



1. This equation is closely related to one based on transition state theory, the Eyring-Polanyi equation. One term found in this equation assumes a constant collision frequency and is the pre-exponential factor, which is symbolized A. It relates the rate constant, k, to an exponential term containing the temperature and activation energy. For 10 points, identify this equation used in chemical kinetics named after a Swedish chemist.

ANSWER: Arrhenius equation

066-11-44-10101

2. During this conflict, Isaac Brock forced William Hull to retreat without firing a single shot. The Battle of Lundy's Lane occurred during this conflict, which also saw the Battle of the Thames where Tecumseh was killed. Robert Barclay was defeated by Oliver Hazard Perry's Erie Squadron during this war. British troops burnt the White House during this war that inspired Francis Scott Key to write the "Star-Spangled Banner." For 10 points, name this war that was ended by the Treaty of Ghent in 1814.

ANSWER: War of 1812

124-11-44-10102

3. The Supreme Court ruled that advertisements for this service in New York could not be banned in Virginia in *Bigelow v. Virginia*. *Singleton v. Wulff* allowed practitioners of this service to sue on behalf of their clients. In a series of 1977 cases, The Court upheld regulations banning the use of Medicaid funds for this service. Texas's statute prohibiting this service except in life-threatening situations was invalidated in a 1973 case. For 10 points, name this service that was the subject of *Roe v. Wade*.

ANSWER: abortion

124-11-44-10103

4. One expression for the Henderson-Hasselbalch equation has a positive logarithm term with a fraction containing the molar concentration of a conjugate one of these substances in the numerator. Phenolphthalein turns pink in the presence of these substances and they also turn red litmus paper blue. These substances are electron pair donors or, equivalently, hydrogen ion acceptors. For 10 points, name these substances which include compounds with a hydroxide group and which have a pH greater than 7.

ANSWER: bases

066-11-44-10104

5. The losing officers of this battle obtained the Wethersfield Intercept. During this battle, Comte de Saint-Simon led a diversion force to the Fusiliers Redoubts. After this battle, Captain Thomas Symonds delivered the surrender documents that were signed by Rochambeau. Henry Clinton failed to arrive with reinforcements for the losing commander, whose naval access was blocked by Admiral de Grasse in the Chesapeake Bay. For 10 points, name this battle in which Cornwallis surrendered to Washington.

ANSWER: Battle of Yorktown

124-11-44-10105

6. This god jumped into the sea and was protected by Thetis after Lycurgus threatened him. Prizes for tragic playwrights were awarded at a festival for this god, who was mistaken for a prince and kidnapped by pirates. This god turned the pirates into dolphins. When this god came to Thebes, he made Agave mistake her son Pentheus for a wild beast and tear him to pieces after that king attempted to outlaw the frenzied worship of this son of Zeus and Semele. For 10 points, name this Greek god of wine.

ANSWER: **Dionysus** [or **Bacchus**]

105-11-44-10106

7. This mountain was first climbed by Hans Meyer with Ludwig Purtscheller and Kinyala Lauwo in 1889. A stratovolcano, its three dormant volcanic cones are Kibo, Mawenzi and Shira. Also sometimes called Uhuru Peak or Kibo Peak, many speculate that its name is Swahili in origin. Collapses and landslides have created the Western Breach on the Kibo cone. The fourth tallest of the Seven Summits, It is located in Tanzania near the border with Kenya. For 10 points, name this tallest mountain in Africa.

ANSWER: Mount **Kilimanjaro** [or **Uhuru** before it is read; or **Kibo** before ti is read]

147-11-44-10107

8. One of this author's characters allows himself to be killed by the chief Doramin for causing the death of Doramin's son, Dain Waris. That character created by this author is disgraced for abandoning a ship full of Muslim pilgrims called the *Patna*. This author also wrote a novella in which Marlow travels up the Congo to find the ivory trader Kurtz, who has set himself up as a god. For 10 points, name this Polish-born British author of *Lord Jim* and *Heart of Darkness*.

ANSWER: Joseph **Conrad** [or Joseph Teodor Konrad **Korzeniowski**]

080-11-44-10108

9. This founder of the Three Emperor's League was prime minister of his country during the Convention of Gastein, which dealt with the problem of Schleswig and Holstein. This man received the Ems Dispatch and advocated the Hohenzollern candidacy for the Spanish throne. At the Battle of Sedan, Napoleon III surrendered to Wilhelm I, who appointed this man as prime minister. This chancellor during the Franco-Prussian War advocated the Kulturkampf. For 10 points, name this Iron Chancellor from Germany.

