



1. The protagonist of this work unexpectedly slaps his companion on the back and jovially announces that they will have rivets. Later, he encounters a motley-dressed Russian who speaks in awe of the resident of a compound surrounded by human heads impaled on stakes. The protagonist of this work journeys up the Congo River in a steamboat to retrieve the ivory trader Kurtz, who whispers, "The horror! The horror!" before dying. For 10 points, name this novella mostly narrated by Marlow and written by Joseph Conrad.
ANSWER: Heart of Darkness

014-12-70-02101

2. If all microstates of a system have equal probability of occurring, this quantity equals Boltzmann's constant times the logarithm of the number of microstates. The change in this quantity is often defined as change in heat over unit temperature. It is multiplied by temperature and subtracted from enthalpy to get Gibbs free energy. The second law of thermodynamics states any spontaneous reaction will result in the quantity increasing. For 10 points, name this measure of disorder in a system, usually symbolized S.
ANSWER: entropy

121-12-70-02102

3. In this work, one character gives a writer a medallion with a line from one of his novels reading, "If you ever need my life, come and take it." That character unexpectedly returns to Sorin's estate in the last act and describes her failed career as an actress. At the end of this play, a bingo-like game is interrupted by the news that Irina Arkadina's son has killed himself. For 10 points, name this play by Anton Chekhov in which Konstantin Treplev shoots the title bird.
ANSWER: *The Seagull* [or *Chayka*]

014-12-70-02103

4. This artist depicted animals hovering behind a man with his head on his desk in the etching *The Sleep of Reason Produces Monsters*. The court painter to Charles IV, this artist painted a crazed god chomping on a headless child in *Saturn Devouring his Son*. This artist of the *Black Paintings* also painted clothed and naked versions of the "maja." For 10 points, name this Spanish artist who painted Napoleonic troops shooting an unarmed man in *The Third of May, 1808*.
ANSWER: Francisco Goya

015-12-70-02104

5. This man got his start working for Johnny Torrio. He commissioned a custom armored Cadillac, which was confiscated and later used to transport FDR. This man made his base in Cicero, Illinois. After extended conflict with the Bugs Moran's gang, this man ordered the St. Valentine's Day Massacre. He was sent to Alcatraz after being convicted of tax evasion in 1931. For 10 points, name this Chicago-area mobster and bootlegger who was known as "Scarface."
ANSWER: Alphonse Capone

015-12-70-02105

6. This character's friend is bemused to notice that he only puts on his boots in private. He slips out of Father Mapple's sermon on Jonah, and consults his small idol named Yojo. Believing himself to be dying of fever, this character builds himself a coffin that is later used as a life raft. The Quakers Bildad and Peleg offer him a large chunk of the *Pequod's* earnings because of his skill. For 10 points, name this tattooed harpooner, a friend of Ishmael in *Moby-Dick*.

ANSWER: **Queequeg**

015-12-70-02106

7. The change in this quantity is equal to negative RT times the natural log of the equilibrium constant. The partial derivative of this value with respect to particle number is equal to a system's chemical potential. This quantity is similar to one named for Helmholtz, but is measured at a constant pressure and temperature. When this quantity is negative, then a reaction is spontaneous. For 10 points, name this quantity that represents the amount of work that can be drawn from a system.

ANSWER: **Gibbs free energy** [or **free enthalpy**; or **Gibbs function**]

149-12-70-02107

8. This artist's collaborations with the singer and model Nico included his film *Chelsea Girls*. He coined the expression "15 minutes of fame." Most of his work was completed at a New York City studio called The Factory. He designed the banana that graces the cover the debut Velvet Underground album. He used a repetitive silk screen process for his colorful pictures of Marilyn Monroe. For 10 points, name this American pop artist known for his paintings of Campbell's soup cans.

ANSWER: Andy **Warhol**

015-12-70-02108

9. In one story from this book of the Bible, Simeon and Levi sack Shechem in retaliation against the rape of their sister Dinah. This book also contains the image of a ladder to heaven that is seen by Jacob in a dream. It tells the story of the Tower of Babel and the destruction of Sodom and Gomorrah. Other stories relayed in this book include Joseph's interpretations of the Pharaoh's dreams and the flooding of the Earth. For 10 points, name this Biblical book which opens with the creation of the world.

