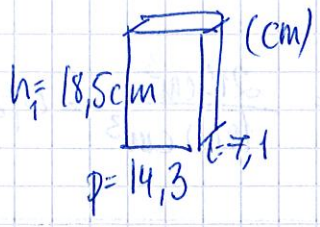
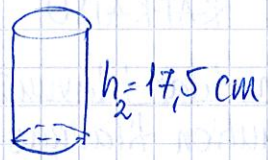
Harjoittele s.43

18 Tilavuuksia





$d = 12{,}0$ cm $\Rightarrow r = 6{,}0$ cm

V_1 V_2

Paketin sisältö mahtuu ympyrälieriöön, jos $V_1 \leq V_2$.

$V_1 = A_p \cdot h_1 = 14{,}3 \cdot 7{,}1 \cdot 18{,}5 \text{ cm}^3 \approx 1878 \text{ cm}^3$

$V_2 = A_p \cdot h_2 = \pi \cdot r^2 \cdot h_2 = \pi \cdot (6{,}0 \text{ cm})^2 \cdot 17{,}5 \text{ cm} \approx 1979 \text{ cm}^3$

$V_1 < V_2$, joten mahtuu

167

V_1

h_1 12,0 cm

$d_1 = 6{,}0$ cm
$r_1 = 3{,}0$ cm

a) $V_1 = A_p \cdot h_1$
$= \pi r_1^2 \cdot h$
$= \pi \cdot (3{,}0 \text{ cm})^2 \cdot 12{,}0 \text{ cm}$
$\approx 340 \text{ cm}^3$

V_2

$h_2 = 9$ cm

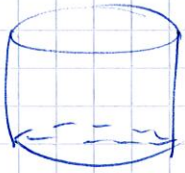
$d_2 = 12{,}0$ cm
$r_2 = 6{,}0$ cm

b) $V_2 = \frac{\pi r_2^2 \cdot h_2}{3}$
$= \frac{\pi \cdot (6{,}0)^2 \cdot 9 \text{ cm}}{3}$
$\approx \frac{1018}{3} \text{ cm}^3 \approx 340 \text{ cm}^3$

$V_2 = V_1$, joten voidaan

168

V_1

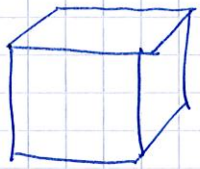


$h_1 = 10$ cm

$d_1 = 10$ cm
$r_1 = 5$ cm

a) Kynttilän tilavuus
$V_1 = A_p \cdot h_1 = \pi r_1^2 \cdot h_1 = \pi \cdot (5 \text{ cm})^2 \cdot 10 \text{ cm}$
$\approx 790 \text{ cm}^3$

V_2



b) Tyhjä tila $= V_2 - V_1$ (kuution tilavuus $- V_1$)
$= 10 \cdot 10 \cdot 10 \text{ cm}^3 - 790 \text{ cm}^3 = 1000 \text{ cm}^3 - 790 \text{ cm}^3$
$\approx 210 \text{ cm}^3$

c) Tyhjä tila prosentteina.

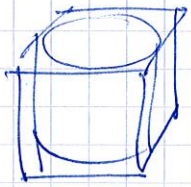
Muodostetaan murtoluku joka kuvaa lieriön osuutta kuutiosta

$\frac{\text{ympyrälieriön til.}}{\text{kuution til}} = \frac{V_1}{V_2} = \frac{790 \text{ cm}^3}{1000 \text{ cm}^3} = 0{,}79 = 79\%$

Tyhjä tila $100\% - 79\% = \underline{21\%}$

Hanjo Ittele
168

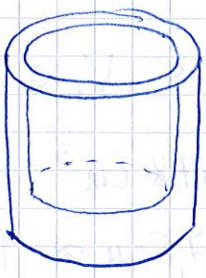
18 Tilavuuksia



c) PAREMPI RATKAISU

$$\frac{\text{Tyhjän tilan tilavuus}}{\text{Kuution tilavuus}} = \frac{210\,cm^3}{1000\,cm^3} = 0{,}21 = 21\%$$

