



INTERNATIONAL Science Bee

2024-2025 Regional Finals Study Guide – Alpha Question Set

Instructions: This study guide should be your first resource in preparing for the International Science Bee that is run on the Alpha Set of questions for the 2024-2025 academic year. Most of the facts below are found at some point in the preliminary rounds of this Set. Thus, we have selected these facts for this study guide to help make your preparation easier and more efficient. This study guide is particularly meant to help new players and teams – not to determine the ultimate winner of the tournament. For that, you will need to do more preparation. In particular, we recommend reviewing the past questions that are posted on the website at www.ihbbeurope.com, www.iacompetitionsasia.com, or www.ihbbcanada.com as well as the other resources there. Remember that the questions are all short paragraphs on a particular topic, so if a topic is referenced below, then it is a good idea to learn a bit more about it on your own than what is listed here (since additional facts about a topic will also be referenced in the question). On the other hand, it is generally not helpful to memorize the dates of events or of famous people's birth and death years, as those are provided below for historical context, not because we will likely ask for those. It is also helpful to read, at a minimum, the introduction of a Wikipedia page on a topic to gain additional context about why it is significant. Good luck!

Biology & Anatomy

1. [Amber](#) is a type of fossilized ancient tree [resin](#).
2. A [eukaryotic cell](#) is a type of cell that possesses a [nucleus](#), as contrasted with [prokaryotic cells](#).
3. [Parrots](#) are a type of tropical bird known for their ability to imitate human speech.
4. Humans have 23 pairs of [chromosomes](#), which are segments of [DNA](#).
5. A [concussion](#) is a [brain injury](#) caused by a blow to the head.
6. [Ferns](#) are a type of plant that is able to reproduce by releasing [spores](#) from their [fronds](#).
7. A [heart attack](#) is a type of medical event in which [blood](#) is cut off from a portion of the [heart](#).

Astronomy

1. [Impact craters](#) are formed when [asteroids](#) or [meteorites](#) make contact with the surface of a planet.
2. The [Sun](#) is an enormous [yellow dwarf](#) star that is orbited by the [Earth](#).
3. [Pluto](#) is now considered a [dwarf planet](#) after being demoted from the status of planet in 2006.
4. An [asterism](#) is a collection of stars that form a group, but not a [constellation](#).
5. The [Soviet Union](#) launched [Sputnik](#), the first artificial [satellite](#) to enter low Earth orbit.
6. The term "dirty snowball" is often used to describe [comets](#).
7. The planet [Jupiter](#) is home to a major storm known as the [Great Red Spot](#).

Chemistry

1. Heat and/or light are released in a type of [exothermic reaction](#) called [combustion](#).
2. German chemist [Robert Bunsen](#) is the namesake of a type of open flame [burner](#) used in laboratories.
3. The [noble gases](#) are a group of [chemical elements](#) characterized by their low [reactivity](#).
4. [Silicon](#) is an element that is vital for the production of [computer chips](#), which is why the element gives its name to a California [valley](#) notable for its tech industry.
5. The [filaments](#) of [incandescent light bulbs](#) are composed of [tungsten](#), a [metal](#) with the symbol W.
6. American chemist [Gilbert N. Lewis](#) developed a classification for [acids and bases](#).
7. [Filtration](#) is a process in which the [solid particles](#) of a [liquid](#) are separated.
8. [Carcinogens](#), or cancer-causing agents, include [arsenic](#), a [metalloid](#) element with the symbol As.

Computer Science

1. The term [Wi-Fi](#) describes [network protocols](#) that allow [computers](#) to interact [wirelessly](#) with the [internet](#).
2. [Computer-generated imagery](#) (CGI), a technology that produces visual images, was used to make the 1995 film [Toy Story](#).
3. [Bell Labs](#) designed [C](#), a computer [programming language](#), or instruction set that tells a computer how to perform [tasks](#).

Earth Science

1. [Pangaea](#) is a [supercontinent](#) that takes its name from the Greek for “all earth.”
2. [Diamond](#) is a precious [gemstone](#) made of [carbon](#); it is also the [hardest natural substance](#) on Earth.
3. [Sonar](#) is a technique that uses [sound](#) to detect underwater objects and [navigate](#).
4. A [caldera](#) is a feature that forms from the collapse of a [cinder cone](#), a type of [volcano](#).
5. [Droughts](#) are typified by a pronounced absence of [precipitation](#) over a stretch of time.

Math

1. The [area](#) of a [circle](#) can be found using the formula πr^2 (pi r-squared).
2. A [vertex](#) is a point where two [curves](#), [lines](#), or [edges](#) meet.
3. Calculating and understanding the likelihood of an event is the focus of [probability](#), a [branch of mathematics](#).

Physics

1. One [property](#) of matter is [inertia](#), the tendency for an object to stay at rest or remain in motion unless acted upon by an external [force](#).
2. The rate of change of the [velocity](#) of a given object is quantified by its [acceleration](#).
3. The resistance of two [surfaces](#) in contact with one another is a type of force called [friction](#).
4. In airplanes, [turbulence](#) is an [atmospheric](#) phenomenon caused by irregular [motion](#).
5. The [four fundamental forces](#) are [gravity](#), the [electromagnetic force](#), the [strong nuclear force](#), and the [weak nuclear force](#).
6. The [field of physics](#) that studies the properties of sound is known as [acoustics](#).