ANSWER: Book of **Genesis**

015-12-70-02109

10. This quantity is inversely proportional to the difference of the natural log of the inner and outer radii of a coaxial cable. For a sphere, this quantity is merely equal to the radius of the sphere. This quantity, which is usually proportional to the permittivity of a material, is added in parallel, unlike resistance. One-half this quantity times the square of the voltage gives the energy stored in this quantity's associated object, which often comes in a parallel-plate variety. For 10 points, name this quantity measured in farads.

ANSWER: **capacitance**

048-12-70-02110

11. This author declared "I decline to accept the end of man" in his Nobel Prize acceptance speech. One of his novels follows the pregnant teenager Lena Grove and the racially confused Joe Christmas. This author frequently wrote about the Snopes and Sartoris families, and set many of his works in Yoknapatawpha (YAHK-nuh-puh-TAW-fuh) County. Quentin Compson narrates this author's novel about the rise and fall of Thomas Sutpen's plantation. For 10 points, name this author of *Absalom, Absalom!* and *The Sound and the Fury*.

ANSWER: William **Faulkner** [or William Cuthbert **Faulkner**]

015-12-70-02111

12. This city was led by two kings at the same time, one from the Eurypontid line and one from the Agiad line. Much of its governance was handled by a group of five ephors. This city's agricultural needs were met by a slave-like class called helots. One king of this city was Leonidas, who fought the Persian army of Xerxes at Thermopylae with an army of only three hundred men. For 10 points, name this city that waged the Peloponnesian War against its less militant rival, Athens.

ANSWER: **Sparta** [or **Lacedaemon**]

015-12-70-02112

13. Extremis and Bleeding Edge were two versions of this character's primary asset. After *Secret Invasion*, this Illuminati member lost SHIELD's directorship to Norman Osborn. This hero led pro-registration forces in the *Civil War*, in which he fought his Avengers teammate Captain America. In a recent film, he survived "in a cave, with a box of scraps" after being captured by terrorists in Afghanistan on the orders of Obadiah Stane. For 10 points, name this hero with a hi-tech suit of armor.

ANSWER: **Iron Man** [or Anthony Edward "Tony" **Stark**; prompt on **Tony**]

153-12-70-02113

14. This poet wrote of a desire to "live alone in the bee-loud glade" in a poem in which the speaker hears the title entity "in the deep heart's core." In another of his poems, the speaker expresses the desire to become a mechanical golden bird in the title city. This poet of "The Lake Isle of Innisfree," also wrote the poems that provided the titles of the novels *No Country for Old Men* and *Things Fall Apart*. For 10 points, name this Irish poet of "Sailing to Byzantium" and "The Second Coming."

ANSWER: William Butler **Yeats**

014-12-70-02114

15. This writer included alternation between masculine and feminine rhymes in a unique type of sonnet he used in a longer work. In one of his poems, the flooding of the Neva destroys the home of Parasha, whose suitor Yevgeny curses the title statue, which then comes to life. This author of "The Bronze Horseman" wrote a novel-in-verse about an aristocrat who kills his best friend Vladimir Lensky in a duel. For 10 points, name this Russian poet of *Eugene Onegin*.

ANSWER: Alexander **Pushkin** [or Alexander Sergeyevich **Pushkin**]

014-12-70-02115



1A. What hard polymer makes up the exoskeletons of insects and the cell walls of fungi?

ANSWER: **chitin**

1B. Which American President controversially fired over 11,000 striking air traffic controllers and temporarily banned them from all federal service jobs?

ANSWER: Ronald Wilson **Reagan**

2A. The title character of what Edward Arlington Robinson poem "went home and put a bullet through his head"?

ANSWER: Richard **Cory** [or **Richard** Cory]

2B. What city's *favelas* have been the target of a "pacification program" in preparation for the 2016 Olympics?

ANSWER: **Rio** de Janeiro, Brazil

3A. This is a 20-second calculation question. If three identical fair coins are flipped, what is the probability that all three coins will land showing the same face?

ANSWER: **one fourth** [or **0.25**; or **one quarter**; or **25 percent**]

3B. This is a 20-second calculation question. What are the roots of the polynomial $x^2 - 10x + 16$?

