

**FÜÜSIKAOLÜMPIAADI KOOLIVOOR 2012/2013 õ.-a.
ÜLESANDED 8. KLASSILE**

1. (8p)

$$V_1 = 4 \times 10^{-15} \text{ m}^3; V_{p1} = 10^{-7} \text{ m}^3; \rho = 1000 \text{ kg/m}^3 \quad m = ?$$

$$n = 1/10^{-7} \times 140 = 1,4 \times 10^9 \text{ tilka}; \quad \mathbf{3 p}$$

$$V_{\text{vesi}} = n \times V_1 = 1,4 \times 10^9 \times 4 \times 10^{-15} = 5,6 \times 10^{-6} \text{ m}^3; \quad \mathbf{3 p}$$

$$m = \rho \times V_{\text{vesi}} = 5,6 \times 10^{-3} \text{ kg} = \underline{5,6 \text{ g}} \quad \mathbf{2 p}$$

2. (6p)

$$l = 200 \text{ m}; v_1 = v_2 = v$$

$$v = ?$$

$$v + v = 2v; 2v = l/t; \quad \mathbf{2 p}$$

$$2v = 200/10 = 20 \text{ m/s}; \quad \mathbf{2 p}$$

$$v = 10 \text{ m/s} = \underline{36 \text{ km/h}} \quad \mathbf{2 p}$$

3. (6p)

$$a = 2\text{m}; b = 1,5\text{m}; c = 1,8\text{m}; j = 20 \text{ kg/min}; \rho = 800 \text{ kg/m}^3$$

$$t = ?$$

$$V = a \times b \times c; V = 5,4 \text{ m}^3; \quad \mathbf{2 p}$$

$$m = \rho \times V; m = 800 \times 5,4 = 4320 \text{ kg}; \quad \mathbf{2 p}$$

$$t = m : j; m = 4320 : 20 = 216 \text{ min} = \underline{3,6 \text{ h}} \quad \mathbf{2 p}$$

4. (6p)

murdumisnurk vees: $\gamma = 90^\circ - 55^\circ = 35^\circ \quad \mathbf{1p}$

graafikult sellele γ vastav langemisnurk õhus: $= 50^\circ \quad \mathbf{2p}$

päikese nurk horisondi suhtes $90^\circ - \alpha = 40^\circ \quad \mathbf{1p}$

päikese nurga muutus tuukri suhtes $55^\circ - 40^\circ = 15^\circ$ või $50^\circ - 35^\circ = 15^\circ \quad \mathbf{2p}$

5. (4p)

Antud

$$t = 6 \text{ s} \quad 1 \text{ ja } 3 \text{ vahel } 12 \text{ m} \quad \text{järelikult } \lambda = 6 \text{ m} \quad \mathbf{1p}$$

$$x = 4 \quad 4 \text{ laineharja vahele jääb } 3 \text{ perioodi } T = 6 \text{ s}/3 = 2 \text{ s} \quad \mathbf{1p}$$

$$l = 12 \text{ m} \quad v = \lambda/T \quad v = 6\text{m}/2\text{s} = 3 \text{ m/s} \quad \mathbf{2p}$$

Leida: T, λ, v