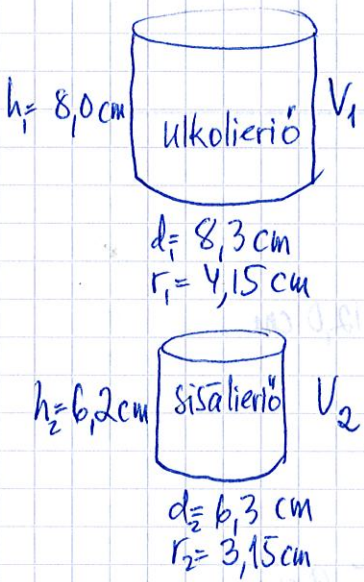
169



Kynttilälyhdyn ~~tilavuus~~ lasin on

V = ulkolieriön tilavuus − sisälieriön tilavuus

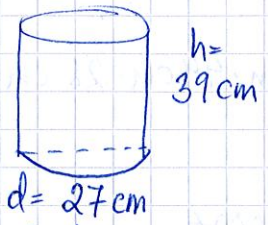
$$V = V_1 - V_2$$
$$= A_{p_1} \cdot h_1 - A_{p_2} \cdot h_2$$
$$= \pi r_1^2 \cdot h_1 - \pi r_2^2 \cdot h_2$$
$$= \pi \cdot (4{,}15\,cm)^2 \cdot 8{,}0\,cm - \pi \cdot (3{,}15\,cm)^2 \cdot 6{,}2\,cm$$
$$\approx 432{,}8486358\,cm^3 - 193{,}2692093\,cm^3$$
$$\approx \underline{\underline{240\,cm^3}}$$



Syvennä s.43

18 Tilavuuksia

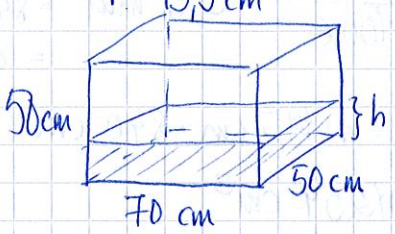
172



a) $V = A_p \cdot h = \pi r^2 \cdot h = \pi \cdot (13{,}5\ \text{cm})^2 \cdot 39\ \text{cm}$

$\approx 22329{,}6\ldots\ \text{cm}^3 \approx 22\ \text{dm}^3 \approx 22\ \text{l}$

b) $V = A_p \cdot h$



$22330\ \text{cm}^3 = 70\ \text{cm} \cdot 50\ \text{cm} \cdot h$

$h = \dfrac{22330\ \text{cm}^3}{70\ \text{cm} \cdot 50\ \text{cm}} \approx \underline{\underline{6{,}40\ \text{cm}}} = \underline{\underline{6{,}4\ \text{cm}}}$

c) $V_{täysi} = A_p \cdot h$

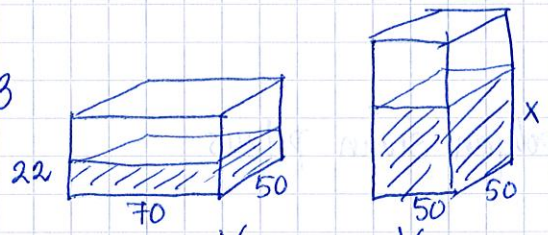
$= 70\ \text{cm} \cdot 50\ \text{cm} \cdot 50\ \text{cm}$

$= 175\ 000\ \text{cm}^3$

$\dfrac{175\ 000\ \text{cm}^3}{22\ 330\ \text{cm}^3} \approx 7{,}8$

V: täysiä astiallisia mahtuu 7

173



$V_1 = V_2$

$70 \cdot 50 \cdot 22 = 50 \cdot 50 \cdot x$

$x = \dfrac{70 \cdot \cancel{50} \cdot 22}{\cancel{50} \cdot 50}$

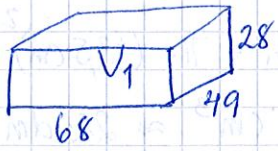
$x = 30{,}8\ \text{cm}$

$x \approx 31\ \text{cm}$

Sovella S.43

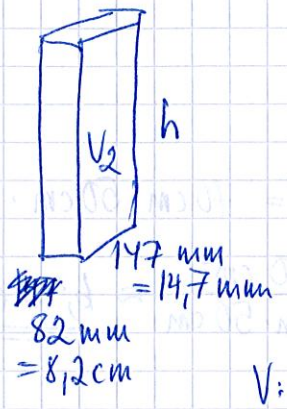
18 Tilavuuksia

170 (cm)



