

# Replacements

Brad Fischer • Clare Keenan • Alec Krueger • Lauren Onel • Noah Prince  
Allison Salach • Zohra Sattar • Kristin Strey • Tyler Vaughan

## Tossups

(1) **This substance may appear in alternating light and dark bands called ogives, based on motion over the year. The ablation of this substance may be abrupt, as in calving events, or may be gradual, as in sublimation or other erosion processes. This substance has a density of roughly (\*) 0.9 grams per cubic centimeter, slightly less than in its liquid form. For ten points, name this solid substance that makes up bergs that float in the ocean, as well as glaciers.**

ANSWER: ice (accept glacier or iceberg before they are read)

(2) **This author wrote a series of letters written under the name Jonathan Oldstyle. One of this man's title characters thinks he hears thunder in the Catskill Mountains, but it turns out to be men playing ninepins. In another short story by this author, (\*) Bram Bones wins the heart of Katrina Van Tassel when Ichabod Crane vanishes. The headless horseman was created by, for ten points, what author of the stories "Rip Van Winkle" and "The Legend of Sleepy Hollow?"**

ANSWER: Washington Irving

(3) **In an emerging cancer therapy, a sample of boron captures these particles as they are radiated into a tumor. An experiment discrediting the gamma ray hypothesis proved the existence of these particles; that experiment was carried out by (\*) James Chadwick. Tritium is a species of hydrogen with two of these particles. Isotopes are specimens of an element that differ in the number of, for ten points, what subatomic particle that possesses no electric charge?**

ANSWER: neutrons

(4) **A pair of VC-25s currently serve as this vehicle, replacing the SAM 27000 in 2001. This vehicle's crew refuses to admit certain caskets to its cargo hold, a tradition begun on November 22, 1963, when the oath of office was administered to (\*) Lyndon Johnson aboard this vehicle. For ten points, name this aircraft used to carry the President of the United States.**

ANSWER: Air Force One

(5) **In one story from this figure, a girl creates jewels whenever she speaks, while her sister's mouth releases snakes. In another of this figure's tales, a cat tricks an ogre into turning into a mouse, which he promptly eats. In addition to "Diamonds and Toads" and (\*) "Puss in Boots," this figure has been credited with creating poems like "Humpty Dumpty" and "Jack and Jill." For ten points, name this imaginary bird-author of many tales and nursery rhymes.**

ANSWER: Mother Goose (accept Charles Perrault before "Humpty Dumpty" is read)

(6) **The angle between vertices of a regular one of these shapes is approximately 109.5 degrees; that number is familiar to organic chemistry students, as molecules of methane take this shape. This is the only (\*) Platonic solid that is its own dual and the only one in which each vertex is equidistant from the others. For ten points, name this simplest Platonic solid, a triangular solid whose name reflects the fact that it has four vertices and four faces.**

ANSWER: tetrahedron (prompt on (triangular) pyramid)

(7) **A decade after this system first opened, it was expanded to connect to Oneida Lake, and a 20th century improvement on it implemented, rather than ran parallel with, the Mohawk River. A then-highly-inexperienced Benjamin Wright oversaw the construction of this system, which (\*) DeWitt Clinton controversially supported. For ten points, name this canal that opened in 1825, greatly simplifying east-west transport across New York state to a namesake Great Lake.**

ANSWER: Erie Canal

(8) **These plants, also known as tracheophytes, generate via a diploid sporophyte phase, as opposed to the haploid gametophytes used by liverworts. These plants have a protective waxy cuticle, and their lignified tissues allow them to grow (\*) tall. Trees and flowers, but not mosses, are examples of, for ten points, what type of plant that transfers nutrients and water through a namesake tissue system consisting of phloem and xylem?**

ANSWER: vascular plants

(9) **Description acceptable. This 1997 event revoked a perpetual lease established by the 1842 Treaty of Nanjing. Like a similar event involving Portugal, this event was made possible by the development of “one country, two systems” theory, which blends socialist policies with capitalism in (\*) Special Administrative Regions. Tony Blair and Jiang Zemin oversaw, for ten points, what event in which the British handed over sovereignty of a very densely populated territory on the Pearl River to China?**

