

Round 5

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Tossups

(1) **At atomic levels, this force is explained by the Tomlinson model, used by nano-tribologists. According to Amonton’s laws, this force is independent of the total area of contact between objects and, unless the objects are not (*) moving, is independent of the velocity of motion. This force’s coefficient, mu [mew], can be reduced by applying a lubricant. For ten points, name this force that resists motion, as seen when trying to slide a box on sandpaper.**

ANSWER: friction

(2) **This artistic medium can use the Zone System developed by Fred Archer and the co-founder of the group f/64 [F-stop-sixty-four]. The works *El Capitan* and *Moon and Half Dome* are works made by (*) Ansel Adams in this medium, which he used to create images of Yosemite National Park. Another work in this medium shows a destitute woman and children during the Dust Bowl, and is called *Migrant Mother*. For ten points, Dorothea Lange began working in what artistic medium when she captured images of New York bread lines with her camera?**

ANSWER: **photography** (accept word forms like **taking photographs**; accept descriptions like using a camera before “camera” is read; prompt on “pictures” or “taking pictures”)

(3) **During this battle, Richard Anderson assaulted the Wheatfield after capturing the Devil’s Den. The winning side of this battle was commanded by George Meade, who had replaced Joseph Hooker just days prior. James Longstreet achieved the (*) “high-water mark of the Confederacy” during this battle as part of an attack on Cemetery Ridge. Pickett’s Charge took place during, for ten points, what July, 1863 battle, nicknamed the “turning point of the Civil War?”**

ANSWER: Battle of Gettysburg

(4) **A character in this novel plants a black flag emblazoned with a gold “N” at the South Pole, and flies the same flag before ramming the keel of a ship owned by the country that killed his family. This novel’s protagonist puts on a “cork vest” to accompany a Canadian named (*) Ned Land and his servant, Conseil [kahn-SYE], to a funeral in a “coral kingdom.” Pierre Aronnax narrates, for ten points, what Jules Verne adventure novel about the voyages of Captain Nemo’s submarine, the *Nautilus*?**

ANSWER: Twenty Thousand Leagues Under the Sea (accept Twenty Thousand Leagues Under the Seas: A World Tour Underwater; accept Vingt mille lieues sous les mers: Tour du monde sous-marin)

(5) **This city experienced backlash against mayor John Cooper and his state representative brother, Jim, after he laughed during an interview about a 2020 event near this city’s Commerce Street. The Petula Clark song (*) “Downtown” played before an attack in this city that disrupted Rutherford County 9-1-1 service when an RV exploded outside an AT&T building. For ten points, name this city whose downtown was targeted by a 2020 Christmas day bombing, the capital of Tennessee.**

ANSWER: Nashville (accept descriptions of Nashville bombing)

(6) **An early version of this concept was proposed by Aristarchus of Samos. This concept replaced an idea based on “deferents” and “epicycles” that was promoted by Ptolemy. The *Dialogue Concerning the* (*) *Two Chief World Systems* argued in favor of this concept, and opposed the will of Pope Urban VIII [the eighth]. Kepler and Galileo built on the work of Copernicus to develop, for ten points, what astronomical model in which planets orbit the Sun, which replaced geo-centrism?**

ANSWER: heliocentrism (accept descriptive answers of “Earth (or the planets) orbiting the Sun” before “planets” is read; accept descriptions of “the Sun being the center of the solar system” before “Sun” is read)

(7) **A poem named for a “Night Club” in this region describes “dark brown girls / in blond men’s arms” and commands a jazz band to “play pLAY PLAY!” A movement named for this region includes the poem “Theme for English B” and a poem that asks (*) “does it explode?” while pondering “what happens to a dream deferred?” Langston Hughes belonged to a literary movement centered in, for ten points, what New York City neighborhood, the namesake of a twentieth century Renaissance among its Black writers and artists?**

ANSWER: Harlem (do not accept or prompt on “New York” or “New York City”)

(8) **Possibly the largest of these events in history took place in India on November 26, 2020 and included chakka jams. In 1980-81, the Solidarity movement led one of these events in Gdansk, Poland. The Fridays for Future movement involves (*) students participating in this type of event, as inspired by Greta Thunberg, to oppose climate change denial. The Industrial Revolution caused an increase in, for ten points, what protests in which laborers refuse to work?**

ANSWER: strikes (accept additional information, such as “general strike,” “student strike,” etc.; prompt on “protests” and similar generic terms for unrest before “protest” is read; do not prompt on “riots” or similar generic terms for violent unrest)

(9) **In a music video featuring this artist, actress Miki Hamano psychically levitates this singer toward a stage; in another, this singer suffocates himself to death and uses a glowing red cross to destroy his house while in his (*) “Starboy” persona. At the 2020 AMAs, this man sang “Sin City’s cold and empty / no one’s around to judge me” while wearing a face full of bandages as part of an anti-drunk driving campaign. For ten points, name this singer of “Heartless” and “Blinding Lights.”**

ANSWER: The Weeknd [“weekend”] (accept Abel Makkonen Tesfaye)

(10) **This deity gave Lamia removable eyes, and took on the appearance of Artemis to seduce Callisto. This deity transformed into an eagle to abduct both Aegina and the shepherd-boy (*) Ganymede, who became this deity's cupbearer on Mount Olympus. This god's female lovers included Semele and Leto, who gave birth on Delos to this god's children, Artemis and Apollo. For ten points, name this philandering Greek sky god, the husband of Hera.**

