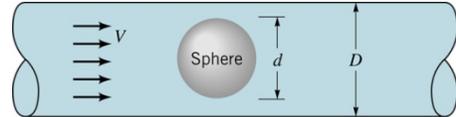


November 14, 2014

NAME

Fluids-ID

Quiz 11. The drag force,  $R$ , on a sphere located in a pipe through which a fluid is flowing is to be determined experimentally. Assume that the drag is a function of the sphere diameter,  $d$ , the pipe diameter,  $D$ , the fluid velocity,  $V$ , and the fluid density,  $\rho$ . (a) What dimensionless parameters would you use for this problem? (b) Some experiments using water indicate that for  $d = 0.2$  in.,  $D = 0.5$  in., and  $V = 2$  ft/s, the drag is  $1.5 \times 10^{-3}$  lb. Estimate the drag on a sphere located in a 2-ft-diameter pipe through which water is flowing with a velocity of 6 ft/s. The sphere diameter is such that geometric similarity is maintained.



Note: Attendance (+2 points), format (+1 point)