

1. **The first president of this country protested for its independence on Direct Action Day, which devolved into a riot. A movement to secede from this country was led by Sheikh Mujibur Rahman and the Awami League. This country gained its independence due to the actions of the Muslim League under Muhammad Ali Jinnah. In 1971, Bangladesh seceded from this country. Asif Ali Zardari currently leads this nation, which saw a 1999 coup led by (*) Pervez Musharraf. For 10 points, name this Muslim country, which was once a part of India.**

ANSWER: Islamic Republic of Pakistan [or Jamhuryat Islami Pakistan]

080-10-19-10102

2. **The perpetrator of these events was aided in carrying out one of these when he told the truth to Diana, who healed the Hind of Ceryneia that he had been sent to capture. Another of these events saw its perpetrator drive away the flock of Symphalian Birds. These goals were completed after a man diverted the course of a river to (*) clean the Augean Stables. The capture of Cerberus and the slaying of the Hydra were also among, for 10 points, what group of tasks completed by a certain mythical hero of great strength?**

ANSWER: labors of Hercules

081-10-19-10103

3. **One of these works uses violas playing "always forte" to mimic the barking of a goatherd's dog. Another of them uses a solo violin to depict the growing drunkenness at a peasant celebration of harvest. This set of pieces makes up the first part of their composer's *The Contest of Harmony and Invention*. Their composer wrote sonnets to preface each of these violin concerti, whose first one depicts the singing of birds and is named "La (*) primavera." For 10 points, name this group of four violin concerti that depict different parts of the year, composed by Antonio Vivaldi.**

ANSWER: *The Four Seasons* [or *Le Quattro Stagioni*; prompt on *The Contest of Harmony and Invention* early; prompt on *Il Cimento dell'armonia e dell'inventione* early]

023-10-19-10104

4. **One character from this country was once the mistress of four admirals and is affectionately called "Bouboulina." That character, Madame Hortense, is loved by a passionate coal miner from this country. Home to a certain Zorba created by Nikos Kazantzakis, this country produced such warriors as (*) Diomedes and Agamemnon in an epic centered on the wrath of Achilles. For 10 points, name this country where Homer wrote *The Iliad*.**

ANSWER: Greece

080-10-19-10105

5. **The upper left portion of this painting shows a pink-striped awning, while the upper right shows multiple people in close conversation and dark foliage in the background. Located in the Phillips Collection in Washington D.C., it also depicts the artist Gustave Caillebotte (ky-"BOAT"), who is donning a white shirt and a straw hat. This painting also notably depicts the artist's future wife, the seamstress Aline Charigot (shar-ee-GO), who is playing with a (*) small dog in the foreground. For 10 points, name this Impressionist painting depicting a noonday meal, a work of Pierre-Auguste Renoir.**

ANSWER: *Luncheon of the Boating Party*

040-10-19-10106

6. **2-Monoacylglycerols (mono-a-sel-gly-cerols) are one of the products of the reaction catalyzed by this organ's namesake lipase. Important cells here include centroacinar cells and acinar cells. The duct of Wirsung is found in this organ and empties into the (*) duodenum. One hormone produced in this organ is secreted by delta cells and is called somatostatin, while alpha cells in this organ are responsible for releasing glucagon, which acts to balance another hormone found in this organ. Home to the Islets of Langerhans, for 10 points name this organ that secretes insulin.**

ANSWER: pancreas

081-10-19-10107

7. **An August magazine article accused one man with this surname of kidnapping a friend, forcing her to smoke marijuana, and making her worship “Aqua Buddha.” That man is the founder of the “National Board of Ophthalmology.” Supporters of another man with this surname rented a (*) blimp instructing people to Google him during his 2008 presidential run, and contributed money to his son’s 2010 Kentucky Senate race. For 10 points, give this surname shared by Kentucky senator Rand and his father, Texas congressman Ron.**

ANSWER: Ron Paul [or Rand Paul]

015-10-19-10108

8. **Euro 1964 was won and hosted by this soccer team, noted for its “tiki-taka” style. After taking Raúl (rah-OO-uhl) off their roster in 2006, they went on a thirty-five game unbeaten streak that was ended by a loss in the 2009 Confederations Cup to the U.S. Featuring Cesc Fabregas (SESK fahb-RAY-gahs) and Xabi (CHAB-ee) Alonso, they won Euro 2008 with a Fernando (*) Torres goal, but David Villa (VEE-yah) is mostly to thank for winning the 2010 World Cup. For 10 points, name this country, many of whose stars play club soccer for their native Real (ray-AHL) Madrid.**

