NAME:_____

1. Use the vertical motion formula $h = -16t^2 + vt + s$ to find the number of seconds it takes for a rocket launched with a starting velocity of 96 ft/s to reach an altitude of 45 ft. Round answers to the nearest tenth.

3. The function $P = 0.0089t^2 + 1.1149t + 78.4491$ models the United States population in millions since 1900. Use the function P to predict the year in which the population exceeds 1 billion.

2. The motion of a ball scooped by a field hockey player can be modeled by $h = -16t^2 + 40t$, where t is the time in seconds and h is the height of the ball. Will the ball ever reach 22 feet? If so, how many seconds will it take?

4. Compare the quantity in Column A with the quantity in Column B.
    Solve each by using the quadratic formula. Determine the greater solution of each.

Column A	Column B
$2x^2 + x - 21 = 0$	$3x^2 - 19x - 14 = 0$

    [A] The quantity in Column A is greater.

    [B] The quantity in Column B is greater.

    [C] The two quantities are equal.

    [D] The relationship cannot be determined on the basis of the information supplied.

[1]   after 0.5 s and after 5.5 s

[2]   yes; about 0.8 seconds and about 1.7 seconds

[3]   2165

[4]   B