sam Young and DeJuan Blair to the NBA Draft. Name this home of the Panthers.

ANSWER: University of **Pittsburgh**

10B. This aerospace engineer produced the first plane with a machine gun synchronized so it could fire through a propeller. Identify this inventor of the helicopter.

ANSWER: Igor **Sikorsky**

1. When divided by " $n$  plus 1," the  $n$ th central number derived from this statement gives the  $n$ th Catalan number. This statement was first proven for complex numbers by Abel, though that generalization had been stated by Newton. This theorem gives rise to numbers that can count the ways of choosing  $k$  elements from a set of  $n$  elements, and those coefficients are equal to the values in a row of Pascal's Triangle. For 10 points, name this theorem which gives the expansion of "the quantity  $x$  plus  $y$ , to the  $n$ th power."

ANSWER: **Binomial** Theorem [or reasonable equivalents of Theorem like **Binomial** Identity; or **Binomial** Coefficient]

028-09-1-05117

2. Henry Smith refused a proposal to abandon this site from James C. Neill. An "Appeal for Aid" from one commander at this location led George C. Kimble to bring 32 of his Gonzales Rangers, but no help came to this spot from James Walker Fannin Jr. in the Goliad. That appeal claimed that no surrender would come from William Travis, who fought and died at this site fighting against Santa Anna. For 10 points, name this site whose garrison included James Bowie and Davy Crockett, a mission located in San Antonio.

ANSWER: the **Alamo** [or **San Antonio de Valero**]

023-09-1-05118

3. One figure in this work sits up in his tomb and asks "who were your ancestors?" In addition to Farinata, this poem also features the adulterous lovers Paolo and Francesca. This poem claims that Minos wraps his tail around his body a symbolic number of times. In the thirty-fourth canto of this poem, the narrator sees Cassius, Brutus, and Judas being gnawed on by Satan, who is frozen in ice. Virgil guides the author on a tour of Hell in, for 10 points, what poem, that comprises the first third of *The Divine Comedy* and was written by Dante Aligheri?

ANSWER: **Inferno** [accept **Hell** before it is read; accept **Comedia** or **Divine Comedy** before "third" is read]

019-09-1-05119

4. When followed by the word negative, this term describes gain-of-function changes that often involve competitive inhibition. Carl Collens discovered the incomplete form of this concept, which can be seen in the Merle modifier in dogs and in the color of carnations. When preceded by the prefix co-, it can describe the roan color of horses and the ABO blood group system. The most common type, called complete or simple, was studied by Gregor Mendel in his pea plants. For 10 points, name this genetic concept, often contrasted with recessive traits.

ANSWER: **dominance** [accept word forms]

040-09-1-05120

5. This piece features a parody of a tune from *Orpheus in the Underworld*, and one movement quotes from "Ah! vous dirai-je, Maman" (voo dee-RAY-zhuh, ma-MA) and "Una Voce Poco Fa." (OO-nuh VOW-chay POH-Koh fah) The violins are the only instruments that play in the movement "Personages with Long Ears." Its composer reused a xylophone theme representing dancing skeletons from the "Fossils" section for his *Danse Macabre*, and a cello solo features in one of its most famous movements, "The Swan." For 10 points, name this composition whose movements depict various animals, by Camille Saint-Saens (San-Sawn).

ANSWER: **Carnival of the Animals**

032-09-1-05121

6. The Concordia Research Base is located on this region's Dome C. Mt. Melbourne is a stratovolcano near this region's Terra Nova Bay. This land contains a hidden rift lake, Lake Vostok. Deception Island lies off the coast of this land. Another volcano off its coast is Mt. Erebus, which lies on Ross Island. The Ellsworth Mountains contain the highest point of this land, Vinson Massif, and McMurdo Station is built on this land. For 10 points, name this continent that is covered by an ice sheet and contains the South Pole.

