Name : _____

Note: If you wish to use such as 3 x 10^5, you need to write your answer as 300000. Fill in the correct answer in the box provided.

Boyle's Law

The initial volume of the air trapped in the cylinder of a hand pump is 650 cm^3 and its pressure is 102 kPa. The air is then slowly compressed to a volume 200 cm^3. What is the pressure of the compressed air pump?

$$P_1V_1 = P_2V_2$$

_____ Pa x _____ cm^3 = P_2 x _____ cm^3

$$P_2 = \_\_\_\_\_ \text{ Pa}$$

Charles Law

2.5 m^3 of air trapped at 30 °C in an expandable cylinder is heated at constant temperature. What is the volume of the air when its temperature becomes 95 °C?

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\frac{\_\_\_\_ m^3}{\_\_\_\_ K} = \frac{V_2}{\_\_\_\_ K}$$

V_2 = _____ m^3

Gay-Lussac's Law (pressure law)

The pressure and temperature of air in a container are 40 °C and 1.3 × 10^5 N m^{-2} respectively. The container is heated until the temperature is 75 °C. What is the final air pressure if the volume of the container is fixed?

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$\frac{\_\_\_\_ Nm^{-2}}{\_\_\_\_ K} = \frac{P_2}{\_\_\_\_ K}$$

P_2 = _____ Nm^{-2}