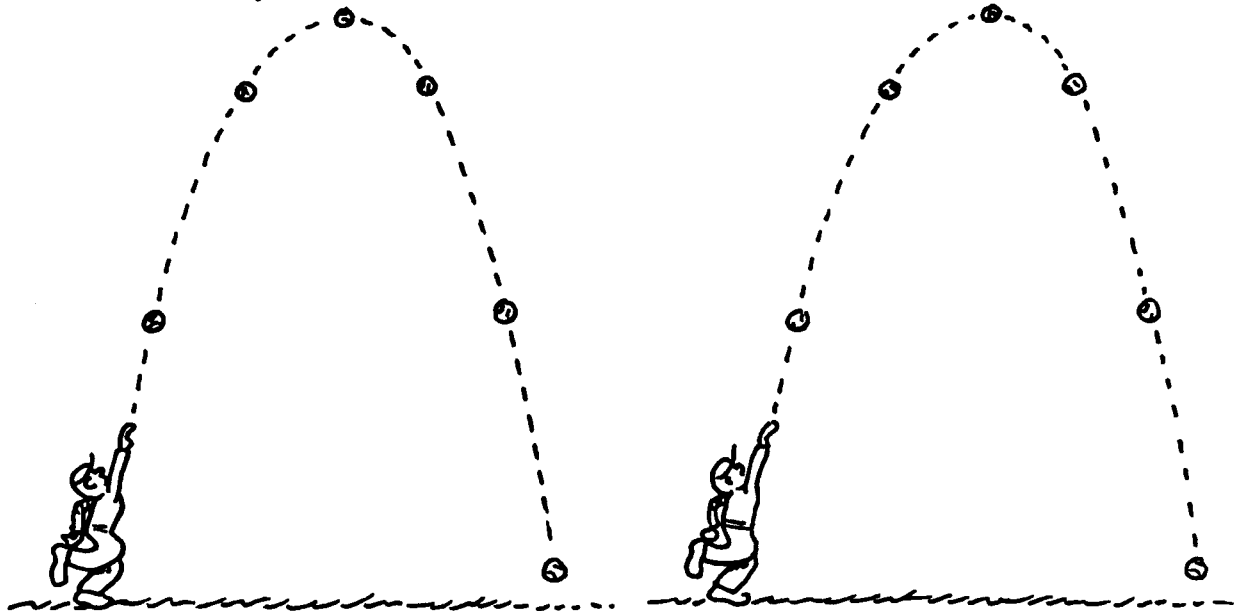


**Concept-Development
Practice Page**

4-3

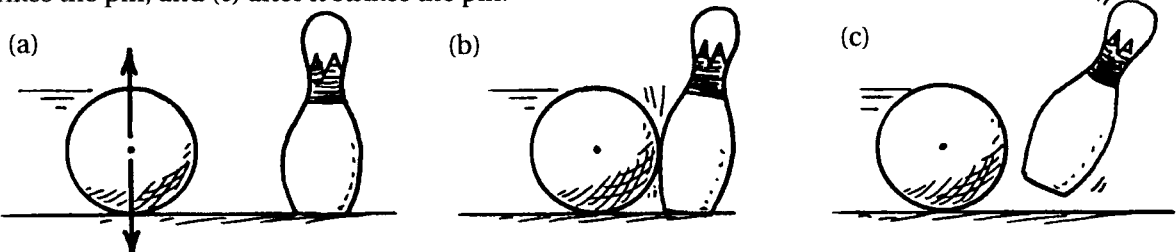
Force and Velocity Vectors



1. Draw sample vectors to represent the force of gravity on the ball in the positions shown above (after it leaves the thrower's hand). Neglect air drag.
2. Draw sample bold vectors to represent the velocity of the ball in the positions shown above. With lighter vectors, show the horizontal and vertical components of velocity for each position.
3. (a) Which velocity component in the previous question remains constant? Why?

- (b) Which velocity component changes along the path? Why?

4. It is important to distinguish between force and velocity vectors. Force vectors combine with other force vectors, and velocity vectors combine with other velocity vectors. Do velocity vectors combine with force vectors? _____
5. All forces on the bowling ball, weight down and support of alley up, are shown by vectors at its center before it strikes the pin (a). Draw vectors of all the forces that act on the ball (b) when it strikes the pin, and (c) after it strikes the pin.



Conceptual PHYSICS

thank to Howard Brand

Net Force

Fill in the magnitudes of net force for each case.

