

12
Дано:
 $S_1 = \frac{1}{3}S$
 $\pi_1 = 36 \text{ км/ч}$
 $t_1 = 60 \text{ с}$
 $S_2 = 300 \text{ м}$
CU
Решение:
 $v_{cp} = \frac{S}{t}$
 $S_2 = \frac{2}{3}S = \frac{2}{3} \cdot 300 \text{ м}$
 $S = S_1 + S_2$
 $S_1 = \frac{1}{3}S = \frac{300}{2} = 150 \text{ м}$
 $S = 150 \text{ м} + 300 \text{ м} = 450 \text{ м}$
 $t = t_1 + t_2$
 $t_1 = \frac{S_1}{v_1}; t_1 = \frac{150 \text{ м}}{10 \text{ м/с}} = 15 \text{ с}$
 $t = 15 \text{ с} + 60 \text{ с} = 75 \text{ с}$
 $v_{cp} = \frac{450 \text{ м}}{75 \text{ с}} = 6 \text{ м/с}$
Ответ: 6 м/с

106

11
Дано:
 $V_1 = \frac{1}{3}V$
 $V_2 = \frac{2}{3}V$
 $\rho_1 = 800 \text{ кг/м}^3$
 $\rho_2 = 600 \text{ кг/м}^3$
Решение:
 $\rho = \frac{m}{V}; m = m_1 + m_2$
 $m_1 = \rho_1 \cdot V_1 = \rho_1 \cdot \frac{1}{3}V$
 $m_2 = \rho_2 \cdot V_2 = \rho_2 \cdot \frac{2}{3}V$
 $m = \frac{1}{3}V\rho_1 + \frac{2}{3}V\rho_2 = V(\frac{1}{3}\rho_1 + \frac{2}{3}\rho_2)$
 $\rho = \frac{V(\frac{1}{3}\rho_1 + \frac{2}{3}\rho_2)}{V} = \frac{1}{3}\rho_1 + \frac{2}{3}\rho_2 = \frac{1}{3}(800 + 2 \cdot 600) = 667 \text{ кг/м}^3$

107

13.
Дано:
 $m_1 = 400 \text{ г}$
 $C_1 = 500 \frac{\text{Дж}}{\text{кг} \cdot ^\circ\text{C}}$
 $V = 1 \text{ л}$
 $\rho_1 = 1200 \frac{\text{кг}}{\text{м}^3}$
 $C_2 = 4200 \frac{\text{Дж}}{\text{кг} \cdot ^\circ\text{C}}$
 $t_1 = 20^\circ\text{C}$
 $t_2 = 100^\circ\text{C}$
Решение:
 $Q = Q_1 + Q_2$
 $Q_1 = m_1 C_1 (t_2 - t_1)$
 $Q_2 = m_2 C_2 (t_2 - t_1)$
 $m_2 = \rho_1 \cdot V$
 $m_2 = 1200 \frac{\text{кг}}{\text{м}^3} \cdot 0.001 \text{ м}^3 = 1.2 \text{ кг}$
 $Q_1 = 400 \cdot 500 (100 - 20) = 160000 \text{ Дж} = 160 \text{ кДж}$
 $Q_2 = 1.2 \cdot 4200 (100 - 20) = 672000 \text{ Дж} = 672 \text{ кДж}$
 $Q = 160 \text{ кДж} + 672 \text{ кДж} = 832 \text{ кДж}$

108

25.5

1. Дано:

$$\begin{aligned} m_1 &= 400 \text{ г} \\ c_1 &= 4200 \frac{\text{Дж}}{\text{кг} \cdot ^\circ\text{C}} \\ \rho_1 &= 100 \frac{\text{кг}}{\text{м}^3} \\ t_1 &= 20^\circ\text{C} \\ t_2 &= 100^\circ\text{C} \\ V &= 2 \text{ л} \\ c_2 &= 500 \frac{\text{Дж}}{\text{кг} \cdot ^\circ\text{C}} \end{aligned}$$

СИ
0,4 кг

Решение:

$$Q = Q_1 + Q_2 \quad +$$

$$Q_1 = m_1 c_1 (t_2 - t_1) \quad + \quad 100$$

$$Q_2 = m_2 c_2 (t_2 - t_1) \quad +$$

$$m_2 = \rho_2 V = 100 \frac{\text{кг}}{\text{м}^3} \cdot 0,002 \text{ м}^3 = 2 \text{ кг}$$

$$Q_1 = 0,4 \cdot 500 (100 - 20) = 16000 \text{ Дж}$$

$$Q_2 = 2 \cdot 4200 (100 - 20) = 672000 \text{ Дж}$$

$$Q = 672000 \text{ Дж} + 16000 \text{ Дж} = 688000 \text{ Дж} = 688 \text{ кДж}$$

Q - ?

2. Дано:

$$\begin{aligned} S_1 &= \frac{1}{3} S \\ S_2 &= 300 \text{ м} \\ t_2 &= 60 \text{ с} \\ v_1 &= 36 \frac{\text{км}}{\text{ч}} \end{aligned}$$

СИ
10 м/с

Решение:

$$v_{\text{ср}} = \frac{S}{t}; S = S_1 + S_2 \quad +$$

$$S_1 = \frac{1}{3} S, S_2 = \frac{2}{3} S \quad +$$

$$S_1 = 150 \text{ м} \quad \left. \begin{aligned} S_2 &= 300 \text{ м} \end{aligned} \right\} S = 150 \text{ м} + 300 \text{ м} = 450 \text{ м} \quad + \quad 100$$

$$t = t_1 + t_2 \quad t_1 = \frac{S_1}{v_1}; \quad t_1 = \frac{150 \text{ м}}{10 \frac{\text{м}}{\text{с}}} = 15 \text{ с}$$

$$t_2 = 60 \text{ с}, t = 15 \text{ с} + 60 \text{ с} = 75 \text{ с} \quad +$$

$$v_{\text{ср}} = \frac{450 \text{ м}}{75 \text{ с}} = 6 \frac{\text{м}}{\text{с}}$$

Решение:

3. Дано:

$$\begin{aligned} \rho_1 &= 800 \frac{\text{кг}}{\text{м}^3} \\ \rho_2 &= 600 \frac{\text{кг}}{\text{м}^3} \\ V_2 &= \frac{2}{3} V \\ V_1 &= \frac{1}{3} V \end{aligned}$$

ρ - ?

Решение:

$$\rho = \frac{m}{V}; m = m_1 + m_2 \quad +$$

$$m_1 = \rho_1 V_1 \quad +$$

$$m_2 = \rho_2 V_2 \quad +$$