

## Part One:

**In your own words, explain what a scientific theory is and their role in science.**

Scientific theories are explanations that are supported by high-level research and testing that are widely accepted, that further explain a specific aspect of natural and/or physical phenomena. However, they can over time change, and more often than not do so. These theories play an important role in science, as they provide explanations and guidance to observations made throughout the world and solving problems. They help to bring together facts, helping to further discover and advance our world day in and day out.

## Part Two:

**Research a theory that has changed over time. Briefly outline how and why that theory changed over time (more in-depth experimentation, better technology for observation and experimentation, etc.). You can create a simple timeline, bulleted list, or flow-chart.**

**Make sure to list the current explanation(s) given by the theory.**

## Einstein's Static Universe theory

In 1917, Albert Einstein proposed a model towards a static universe, that it was temporally infinite, but spatially finite. A static universe, or "stationary" universe, is one where it does not expand or contract. However, Edwin Hubble went on to discover that a galaxy's redshift is proportional to its distance (known as Hubble's law) in 1929. Therefore in this instance, the universe in fact was expanding. He discovered this by comparing the distances of galaxies to their redshifts. This ultimately disproved Einstein's initial theory that he made back in 1917.

In today's world, scientists are still trying to determine the exact value of Hubble's constant, which tells us the speed of an object at a given distance. In this case, that the universe expands the same everywhere. However, this rate of expansion continues to change. According to NASA, the current best direct measurement of this constant is around "*73.8 km/sec/Mpc.*"