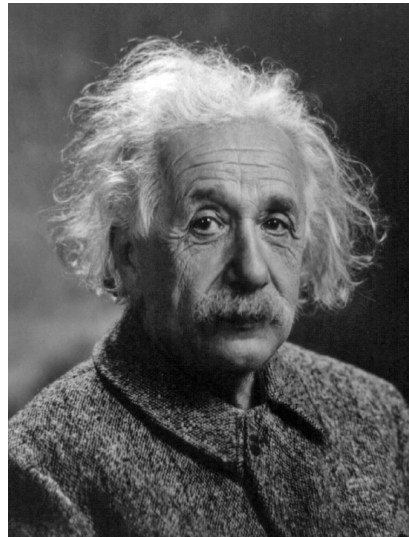


Albert Einstein

Born March 14, 1879, in Ulm Germany

Died April 18, 1955, in Princeton, New Jersey, United States



Albert Einstein is one of the most well known physicists of the 20th century. He is recognized as the father of modern physics and developer of the equation $E = mc^2$ as well as his famous general theory of relativity and special theory of relativity. He was also instrumental in the Manhattan Project that created the first atomic bomb during World War II.

Early Life:

He was born in the city of Ulm in the kingdom of Wurttemberg, which was situated in the greater German Empire in the year 1879. Einstein was born into a well-off family. His father operated an electrical equipment company that manufactured equipment that ran on Direct Current (DC). The name of his father's company was *Elektrotechnische Fabrik J. Einstein & Cie* and was based in Munich. However, the company was unable to keep up with the changing technology and in the year 1894, was unable to transform its equipment to work on the newer and more efficient Alternating Current (AC), this eventually led to its closure. After this unfortunate occurrence, Einstein's family moved to Italy in the hopes of finding new opportunities (Folsing, 1993).



1882 - Albert age 3

Adult Life:

Albert Einstein stayed behind in Munich after his family moved to Italy and completed his basic education at Luitpold Gymnasium. Einstein was a rebel against authority since childhood and did not accept the teaching methods at Luitpold and believed that their strict authority was ruining

the creative nature of its students. Later on, Einstein enrolled in the Argovian cantonal school in Aarau, Switzerland where he completed his secondary education. Please note that contrary to what some believe, Einstein did not fail out of school at a young age.

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Patent Office:

The work Einstein did in the patent office at the federal office for intellectual property in Switzerland is worth discussing as it was the start of his work on theoretical physics and what prompted him to carry out his research. He received his position at the patent office in 1903 after failing to find a teaching position following graduation.

The issues Einstein dealt with at the patent office related to the topic of electrical signal transmission through which he gained the thoughts that prompted his radical theories of the nature of light and matter (Arthur, 2015).

Academic/Career Achievements:

Throughout his career, Einstein was published many times in numerous scientific journals, the first coming in the year 1900 at the age of 21 in the Annalen der Physik. He was awarded his Ph.D. in the year 1905 (age of 26) after he completed his thesis "A new determination of molecular dimensions." However, Einstein will also be remembered for what he accomplished in what is now known as Einstein's Miracle Year.

Einstein's Miracle Year:

1905 has been recognized as the miracle year for Albert Einstein. During this year, Einstein published four groundbreaking scientific papers that revolutionized science as we know it.

Paper #1: "On a Heuristic Viewpoint Concerning the Production and Transmission of Light" His first paper discussed the Photoelectric Effect which showed that light moved in packets of energy called photons instead of a continuous wave as was previously thought. This was shown by shining a light onto the surface of a metal and observing the electrons that were ejected. Although his work was disputed, he would later receive the Nobel Prize in 1921 for the work first proposed in this paper.



Albert Einstein - 1905

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Paper #4: Does the Inertia of a Body Depend Upon Its Energy Content?" Here Einstein stated that all matter, no matter its size or speed, possesses energy. In physics, we call this its "rest energy" and represent it with the equation, $E = mc^2$ where E = energy (in joules), m = mass (in grams) and c is the speed of light (3.0×10^8).

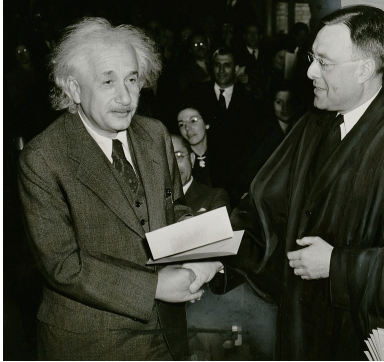
By publishing these papers, Einstein was recognized all over the world for his academic achievements and was immediately brought into the spotlight.

After publishing these groundbreaking scientific papers, Einstein spent the next few years teaching at higher posts in different universities around Switzerland and other Scandinavian countries. However, his contribution to science wasn't nearly complete. He developed his General Theory of Relativity in the year 1911 which looked at how gravity is simply a result of a curved

space-time. This theory would also predict gravitational waves that weren't proven to exist until 2016; over 100 years after his theory predicted them!

Legacy:

Einstein was known as a rebel since he was a child and had views that were against the conventional ideologies. He disagreed with the teaching methods of his school as he considered them very rigid and uncreative. Einstein was a committed anti-racist individual and supported the rights of all people no matter their color throughout his life. He was also known as a great enthusiast of music and played the violin.



Einstein - 1940

During his life, he published more than 300 scientific papers and numerous non-scientific ones. He passed away on 17th April 1955 in Princeton Hospital, New Jersey at the ripe age of 76, it is said that he kept working right to the end (Hermann, 2010).

Einstein's scientific achievements have far outlasted the man. What he theorized in the beginning of the 20th century is still being proven to this day with discoveries like Gravitational Waves. His work and thoughts have left their mark on our world and paved the way for many applications we use today. Such applications include solar panels that have enabled us to harness the energy of the sun, Global Positioning Systems (GPS) that allow us to know where we are in the world and satellites to function, as well as our ability to harness nuclear power inside our fission reactors. Einstein has benefited us in countless ways and his contributions to our society cannot be properly measured (Frank, 2005).

Reading Comprehension Questions:

1. What did Einstein receive his Nobel Prize for and in what year did he receive it?
2. What
3. What
4. Why was his time at the Patent office important?
5. Which
6. How much energy does 1 g of a substance possess when stationary. Your answer will be in Joules (J)?

Extension Questions:

7. Research the connection between Einstein and our current GPS. Which achievement of Einstein does GPS owe its ability to function and why?
8. Why
9. How were gravitational waves discovered in 2016?
10. Create
11. Create

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