different directions. Their vector representations are aligned so that the tail of one vector is at the point of the other. A parallelogram is constructed by replicating the angle formed; the resultant R bisects the parallelogram, beginning at the tail of the first vector and ending at the point of the second.

**Resolution of Forces**

Resolution of forces is the opposite process described in the composition of forces to determine the combined effect of force. Any force can be broken down into its horizontal and vertical components. By constructing a rectangle around the original vector, with the original vector dividing the rectangle, one can find the horizontal and vertical components of the force. This exercise illustrates the relative amount of force that is directed vertically and horizontally by the vector. The rectangular shape, depicted in the second part of Figure 2-4 shows how vector A can be broken down into its horizontal (H) and vertical (V) components by constructing a rectangle around the vector, with the vector bisecting opposite right angles. In this illustration, there is approximately 33% as much horizontal force as there is vertical force.

The clinical relevance of this can be seen in Figure 2-5. When traction is positioned to extend the finger joint, the angle of application of the force is important. In the illustration, the angle of application is not perpendicular to the bone. Analysis of the horizontal and vertical components of the force will reveal that some of the force is being directed horizontally along the longitudinal axis of the bone, which will result in linear motion (the sling will slip distally along the finger); less than full force is vertical (rotary), and the force will actually rotate the finger at the joint.

**Motion**

Kinematics looks at aspects of movement like acceleration, velocity, and associated forces with respect to time (Loth & Wadsworth, 1998). The description of movement can represent displacement of a body’s position in space or a change in position relative to time or velocity (Loth & Wadsworth, 1998). The motion of bodies in space may be concerned with a single point in space (i.e., center of gravity), the position of several segments (i.e., the upper extremity), or the position of a single joint or motion (Hamill & Knutzen, 1995). It may represent linear or angular movements. Kinematics is not concerned with the causes of motion but rather with the results.

**Linear or Translatory Movement**

In linear or translatory movement, all parts of an object or person move the same distance in the same direction at the same time (Gench et al., 1995). If you push a book across