Projectiles:  Canon

1.  A canon fires an 18.0 kg canon ball with an initial velocity of 22.0 m/s with a angle of  
38.0 degrees with ground.  Find a) its hang time, b) its range and c) its maximum height  
above the ground.  
  
  
The first task is to break down the original vector of 22.0 m/s with 38.0 degrees into its horizontal and vertical   
components.  
  
  
  
  
  
V= 22.0 m/s

38.00

Initial Horizontal Velocity (Vox) =  V(cos A)                Initial Vertical Velocity (Voy) = V(sin A)  
                        = 22.0 Cos 38                                                        = 22.0 Sin 38  
                        = 17.34 m/s                                                          = 13.54 m/s  
  
a. To find hangtime:                                b. To find range:                               c. To find height:  
Vfy = Voy + at                                         d =(Vox)t                                          d=(Voy)t + .5at^2  
0  = 13.54 + (-9.8) t                                  = 17.34 (1.3816)                            = 13.54(1.3816) + .5(-9.8)(1.3816)^2  
t  = 1.3816 s                                            = 23.956 m                                     = 9.3537 m  
2t = 2.7632 s                                            = 24.0 m                                         = 9.35 m