ANSWER: transfer of Hong Kong from the United Kingdom (or Great Britain, England, etc.) to the (People’s Republic of) China (accept anything that describes Hong Kong no longer being British and/or Hong Kong becoming Chinese)

(10) **The middle section of Baudelaire’s *Les Fleurs du Mal* is titled for this substance. In a novel partially titled for this substance, Leo attempts to build a “happiness machine” and (\*) Douglas Spaulding spends his summers in Green Town. Omar Khayyam’s *The Rubaiyat* famously proclaims the need for “a jug of [this], a loaf of bread, and thou.” For ten points, name this substance, a *Dandelion* variety of which titles a Ray Bradbury novel.**

ANSWER: wine

## Bonuses

(1) This Catholic Queen promoted religious intolerance by issuing the Alhambra Decree, expelling Jews from her land, and by waging war against the Moors. For ten points each,

Name this wife of Ferdinand of Aragon. As a royal pair, they financially supported the voyages of Christopher Columbus.

ANSWER: Isabella I of Castile

The marriage of Isabella of Castile and Ferdinand of Aragon essentially unified this modern European country.

ANSWER: Spain

Isabella and Ferdinand completed this centuries-long Spanish campaign against Muslims in Europe with the 1492 surrender of Granada.

ANSWER: Reconquista

(2) Ganymede, which orbits a different planet, is the only moon larger than this one. For ten points each,

Name this moon, the second largest in the solar system and the only one to have a dense atmosphere.

ANSWER: Titan

Titan orbits this planet, whose ring system has been studied by the *Cassini* probe.

ANSWER: Saturn

Saturn has a hexagonal cloud formation in this region of the planet. Water ice covers this region on both Mars and Earth, though a lake has annually formed at this spot on Earth since 2013.

ANSWER: north pole (prompt on pole)

(3) This city is the setting of a novel in which an unnamed narrator stabs Ras the Destroyer during a race riot in a Manhattan neighborhood. For ten points each,

Name this American city whose boroughs are the settings of Ralph Ellison's *Invisible Man* and Betty Smith's *A Tree Grows in Brooklyn*.

ANSWER: New York City, New York

*Invisible Man* is partially set in this neighborhood in Manhattan, which was the namesake of an early twentieth century literary movement of black writers. A Langston Hughes poem named for this neighborhood asks, "What happens to a dream deferred? / Does it dry up / like a raisin in the sun?"

ANSWER: Harlem (accept Harlem Renaissance)

This black playwright borrowed a line from Langston Hughes's poem "Harlem" for the title of her play about the Younger family's struggles living in Chicago, *A Raisin in the Sun*.

ANSWER: Lorraine Vivian Hansberry

(4) For ten points each, answer the following about multiplying 42 times 27. Note that the actual product, 1134, will not be an answer.

You may have written down a vertical multiplication problem and started to find 7 times 42, then progressed to 2 times 42 with a 0 in the ones column of your array. If so, you were following one of these sets of methodical instructions that will eventually result in a solution. This term is often used when talking about computer programming, as computers are machines for carrying out these processes.

ANSWER: **algorithms**

The sub-problem “7 times 42” might be re-written as “7 times the quantity 40 plus 2;” if so, this mathematical property notes that you can further re-write the problem as 7 times 40 plus 7 times 2.

ANSWER: **distributive** property (accept word forms like **distribution**)

This mnemonic is used as an algorithm to remember all steps in double-binomial distribution, which could - but probably wouldn't - be used in finding the answer to 42 times 27. This mnemonic reminds you of the four terms in the product, including the first and last.

ANSWER: **FOIL** (accept **first, outer, inner, last**; accept word forms, like outside for outer)

(5) In an 1895 speech at the Cotton States and International Exposition, this man noted that “the opportunity to earn a dollar in a factory [...] is worth infinitely more than the opportunity to spend a dollar in an opera house.” For ten points each,

Name this African-American orator and founder of the Tuskegee Institute who argued for a “compromise” in which blacks would accept white political leadership in the south in exchange for education, employment, and equal treatment under the law.

