

Name \_\_\_\_\_

## Historical Breakthroughs with the Scientific Method

### Short-Answer Answer Key

1. Answer: Galileo used the scientific method by making careful observations through his telescope, collecting data, and analyzing it. His observations of Jupiter's moons and Venus's phases provided evidence supporting the heliocentric model of the solar system.
2. Answer: Newton's laws of motion include the law of inertia (first law), which states that objects at rest stay at rest, and objects in motion stay in motion unless acted upon by an external force. The second law introduces the concept of force and acceleration, while the third law states that for every action, there is an equal and opposite reaction. His law of universal gravitation explains how objects are attracted to each other due to their masses and distances.
3. Answer: Darwin's theory proposes that species evolve over time through a process where individuals with favorable traits are more likely to survive and reproduce. This leads to the accumulation of advantageous traits in a population over generations, resulting in the adaptation of species to their environments.
4. Answer: Marie Curie's research on radioactivity led to the discovery of new elements and a deeper understanding of atomic structure. Her work also laid the foundation for the use of radiation in medical treatments and diagnostics, including X-ray machines, which have become invaluable in modern medicine.
5. Answer: The two major components of Einstein's theory of relativity are special relativity and general relativity. Special relativity introduced the idea that space and time are interconnected and relative to the observer's motion. General relativity revolutionized our understanding of gravity by describing it as the warping of spacetime by mass. These theories transformed our understanding of the physical world and led to practical applications.

