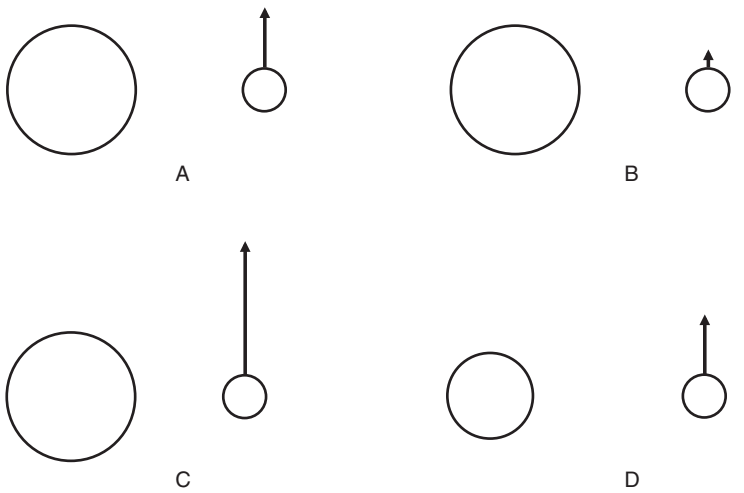
Checkout Questions

Lab 3. Gravity and Orbits: How Does Changing the Mass and Velocity of a Satellite and the Mass of the Object That It Revolves Around Affect the Nature of the Satellite's Orbit?

1. How is an object's mass related to the force of gravity it will exert on other objects?

2. How does the gravitational force of an object change as distance from the object increases?

3. A scientist has drawn a sketch of four planet-satellite pairs. The sizes of the circles represent the relative masses of the objects, and the size and direction of the arrows represent the initial velocity and direction of the satellites.



a. Which pair will most likely result in the satellite not entering a stable orbit?

A B C D

b. How do you know?

c. Which pair will most likely result in the satellite crashing into the planet?

A B C D

d. How do you know?

4. Theories are guesses and laws are facts.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about gravity and orbits.

5. Scientists assume that the universe is a vast single system in which basic laws are consistent.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about gravity and orbits.

6. Scientists often use models to represent the components of a system and how these components interact with each other. Explain why models of systems are useful, using an example from your investigation about gravity and orbits.

7. It is critical for scientists to be able to keep track of changes in a system quantitatively during an investigation. Explain why this is so important, using an example from your investigation about gravity and orbits.