4.3

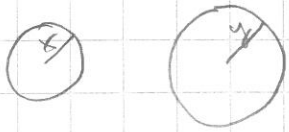
$V_1 = 120\,cm^3$ $V_2 = 190\,cm^3$

$$\frac{V_1}{V_2} = k^3 = \left(\frac{x}{11\,cm}\right)^3 = \frac{120\,cm^3}{190\,cm^3} \quad |\sqrt[3]{}$$

$$\Leftrightarrow \frac{x}{11\,cm} = \sqrt[3]{\frac{120}{190}} \quad |\cdot 11\,cm$$

$$\Leftrightarrow x = 11\,cm \cdot \sqrt[3]{\frac{12}{19}} \approx 9{,}438\,cm \approx \underline{9{,}4\,cm}$$

4.5



$x = 15\,cm$ $y = 25\,cm$

A_1 A_2

V_1 V_2

a) $$\frac{A_2}{A_1} = k^2 = \left(\frac{y}{x}\right)^2 = \left(\frac{25\,cm}{15\,cm}\right)^2 \approx 2{,}7778$$

$$\approx 277{,}78\,\%$$

$\Rightarrow$ vastaus: $277{,}78\,\% - 100\,\% \approx \underline{178\,\%}$

b) $$\frac{V_2}{V_1} = k^3 = \left(\frac{y}{x}\right)^3 = \left(\frac{25\,cm}{15\,cm}\right)^3 \approx 4{,}6296$$

$\Rightarrow$ vastaus: $4{,}6296 - 1 = 3{,}6296 \approx \underline{363\,\%}$

4.24

$V_1 = 1l$ $V_2 = 3l$

pinta-ala A_1 A_2

massa m_1 m_2

$\frac{m_1}{V_1}$ $\frac{m_2}{V_2}$

$$\frac{m_2}{m_1} = \frac{\cancel{k}A_2}{\cancel{k}A_1} = \frac{A_2}{A_1} = k^2 = \left(\sqrt[3]{3}\right)^2 \approx 2{,}080$$

$\Rightarrow$ m. 2,1 - kertainen määrä

$$\left[\frac{V_2}{V_1} = k^3 = \frac{3l}{1l} = 3 \quad |\sqrt[3]{}\right.$$

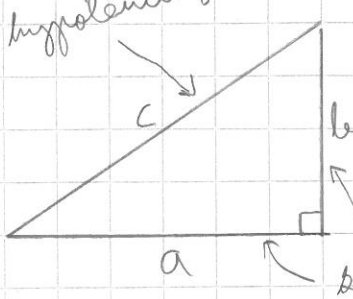
$$\left.\Leftrightarrow k = \sqrt[3]{3}\right]$$

massa ilmaistuna tilavuuden avulla

$$\frac{\frac{m_2}{V_2}}{\frac{m_1}{V_1}} = \frac{m_2}{V_2} \cdot \frac{V_1}{m_1} = \frac{m_2}{m_1} \cdot \frac{V_1}{V_2} \approx 2{,}080 \cdot \frac{1l}{3l} \approx 0{,}69336$$

$\Rightarrow 1 - 0{,}69336 = 0{,}30664 \approx \underline{31\,\%}$

5. Suorakulmainen kolmio



$$\boxed{a^2 + b^2 = c^2}$$ PYTHAGORAS