Laukku

$V_1 = A_p \cdot h = 68\,cm \cdot 49\,cm \cdot 28\,cm = 93296\,cm^3$



Setelit

Korkeus $h = \frac{7000\,000\,€}{100\,€} \cdot 0{,}12\,mm = 8400\,mm$
$= 840\,cm$

$V_2 = A_p \cdot h = 8{,}2\,cm \cdot 14{,}7\,cm \cdot 840\,cm$
$= 101254\,cm^3$

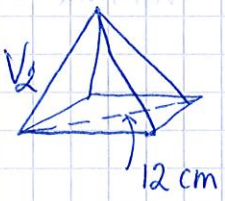
V: $V_2 > V_1 \Rightarrow$ eivät mahdu

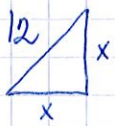
171

d = 12 cm
r = 6 cm

Lieriö

$V_1 = A_p \cdot h = \pi r^2 \cdot h = \pi \cdot (6\,cm)^2 \cdot 6\,cm$
$\approx 679\,cm^3$





Pyramidi

Lasketaan pohjan sivun pituus

$x^2 + x^2 = 12^2$

$2x^2 = 144$

$x^2 = 72$

$x = \sqrt{72}\,cm$

$V_2 = A_p \cdot h$

$= \frac{\sqrt{72} \cdot \sqrt{72} \cdot 6}{3}\,cm^3$

$= 144\,cm^3$

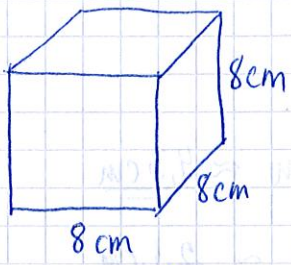
Pyramidin tilavuus lieriön tilavuudesta prosentteina

$\frac{V_2}{V_1} = \frac{144\,cm^3}{679\,cm^3} \approx 21\%$

Syventä s.43

18 Tilavuuksia

8102



a) $V_{kuutio} = 8^3\ cm^3 = \underline{\underline{512\ cm^3}}$

b) $V_{3\text{-särmiö}} = A_p \cdot h = \frac{b \cdot h_1}{2} \cdot h$

$= \frac{2 \cdot 2}{2} \cdot 8\ cm^3$

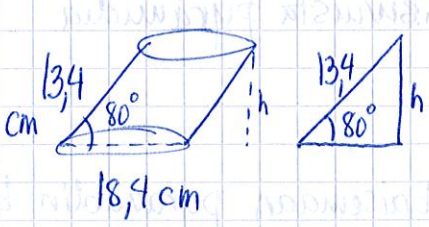
$= \underline{\underline{16\ cm^3}}$

c) $V_{8\text{-särmiö}} = V_{kuutio} - 4 \cdot V_{3\text{-särmiö}}$

$= 512\ cm^3 - 4 \cdot 16\ cm^3$

$= \underline{\underline{448\ cm^3}}$

8103

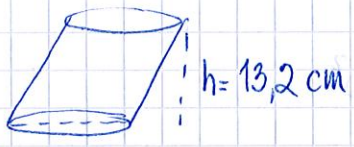


a) korkeus h

$\sin 80° = \frac{h}{13{,}4} \quad || \cdot 13{,}4$

$\sin 80° \cdot 13{,}4 = h$

$h \approx \underline{\underline{13{,}2\ cm}}$



d= 18,4 cm

r= 9,2 cm

b) tilavuus V

$V = A_p \cdot h$

$= \pi r^2 \cdot h$

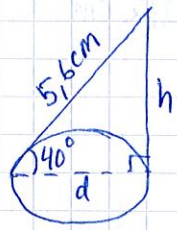
$= \pi (9{,}2\ cm)^2 \cdot 13{,}2\ cm$

$\approx \underline{\underline{3500\ cm^3}}$

Syvennä s.185

18 Tilavuuksia

S104



a) $\cos 40° = \frac{d}{5{,}6\,cm}$

$d = \cos 40° \cdot 5{,}6\,cm \approx \underline{\underline{4{,}3\,cm}}$

b) $r = \frac{\cos 40° \cdot 5{,}6\,cm}{2} \approx \underline{\underline{2{,}1\,cm}}$

c) $\sin 40° = \frac{h}{5{,}6\,cm}$

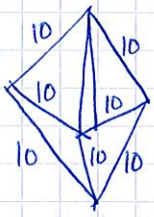
$h = \sin 40° \cdot 5{,}6\,cm \approx \underline{\underline{3{,}6\,cm}}$

