

Name \_\_\_\_\_

## Gravity Gauge: Measuring the Force on Different Planets

### Open-Ended Response Answer Key

1. Knowing the strength of gravity on Mars would help me plan my activities and equipment. I would need to account for the weaker gravity when walking, lifting objects, and even jumping. It would also influence the design of vehicles and tools to ensure they work effectively in Martian conditions.
2. The strength of gravity affects the weight of objects on different planets. On Earth, a 100-pound object weighs the same as 100 pounds. However, on the Moon, it would weigh only about 16 pounds due to weaker gravity. On Jupiter, it would weigh about 248 pounds due to stronger gravity.
3. Challenges include calibrating the gravimeter accurately, accounting for variations in gravity within a planet, and ensuring the device works in harsh space environments. Scientists overcome these challenges through careful planning, advanced technology, and data analysis.
4. Understanding gravity on other celestial bodies is essential for space exploration because it helps us design spacecraft, landers, and equipment that can function in varying gravitational conditions. It also aids in planning missions, ensuring astronaut safety, and potentially establishing human settlements on other planets.

