

1. a) $x = \sqrt{13,1^2 + 17,8^2} = 22,100\dots$ V: 22,1 cm

b) $A = \frac{2,3 + 3,7}{2} \cdot 1,9 = 5,7$ V: 5,7 m²

2. a) $\alpha = 48^\circ$ (ristikulma)
 $\beta = 180^\circ - 48^\circ - 112^\circ = \underline{\underline{20^\circ}}$

b) $r = 11 \text{ m} : 2 = 5,5 \text{ m}$
 $A = \pi r^2 = \pi \cdot (5,5 \text{ m})^2 = 95,033\dots \text{ m}^2$
V: 95 m²

c) $V = \pi r^2 \cdot h = \pi \cdot (8,0 \text{ cm})^2 \cdot 12,0 \text{ cm} = 2412,7 \text{ cm}^3$
V: 2400 cm²

3. Monivalinnat: Oikeat vastaukset näkyvät

4. a) $\beta = 123^\circ$ (samankohtaiset)
 $\alpha = 180^\circ - 123^\circ = 57^\circ$ (vieruskulmat)

b) $2,8 \text{ km} : 20000 = 0,00014 \text{ km} = \underline{\underline{14 \text{ cm}}}$

c) $\frac{A}{75} = \left(\frac{1}{80}\right)^2$ $0,01171\dots \text{ m}^2 = 1171 \text{ cm}^2$

$\frac{A}{75} = \frac{1}{6400}$ V: 120 cm²

$6400A = 75 \quad || : 6400$

$A = 0,01171\dots \text{ (m}^2\text{)}$

tai $0,012 \text{ m}^2$

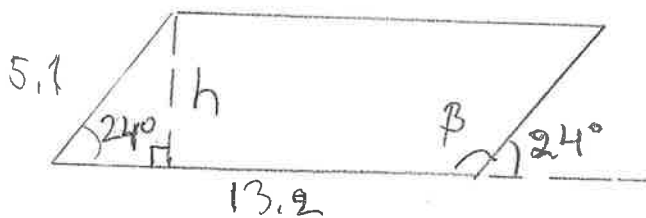
5. a) $\cos 24^\circ = \frac{x}{9,1} \quad || \cdot 9,1$

$x = 9,1 \cdot \cos 24^\circ = 8,313.. \quad V: \underline{8,3 \text{ cm}}$

b) $\sin \alpha = \frac{12}{21}$

$\alpha = 34,84...^\circ \quad V: \underline{35^\circ}$

6.



$\sin 24^\circ = \frac{h}{5,1}$

$h = 5,1 \cdot \sin 24^\circ = 2,074..$

$A = a \cdot h = 13,2 \text{ cm} \cdot 2,074... \text{ cm} = 27,38... \text{ cm}$

Tylppä kulma $\beta = 180^\circ - 24^\circ = \underline{156^\circ}$

7.

a) $\frac{\alpha}{360^\circ} \cdot 2\pi r = b \quad || \cdot 360^\circ$

Voi ratkaista myös Geo Gebralla.

$\alpha \cdot 2\pi r = 360^\circ \cdot b \quad || : (\alpha \cdot 2\pi)$

$r = \frac{360^\circ \cdot b}{\alpha \cdot 2\pi} = \frac{360^\circ \cdot 6,7 \text{ cm}}{84^\circ \cdot 2\pi} = 4,57... \text{ cm}$

$\approx \underline{4,6 \text{ cm}}$

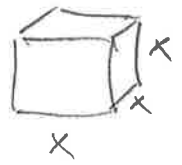
b) $4\pi r^2 = 5000 \quad || : 4\pi$

$r = \pm \sqrt{\frac{5000}{4\pi}} = \pm 19,947... \quad (\text{Vain posit. arvo käy})$

$V = \frac{4\pi r^3}{3} = \frac{4 \cdot \pi \cdot (19,947... \text{ cm})^3}{3} = 33245,1... \text{ cm}^3$

Vasteksena käy myös 30000, 33200 ja 33250) $\approx \underline{33000 \text{ cm}^3}$

8. a) $8 \text{ l} = 8 \text{ dm}^3 = 8000 \text{ cm}^3$



$$x^3 = 8000 \quad \sqrt[3]{\quad}$$

$$x = 20 \text{ (cm)}$$

$$A = 6 \cdot 20 \text{ cm} \cdot 20 \text{ cm} = \underline{\underline{2400 \text{ cm}^2}}$$

($\approx 2000 \text{ cm}^2$)

b) $V = \frac{1}{2} \cdot \frac{4\pi r^3}{3} = \frac{1}{2} \cdot \frac{4\pi \cdot (3,6 \text{ m} : 2)^3}{3} = 12,214 \dots \text{ m}^3$

Sisäosa $3,6 \text{ m} - 1,0 \text{ m} = 2,6 \text{ m}$

$$V_2 = \frac{1}{2} \cdot \frac{4\pi r_2^3}{3} = \frac{1}{2} \cdot \frac{4\pi \cdot (2,6 \text{ m} : 2)^3}{3} = 4,60138 \dots \text{ m}^3$$

$$V - V_2 = 7,6131 \dots \text{ m}^3 = 7613,1 \dots \text{ dm}^3$$

Lumen paino $0,2 \text{ kg/dm}^3 \cdot 7613,1 \dots \text{ dm}^3$

$$= 1522,6 \dots \text{ kg}$$

$$\approx \underline{\underline{1500 \text{ kg}}}$$