

CHEN.3030 Fluid Mechanics
Short Quiz: Basic Concepts and Properties

- a. A gas is contained in a vertical frictionless piston-cylinder device as shown. The piston has a mass of 4 kg and a cross sectional area of 35 cm^2 . A compressed spring above the piston exerts a force of 60 N on the piston. If the atmospheric pressure is 95 kPa, determine the absolute pressure (kPa) inside the cylinder.
- b. If the gas in the container is air at $40 \text{ }^\circ\text{C}$, what is the air density (kg/m^3) for the conditions shown? Use $R_{\text{air}} = 286.9 \text{ J/kg-K}$.

