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**Einstein and Relativity**

In1919, A SOLAR ECLIPSE made Albert Einstein the most famous scientist of the planet.

Years earlier, Einstein had pondered the theories of Isaac Newton, most especially the theory of gravity. Newton had first theorized that what made an apple fall from a tree to the ground was the same force that made the earth, and the rest of the solar system, revolved around the sun. His theories and equations, two centuries old, still accurately traced the movement of the planets; however, Newton had never been able to explain how or why gravity worked the way it did. Einstein proposed his Theory of Special Relativity to 1905, in a paper titled, “On the Electrodynamics of Moving Bodies”. Building on the observations of Galileo, he showed that the velocity of any moving mass was relative to the velocity of whatever mass it was measured against. In other, more simple terms, rather than a force, as Newton had assumed, gravity is the effect of mass on space.

The most significant aspect of Einstein’s work was his proof that space and time, two essential elements of physics, were not absolutely fixed and non-variable, but were **mutable**. He theorized correctly that the only absolute in physics was the speed of light—which was a constant that nothing could exceed. This was a new way of looking at the physical world and the universe. Einstein’s Theory of General Relativity, therefore, opened the door to a new understanding of how the universe works.

Einstein was building on the scientific observations of not only Galileo and Newton, but also of many others since; nevertheless, only Einstein was able to present and codify these observations into a cohesive, provable theory that would lead to technological and scientific advances during the course of the next century.

The solar eclipse of 1919 was the first accepted proof of Einstein’s idea of relativity, which stated that the light of stars close to the sun would bend in response to its gravity. This effect is visible only during an eclipse. At all other times, light will be obscured by the brightness of the sun. When photographs of the eclipse were published, showing that the theory was absolutely correct, Einstein was heralded for his work.

1. How do you assess the level of scientific knowledge communicated in the passage?

1. It is an in-depth account of Einstein, his theories, and his effect on physics.
2. It is a basic, but fairly complete outline of the Theory of Relativity.
3. It is a readily understood description of the distinctions between Newton and Einstein.
4. It is superficial and incomplete, displaying a limited proficiency in science.

2. According to the second paragraph, Einstein and Newton differed in their theory of gravity because

1. Newton saw time and space as absolute, and Einstein did not.
2. Newton believed gravity was a force, and Einstein did not.
3. Newton had a completely different perception of mass.
4. Newton believed gravitational force moved the planets.

3. As used in the passage, the word **mutable** means

1. Fixable.
2. Reliable.
3. Changeable.
4. Measurable.

4. According to the passage, Albert Einstein is deservedly famous because

1. he independently conceived the Theory of General Relativity.
2. he recognized that the universe differed from Newton’s theories.
3. he channeled the work of previous scientists into a cogent theory.
4. the solar eclipse of 1919 gave solid proof of the Theory of Relativity.

5. What would be the most appropriate title for the passage?

1. Einstein, World’s Greatest Physicist
2. A New View of the Universe
3. Einstein Overthrows Newton
4. A Basic Explanation of Relativity

6. Answer the following question using complete sentences: How does the Theory of Relativity change perceptions of the physical world?