17 A 'scuba tank' is used to store air at high pressure. A diver breathes underwater using air from the scuba tank.

(a) A scuba tank contains air at a pressure of 1.28×10^7 Pa and a temperature of 17.5 °C.

The scuba tank is left outside on a sunny day and the temperature of the air inside the scuba tank increases to 42.5 °C. The volume of the scuba tank remains constant.

Calculate the increase in the pressure exerted by the air inside the scuba tank.

(4)

Increase in pressure = ...

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

*(b) Explain why the pressure of the air inside the scuba tank increases as the temperature increases. Your answer should refer to the motion of the air molecules.

(6)

(Total for Question 17 = 10 marks)