Algebra 1 Name_____

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 groud. How long was the ball in the air before Enrique caught it?

Find the width of the frame.

5) A picture is 36 cm long by 20 cm wide. The picture is framed using material that is x cm wide. The area of the frame and picture together is 1232 square centimeters. What is the width of the framing material?

6) A picture is 8 inches long by 10 inches wide. The picture is framed using material that is x cm wide. The area of the frame and picture together is 224 square inches. What is the width of the framing material?

Factor each completely.

7) $14m^2 - 10m$

8) $20n^2 - 34n - 40$

Solve each equation by factoring.

9) $(5x + 2)(x + 3) = 0$

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

11) $5k^2 - 46k + 60 = -6k$

12) $3a^2 - 20a + 17 = 5$