

12 An airbag is a safety feature used in cars.

Nitrogen gas is released into an airbag. The airbag inflates to a volume of $7.08 \times 10^{-2} \text{ m}^3$.
The pressure of gas in the inflated airbag is $1.24 \times 10^5 \text{ Pa}$.

- (a) Show that the number of molecules of nitrogen gas released into the airbag is about 2×10^{24} .

temperature of gas in airbag = 25°C

(3)

- (b) Nitrogen gas escapes from small holes in the inflated airbag. The pressure decreases to $3.45 \times 10^4 \text{ Pa}$.

Calculate the number of nitrogen molecules that escape from the airbag.

The volume and temperature remain constant.

(2)

Number of nitrogen molecules that escape =

(Total for Question 12 = 5 marks)