



2. Click on the home button to return to the main menu and start the Pressure Volume Experiment.

a. Add 5 He atoms. Gradually decrease the “volume” of the box by clicking on the lower right hand corner and dragging the corner to the center of the screen. Try to get at least 5 data points from the largest to smallest box. Why does pressure increase as volume decreases?

b. Click the reset button (↺) and start again by adding 20 He atoms, then shrink the box as in “a”. What differences do you observe when 20 atoms are used instead of 5. How might those differences be explained.

c. Click reset again and repeat with 20 Kr atoms. Repeat step “b” above. Note and explain any differences in your observations.



4. The deepest oceanic trench is 11000 m deep. Seawater has a constant density of  $1.1 \text{ g/cm}^3$  in the water column and that the acceleration to gravity is  $9.8 \text{ m/s}^2$ .

a. Imagine a column of sea water that is 1.0 m on a side and 11000 m high. What is its mass? (remember  $V = \text{length} \times \text{width} \times \text{height}$ ).

b. What force does the column of sea water apply due to gravitational acceleration?

c. What pressure does the sea water in this column of sea water apply to its vertical base in pascals ( $1 \text{ Pa} = 1 \text{ kg/ms}^2$ )? In atm ( $1 \text{ atm} = 1.01325 \times 10^5 \text{ Pa}$ )?