

**Two-Dimensional
Motion and
Vectors**

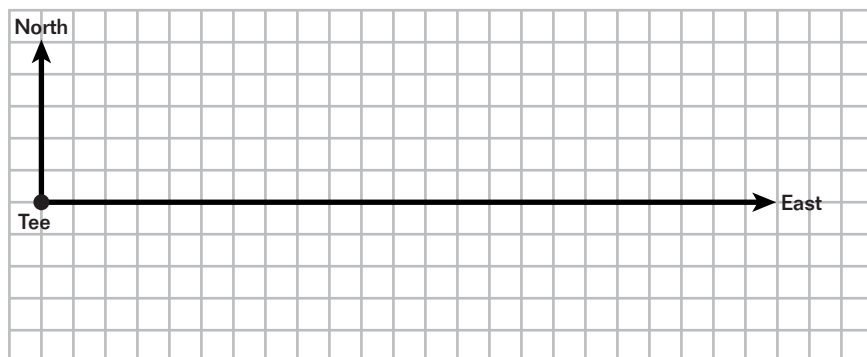
HOLT PHYSICS

Diagram Skills

Vector Operations

One of the holes on a golf course lies due east of the tee. A novice golfer flubs his tee shot so that the ball lands only 64 m directly northeast of the tee. He then slices the ball 30° south of east so that the ball lands in a sand trap 127 m away. Frustrated, the golfer then blasts the ball out of the sand trap, and the ball lands at a point 73 m away at an angle 27° north of east. At this point, the ball is on the putting green and 14.89 m due north of the hole. To his amazement, the golfer then sinks the ball with a single shot.

1. In the space provided, choose a scale, then draw a sketch of the displacement for each shot the golfer made. Label the magnitude of each vector and the angle of each vector relative to the horizontal axis.



2. Use algebraic formulas to find the x and y components of each displacement vector.

Shot 1 x component _____ y component _____

Shot 2 x component _____ y component _____

Shot 3 x component _____ y component _____

Shot 4 x component _____ y component _____

3. Find the total displacement (to the nearest meter) the golf ball traveled from the tee to the hole. Assume the golf course is flat. (Hint: Which component of each displacement vector contributes to the total displacement of the ball between the tee and the hole?)
