

Free fall #9

bridge $v_i = 0$

$d_1 = 30.0\text{m}$

water $d_2 = ?$

$a = 9.8\text{m/s}^2$

$t_1 = 4.0\text{s}$

$t_2 = 4.0 - 2.47$

bottom $v_f = 0 + (-9.8)(2.47)$
 $= 24.23\text{ m/s}$

water $v = \frac{1}{2}(24.23) = 6.06\text{ m/s}$

$d_2 = v t_2 = (6.06)(1.53\text{s}) = 9.27\text{m}$

① $d = v_i t + \frac{1}{2} a t^2$
 $d = \frac{1}{2} a t^2$
 $t = \sqrt{\frac{d}{\frac{1}{2} a}} = \sqrt{\frac{-30}{\frac{1}{2}(-9.8)}} = 2.47\text{ s}$

Mar 15-10:50 AM