

Second Set 2025-26

powered by

TheRockfordQuizBowlCo.

Brad Fischer · Jamie Fischer · Sophia Lind · Adam Silverman · Kristin A. Strey

Replacements

- 1) **This scientist names the law that, “convective heat flux equals h , times area, times the difference in temperature.” A law named for this physicist sets force equal to “big G , times big M , times little m , over distance squared.” According to this physicist, the sum of the (*) forces on a free-body diagram add up to mass times acceleration. The laws of universal gravitation and the Second Law of Motion were developed by, for ten points, what Englishman?**

ANSWER: Sir Isaac Newton

Bonus 1) Give the following about Wilson's theorem, for ten points each.

[10e] Wilson's theorem explains whether an integer will be this type of number. These numbers are only evenly divisible by themselves and one, unlike a composite number.

ANSWER: prime number(s)

[10m] For an integer N , Wilson's theorem involves taking this operation on the input " N minus one." For two examples, if N equals five, this operation on four gives you twenty-four; if N equals seven, then this operation on six gives you seven hundred twenty.

ANSWER: factorial (accept " N minus 1 factorial;" accept " N factorial")

[10h] Wilson's theorem notes that N will be a prime number if and only if the expression " N minus 1 factorial" is congruent to negative one within this type of arithmetic.

ANSWER: modular arithmetic (accept modulo; accept mod; accept additional information like "mod N ")

- 2) **Oskar Potiorek witnessed this event after complaining that a driver had taken a wrong turn;. Potiorek was the impromptu intended target of a bullet that killed Sophie Chotek, the second of this event's (*) two victims. The Black Hand plotted this event, which triggered the July Crisis and subsequent diplomatic tangling. Gavrilo Princip carried out, for ten points, what June 28, 1914 attack in Sarajevo that is often cited as a direct cause of World War One?**

ANSWER: assassination of Archduke Franz Ferdinand (both underlined parts required; prompt on partial answers that do not include both underlined parts; accept equivalents like murder, shooting, etc. of Franz Ferdinand, with both parts required)

Bonus 2) This literary character is named for a waterfall by her father, an "ancient Arrow-maker." For ten points each,

[10h] Name this fictional Dakota woman who falls in love with an Ojibwe man, the son of Nokomis and the West Wind, in a nineteenth-century poem.

ANSWER: Minnehaha

[10m] Minnehaha falls in love with the title character of this poem, who is raised by Nokomis "By the shores of Gitche Gumee, / By the shining Big-Sea-Water."

ANSWER: The Song of Hiawatha

[10e] *The Song of Hiawatha* is a long poem by this American author of "Paul Revere's Ride."

ANSWER: Henry Wadsworth Longfellow

- 3) **In this play, a political advisor is called a fishmonger by a man who accidentally kills him. A character in this play gives her friends fennel and columbines, and says that all the violets withered with the death of her father, (*) Polonius. In this play, Gertrude hopes Ophelia is the reason for her son's madness, which he fakes so he can find out whether Claudius killed his father. For ten points, name this Shakespeare play about a prince of Denmark.**

ANSWER: Hamlet (accept The Tragedy of Hamlet, Prince of Denmark)

Bonus 3) Give the following about dramatic landforms for ten points each.

[10e] In areas with little vegetation, wind can blow sand into these mounds that can reach heights of hundreds of feet. A desert landscape filled with these features is called an erg.

ANSWER: dune (accept sand dunes)

[10m] These narrow sea inlets, common in Norway and New Zealand, are formed by sea water flooding into a U-shaped valley cut out by glacial movement.

ANSWER: fjords [fYORD]

[10h] Alpine Europe has many examples of this type of topography, in which the dissolution of underground limestone forms sinkholes and caves, largely preventing the above-ground fields from being completely flat or having above-ground water.

ANSWER: karst topography

- 4) **When mosquitoes with this trait are infected with *Wolbachia*, cytoplasmic incompatibility causes their offspring to immediately die. No living whiptail lizards have this trait. In a Fisherian runaway, animals with this trait sacrifice survival fitness to improve success at mating. (*)** Honeybees with this trait called drones die after a nuptial flight with the queen. For ten points, brightly colored ducks or peacocks with large tails are what sex?

