

The FRONT frame of reference +

$$\frac{l+d}{V_f - V_F} = \frac{l}{V_s - V_F}$$

$$l = 12 \text{ m} \quad V_f = 25 \text{ m/s} \quad V_s = 5 \text{ m/s}$$

For stationarity $V_F = 0$

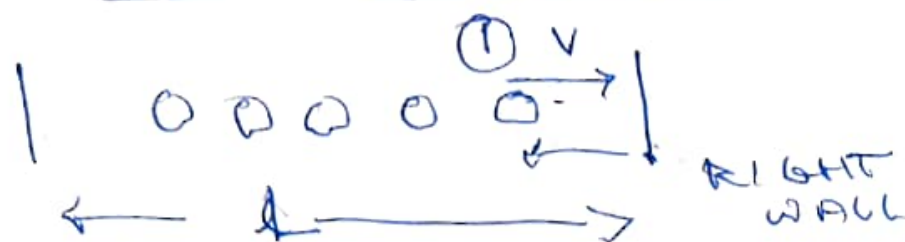
$$\frac{12+d}{25} = \frac{12}{5}$$

$$\therefore d = 48 \text{ m}$$

= DISTANCE BETWEEN
TWO CARS IN THE
FAST LANE (HIGHWAY)

5/8/24
11/11
5/8/24

BEAD PROBLEM.



BEAD RADIUS = r

DISTANCE "TRAVELLED" BY BEAD (1)

$$= (L - 5r) \times 2$$

TIME TAKEN FOR THIS

$$= \frac{2(L - 5r)}{v}$$

VIJAY
SINGH
8/8/24

CHANGE IN MOMENTUM ON
COLLISION WITH THE RIGHT WALL

$$= 2mv$$

\therefore Average Force on RIGHT WALL

$$F = \frac{2mv}{\frac{2(L - 5r)}{v}}$$

$$= \frac{mv^2}{L - 5r}$$

Interesting aside remark

$$F \times (L - 5r) = mv^2$$

$$[P(V-b) = RT]$$

Pressure ONE-DIM $= \frac{1}{2} kT$
VOLUME (equipartition)