ANSWER: $x = \underline{8}$ and $x = \underline{2}$

4A. Identify the Romantic American art movement represented by such landscape painters as Frederic Edwin Church and Thomas Cole.

ANSWER: **Hudson River** School

4B. Benzene is a very stable compound because it possesses what electron-delocalizing property described by Huckel's rule?

ANSWER: **aromaticity** [prompt on **resonance**]

5A. The Plain of Jars archaeological site is found in what country, the homeland to most of the Hmong [MUNG] ethnic group?

ANSWER: **Laos**

5B. This is a 20-second calculation question. What is the sine of 210 degrees?

ANSWER: **negative one half** [or **-0.5**]

6A. Elie Wiesel (ELL-ee vee-ZELL) recounted his experiences in the Auschwitz and Buchenwald concentration camps in what autobiographical book?

ANSWER: **Night** [or *La Nuit*]

6B. What hero killed the Hydra with the help of his nephew Iolaus (ee-OH-lay-us)?

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

7A. This is a 30-second calculation question. What is the intersection of the lines $y = 4 - 2x$ and $x + y = 2$?

ANSWER: **(2,0)** [or $x = \underline{2}$ and $y = \underline{0}$]

7B. This is a 30-second calculation question. What is the measure, in degrees, of each interior angle of a regular octagon?

ANSWER: **135** degrees

8A. What current Governor of Massachusetts declared "It's time for Democrats to grow a backbone" in his speech at the Democratic National Convention?

ANSWER: Deval Lardine **Patrick**

8B. In 2012, both Kristen Stewart and Julia Roberts starred in film versions of what classic fairytale, which was also the first full-length Disney animated feature?

ANSWER: **Snow White** and the Seven Dwarves

9A. Who was the English clergyman and chemist who wrote "Rational Christianity" and discovered nitrous oxide and oxygen?

ANSWER: Joseph **Priestley**

9B. What American artist of *Lavender Mist* was known for dripping paint onto his canvases?

ANSWER: Jackson **Pollock**

10A. The Mercalli scale is used to measure the effects and intensity of what types of natural events?

ANSWER: **earthquakes**

10B. The tallest peak in the United States, Mount McKinley, is located in what national park which serves as the alternate name for the mountain?

ANSWER: **Denali** National Park and Preserve



1. This law cannot be applied to diodes since the relationship between its variables is nonlinear. The analogous quantity impedance is substituted into this law for AC components. An equivalent statement of this law is J equals sigma times E , or current density is equal to conductivity times electric field. This law is often used in conjunction with Kirchoff's (KEER-choff's) rules to find the potential drop across a resistive element. For 10 points, name this law that states voltage equals current times resistance.

ANSWER: Ohm's law

048-12-70-02117

2. Some scholars have claimed this speech was plagiarized from Archibald Carey's 1952 Republican National Convention speech, as both quote the song "My Country, 'Tis of Thee." It ends with the declaration "Free at last! Free at last! Thank God Almighty, we are free at last." This speech's author hoped his four children would "not be judged by the color of their skin but by the content of their character." For 10 points, name this speech delivered at the Lincoln Memorial by Martin Luther King, Jr.

ANSWER: "I Have a Dream" speech

015-12-70-02118

3. This man's forces defeated the Scots under David Leslie at the Battle of Dunbar. This man was long vilified for the massacres at Drogheda (DRAW-eh-duh) and Wexford during his invasion of Ireland. With Thomas Fairfax, he won the key Battle of Naseby. After this man's death, his son Richard was in power for less than a year before Charles II was put on the throne. For 10 points, name this man who served as Lord Protector during the interregnum that resulted from the execution of Charles I.

ANSWER: Oliver Cromwell

015-12-70-02119

4. A form of therapy originating in this school of thought was developed by Fritz Perls. The founder of this school of thought investigated how a series of stationary images create the illusion of movement in an effect called the phi phenomenon. This school of thought holds that the mind follows the organizational principle of *prägnanz*, and its founding members included Wolfgang Köhler and Max Wertheimer (VERT-hie-mer). For 10 points, name this school of psychology named for the German word for "figure."