ANSWER: males (accept word forms like maleness; accept XY or ZZ)

Bonus 4) This man fought alongside the Colorados in the Uruguayan Civil War and the Ragamuffins in Brazil. For ten points each,

[10h] Name this man who became known as the "Hero of Two Worlds" for those exploits in South America and other work in Europe.

ANSWER: Giuseppe Garibaldi

[10e] Garibaldi is best known for leading troops during the Risorgimento, the unification of states like the Kingdom of Naples and the Kingdom of the Two Sicilies into this modern-day country.

ANSWER: Italy (accept Kingdom of Italy; accept Italian Republic; accept Italia)

[10m] Garibaldi's volunteer followers wore this type of colorful clothing, and became known by that name.

ANSWER: red shirt (accept the Redshirts; accept camicie rosse; accept giubbe rosse; prompt on "shirt" alone; do not accept or prompt on answers with different colors)

- 5) **One example of these shapes, the Gosper island, can tile the plane with a Hausdorff dimension of log nine over log seven. These shapes exhibit self-similarity, according to the 1967 paper about the (*) coastline of Britain that introduced their study. The Sierpinski triangle and Mandelbrot set are examples of, for ten points, what complex geometric shapes that look like themselves, even after intense levels of zooming in?**

ANSWER: fractals

Bonus 5) Ben Franklin charted maps of this phenomenon after learning about it from a Nantucket whaler. For ten points each,

[10m] Name this ocean current that runs from the strait between Cuba and Florida, up to the Carolinas, before turning toward the North Atlantic.

ANSWER: Gulf Stream

[10h] The Gulf Stream is the northwestern arm of the North Atlantic type of this ocean current system. This type of circulating system with a four letter name generates a patch of flotsam, or garbage, in its center.

ANSWER: gyre

[10e] The North Atlantic Gyre surrounds the Sargasso Sea, a calm section of the Atlantic that is named for a type of this marine algae. Kelps are an example of these plants.

ANSWER: seaweeds

- 6) **In this novel, the King of Thunes orders the death of the poet Pierre Gringoire [pee-AYR grang-WAHR] in the Court of Miracles, but changes his mind when the poet marries the daughter of Sister Gudule. In this novel, a dancer who performs with the goat (*) Djali ["jolly"] loses sanctuary and dies because she rejects the creepy archdeacon Claude Frolo. Esmeralda is executed in, for ten points, what novel by Victor Hugo in which the bell-ringer Quasimodo lives in the title Paris Cathedral?**

ANSWER: The Hunchback of Notre Dame (accept Notre-Dame de Paris)

Bonus 6) Nearly twenty million gallons of this material were sprayed in Operation Ranch Hand, a decade-long campaign that led the United Nations to try to label certain herbicides as banned chemical weapons. For ten points each,

[10h] Name this defoliant, a mixture of 2,4-D [two four D] and 2,4,5-T [two four five T] herbicides. This chemical's trace amounts of dioxin led to spikes in cancer throughout Southeast Asia.

ANSWER: Agent Orange

[10e] The U-S heavily sprayed Agent Orange during this war, whose American involvement ended after the evacuation from Saigon in 1975.

ANSWER: Vietnam War

[10m] The use of Agent Orange was not considered a war crime, unlike this March 16, 1968 massacre of civilians in South Vietnam. William Calley was the only person convicted of a crime related to this massacre.

ANSWER: My Lai massacre (pronounced [mee "lye"], but be lenient; accept Son My massacre)

- 7) **This man's administration started the Reconstruction Finance Corporation, which reached its peak under his successor. This author of the textbook *Principles of Mining* went against the advice of over one thousand economists to sign the (*) Smoot-Hawley Tariff into law, and he enraged veterans by ordering Douglas MacArthur to clear out the Bonus Army. For ten points, name this U-S president who did not adequately address the start of the Great Depression.**

ANSWER: Herbert Hoover (accept Herbert Clark Hoover)

Bonus 7) This literary genre has been characterized by mistaken identity, ghostly spectres, and dramatic deaths since the first novel written in this style, *The Castle of Otranto*. For ten points each,

[10m] Name this genre associated with dark themes and medieval architecture.

ANSWER: Gothic literature (accept Gothic fiction; accept Gothic horror)

[10e] This Gothic novel by Bram Stoker follows the lawyer Jonathan Harker and his friends as they hunt the title vampire.

