

Name _____ Gravity



The Theory of Relativity

Albert Einstein was born in Germany in 1879, and spent most of his childhood there. His father, who owned an electronics company, taught him a lot about science and electronics. Einstein studied mathematics and science in school.

In the early 20th century in Germany, the Nazi party rose to power. Because of the restrictions that the Nazis placed on Jewish people (in the years leading up to the Holocaust) Einstein, who was Jewish, was unable to hold a University teaching position in Germany. So in 1933, Einstein immigrated to the United States. In 1940, he became a U.S. citizen.

Einstein made many great contributions to science, but he was best known for his Theory of Relativity. This theory marked a turning point in how scientists view the world. It also laid the foundation for nuclear technologies like the nuclear bomb and nuclear energy.

A famous equation from Einstein's Theory of Relativity (1916) is $E=mc^2$. In this formula, c represents the speed of light, which is a constant, and as far as we know the greatest speed in the universe. E stands for energy, and m stands for mass. The Theory of Relativity explains that what we perceive as the force of gravity is actually a consequence of the curvature of space and time. Einstein proposed that when in the presence of matter and energy, the geometry of space-time can change, stretch, and warp, creating ridges, peaks, and troughs that make the bodies moving through space-time zigzag and curve. According to Einstein, then, there is no force of gravity. The Earth is not pulled towards the sun because of gravity, but because the geometry of space-time around the sun causes the Earth to move in that way.

The general Theory of Relativity also describes the history and expansion of the universe, how black holes work, and the bending of light from distant stars and galaxies.