

12-3**Real-Life Career Activity****Skydiver**

Skydiving teams, such as the United States Army's "Golden Knights," perform aerial demonstrations around the world. They also compete at national and international skydiving competitions. Many of the exhibition dives require exciting formation freefalls.

To plan formation falls, skydivers must calculate how much time they have in freefall. Ignoring air resistance, a skydiver can use the formula below to calculate the distance fallen in meters.

$$d = 4.9t^2$$

In this formula, d is the distance fallen in meters, and t is the time in seconds during which the freefall occurs.

Suppose a skydiver freefalls for 10 seconds. What distance d does the skydiver freefall during that time?

$$\begin{aligned} d &= 4.9 \times 10^2 \\ &= 490 \end{aligned}$$

The skydiver freefalls 490 meters in 10 seconds.

Solve.

1. The United States Parachute Association issues a basic "A License" to persons who have completed, among other things, at least three 40-second freefalls. What distance would a skydiver drop during a 40-second freefall? What is the total distance needed to qualify for the "A License"?
2. To earn an intermediate "B License," skydivers must complete at least three 45-second freefalls. What distance would a skydiver drop during a 45-second freefall? What is the total distance needed to qualify for the "B License"?
3. To earn an intermediate "D License," skydivers must complete at least ten 60-second freefalls. What distance would a skydiver drop during a 60-second freefall? What is the total distance needed to qualify for the "D License"?