ANSWER: **Antarctica**

036-09-1-05122

7. The immunoglobulin heavy chain binding protein, or BiP, is a component of this organelle. This organelle plays a key role in detoxification and production of lipids, and its internal space is known as the lumen. Like the Golgi apparatus, this organelle contains flattened sacs known as cisternae, and this network of folded membranes is found in two forms depending on whether or not it contains ribosomes. For 10 points, name this organelle which comes in smooth and rough varieties.

ANSWER: **endoplasmic reticulum** [or **ER**]

025-09-1-05123

8. This author describes some fictional works of Herbert Quain and an almost-identical version of *Don Quixote* written by Pierre Menard. This author collected those stories with one about the German spy Yu Tsun, who uncovers clues about an enigma left by Ts'ui Pen, "The Garden of the Forking Paths." This author also wrote about an object which reveals the entire universe when viewed, "The Aleph," and about an unending hexagonal structure containing all 410 page books in every character combination conceivable, "The Library of Babel." For 10 points, name this Argentine author who collected those stories in *Ficciones*.

ANSWER: Jorge Francisco Isidoro Luis **Borges** Acevedo

034-09-1-05124

9. One blind man with this ability was unable to eat due to Zeus setting the Harpies on him. The Argonauts received information after helping that king who had used this ability too much, Phineus. Another man with this ability was crushed with his sons by two sea serpents after warning against accepting gifts from enemies. Apollo gave this ability to another person in Greek myth, with the twist that she would never be believed. For 10 points, name this ability of Laocoön (lay-AH-kuh-wahn) and Cassandra, which warned them about events in the future.

ANSWER: **prophecy** [or **foresight**; accept word forms; accept **seeing the future** or other exact equivalents]

023-09-1-05125

10. One character created by this author has an affair with the art student Florinda, and another is born during the reign of Elizabeth I as a man and ends up a published author in 1928 as a woman. This author of *Jacob's Room* and *Orlando* wrote that a woman must have the title asset and money if she is to write fiction, and wrote a novel about Septimus Smith, who meets Clarissa Dalloway. The best known work of this author of *A Room of One's Own* includes Lily Briscoe, a painter who portrays James and Mrs. Ramsay, who owns a summer home on the Scottish isle of Skye. For 10 points, name this author of *To the Lighthouse*.

ANSWER: Adeline Virginia **Woolf**

045-09-1-05126

11. This leader commemorated the hundred year anniversary of Leo XIII's *Rerum Novarum* in one writing. This leader's writings also include his *Fides et Ratio*, which argued for the intermingling of science and religion. That line of thought led this man to pardon Galileo Galilei. This leader chose the same name as his predecessor, who died after only thirty-three days as pope. This man was the first non-Italian pope in over four centuries, as he was born in Poland. For 10 points, name this pope whose death in 2005 led to his replacement by Benedict XVI.

ANSWER: **John Paul II** [or Karl Józef **Woztyła**]

023-09-1-05127

12. The title of Huxley's *The Doors of Perception* was inspired by a line from this poet's *The Marriage of Heaven and Hell*. One of his poems describes "where the chartered Thames does flow," and is entitled "London." A poem by this man beginning "And did those feet in ancient time" was adapted into the hymn "Jerusalem." For 10 points, name this poet whose *Songs of Experience* are paired with his *Songs of Innocence*, and include "The Tyger."

ANSWER: William **Blake**

024-09-1-05128

13. One leader of this empire created a means of gathering prisoners by fighting small flower wars with neighboring peoples. This empire became part of a triple alliance with Tlacopan and Texcoco through the work of Itzcoatl. A prophecy in which an eagle sitting on a cactus fed upon a snake was fulfilled near the site of its capital, Tenochtitlan. For 10 points, name this ancient civilization conquered when a man mistaken for Quetzalcoatl, Hernán Cortés, overthrew rulers like Montezuma II.

