

Name: _____

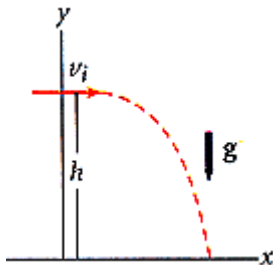
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Section C D F

Projectile Motion I - Horizontal

1. The fastest recorded pitch in Major League Baseball, thrown by Nolan Ryan in 1974, was clocked at 162.3 km/h (100.8 mi/h). If a pitch were thrown horizontally with this velocity, how far would the ball fall vertically by the time it reached home plate, 18.3 m (60.0 ft) away?

2. A person standing at the edge of a seaside cliff kicks a stone over the edge with a speed of $v_i = 23$ m/s. The cliff is $h = 48$ m above the water's surface.
 - a. How long does it take for the stone to fall to the water?



- b. With what speed does it strike the water? (*Hint: you have to find V_f here, not V_{fy}*)

3. Two boats are traveling down a river. The first boat is a spy boat, trying to run from the police boat next to them. The two boats see a 5 meter waterfall ahead, and decide to jump the waterfall. If the spy boat was traveling at 27 m/s, and the police boat was traveling at 16 m/s, how far ahead of the police boat will the spy boat be when they land? (*Assume the two boats were side by side when they launched off the waterfall*)