

Module 6 Lesson 5 Assignment

Use the model for vertical motion of a projected object: $h = -16t^2 + vt + s$, where h is the height in feet, t is the time in seconds, v is the initial upward velocity in feet per second, and s is the starting height of the object in feet.

- 1) Damaris launches a grappling hook from a height of 6 feet with an initial upward velocity of 56 feet per second. The hook just misses the stone ledge of a building she wants to scale. As it falls, the hook anchors on the ledge which is 30 feet above the ground. How long was the hook in the air?
- 2) Suppose a diver leaps from the edge of a cliff 80 feet above the ocean with an initial upward velocity of 8 feet per second. How long will it take the diver to enter the water below?
- 3) Lauren dove into a swimming pool from a 15-foot-high diving board with an initial upward velocity of 8 feet per second. Find the time, in seconds, it took Lauren to enter the water.
- 4) Brad tossed a baseball in the air from a height of 6 feet with an initial upward velocity of 14 feet per second. Enrique caught the ball on its way down at a point 4 feet above the ground. How long was the ball in the air before Enrique caught it?

Factor each completely.

5) $14m^2 - 10m$

6) $20n^2 - 34n - 40$

Solve each equation by factoring.

7) $(5x + 2)(x + 3) = 0$

8) $x^2 = -4x + 5$

9) $5k^2 - 46k + 60 = -6k$

10) $3a^2 - 20a + 17 = 5$