CHAPTER OVERVIEW

9: Gravity

Learning Objectives

- Understand Kepler's Laws.
- Understand Newton's Universal Theory of Gravity.
- Understand Gauss' Law and the gravitational field.
- Understand how to use energy to describe orbits.
- Understand how Einstein's General Theory of Relativity differs from Newton's theory of gravity.

In previous chapters, we have so far learned about Newton's Theory of Classical Mechanics, which allowed us to model the motion of an object based on the forces acting on the object. In this chapter, we present the theories that describe the force of gravity itself. We will see several theories of gravity and focus primarily on Newton's Universal Theory of Gravity.

prelude

A person stands on a scale at the top of Mount Logan, the tallest mountain in Canada. How will her measured weight compare to her weight at sea level?

A. It will be slightly less than her weight at sea level.
B. It will be equal to her weight at sea level.
C. It will be slightly more than her weight at sea level.