ANSWER: Otto Eduard Leopold von **Bismarck**

124-11-44-10109

10. One of the opening dialogues in this play concerns the story of the two thieves crucified alongside Jesus and wonders why one version is held to be more truthful than another. One character in this play is unable to think before putting on a hat, which only enables him to spew out endless gibberish. The arrival of Lucky and Pozzo in this play causes Vladimir and Estragon to rethink why they are performing the title action. For 10 points, name this play by Samuel Beckett, in which the title character never actually appears.

ANSWER: **Waiting for Godot**

040-11-44-10110

11. During this man's reign, he annexed the Bosphoran Kingdom into the Empire. Gaius Suetonius Paullinus put down Boudicca's Revolt in Britannia during this man's reign. The Pisonian Conspiracy was an attempt to have this ruler assassinated, which led to this man forcing his former tutor Seneca the Younger to commit suicide. This man's death ushered in the Year of the Four Emperors. For 10 points, name this Roman emperor that is said to have played the lute while Rome burned.

ANSWER: **Nero** Claudius Caesar Augustus Germanicus [or **Nero** Claudius Drusus Germanicus; or **Lucius Domitius Ahenobarbus**]

135-11-44-10111

12. The title character of one novel by this author marries Mirah Lapidoth after discovering that he is actually Jewish. In another of her works, a miser has his gold stolen, but in its place, he finds a baby girl he names Eppie. This author of *Daniel Deronda* wrote a "Study of Provincial Life" in which, after the end of a stifling marriage to Edward Casaubon, Dorothea Brooke chooses to marry Will Ladislaw. For 10 points, name this Victorian woman who wrote *Silas Marner* and *Middlemarch*.

ANSWER: George **Eliot** [or Mary Anne **Evans**]

080-11-44-10112

13. The territory promised in the Treaty of Brieg helped to spark this war. The Treaty of Turin signed before the outbreak of this war helped to secure Sardinian independence from Spain. The Indian theater of this war was called the Carnatic War and saw conflicts with the Dutch. The War of Jenkins' Ear was subsumed into this war, and the American theater of this war was called King George's War. For 10 points, name this war that Charles VI tried to prevent with the Pragmatic Sanction, and which was fought over Maria Theresa's taking the Hapsburg throne.

ANSWER: War of **Austrian Succession**

135-11-44-10113

14. M. H. Abrams wrote about this poetic form whose early version included a *strophe* and *antistrophe*. Encomiums were an early form of these written by Pindar. The irregular type developed by Abraham Cowley combined with the Horatian type to create the romantic meditative type of this poetic form. Coleridge's "Dejection" and Wordsworth's "Intimations of Immortality" are examples of this poetic form. For 10 points, name this poetic form exemplified by Shelley's "to the West Wind" and Keats's "to a Nightingale."

ANSWER: **ode**

124-11-44-10114

15. Clara cells are found in this organ. Minor functions of this organ include conversion of angiotensin I to angiotensin II, and the lecithin to sphingomyelin ratio gives a measure of the development of this organ. One quantity associated with this organ is measured by a spirometer, and this organ contains small cavities known as alveoli in its parenchyma. For 10 points, identify these organs for respiration located within the ribcage which are damaged by usage of cigarettes.

ANSWER: the **lungs**

126-11-44-10115



1A. Cincinnati and Louisville lie on what tributary of the Mississippi River, whose own tributaries include the Allegheny?

ANSWER: **Ohio** River

1B. Fragonard's *The Swing* and Watteau's *Embarkation for Cythera* are pieces from which ornate late-eighteenth-century art movement, sometimes known as Late-Baroque?

ANSWER: **rococo**

2A. This is a 10-second computation question. In a population with mean 10 and standard deviation 5, what is the z-score for an observation of -2? Express your answer as a decimal to the nearest tenth.

ANSWER: **-2.4** [or **negative two point four**; do not accept "two point four"]

2B. This is a 10-second computation question. What is the range of the set: {1, -1, 2, -2, 4}?

