Thrust

To work out potential thrust from our 1.41 lbs/sec at 1.44 pressure ratio at 918 deg K from our previous example, (Rule of Thumb No 8), punch into our calculator the 1.44 PR hit yx key then 0.248 to give 1.0946... divide this into our 918 K, giving 838, take this from the 918 gives us an 80 deg C temp drop thru our jet nozzle if at 100% efficiency, but as thats impossible, something like 90% may be used , so multiply the 80 degs by 0.9 for an actual 72 deg C drop thru the jet nozzle with a temperature of 918 - 72 = 846 K - 573 C - 1063 F. static temp at the jet nozzle exit.

To work out the velocity obtained from our 72 C deg drop, multiply by 64.4 (twice gravity) for 4636..multiply again by 1400 for 6491520 then again by our 0.276 (Cp of hot gases) to give 1791659 then square root this for a velocity of 1338ft/sec.

To find the density at the jet nozzle outlet at 846 K we multiply the 846 by 96 (a constant ??) for 81216 then divide by 14.7 (psi ambient) for 5524... then divide again by 144 , for a density of 38.36 cu ft/lb.

To find the area of our jet nozzle we multiply our 38.36 by the mass flow of 1.41 lbs/sec, for 54.09 then divide by our velocity of 1338 ft/sec for an area of 0.04043 sq ft, multiply by 144 for sq inches, our jet nozzle needs to be 5.82 sq ins. Divide this 5.82 by "pi" (3.14) for 1.853...then square root this for 1.3613....as the radius, multiply by 2 for a theoretical jet nozzle size of 2.72 inches diameter.

As there will be a thin "boundary layer" against the wall of the jet nozzle the actual size needs to be a bit larger, a size of 2.8 inches diameter might be closer to what is needed.

Thrust is simply mass times the velocity change, the mass is 1.41 lbs/sec divided by 32.2 = 0.04378...multiplied by our 1338 ft/sec to give us our thrust of 58.5 lbs. Simple :-))