ANSWER: Gestalt psychology

014-12-70-02120

5. Foehn winds were first observed in this mountain range, where the 5,000-year-old mummy "Otzi" was discovered. The Mer de Glace and the Aletsch are two glaciers in it. The Great St. Bernard Pass runs through this mountain range. Lake Constance lies at the foot of this mountain range. Its highest peak is Mont Blanc, and it contains the Matterhorn. For 10 points, name this European mountain range that passes through Switzerland and Northern Italy.

ANSWER: the Alps

080-12-70-02121

6. The earliest work of this type is often considered to be Jacopo Peri's *Dafne*, and Peri's *Euridice* is the earliest surviving one. Claudio Monteverdi's *L'Orfeo* is another important early one of these musical works. Modern examples of these musical works include Philip Glass's *Einstein on the Beach* and John Adams's *Nixon in China*. Mozart composed works of this type with both German and Italian libretti. For 10 points, name this type of musical drama, examples of which include Giacomo Puccini's *Madame Butterfly*.
ANSWER: **opera**

014-12-70-02122

7. One work by this poet describes how "moving through a mirror clear...shadows of the world appear" to the title character, who sets herself adrift in a boat and dies after seeing Sir Lancelot. Another of his poems asks, "Was not a man dismayed?" at an ill-conceived order given to a group who "came through the jaws of Death, back from the mouth of Hell, all that was left of them, left of six hundred." For 10 points, name this Victorian poet of "The Lady of Shalott" and "The Charge of the Light Brigade."

ANSWER: Alfred, Lord **Tennyson**

014-12-70-02123

8. A group of photographs of this battle known as the Magnificent Eleven were taken by Robert Capa. The earliest fighting in this battle occurred with Operation Deadstick, which used glider borne forces to capture a key pair of bridges. This battle was given the codename Operation Overlord, and began with coordinated amphibious assaults on beaches named Gold, Juno, Utah, Omaha, and Sword. For 10 points, name this Allied invasion of occupied France during World War II that began on D-Day.

ANSWER: **Normandy** Invasion [accept equivalent answers; accept Operation **Overlord** before mentioned; accept **D-Day** before mentioned]

015-12-70-02124

9. This composer wrote a finale based on "Gaudeamus igitur" for a composition incorporating many such student drinking songs, written to commemorate his honorary doctorate from the University of Breslau. In response to the death of his mother, he wrote a choral composition that eschewed the traditional Latin text in favor of Luther's Bible. For 10 points, name this German Romantic composer of *Academic Festival Overture* and *A German Requiem*, who composed a famous lullaby

ANSWER: Johannes **Brahms**

014-12-70-02125

10. One character in this novel barely catches a clock after knocking it off a mantle. That character is told "you always look so cool." The narrator of this novel has been mulling on advice his father gave him in his "younger and more vulnerable years." Its title character is shot in his swimming pool by George Wilson after Myrtle is killed by a yellow car. The title character of this novel invites Nick Carraway to some of the lavish East Egg parties he has thrown to impress Daisy Buchanan. For 10 points, name this novel by F. Scott Fitzgerald.

ANSWER: *The* **Great Gatsby**

015-12-70-02126

11. The 1969 version of this franchise was known as the "Miracle" ones. This team forced a game 7 in the 1986 World Series when Bill Buckner failed to handle a ground ball. The Marlins traded Mike Piazza to this team in 1998. This franchise's 2006 postseason run ended when Carlos Beltran struck out looking. It has featured players such as Johan Santana and David Wright. For 10 points, name this baseball franchise that plays its games in Citi Field.

ANSWER: New York **Mets** [or **Metropolitans**; prompt on **New York**]

186-12-70-02127

12. These organisms were part of an experiment in which they developed the ability to metabolize citrate over a 20-year period of evolution. Another experiment in which these organisms were used grew them on a nitrogen-15 medium and showed that DNA replication was semiconservative. This organism is infected by the T4 phage, and it was used in the Lenski and Meselson-Stahl experiments. Its O157:H7 strain is a common cause of food-borne illness. For 10 points, name this gram-negative bacterium commonly found in the intestine.