d) tilavuus

$$V = \frac{A_p \cdot h}{3} = \frac{\pi r^2 \cdot h}{3} = \frac{\pi \cdot \left(\frac{\cos 40° \cdot 5{,}6\,cm}{2}\right)^2 \cdot \sin 40° \cdot 5{,}6\,cm}{3}$$

$$\approx \underline{\underline{17\,cm^3}}$$

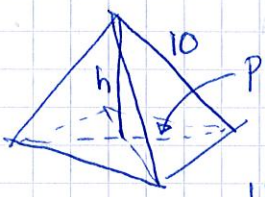
S105



Kaksi säännöllistä neliösivuista pyramidia

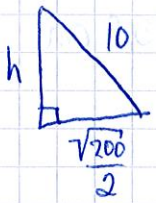
$V = 2 \cdot \frac{A_p \cdot h}{3}$

Lähdetään ensin ratkaisemaan pyramidin korkeus



$x^2 = 10^2 + 10^2$

$x = \sqrt{200}$



$h^2 + \left(\frac{\sqrt{200}}{2}\right)^2 = 10^2$

$h^2 + \frac{200}{4} = 100$

$h^2 = 50$

$h = \sqrt{50}\,cm$

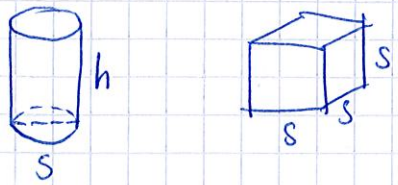
$$V = 2 \cdot \frac{A_p \cdot h}{3} = \frac{2 \cdot 10 \cdot 10 \cdot \sqrt{50}}{3}\,cm^3 \approx 470\,cm^3 = 0{,}47\,l$$

$= \underline{\underline{4{,}7\,dl}}$

Syvennä s.185

18 Tilavuuksia

S106



$$V_1 = V_2$$

$$\pi r^2 \cdot h = s^3$$

$$\pi \left(\frac{s}{2}\right)^2 \cdot h = s^3$$

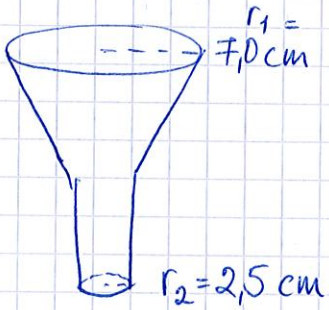
$$\pi \cdot \frac{s^2}{4} \cdot h = s^3 \quad \| \cdot 4$$

$$\pi \cdot s^2 \cdot h = 4 \cdot s^3 \quad \| : \pi \cdot s^2$$

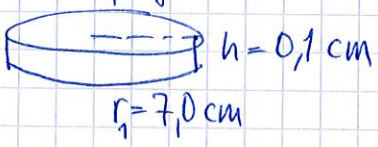
$$h = \frac{4 \cdot s^{\cancel{3}}}{\pi \cdot \cancel{s^2}}$$

$$h = \frac{4s}{\pi} = \frac{4 \cdot 4\,cm}{\pi} \approx \underline{\underline{5{,}1\,cm}}$$

S107



a) Lieriön kertyy vettä yhtä paljon kuin suppilon suulle sataa



$$V = A_p \cdot h = \pi r^2 \cdot h = \pi \cdot (7{,}0\,cm) \cdot 0{,}1\,cm$$
$$\approx 15\,cm^3$$

b) Lieriön korkeus kun sataa 1mm = jakovälin korkeus

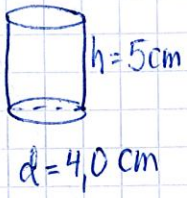
$$V = A_p \cdot h$$

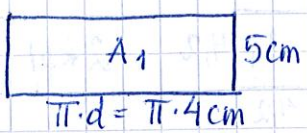
$$h = \frac{V}{A_p} = \frac{15\,cm^3}{\pi \cdot (2{,}5\,cm)^2} = 0{,}763\ldots\,cm \approx \underline{\underline{8\,mm}}$$

Harjoittele s.45

19 Lieriön pinta-ala

174





$A_1 = \text{kanta} \cdot \text{korkeus}$
$= \pi \cdot d \cdot h$
$= \pi \cdot 4\text{cm} \cdot 5\text{cm}$

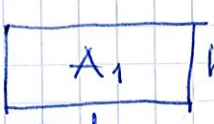
$A_2 = \pi r^2$
$= \pi \cdot (2\text{cm})^2$
$= \pi \cdot 2\text{cm} \cdot 2\text{cm}$

Kokonaispintaala (A) on vaipan (A_1) ja kahden pohjan (A_2) pinta-alojen summa.