ANSWER: **6**

3A. Which singer of "Stars Are Blind" appeared on the show *The Simple Life* with her dog Tinkerbell and her friend Nicole Richie?

ANSWER: Paris **Hilton**

3B. In *Jane Eyre*, which man keeps his insane wife Bertha Mason locked up in his estate of Thornfield Hall and eventually marries Jane?

ANSWER: Edward **Rochester** [or **Edward** Rochester]

4A. This is a 20-second calculation question. What is the equation for a line that passes through the points (1, 2) and (2, -30)? Present your answer in slope-intercept form.

ANSWER: **$y = -32x + 34$**

4B. This is a 20-second computation question. Find the cosine of the arctangent of 2.

ANSWER: **$2\sqrt{5}/5$** [or **$2/\sqrt{5}$**]

5A. Eddie Robinson set the record for most career wins in college football as the coach of what Louisiana-based historically black university?

ANSWER: **Grambling** State University

5B. Accused Nigerian-born terrorist Umar Farouk Abdulmutallab (ahb-dool-moo-TAH-lob) was put on trial in October 2011 after he was caught attempting to bomb a flight on Christmas Day in 2009 when what part of his clothing caught on fire?

ANSWER: **Underwear** [or **underpants**]

6A. The smallest unit of sound in a language is given what name?

ANSWER: **phoneme**

6B. What largest island of Japan is separated from Hokkaido by the Tsugaru Strait and contains the cities of Kyoto and Tokyo?

ANSWER: **Honshu**

7A. This is a 30-second computation question. You have 6 health points and take either 0, 1, 2, or 3 damage points each turn. What is the probability that your health is above 0 after 3 turns? Express your answer as a fraction in lowest terms.

ANSWER: **11/16**

7B. This is a 30-second computation question. A circle is circumscribed about a square with side length 6 units. A second circle is inscribed in the same square. What is the difference in their areas? Express your answer in terms of pi.

ANSWER: **9 pi** square units

8A. Petroleum contains a mixture of these organic compounds. Name these organic compounds which include alkynes, alkenes and alkanes, such as methane and propane and as their name suggests are composed entirely of two elements.

ANSWER: **hydrocarbons**

8B. Sand, silt and this type of soil are the three basic soil types. Name this finest-grained soil composed of aluminum silicate.

ANSWER: **clay**

9A. What German mercenaries did George Washington surprise at the Battle of Trenton after crossing the Delaware River the morning after Christmas?

ANSWER: **Hessians**

9B. In Greek mythology, Zeus managed to defeat what monstrous father of Ladon and Orthrus, the mate of Echidna?

ANSWER: **Typhon**

10A. Name the woman who took the photograph that became known as "the face of the Great Depression", her work *Migrant Mother*?

ANSWER: Dorothea **Lange** [or Dorothea Margareta **Nutzhorn**]

10B. Who introduced the Hindu-Arabic numeral system to Europe in his *Liber Abaci* and defined a sequence of numbers that starts 1, 1, 2, 3, 5?

ANSWER: Leonardo **Fibonacci** [or **Leonardo of Pisa**]



1. After listening to a record, one character in this film realizes that he has lost a bet of a shilling. A character played by Michael Gambon lectures his son about the growing importance of the radio. One character insists on addressing another as "Bertie" over the other's objections. After Bertie's brother decides to marry Wallis Simpson, Bertie's lessons with Lionel Logue gain greater importance. For 10 points, name this 2010 film in which Colin Firth plays a stammering George VI.

ANSWER: *The King's Speech*

132-11-44-10117

2. The prostomium protects the mouth of one organism in this phylum. The reproductive epitoke breaks off from syllids, a family in this phylum. Cocoons form from clitellum, a pale ring on members of this phylum. This phylum includes nereids, oligochaeta, which includes the family lumbricus, and hirudinea that includes hermaphroditic leeches. Chaetae are stiff bristles found on earthworms, who are members of this phylum. For 10 points, name this phylum of segmented worms.

ANSWER: Annelida

124-11-44-10118

3. The Bohm-Jacopini Theorem states that this statement is unnecessary in a language with sequence, conditional, and while statements. It is often used to move out of a loop to an error handler, and tail calls are an alternative to them. In Java it is an unusable reserved keyword. A paper that argued that this statement made code unclear was written by Dijkstra [DYKE-straw] and was called this "Considered Harmful." For 10 points, name this statement which uses labels to jump to a given line in a program.