ANSWER: Spain [or Spanish; or España; or Español; prompt on The Red Fury; prompt on La Furia Roja]

079-10-19-10109

9. **This ruler asked for assistance from Gregory XIII to intercede in an unsuccessful conflict known as the Livonian War. This ruler divided his kingdom into two realms, one of which was not ruled by him called the zemschina. The other portion was governed by the oprichniki, who dressed in black and terrorized the countryside. This ruler was the first to take the title of (*) tsar. This man contributed to the decline of the Rurikid dynasty by killing his heir. For 10 points, name this tsar whose reign included a considerable amount of violence.**

ANSWER: Ivan the Terrible [or Ivan IV of Russia; or Ivan Vasilyevich; or Ivan Grozny; prompt on Ivan]

023-10-19-10110

10. **This U.S. state contains the entirety of the Apalachicola River, which is formed at Jim Woodruff Dam from the Flint and Chattahoochee Rivers. Its most populous city, in Duval County, is located on the St. John's River and was once known as Cowford, while its westernmost major city is known as the City of the Five Flags and is located on a namesake (*) bay on the Gulf of Mexico. Also home to the Okefenokee Swamp and Lake Okeechobee, for 10 points, name this U.S. state whose cities include Jacksonville and Pensacola and whose capital is Tallahassee.**

ANSWER: Florida

040-10-19-10111

11. Mariana of Austria is one figure that can be seen in this painting, which also includes a man pausing in the background on a flight of stairs and a large brown dog resting in the bottom front right. In the background, two figures of royalty can be seen reflected in a mirror. This painting shows a scene inside the Alcazar palace of Philip IV; to the far left is the painter himself working on a large canvas while in the center a group of servants, or ladies in waiting, attend to the (*) Infanta Margarita. For 10 points, name this painting by Diego Velazquez whose title translates as “The Maids of Honor”.

ANSWER: Las Meninas [accept *The Maids of Honor* before mentioned]

064-10-19-10112

12. The virial ("VEER"-ee-uhl) equation includes a compression factor that measures deviations from this law. Another modification of this law includes coefficients accounting for molecule's size and interactions, and was developed by Johannes van der Waals ("WALLS"). It was originally stated as a combination of (*) Boyle's Law and Charles's Law. The constant in this equation is usually expressed in terms of joules per Kelvin per mole. For 10 points, name this equation of state that is usually written as $P V = n R T$.

ANSWER: ideal gas law

081-10-19-10113

13. After the Civil War, the "exodusters" fled to this state, where the question of slavery had earlier led to the drafting of the Lecompton Constitution. The Wakarusa War occurred here during a time that also saw John Brown lead a massacre at Pottawatomie. An act that allowed new states' voters to choose whether they would permit (*) slavery was named for this state and Nebraska. For 10 points, name this one time "Bleeding" state whose anti-slavery centers included the often sacked city of Lawrence and the eventual capital Topeka.

ANSWER: Kansas

079-10-19-10114

14. This organ is the site of lymphoid tissue called Peyer's Patches as well as some glands that produce an alkaline secretion named for Brunner. This organ begins with the Sphincter of Oddi, which regulates the flow of the liver's bile. Its walls are lined with enterocytes, whose (*) microvilli absorb nutrients from food. It consists of the duodenum, jejunum, and ileum. For 10 points, name this organ of the digestive system that takes food from the stomach and moves it to a large organ of a similar name.

ANSWER: small intestine [prompt on ileum before Brunner]

079-10-19-10115

15. This poet wrote “I would that my tongue could utter the thoughts that arise from me” in a poem which asks the sea to “break, break, break on thy cold gray stones.” Another of his poems ends “To strive, to seek, to find, and not to yield.” This poet collected verses based on Arthurian legend in his *Idylls of the King*. A group of British horsemen go “half a (*) league, half a league, half a league onward” in his poem based on a Crimean War battle. For 10 points, name this British poet of “Ulysses” and “The Charge of the Light Brigade.”

ANSWER: Alfred, Lord Tennyson

015-10-19-10116

16. This U.S. state existed as an independent state for nearly fourteen years, and during part of that time it was governed by Thomas Chittenden. During the Revolutionary War, it saw forces under John Stark defeat a British unit commanded by Friedrich Baum at the Battle of Bennington. This state grew out of lands claimed by the New Hampshire Grants. A unit associated with this state was led by (*) Ethan Allen and named the Green Mountain Boys. For 10 points, name this state that was the fourteenth to be admitted to the Union, which has a capital at Montpelier.