ANSWER: Zeus

(11) **After this country's forces rampaged through the city of Louvain, they were described as "Huns" in propaganda. This country suggested that Arizona could be invaded by Mexico in a missive intercepted by the USA, the (*) Zimmerman Telegram. This country's Schlieffen Plan included invading Belgium, and it blockaded Britain by sinking ships with Unter-see-boots, or submarines. For ten points, name this country that formed the Weimar Republic after World War I, led from Berlin.**

ANSWER: Germany (accept Deutschland; accept German Empire or Deutsches Kaiserreich)

(12) **A member of this family wrote the proto-feminist novel *The Tenant of Wildfell Hall*. This family includes the authors of *Agnes Grey* and a novel in which Edgar Linton marries Catherine against the wishes of her adoptive brother, (*) Heathcliff. Another author from this family wrote about the romance between Mr Rochester and the title governess. For ten points, Anne, Charlotte, and Emily were members of what literary family responsible for English classics like *Wuthering Heights* and *Jane Eyre*?**

ANSWER: Brontë family (accept Brontë sisters; accept Anne, Charlotte, and/or Emily Brontë)

(13) **The Z-W system of these structures is common in birds and snakes. Turner Syndrome may result from the absence of one of these structures, or from the absence of one of their p-arms. An extra one of these structures may cause (*) Klinefelter Syndrome, and a replication of another of these, trisomy-21, causes Down Syndrome. Humans have twenty-three pairs of, for ten points, what structures that carry genes, such as sex-determining X and Y ones?**

ANSWER: chromosomes (accept sex chromosomes; accept Z, W, X, and/or Y chromosomes)

(14) **This composer included movements called "La Paix" [lah pah-ee] and "La Réjouissance" [lah ray-joo-ee-sawns] in a suite dedicated to the Treaty of Aix-la-Chapelle [ah-ee-lah-shah-pell], and composed a set of pieces for a concert on the River Thames. This composer of (*) *Music for the Royal Fireworks* wrote *Water Music* for George II, who began a tradition of standing during a work by this composer that repeats, "and He shall reign forever and ever." For ten points, name this composer whose *Messiah* oratorio includes the "Hallelujah" chorus.**

ANSWER: George Frideric Handel (accept Georg Friederich Händel)

(15) **Matrices have this property if they are equal to their transpose. "Even" functions have this quality with respect to the y-axis, and "odd" functions have this quality around the origin. The term (*) "bilateral" can describe this property about a line, as in mirror images. Four different lines of this concept can be drawn through a square. For ten points, name this concept that describes shapes that appear the same after being rotated or reflected.**

ANSWER: symmetry (accept word forms like symmetric; accept additional information like symmetric matrix, y-axis symmetry, etc.)

(16) **In this country’s 1979 “Mississauga Miracle” two hundred thousand people were safely evacuated with no casualties when a chemical train derailed and exploded. A 2016 wildfire in this country forced the evacuation of Fort McMurray, where an oil industry developed on the (*) Athabasca tar sands. In 1917, the French cargo ship *Mont-Blanc* exploded in this country’s closest port to Europe. For ten points, name this country where the Halifax explosion took place in Nova Scotia.**

ANSWER: Canada

(17) **Two brothers with this last name discovered piezoelectricity in 1880, and one of those brothers names the temperature at which permanent magnetism vanishes in some materials. The 1903 Nobel in Physics was shared by Henri Becquerel and (*) two scientists with this surname. The first scientist to win a second Nobel Prize, earned for discovering elements 84 and 88, had this surname. Polonium and radium were studied intensely by, for ten points, what family of scientists that included Pierre and Marie?**

ANSWER: Curie family (accept Jacques Curie; accept Pierre Curie; accept Marie Sklodowska Curie)

(18) **This religious action is described in Paul’s letter to the Ephesians as a result of having “one lord” and “one faith.” The son of Elizabeth, John, saw the Holy Spirit descend “like a dove” onto (*) Jesus during this ritual in the Jordan River. In Catholicism, this action is typically performed on infants and in Eastern Orthodoxy, it can be performed through full immersion. For ten points, name this Christian ritual, also called “christening,” in which a person is inducted into the church by being blessed with water.**

ANSWER: baptism (accept word forms like baptise; accept christening before it is read)

(19) **This writer was credited by Sophocles as the author of “The North Wind and the Sun,” and was described by Phaedrus as telling the tale of “The Frogs Who Desired a King.” In stories attributed to this man, a bitter protagonist dismisses unreachable (*) grapes as “sour,” and a lion is convinced to spare a mouse who later saves his life in return. For ten points, name this ancient Greek writer who included stories like “The Tortoise and the Hare” in his namesake “Fables.”**

ANSWER: Aesop (accept Aesop’s Fables)

(20) **This man wrote “injustice anywhere is a threat to justice everywhere” while imprisoned in Birmingham. This man rallied sanitation workers with his “I’ve Been to the (*) Mountaintop” speech one day before he was assassinated by James Earl Ray. In another speech, this man described a day when his children would be judged by the “content of their character” rather than the color of their skin. For ten points, name this Civil Rights leader who gave the 1963 “I Have a Dream” speech.**

ANSWER: Martin Luther King Jr. (accept MLK Jr.)