ANSWER: GOTO

093-11-44-10119

4. One character in this play laughs when she is futilely stabbed by a paper knife. That character is killed when her lesbian lover leaves the gas on while they sleep. This play is set in a room with Second Empire furniture with a bronze sculpture on the mantle. The Valet escorts Estelle, Inez, and Garcin into that hotel room, where Garcin eventually realizes that "Hell is other people." For 10 points, name this play set in a customized hell and written by Jean-Paul Sartre.

ANSWER: No Exit [or Huis Clos]

080-11-44-10120

5. The members of one major group of these organisms have a siliceous cell wall and are the diatoms. The harmful type of this organism's namesake bloom can cause shellfish poisoning. The major component of stromatolites is the remains of a group once thought to belong with these organisms; that group is now known as cyanobacteria. A symbiotic relationship between a fungi and the green group of these organisms is called a lichen. For 10 points, name these marine photosynthetic organisms which include seaweed.

ANSWER: algae [prompt on phytoplankton]

066-11-44-10121

6. In one story by this author, a man accidentally beckons to an invisible creature by waving to a boat. This author of "The Horla" wrote a story in which the title prostitute agrees to sleep with a Prussian officer, after which she is shunned by the rest of the carriage occupants she is traveling with. In another story by this author, Madame Loisel (Iwah-ZELL) and her husband work for ten years to pay back the sum they borrowed to replace the title object, which is revealed to be fake. For 10 points, name this French author of "Ball of Fat" and "The Necklace."

ANSWER: Henri René Albert Guy de **Maupassant**

066-11-44-10122

7. This language was made its country's official tongue by the "Farmer King" Dinis. A variant of this language, "Fala," is spoken in a neighboring country. It is not Chinese, but it is the official language of the special administrative region of Macau. This language is spoken in the former African colonies of Mozambique and Angola. "Carioca" and "Caipira" are words in this language used to refer to citizens in Brazil. For 10 points, name this language spoken in a namesake Iberian country.

ANSWER: **Portuguese** [or **portuguesa**]

052-11-44-10123

8. This effect can cause broadening in the spectral lines of distant stars. It occurs because consecutive wave peaks are emitted from different locations, and so seem to bunch up or spread out. Radar using this effect is used in speed guns and meteorology. Depending on the direction of motion, it can give rise to a blue-shift or a red-shift. For 10 points, name this perceived change in the frequency of waves emitted by a moving source, exemplified by the changing pitch of a moving siren.

ANSWER: **Doppler** effect

132-11-44-10124

9. This man survived Operation Verano after entering a country on the yacht *Granma*. The date of an attack on the Moncada Barracks names this man's 26th of July Movement. Americans objected when prisoners and mental patients were among those who left his country in the Muriel boatlift. He overthrew the dictatorship of Fulgencio Batista with the help of Che Guevara. For 10 points, name this Communist dictator of Cuba who has transferred most of his duties to his brother Raul.

ANSWER: Fidel **Castro** Ruz

132-11-44-10125

10. The impedance of this device is directly proportional to frequency. When this component is in series with a resistor, the voltage across it is equal to V times $e^{-t/\tau}$. That equation states the voltage across this device decreases with time. The quantity defining these devices adds in series and one can also increase that quantity by inserting an iron core. For 10 points, name this circuit device whose ability to store energy in a magnetic field is measured in henries and which is symbolized by an L.

ANSWER: **inductor**

066-11-44-10126

11. In this opera's first act, the aria "What do I hear? O crime!" is sung by Arnold upon hearing of the execution of his father Melchthal. The most famous musical section of this work features a "call to the dairy cows" before a "cavalry charge". Its title character sings "Sois immobile" to his son Jemmy, who had been captured by the villainous Gesler. For 10 points, name this opera by Gioachino Rossini that opens with a famous overture and sees the title character shoot an apple off his son's head.

ANSWER: **William Tell** [or **Guillaume Tell**]

088-11-44-10127

12. In October 2011, this country's elections ended with Congress for the Republic finishing second to a party led by presumptive new prime minister Rachid Ghannouchi, Enhadda. Ghannouchi praised the town of Sidi Bouzid and self-immolating vegetable seller Mohammed Bouazizi, who opened the way for free elections in this country by starting the protest against former dictator Zine Ben Ali. For 10 points, name this North African country, the first to change government during the "Arab Spring."

