Engineers often need to estimate the pressures and volumes of a gas in a container. The *van der Waals's* equation is often used for this purpose. It is

$$P = \frac{RT}{\hat{V} - b} - \frac{a}{\hat{V}^2}$$

Where the term *b* is a correction for the volume of the molecules and the term a/V^2 is a correction for molecular attractions. The gas constant is *R*, the *absolute* temperature is *T*, and the gas specific volume is V. The value of *R* is the same for all gases; it is *R* % 0.08206 L-atm/mol-K. The values of *a*, *b* depend on the type of gas. Some values are given in the following table.

pressure.m computes the pressure *P* on the basis of the van der Waals equation.

The function's input arguments are *T*, V, and a string variable containing the name of a gas listed in the table.

Gas	*a* (L^2-atm/mol^2)	*b* (L/mol)
Helium, He	0.0341	0.0237
Hydrogen, H_2	0.244	0.0266
Oxygen, O_2	1.36	0.0318
Chlorine, Cl_2	6.49	0.0562
Carbon dioxide, CO_2	3.59	0.0427