$A = A_1 + 2 \cdot A_2$
$= \pi \cdot 4\text{cm} \cdot 5\text{cm} + 2 \cdot (\pi \cdot 2\text{cm} \cdot 2\text{cm})$
$\approx 62{,}83\ \text{cm}^2 + 2\,(12{,}57\ \text{cm}^2)$
$\approx 87{,}96\ \text{cm}^2$
$\approx 88\ \text{cm}^2$

Vastaukset
a) Vaipan pinta-ala $A_1 \approx \pi \cdot 4\text{cm} \cdot 5\text{cm} \approx 63\ \text{cm}^2$
b) Pohjan pintala $A_2 = \pi \cdot 2\text{cm} \cdot 2\text{cm} \approx 13\text{cm}^2$
c) Pinta-ala 88cm^2

175



$\pi \cdot d$
$= \pi \cdot 2 \cdot 28\ \text{mm}$
$= \pi \cdot 56\ \text{mm}$

$A_1 = \text{kanta} \cdot \text{korkeus}$
$= \pi \cdot 56\ \text{mm} \cdot 14\ \text{mm}$

$r = 28\ \text{mm}$

$A_2 = \pi r^2 = \pi \cdot (28\ \text{mm})^2$

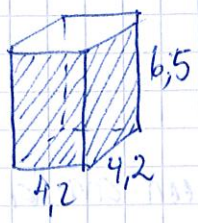
$A = A_1 + 2 \cdot A_2 = \pi \cdot 56\text{mm} \cdot 14\text{mm} + 2 \cdot \pi \cdot (28\ \text{mm})^2$
$\approx 2463\ \text{mm}^2 + 2 \cdot 2463\ \text{mm}^2$
$\approx 7389\ \text{mm}^2$
$\approx 7400\ \text{mm}^2$

Harjoittele s.45

19 Lieriön pinta-ala

176 Laske VAIPAN pinta-ala

a)

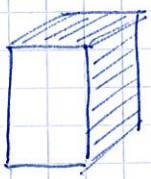


Vaippa koostuu neljästä ympäröivästä tahkosta

$\times 4$

$A = 4 \cdot b \cdot h$
$= 4 \cdot 4{,}2\,cm \cdot 6{,}5\,cm$
$= 109{,}20\ cm^2$
$\approx \underline{\underline{110\ cm^2}}$

TAI

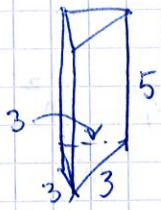


$\times 2$

$\times 2$

$A = 2 \cdot b_1 h_1 + 2 \cdot b_2 \cdot h_2$
$= 2 \cdot 4{,}2\,cm \cdot 4{,}2\,cm + 2 \cdot 4{,}2\,cm \cdot 6{,}5\,cm$
$= 89{,}88\ cm^2$
$\approx \underline{\underline{90\ cm^2}}$

b)



Tällä kertaa on olemassa vain yksi vaippa, joka muodostuu kolmesta suorakulmiosta.

$\times 3$

$A = 3 \cdot A_1$
$= 3 \cdot b \cdot h$
$= 3 \cdot 3\,cm \cdot 5\,cm$
$= \underline{\underline{45\ cm^2}}$

Harjoittele s.45

19 Lieriön pinta-ala

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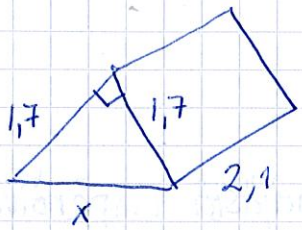
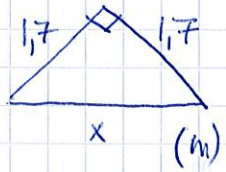