ANSWER: **Tunisia** [or Al Jumhuriyah at **Tunisiyah**]

019-11-44-10128

13. This poet stated, "inebriate(d) of air am I" in one poem and also described the "meek members of the resurrection" in another. This poet of "I Taste a Liquor Never Brewed" and "Safe in their Alabaster Chambers" declared "How dreary to be somebody! How public, like a frog," in her poem "I'm Nobody! Who Are You?" For 10 points, name this writer of "I Heard a Fly Buzz When I Died" and "Because I Could Not Stop for Death," a reclusive poet from Amherst.

ANSWER: Emily **Dickinson**

064-11-44-10129

14. One of this man's works includes movements representing "Laideronnette, the Empress of the Pagodas" and a fairy garden. This composer of the *Mother Goose* suite also wrote *Le tombeau de Couperin*, as well as the most commonly performed orchestration of Mussorgsky's *Pictures at an Exhibition*. His most famous work consists of a repeated theme building to a crescendo played over an ostinato snare drum; that work is named after a Spanish dance. For 10 points, name this composer of *Bolero*.

ANSWER: Maurice **Ravel** [or Joseph-Maurice **Ravel**]

142-11-44-10130

15. This author wrote a novel in which the sailor Tom abandons the *Dolly* on an exotic island, where he is taken prisoner by the title tribe. During his lifetime, this writer achieved great success with the novels *Typee* and *Omoo*. He also wrote a novella in which the title sailor is hung for killing the master-at-arms Claggart, as well as a lengthy novel in which the harpooner Queequeg and the schoolmaster Ishmael sail aboard the *Pequod*. For 10 points, name this author of *Billy Budd* and *Moby-Dick*.

ANSWER: Herman **Melville**

080-11-44-10131



1. Hans Reiser invented the dancing type of these structures that balance only when flushing. Rudolf Bayer designed one of these structures composed of only red and black. Parts of these interact with mycorrhizae (my-KOR-ih-zay). Their age can be determined with dendrochronology. The degree measures the number of descendants in these structures that include the binary search type. These structures originate with root nodes and unbranched ends are called leaves. For 10 points, give this word which names a data structure in computer science and a type of large plant that includes maple and oak.

ANSWER: trees

124-11-44-10132

2. This author satirized university life in a novel about an emigre professor at Waindell College who is seduced by Liza Wind. This author of *Pnin* and the autobiography *Speak, Memory* wrote a novel largely composed of Charles Kinbote's commentary on the title 999-line poem. After leaving the Soviet Union for the United States, this author of *Pale Fire* wrote a novel detailing Humbert Humbert's obsession with the title young girl. For 10 points, name this author of *Lolita*.

ANSWER: Vladimir Nabokov

080-11-44-10133

3. In the Book of Malachi 3:1 this man is said to prepare the way for Jesus. Jesus tells his apostles that Elijah came in the form of this man. The Mormon Church states that this man appeared on the banks of the Susquehanna River in Pennsylvania being to Joseph Smith and ordained him to the Aaronic priesthood. This man was beheaded after criticizing Herod's marriage to his brother's wife. For 10 points, name this man who baptized Jesus in the Jordan River.

ANSWER: John the Baptist [prompt on "John"]

135-11-44-10134

4. This author described a figure "who knows neither Time nor error" in "Evening Hawk" and won Pulitzer Prizes for his poetry collections *Promises* and *Now and Then*. He wrote a novel in which Tiny Duffy tips Adam Stanton off to an affair that the main character had with his wife. The narrator of that novel resumes his dissertation about Cass Mastern. This author created Jack Burden, the right-hand man of a corrupt governor. For 10 points, name this author who intended Willie Stark as a caricature of Huey Long in *All the King's Men*.

ANSWER: Robert Penn Warren

020-11-44-10135

5. In the real numbers, all Cauchy sequences possess this property. The harmonic series does not possess it, though the alternating harmonic does. Generally, any alternating series satisfying Leibniz criterion will possess it. The root test and ratio test can be used to see whether a given series possesses this property. For 10 points, name this property of sequences whose limits are finite, the opposite of divergence.

ANSWER: convergence [or word forms]

121-11-44-10136