ANSWER: Booker T. **Washington**

Opponents of Washington's “compromise” included W.E.B. DuBois, who co-founded this civil rights organization in 1909.

ANSWER: **NAACP** (accept **National Association for the Advancement of Colored People**)

Washington's 1895 speech promoting the “compromise” was given in this largest city in Georgia.

ANSWER: **Atlanta** (accept the **Atlanta** Compromise)

(6) For ten points each, answer the following about the author of an early science fiction novel in which Dr Lidenbrock and his nephew Axel take a *Journey to the Center of the Earth*. For ten points each,

In *Journey to the Center of the Earth*, Lidenbrock and Axel travel through an Icelandic volcano to discover dinosaurs, electrically glowing clouds of gas, and an immense cavern in which a twelve-foot-tall humanoid herds these prehistoric relatives of the woolly mammoth.

ANSWER: mastodons (accept mammutids)

*Journey to the Center of the Earth* is by this French author of early science-fiction adventure novels, who also wrote *Around the World in Eighty Days* and a novel about Captain Nemo.

ANSWER: Jules Gabriel Verne

In this novel by Verne, Captain Nemo takes Pierre Aronnax aboard his submarine, the *Nautilus*, to investigate sharks and giant squid deep in the ocean.

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

(7) For ten points each, answer the following about a 1909 experiment carried out by Robert Millikan.

The experiment measured the value of this quantity, symbolized  $e$  and equal to roughly  $1.6 \times 10^{-19}$  coulombs.

ANSWER: elementary charge (accept the charge of the electron or charge of the proton; prompt on (electric) charge)

In the experiment, small drops of this substance were suspended between electrodes such that the electric force canceled the gravitational force.

ANSWER: oil (accept oil drop experiment)

Millikan conducted the oil drop experiment at this university in Illinois. It was also the site of Enrico Fermi's conduction of the first self-sustaining nuclear chain reaction.

ANSWER: University of Chicago

(8) This character hides under a couch whenever he is brought food, but emerges to listen to his sister Grete [GRAY-tuh] play the violin. For ten points each

Identify this character. He used to be a traveling salesman until he wakes from a night of uneasy dreams and discovers that he's been transformed into a giant insect.

ANSWER: Gregor Samsa (accept either underlined name)

Gregor Samsa is the protagonist of this short story by Franz Kafka. This story ends after Gregor's death, when the Samsa family take a tram ride and make plans to find Grete a husband.

ANSWER: The Metamorphosis

Gregor dies after his father throws this fruit at him and it becomes lodged in his back. This fruit was also eaten by Snow White shortly before she fell into an enchanted sleep.

ANSWER: apple

(9) For ten points each, name the following vitamins.

This essential vitamin prevents oxidation and is therefore used as a food additive. It also promotes collagen synthesis, preventing the onset of scurvy.

ANSWER: Vitamin C (accept ascorbic acid)

Beta-carotene is a precursor molecule to this vitamin for humans, but not cats, who can't convert it. The retina requires this vitamin for the generation of light-absorbing molecules.

ANSWER: Vitamin A

Low red blood cell quantities and neural tube defects can be prevented during pregnancy by intake of this vitamin.

ANSWER: Vitamin B<sub>9</sub> (accept folic acid or folate; prompt on B)

(10) These motions sought to determine whether President Polk's *casus belli* was legitimate, but they were largely ignored. For ten points each,

Name this set of eight House resolutions posed in 1847 by then-Representative Abraham Lincoln, who questioned whether American blood had been shed on soil actually owned by America.

ANSWER: Spot resolution(s)

The Spot resolutions questioned the legitimacy of this war, which ended in 1848 with the Treaty of Guadalupe Hidalgo.

ANSWER: Mexican-American War

After the Mexican-American War, the U.S. and Mexico agreed that Texas was U.S. territory and that much of their border would be marked by this river, which flows into the Gulf of Mexico.

ANSWER: Rio Grande (accept Rio Bravo del Norte)