ANSWER: Dracula

[10h] In *Dracula*, this woman ticks all the Gothic boxes: She dies dramatically, becomes a vampire, and appears as a ghostly spectre who hunts children until Harker and Van Helsing kill her a second time.

ANSWER: Lucy Westenra (accept Lucy Westenra)

- 8) **Trace levels of water in drugs are detected by this process on a Karl Fischer apparatus. This technique of volumetric analysis uses a glass column with a stopcock to release one drop at a time into a beaker containing (*) phenolphthalein.** This technique measures an equivalence point, where the solution is neutralized, and an endpoint, where the pH indicator changes color. For ten points, name this technique to measure the concentration of acids or bases.

ANSWER: **titration** (accept word forms like **titrating**; accept acid-base **titration**)

Bonus 8) This uprising sputtered out shortly after its protesters were unable to capture guns in a futile attack on an armory in January 1787. For ten points each,

[10m] Name this short-lived uprising against tax collection in rural Massachusetts. Benjamin Lincoln helped suppress this rebellion.

ANSWER: **Shays'** Rebellion (do not accept or prompt on "Shay" alone)

[10h] Daniel Shays and his militia marched on the armory in this Massachusetts town, the first federal armory in the United States. This town was the center for American rifle and musket production for two centuries.

ANSWER: **Springfield** (accept **Springfield** Armory)

[10e] Shays' Rebellion is often cited in discussions of the weakness of this governing document, which the thirteen colonies discussed at the Second Continental Congress. This document was replaced by the Constitution in the 1780s.

ANSWER: **Articles of Confederation** (accept **Articles of Confederation** and Perpetual Union)

- 9) **Landmarks in this battle included a German Baptist church, the Hagerstown Turnpike, and a sunken road that became known as the "Bloody Lane." This battle ended after A.P. Hill's reinforcements sent Ambrose Burnside back to a gravely-captured stone arch (*) bridge.** George McClellan was relieved of duty after failing to pursue Robert E. Lee after, for ten points, what September 1862 clash in Maryland, the deadliest single-day battle in American history?

ANSWER: Battle of **Antietam**

Bonus 9) In this play, Trigorin tells Nina a story about a man who destroys a woman unthinkingly, the way a person might shoot the title animal. For ten points each,

[10h] Name this play in which Konstantin Treplev shoots the title bird and then himself over his failed love for Nina.

ANSWER: The Seagull (accept Chakya)

[10e] *The Seagull* is by this Russian author known for popularizing the rule that a gun shown on stage in Act One must be fired in Act Two.

ANSWER: Anton Chekhov (accept Anton Pavlovich Chekhov; accept Chekhov's gun)

[10m] At the end of this Anton Chekhov play, Madame Ranevskaya unthinkingly locks her servant, Firs, in her house to die while, offstage, axes are heard chopping down the title grove of fruit trees.

ANSWER: The Cherry Orchard (accept Vishneviy sad)

- 10) **This author's *The Land of Sweet Forever* was controversially published in 2025. A character created by this author reads the racist pamphlet "The Black Plague" in the sequel to a novel in which he defends (*) Tom Robinson in court. This author created the character of Dill Harris, who spends a summer in Maycomb with Jem and Scout Finch. For ten points, name this author of *Go Set a Watchman* and *To Kill a Mockingbird*.**

ANSWER: Harper Lee (accept Nelle Harper Lee)

Note: *The Land of Sweet Forever* is a collection of Lee's short fiction, written when she was very young. Like *Go Set a Watchman*, many consider it unlikely that she ever wanted them published.

Bonus 10) Visible light has the right amount of energy to make d electrons in these elements jump between energy levels, which is why they're often colored after oxidation. For ten points each,

[10e] Name these metals that occupy the middle of the periodic table.

ANSWER: transition metals

[10h] Without oxidation, transition metals are colorless, unless they have this many d electrons, allowing them to steal an s electron to fill the d subshell. Copper has this many d electrons.

ANSWER: nine (accept d nine)

[10m] This element in the copper group owes its brilliant color to relativistic electronic effects. This metal gives color to the salt auric chloride.

ANSWER: gold (accept A·U)