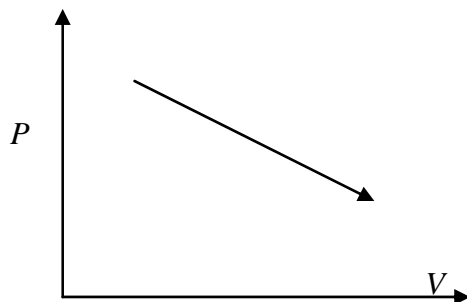


Support Worksheet – Topic 3, Worksheet 3

- 1 Calculate the work done as the gas expands according to the pressure – volume graph below. The initial state of the gas is $P = 6.0 \times 10^6 \text{ Pa}$, $V = 2.0 \times 10^{-4} \text{ m}^3$ and the final state is $P = 3.0 \times 10^6 \text{ Pa}$, $V = 8.0 \times 10^{-4} \text{ m}^3$.



- [2]
- 2 The initial temperature of the gas in the previous problem was 600 K. Calculate the temperature in the new state. [1]
- 3 Determine, for the expansion of the gas in the previous problem whether heat has been supplied to, or removed from, the gas. [2]
- 4 State the second law of thermodynamics. [1]
- 5 A glass of water is put in a freezer and the water turns into ice. Discuss the entropy changes of
- a the water. [2]
- b the rest of the universe. [2]