

Name \_\_\_\_\_

## The Mysteries of Gravity

### Open-Ended Response Answer Key

1. The history of our understanding of gravity includes contributions from ancient civilizations, such as the Greeks, who had early ideas about falling objects. Galileo Galilei conducted experiments on falling objects, while Sir Isaac Newton formulated the law of universal gravitation, revolutionizing our understanding of gravity.
2. The concept of the expanding universe suggests that galaxies are moving away from each other. Gravity plays a role by attempting to slow down this expansion. The ultimate fate of the universe depends on the balance between the expansion driven by dark energy and the gravitational pull of matter.
3. Exploring a celestial body with lower gravity would pose challenges, such as astronauts experiencing weaker gravitational forces, leading to muscle and bone loss. Navigating in low gravity would also require adjustments in movement and equipment. Countermeasures like exercise and specialized gear would be necessary.
4. Recent discoveries related to gravity include the detection of gravitational waves by LIGO and Virgo detectors, confirming Einstein's theory of general relativity. Space missions like the Gravity Recovery and Climate Experiment (GRACE) have provided valuable data on Earth's gravitational field and its changes over time.

