Free Fall 2 Solutions

vf = vo + at vf2 = vo2 + 2 a Δx h = ½ at2

1. Time to hit pool h = ½ at2 ; 10 = ½ 9.8 t2 t = 1.43 s

Velocity on impact vf = vo + at; vf = - 9.8 (1.43) = -14.0 m/s

1. Vertical to 25 m vf2 = vo2 + 2 a Δx; vo = 2 (9.8)(25); vo = 22.1 m/s

Time vf = vo + at; 22.1/9.8 = 2.26 s

1. Stone thrown down at 10 vf2 = vo2 + 2 a Δx = 102 +( 2 )(9.8)(35)

vf= 28.0 m/s vf = vo + at ; -28 = -10 = 9.8t t = 18/9.8 = 1.84 s

1. Height of bridge h = ½ at2 , h = ½ (9.8)(3.85)2 = 72.6 m

vf = vo + at = 9.8(3.85) = 37.7 m/s

1. Ball to max ht vf = vo + at; t = 13.7/9.8 = 1.40 s

Mx ht vf2 = vo2 + 2 a Δx; (13.7)2/19.6 = 9.58 m

Average (13.7 + 0)/2 = 6.85 m/s

1. Acceleration on mars = 0.379)(9.8) = 3.71

h = ½ at2 ; t = [[(2)(500)]/3.71]1/2 = 16.4 s

hit ground mars vf = vo + at = 3.71 (16.4s) = 60.8 m/s

on Earth h = ½ at2 t = [1000/9.8]1/2 = 10.1 s