ANSWER: Vermont

040-10-19-10117

17. An 1874 book by Henry Sidgwick purports to describe "the methods" of these, and Simone de Beauvoir wrote a short treatise about those "of ambiguity." G.E. Moore's best known work also references them, while a philosophical work titled after them contains the section "Of Human Bondage" and is laid out as a series of (*) geometric axioms; that work was written by Baruch Spinoza. For 10 points, give this term that describes the branch of philosophy that deals with the existence of morality.

ANSWER: ethics

040-10-19-10118

18. One character in this novel is a black man who gets his nickname from his crooked back. Another character receives a new puppy, but is convinced by Carlson to have his old dog put down. Those two characters, Crooks and Candy, are present when the only female character seduces them and one of the protagonists, who breaks her neck after she allows him to stroke her hair (*). Curley then summons a mob to come for him, causing his friend to shoot him in the head. For 10 points, identify this novel about George and Lennie, written by John Steinbeck.

ANSWER: *Of Mice and Men*

020-10-19-10119

19. This quantity is multiplied by the voltage gain to produce the "Miller" type of this quantity. Its inverse is elastance (ee-LAST-ence). For an infinitely thin sphere, it equals four pi times the electric constant times the radius. This quantity is observed in devices that were predated by the (*) Leyden Jar; those devices now commonly consist of two parallel-plate conductors that are separated by a dielectric. It is equal to charge over voltage and measured in Farads ("FAIR"-adz). For 10 points, name this measure of the amount of stored electrical energy.

ANSWER: capacitance [or C]

079-10-19-10120

20. A church in this novel is called First Purchase because it was the first thing bought by freed slaves. The protagonist of this novel is frightened by Cecil Jacobs while in a ham costume. The protagonist of this novel helps to break up a potential lynch mob whose target is a man wrongly accused of raping Mayella Ewell, Tom Robinson. That event sees the protagonist accompanied by (*) Dill and her brother Jem, who breaks his arm in an attack largely thwarted by Boo Radley. For 10 points, name this novel featuring Scout and Atticus Finch by Harper Lee.

ANSWER: *To Kill A Mockingbird*

081-10-19-10121

21. **This man described transpersonal psychology as the "fourth force" of psychology. One part of this psychologist's main creation came from the work of Kurt Goldstein. That creation included parts that this man labeled instinctoid or deficit. This man expanded upon those ideas in his work *Toward a Psychology of Being*. This man's main creation starts out with the (*) "physiological" and ends with the attainment of self-actualization. For 10 points, name this American psychologist who described human motivation through the creation of his Hierarchy of Needs.**

ANSWER: Abraham Harold Maslow

023-10-19-10122

22. **With his twin brother, this figure stole bones from the underworld and used them to create humans. A rival of this deity is (*) Tezcatlipoca (TETZ-cat-lee-POKE-uh), and the arrival of a certain conquistador was mistaken as the return of this figure. Confused by the natives with Hernan Cortes, for 10 points, identify this Aztec god, a feathered serpent.**

ANSWER: Quetzalcoatl

081-10-19-10123

23. **This party stored the "blood flag" in its headquarters in the Brown House. It was founded as the DAP by Anton Drexler, who was sponsored by the Thule Society. Glorified in Leni Riefenstahl's film, *Triumph of the Will*, this party seized power after the burning of the Reichstag and perpetrated the Night of the Long Knives, which purged the SA. Its leaders included (*) Hermann Goering and Heinrich Himmler and its symbol was the swastika. For 10 points, name this German Workers' Party led by Adolf Hitler.**

ANSWER: Nazi Party [or National Socialist German Workers' Party; or Nationalsozialistische Deutsche Arbeiterpartei; or NSDAP]

080-10-19-10124

1. The reciprocal function of this function is the cosecant.

[10] Name this periodic function whose derivative is the cosine.

ANSWER: **sine** [or **sin**]

[10] This value is equal to sine squared theta plus cosine squared theta.

ANSWER: **one**

[10] One can write a periodic function in terms of various cosine and sine waves using this series named for a French mathematician.

ANSWER: **Fourier** series

001-10-19-10201

2. It is paired with *Freedom* in a Milton Friedman work, and one thinker argued that the Protestants' work ethic contributed to its proliferation in America. For 10 points each:

[10] Name this economic system in which the means of production are privately owned, which comes between feudalism and socialism according to Communist theory.

