A manufacturer of gunpowder has developed a new powder which was tested in 12 shells. The resulting muzzle velocities in m/s are (they are assumed to be approximately normally distributed):

1001.7, 975.0, 978.3, 988.3, 978.7, 988.9, 1000.3, 979.2, 968.9, 983.5, 999.2, 985.6

a. At the 5% significance level, does the data suggest that, on average, the muzzles are faster than 995 m/s?
b. Find a 99% confidence interval for the standard deviation of the velocity of shells of this type.