a) Pohjan leveys x



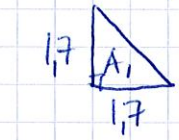
Pythagoraan lauseen avulla

$1{,}7^2 + 1{,}7^2 = x^2$

$x = \sqrt{1{,}7^2 + 1{,}7^2}$

$\underline{\underline{x \approx 2{,}4 \text{ m}}}$

b) Kokonaispinta-ala



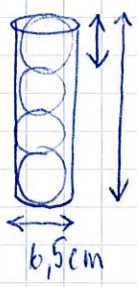
x 2 päädyt

x 2 Seinät

x 1 pohja

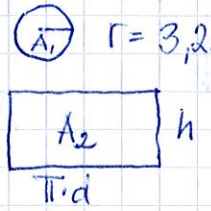
$$A = 2 \cdot A_1 + 2 \cdot A_2 + 1 \cdot A_3$$
$$= 2 \cdot \frac{b_1 h_1}{2} + 2 \cdot b_2 h_2 + 1 \cdot b_3 h_3$$
$$= 2 \cdot \frac{1{,}7 \cdot 1{,}7}{2} + 2 \cdot 2{,}1 \cdot 1{,}7 + 1 \cdot 2{,}1 \cdot 2{,}4 \text{ m}^2$$
$$= 2 \cdot 1{,}445 + 2 \cdot 3{,}57 + 1 \cdot 5{,}04 \text{ m}^2$$
$$= 15{,}07 \text{ m}^2$$
$$\approx 15 \text{ m}^2$$

178



$d = 2{,}56 \cdot 2{,}54 \text{ cm} \approx 6{,}5 \text{ cm}$

$h = 4 \cdot d = 4 \cdot 6{,}5 \text{ cm} = 26 \text{ cm}$

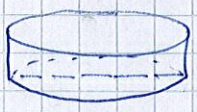


$$A = 2 \cdot A_1 + A_2$$
$$= 2 \cdot \pi r^2 + \pi \cdot d \cdot h$$
$$= 2 \cdot \pi \cdot (3{,}25)^2 + \pi \cdot 6{,}5 \text{ cm} \cdot 26 \text{ cm}^2$$
$$= 66{,}37 \text{ cm}^2 + 530{,}93 \text{ cm}^2 \approx 598 \text{ cm}^2$$

Sovella s.45

179

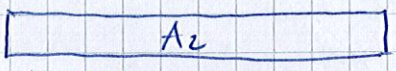
19 Lieriön pinta-ala



$h = 2{,}54\ cm$

$d = 7{,}62\ cm$

$r = \frac{d}{2} = \frac{7{,}62\ cm}{2} = 3{,}81\ cm$



$h = 2{,}54$

$b = \pi \cdot d = \pi \cdot 7{,}62\ cm \approx 23{,}94\ cm$

a) $A = 2 \cdot A_1 + A_2 = 2 \cdot \pi r^2 + b \cdot h = 2\pi r^2 + \pi \cdot d \cdot h$