ANSWER: **capitalism**

[10] The aforementioned work *The Protestant Ethic and the Spirit of Capitalism* was authored by this German sociologist, who also gave the "Politics as a Vocation" speech.

ANSWER: Max **Weber**

[10] In "Politics as a Vocation," Weber argued that a politician can derive authority by tradition, legal means, or by possessing this property, "a certain quality of personality" that sets him apart.

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

079-10-19-10202

3. One atypical work of this painter is a scene of *Cupid and Psyche* set against a copper sky. For 10 points each:

[10] Identify this artist who is best remembered for his various depictions of Charles I, such as *Charles I at the Hunt*.

ANSWER: Sir Anthony **van Dyck** [prompt on partial last name]

[10] Van Dyck received training from this Flemish Baroque painter known for *Battle of the Amazons*, *The Raising of the Cross*, and the *Marie de Medici* cycle.

ANSWER: Sir Peter Paul **Rubens**

[10] Van Dyck painted a work of this type "with a sunflower." The ones painted by Frida Kahlo often include monkeys and grotesque bodily deformations.

ANSWER: **self-portraits**

020-10-19-10203

4. He mitigates his punishment of having to whitewash a fence by finding other kids to do the work. For 10 points each:

[10] Name this character who has run-ins with Injun Joe and lives with his Aunt Polly.

ANSWER: **Tom Sawyer** [accept either name]

[10] *The Adventures of Tom Sawyer* was written by this American novelist who also wrote about Huck Finn, as well as *A Connecticut Yankee in King Arthur's Court*.

ANSWER: Mark **Twain** or Samuel Langhorne **Clemens**

[10] Tom's love is this girl, with whom he becomes "engaged" and with whom he gets trapped in a cave at the end of the novel.

ANSWER: **Becky Thatcher** [accept either name]

081-10-19-10204

5. The background of this painting is largely filled with smoke, while people visible in the foreground include a man brandishing a rifle and another holding a pistol in each hand. For 10 points each, [10] Name this painting that also shows a bare-breasted woman holding a French tricolor aloft in her right hand.

ANSWER: Liberty Leading the People [or *La Liberté guidant le peuple*]

[10] This artist of *Women of Algiers* and *Death of Sardanapalus* painted *Liberty Leading the People*.

ANSWER: Eugene Delacroix (day-lah-KWAH)

[10] Delacroix's notable paintings set in this country include *Massacre at Chios* and one in which it is "Expiring on the Ruins of Messolonghi."

ANSWER: Greece

040-10-19-10205

6. It receives the waters of the Cooks and Georges Rivers, and it was originally known as Sting Ray Harbor when James Cook landed here in 1770. For 10 points each,

[10] Name this body of water, the site of a planned British penal colony after Cook's landing sparked the colonization of the continent on which it is located.

ANSWER: Botany Bay

[10] Botany Bay is located on this island continent. Other early events from its history include the Eureka Stockade and the Rum Rebellions.

ANSWER: Commonwealth of Australia

[10] The settlement of the areas around Botany Bay formed the beginnings of this Australian state that was governed by Arthur Phillip and William Bligh.

ANSWER: New South Wales

040-10-19-10206

7. This nymph is the daughter of the river Inachus. For 10 points each:

[10] Name this priestess of Hera who fell in love with Zeus. Her son Belus fathered Cadmus.

ANSWER: Io

[10] To avoid Hera's wrath, Zeus transformed Io into one of these creatures. A primordial one of these, Audhumbla, appears in Norse myth.

ANSWER: cows [or cattle; or heifers]

[10] After Hermes helped Io escape from the many-eyed beast Argus, Hera sent this creature to sting Io. Zeus sent another of these to sting Pegasus so Bellerophon could not reach Mt. Olympus.

ANSWER: gadfly

079-10-19-10207

8. This pathway requires eighteen ATP molecules and twelve NADPH molecules for every six carbon dioxide input molecules. For 10 points each:

[10] Name this cycle that, as part of the dark reactions, makes sugars from carbon dioxide.

ANSWER: Calvin-Benson Cycle

[10] This most prevalent enzyme on Earth fixes carbon dioxide to ribulose 1,5-bisphosphate in the first step of the Calvin Cycle.

ANSWER: RuBisCO [or ribulose bisphosphate carboxylase]

[10] This is the sugar produced by the Calvin Cycle. Along with DHAP, this sugar is produced from the breakdown of fructose 1,6-bisphosphate during glycolysis.