ANSWER: **Aztec** Empire

023-09-1-05129

14. In one of this author's plays, Carol accuses John of sexual harassment, and in another, the Patels are ridiculed in an act set entirely in a Chinese restaurant. In addition to writing *Oleanna*, this author wrote a play in which Karen convinces Bobby Gould to produce a film version of *The Bridge, Speed-the-Plow*, and a play in which Shelley Levene steals real estate leads from Ricky Roma. For 10 points, name this contemporary American playwright, author of *Glengarry Glen Ross*.

ANSWER: David Alan **Mamet**

038-09-1-05130

15. This ruler sent a delegation of ambassadors to Ala ad-Din Muhammad, who shaved and beheaded all but one member. In response, this man attacked the Khwarezmian Empire with a force of twenty tumens. His rise to power began when he offered allegiance to the Kerait leader Toghrul. Later, due to the influence of Toghrul's son Senggum, Toghrul betrayed this leader for Jamuqa and was killed by a group of Naiman soldiers. For 10 points, identify this leader succeeded by his son Ogedai and grandson Kublai, who unified the Mongol empire.

ANSWER: Genghis **Khan** [or **Temujin**; prompt on "Khan"]

022-09-1-05131

1. The molar heat capacity for a metal is roughly equal to three times this quantity, according to the Law of Dulong and Petit. Like entropy, it is most often expressed in joules per mole Kelvin. The product of this quantity and temperature also appears in the Nernst equation. In the Arrhenius equation, the activation energy divides both this quantity and temperature. It is equal to the product of Boltzmann's constant and Avogadro's number. For 10 points, give this constant equal to about 8.31 joules per mole Kelvin, usually symbolized R.

ANSWER: ideal **gas constant** [or molar **gas constant**; or universal **gas constant**; accept **R** before it is read]

003-09-1-05132

2. This substance has limited repair capabilities due to its lack of blood flow, and because, like bone tissue, it is contained within lacunae. The hyaline type of this substance is rich in type two collagen and forms the smooth surface of joints. This substance, which is comprised of chondrocytes, is depleted in osteoarthritis, leading to painful bone-on-bone wear. Sharks and rays have skeletons comprised entirely of this material. For 10 points, name this tissue that gives structure to the human ear and nose.

ANSWER: **cartilage**

040-09-1-05133

3. Mahayana Buddhists venerate one of these known as the "Diamond Cutter," while Zen Buddhists follow the "Platform" one and Tendais revere the "Lotus" example. In Hinduism, this word, which is Sanskrit for "thread," refers to a collection of aphorisms on any topic, but especially on ritual procedure. A specific one of these, written by Vatsyayana, is named for the Hindu concept of desire and contains chapters on wives and courtesans. For 10 points, identify this genre of religious literature, which includes a sexually explicit manual called the "Kama" version.

ANSWER: **sutras** [or **suttas**]

019-09-1-05134

4. Ashoke Ganguli reads this story prior to a train derailment in Jhumpa Lahiri's *The Namesake*, and names his son after its author. In this story's opening, its author dismisses that its protagonist has a "strange and farfetched name," and that protagonist receives a large holiday bonus for his eagerness in copying documents prior to meeting the "Very Important Person" after two ruffians kick him down into the snow and steal the title object. The ghost of Akaky Akakievich haunts St. Petersburg in, for 10 points, what work by Nikolai Gogol about a warm garment?

ANSWER: "The **Overcoat**" [or "**Shinel**"; or "The **Cloak**"]

020-09-1-05135

5. Late in life, the Italian mathematician Giuseppe Peano was the president of an academy devoted to one of these things, which Peano also invented. The priest Johann Martin Schleyer claimed to be commanded by God to create one called Volapük. A man who took on the name "Doctor Hopeful," Ludwik Zamenhof, created one of the most successful examples of these things, by eliminating gender and paring down to only one article. For 10 points, Interlingua and Esperanto are some of the most-used examples of what kind of language, along with Elvish and Klingon?

ANSWER: **artificial** languages [or **constructed** languages; or **conlangs**; or international **auxiliary** languages]

019-09-1-05136