ANSWER: **E coli** [or **Escherichia coli**]

048-12-70-02128

13. During the Civil War, David Farragut moved past Fort Jackson and Fort St. Philip to capture this city. This city was governed for the rest of the war by Benjamin Butler. Homer Plessy was prosecuted for boarding a whites-only train car in this city. A group of pirates led by Jean Lafitte helped Andrew Jackson take this city in the final battle of the War of 1812. For 10 points, name this Southern city that was led by Mayor Ray Nagin when it was severely damaged by Hurricane Katrina.

ANSWER: **New Orleans**

015-12-70-02129

14. This god hung from a tree for nine days to learn the secret of the runes. He rides an eight-legged horse named Sleipnir (SLYP-near) and is given news about the world by the ravens Huginn and Muninn. This husband of Frigga sacrificed one of his eyes to gain wisdom. He will be slain by the wolf Fenrir at Ragnarok. He wields a spear named Gungnir and sits on a massive throne in Asgard. For 10 points, name this leader of the Aesir and chief god of the Norse pantheon.

ANSWER: **Odin**

015-12-70-02130

15. Although not a rectangle, this polygon names a rule of numerical integration that is usually less efficient than Simpson's rule. Lateral faces of a pyramidal frustum are of this shape. James Garfield used the area formula for this figure to prove the Pythagorean theorem. An isosceles one of these figures has congruent diagonals. The area of one of these polygons is half the product of its height and the sum of its bases. For 10 points, name these quadrilaterals that have one pair of parallel sides.

ANSWER: **trapezoids**

131-12-70-02131



1. One type of these generic objects used in CPU instructions comes in immediate, indexed, and direct modes. TLBs cache mappings of the virtual type of these objects. A group of one networking type of these general entities can be rolled up into a single multicast one. Ethernet uses the 48 bit Media Access Control type of these entities to identify devices. The Internet uses versions four and six of the IP type. For 10 points, name these identifiers that allow computers to locate resources, such as the web one www.nist.gov.
ANSWER: **address** [or memory **address** before networking; or IP **address** before "IP"; prompt on **IP** before it is read]

001-12-70-02132

2. Images in this poem include a “bough of cherries some officious fool broke in the orchard” and a depiction of Neptune taming a sea-horse. Before describing his “gift of a nine-hundred-years-old name,” the speaker describes a woman who “had a heart...too soon made glad, too easily impressed” while showing off a painting by Fra Pandolf of his deceased wife. For 10 points, name this dramatic monologue spoken by the Duke of Ferrara and written by Robert Browning.
ANSWER: “**My Last Duchess**”

014-12-70-02133

3. If this particle's electric dipole moment is nonzero, it would violate both parity and time reversal symmetry. Beryllium-5 undergoes a type of decay in which this particle is released, and this particle was originally discovered in an experiment in which paraffin wax was bombarded with them, performed by James Chadwick. Consisting of two down and one up quark, this particle has a mass of 1.008 atomic mass units. Changing the number of these particles results in a new isotope. For 10 points, name this particle found in the nucleus, the neutral counterpart of the proton.
ANSWER: **neutron**

048-12-70-02134

4. In the aftermath of this war, the losing side wrote the Khartoum Resolution. Prior to the start of this war, one side blockaded the port city of Elat by closing the Gulf of Aqaba. After a preemptive strike against one side's grounded air force, the winning side in this war seized the Golan Heights, West Bank, and Sinai Peninsula, and took sole control of Jerusalem. For 10 points, name this 1967 war between Israel and Arab states named for its brief duration.
ANSWER: **Six-Day** War [or **June** War; or **Third Arab-Israeli** War]

014-12-70-02135

5. These cells contain the ZP3 glycoprotein in an extra membrane, the zona pellucida (peh-LOO-sid-uh), which surrounds them. Fimbriae interact with these cells, which contain a germinal vesicle and form in a process which also creates three smaller polar bodies. These haploid cells are released by the follicle, after which they travel through the fallopian tubes. For 10 points, name these cells which develop into a zygote and then an embryo after fertilization.
ANSWER: **ova** [or **ovum**; or **egg** cells]

104-12-70-02136

This is a calculation question. What is the radius of the circle described by the equation $x^2 + y^2 + 6y = 7$?
ANSWER: **4**

Name the animal whose head is borne by the Egyptian god Horus.
ANSWER: a **falcon**