ANSWER: glyceraldehyde-3-phosphate [or G3P]

003-10-19-10208

9. One man under this ruler was responsible for the discovery of the Azores. For 10 points each:

[10] Name this prince whose explorations greatly contributed to the expansion of worldwide trade, leading to his being given the epithet "the Navigator."

ANSWER: Prince **Henry** the Navigator

[10] Henry donated buildings that would eventually become a university in this capital of the nation of which he was prince. This capital was also the port later used by men such as Vasco de Gama.

ANSWER: **Lisbon** [or **Lisboa**]

[10] Henry encouraged his father to conquer the Muslim port of Ceuta, which had previously been under the control of the Kingdom of Fez in this nation. Later, this country would be the first to recognize the U.S. as an independent nation.

ANSWER: Kingdom of **Morocco** [or Al Mamlakah **al Maghribiyah**]

081-10-19-10209

10. It begins, "Flood-tide below me! I watch you face to face!" For 10 points each:

[10] Name this poem that details a boat trip from Manhattan to another New York borough.

ANSWER: "**Crossing Brooklyn Ferry**"

[10] "Crossing Brooklyn Ferry" and *Leaves of Grass* are works of this American poet who wrote "O Captain! My Captain!" about Abe Lincoln's death.

ANSWER: Walt **Whitman**

[10] This word completes the title of the Whitman poem "I Sing the Body." This word also describes a *Kool-Aid Acid Test* in a Tom Wolfe title.

ANSWER: **electric**

079-10-19-10210

11. Answer these questions about medieval French literature, for 10 points each.

[10] The oldest important work of French literature is the song of this man, a hero who died in a 778 battle. He is "furious" in the title of an epic poem by Ariosto.

ANSWER: **Roland** [or **Orlando**]

[10] Another work from the same period tells the story of this Cornish knight, who is in love with Iseult, or Isolde.

ANSWER: **Tristan** [or **Tristram**]

[10] Guillaume de Lorris and Jean de Meun wrote a poem about courtly love known as the romance of this type of flower.

ANSWER: **rose**

024-10-19-10211

12. Varieties include charm, strange, top, and bottom. For 10 points each:

[10] Name this type of fundamental particle that makes up protons and neutrons.

ANSWER: **quark**

[10] The aforementioned charm, strange, top, and bottom are types of this classification of quantum number of quarks. In quantum chromodynamics, this designation has symmetry.

ANSWER: **flavor**

[5,5] For 5 points each, protons and neutrons have charge because they are composed of these two other quarks. A proton has two of one and one of the other, while the neutron has the opposite.

ANSWER: **up** and **down** [or **U** and **D**]

081-10-19-10212

13. One location in this battle is known as the "high-water mark of the Confederacy." For 10 points each:
[10] Name this Civil War battle fought in Pennsylvania, which saw Robert E. Lee's Confederate troops lose to a Union force led by George Meade.

ANSWER: Battle of **Gettysburg**

[10] The last day of the battle saw this futile military action conducted by the South. This infantry assault on the middle of the Union line on Cemetery Ridge devastated the Confederate troops and is named for a southern general.

ANSWER: **Pickett's Charge**

[10] Pickett led his namesake charge under the direction of this Confederate general. He helped the South prevail at Fredericksburg and Second Bull Run and was wounded at the Battle of the Wilderness, but he lost favor in the South after the war when he joined the Republican Party.

ANSWER: James **Longstreet**

081-10-19-10213

14. Mark Twain National Forest is located in this range, which contains the St. Francois Mountains. For 10 points each:

[10] Name this mountain range in the U.S., located partly in Arkansas, that is the largest range between the Rockies and the Appalachians.

ANSWER: **Ozarks**

[10] The Ozarks are primarily found in the south of this state passing through its capital of Jefferson City but not its bigger cities such as St. Louis or Kansas City.

ANSWER: **Missouri**

[10] This Missouri city located in the Ozarks in Taney County is a noted entertainment hotspot of the Midwest, making it a popular tourist destination.

ANSWER: **Branson**

079-10-19-10214

15. In this novel, the conch is shattered on the same rock by which Piggy is killed, symbolizing a breakdown of society. For 10 points each:

[10] Name this novel, in which Jack and Ralph compete for leadership of a group of boys in exile on an island.

ANSWER: **Lord of the Flies**

[10] *Lord of the Flies* is by this British Nobel laureate who also wrote *Rites of Passage*.

