1) VOLUME = cost ISOCORA

$$\Delta U = Q$$

$$C_v = \frac{Q}{\Delta T} \qquad C_v = \frac{\Delta U}{\Delta T} \qquad C_v = \frac{1}{2} f n R \cancel{\Delta T} / \cancel{\Delta T}$$

$$C_v = \frac{1}{2} f R$$

2) ISOBARA

$$c_p = \left(\frac{1}{2} f + 1\right) R \qquad C_p = \frac{f+2}{2} R$$

$$C_p = C_v + R$$

$$\frac{C_p}{C_v} = \gamma \qquad \gamma = \frac{f+2}{f}$$

MONOATOMICA $f = 3$

$$C_v = \frac{3}{2} R \qquad C_p = \frac{5}{2} R \qquad \gamma = \frac{5}{3}$$

BIATOMICA $f = 5$

$$C_v = \frac{5}{2} R \qquad C_p = \frac{7}{2} R \qquad \gamma = \frac{7}{5}$$

$$\Delta U = -L$$

$$L = n C_v (T_i - T_f)$$

$$\Delta U = \frac{1}{2} f n R T_f - \frac{1}{2} f n R T_i$$

$$\frac{1}{2} f n R (T_f - T_i)$$

$h = 4{,}90$ m

$T_i = 20°C$

1, 2, 3, 4, 5

$T_f =$

$(mgh)\ 5$

$$Q = m c_v \Delta T$$

$c_v = 130\ J/kg \cdot K$

$$5 \cancel{m} g h = \cancel{m} c_v (T_f - T_i)$$

$$5 \cdot 9{,}81 \cdot 4 = 130\ (x - 20°)$$