ANSWER: William **Golding**

[10] This innocent boy is killed by the other boys when he is mistaken for the "Beast" on the island. He "converses" with the Lord of the Flies, a pig's head left as an offering for that creature.

ANSWER: **Simon**

081-10-19-10215

16. One story told at the Passover seder claims that this man visits all homes during the holiday, and a special cup of wine is set aside for him. For 10 points each:

[10] Name this Biblical prophet who was taken to heaven in a fiery chariot. In some central European nations, he is held responsible for such phenomena as thunder and dew.

ANSWER: **Elijah**

[10] Another Jewish mythological figure is this giant defender of the Jewish people who was famously summoned by Rabbi Judah Loew ben Bezalel. This creature was destroyed when the word "truth" on its forehead was changed to the word "death."

ANSWER: **golem**

[10] Another Jewish myth describes this woman, Adam's first wife, and her attempts to cause sickness to babies, which are foiled if the children wear certain amulets.

ANSWER: **Lilith**

081-10-19-10216

17. The cellos and bassoons introduce the B minor theme of this piece, which is later transposed up a fifth to F-sharp major. For 10 points each:

[10] Name this piece which uses a furious crescendo of staccato notes to depict a certain figure's flight from the trolls pursuing him.

ANSWER: ***In the Hall of the Mountain King*** [or ***I Dovregubbens hall***]

[10] *In the Hall of the Mountain King* is the final part of this suite, which also contains *Morning Mood* and *Anitra's Dance*. It was composed as incidental music to a Henrik Ibsen play.

ANSWER: ***Peer Gynt Suite*** no. 1

[10] The *Peer Gynt Suite* was composed by this Norwegian composer of the *Lyric Pieces*, the *Holberg Suite* and a Piano Concerto in A Minor.

ANSWER: Edvard **Grieg**

080-10-19-10217

18. The Battle of Lundy's Lane took place during this war. For 10 points each:

[10] Name this war that was ended by the Treaty of Ghent.

ANSWER: War of **1812**

[10] This Canadian heroine is famous for warning James FitzGibbon of a surprise attack by American forces.

ANSWER: Laura Ingersoll **Secord**

[10] Many British ships, including the *Detroit* and the *Chippeway*, were captured during the battle that took place on this Great Lake in 1813.

ANSWER: Lake **Erie**

024-10-19-10218

19. One of these teams nearly beat the other on a half-court buzzer beater by Gordon Heyward. For 10 points each:

[10] Name these two colleges that played in the 2010 NCAA Men's Basketball Championship game. One of them won the Horizon League and is coached by Brad Stevens, while the other won the ACC and is coached by Mike Krzyzewski (SHUH-chef-skee) .

ANSWER: **Butler** Bulldogs and the **Duke** Blue Devils

[10] The 2010 NCAA women's basketball championship was played by these two schools. The one coached by Geno Auriemma defeated the one coached by Tara VanDerveer despite scoring only twelve points in the first half.

ANSWER: **Connecticut** Huskies [or **UConn**] and the **Stanford** Cardinal

[10] In this banner calendar year for New England, both the Connecticut men's and women's teams won their respective NCAA tournaments, the Patriots won the Super Bowl, and the Red Sox won the World Series.

ANSWER: **2004**

004-10-19-10219

20. This unit measures the amount of a substance, and a substance's atomic mass is equal to the mass of this much of a substance. For 10 points each:

[10] Name this chemical unit that, for a given substance, equals whatever amount of the substance would contain the same number of atoms as twelve grams of carbon-12.

ANSWER: **moles**

[10] This Italian man names a constant equal to 6.022 times ten to the twenty-third. That constant equals a substance's number of atoms divided by the amount of substance, in moles.

ANSWER: Amedeo **Avogadro**

[10] The gas constant divided by Avogadro's Number gives this constant, equal to 1.38 times ten to the minus twenty-third. It relates temperature and kinetic energy in gases.

ANSWER: **Boltzmann**'s Constant [do not accept "Stefan-Boltzmann Constant"]

079-10-19-10220

21. Studied by mycologists, they possess cell walls that contain chitin. For 10 points each:

[10] Name this kingdom that contains molds, yeasts, and mushrooms.

ANSWER: **fungus** [or **fungi**]

[10] This symbiotic relationship is formed between a fungus and a photosynthetic organism such as green algae or cyanobacteria and often observed on a rock.

ANSWER: **lichens**

[10] This symbiotic relationship forms between a fungus and the roots of a plant, providing the fungus with water and the plant with nutrients.

ANSWER: **mycorrhizae**

079-10-19-10221