$= 2 \cdot \pi \cdot (3{,}81\ cm)^2 + \pi \cdot 7{,}62 \cdot 2{,}54\ cm^2$

$= 91{,}21\ cm^2 + 23{,}94 \cdot 2{,}54\ cm^2$

$\approx \underline{\underline{152\ cm^2}}$

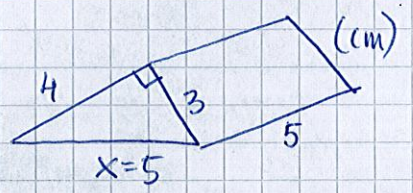
b) $V = A_p \cdot h$

$= \pi \cdot r^2 \cdot h$

$= \pi \cdot (3{,}81\ cm)^2 \cdot 2{,}54\ cm$

$\approx \underline{\underline{116\ cm^3}}$

180



a) Särmä x Pythagoraan lauseen avulla

$x^2 = 4^2 + 3^2$

$x = \sqrt{16+9}$

$\underline{\underline{x = 5{,}0}}\ cm$

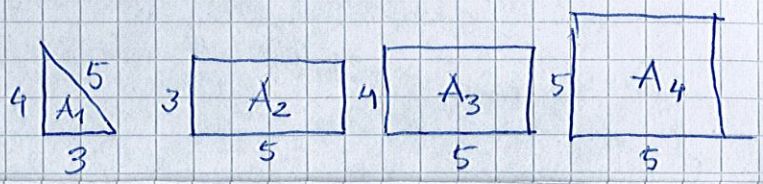
b) Lankaa tarvitaan

$2 \cdot$ kolmion piiri $+ 3 \cdot$ korkeus

$= 2 \cdot (4\ cm + 3\ cm + 5\ cm) + 3 \cdot 5\ cm$

$= 2 \cdot 12\ cm + 3 \cdot 5\ cm$

$= \underline{39\ cm}$



c) Pinta-ala

$A = 2 \cdot A_1 + A_2 + A_3 + A_4$

$= 2 \cdot \frac{3 \cdot 4}{2} + 5 \cdot 3 + 5 \cdot 4 + 5 \cdot 5\ cm^2$

$= 12 + 15 + 20 + 25\ cm^2$

$= \underline{72\ cm^2}$

Sovella s.45

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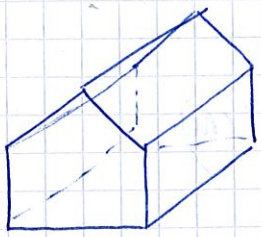
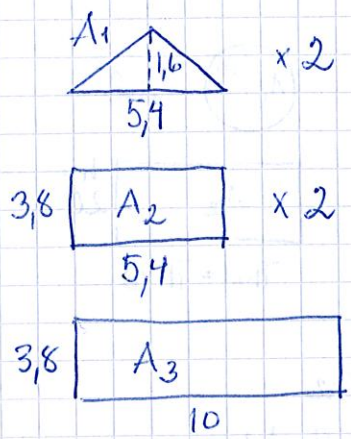
19 Lierion pinta-ala





a) $A = 2 \cdot A_1 + 2 \cdot A_2 + 2 \cdot A_3 - 9{,}8\ m^2$

$= 2 \cdot \frac{5{,}4 \cdot 1{,}6}{2} + 2 \cdot 5{,}4 \cdot 3{,}8 + 2 \cdot 10 \cdot 3{,}8 - 9{,}8\ m^2$

$= 2 \cdot 4{,}32 + 2 \cdot 20{,}52 + 2 \cdot 38 - 9{,}8\ m^2$

$= 115{,}88\ m^2$

$\approx \underline{120\ m^2}$

b) Maalataan kahteen kertaan $2 \cdot 120\ m^2 = 240\ m^2$

1 l riittää 6 m^2:iin.

Montako litraa tarvitaan?

$\frac{240\ m^2}{6\ m^2} = 40\ l$

Tarkkaa arvon käyttäen

$\frac{2 \cdot 115{,}88\ m^2}{6\ m^2} = 38{,}626\ldots\ l \approx 39\ l$

V: $\underline{39\ l}$

Sovella s.45

19 Lieriön pinta-ala

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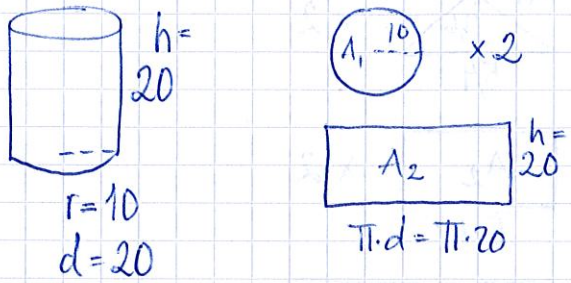


(cm)

$$A = 2 \cdot A_1 + A_2$$
$$= 2 \cdot \pi r^2 + \pi \cdot d \cdot h$$
$$= 2 \cdot \pi \cdot 10^2 + \pi \cdot 20 \cdot 20$$
$$= 200\pi + 400\pi$$
$$= 600\pi \text{ cm}^2$$

(tarkka arvo!)

a) Korkeus kasvaa 10%

$$h_1 = 1{,}1 \cdot h = 1{,}1 \cdot 20 = 22 \text{ cm}$$
$$A_1 = 200\pi + \pi \cdot 20 \cdot 22$$
$$= 200\pi + 440\pi$$
$$= 640\pi \text{ cm}^2$$

(tarkka arvo)

Pinta-alojen erotus (kasvu) $640\pi - 600\pi = 40\pi$ cm²

Kasvu prosenteissa alkuperäisestä pinta-alasta

$$\frac{\text{kasvu}}{\text{alkuperäinen pinta-ala}} = \frac{40\pi}{600\pi} \approx 0{,}067 \approx \underline{\underline{6{,}7\,\%}}$$

b) Säde kasvaa 10%

$r_2 = 1{,}1 \cdot 10 \text{ cm} = 11 \text{ cm}$
$d_2 = 22 \text{ cm}$

$$A_2 = 2 \cdot \pi \cdot 11^2 + \pi \cdot 22 \cdot 20$$
$$= 242\pi + 440\pi$$
$$= 682\pi$$

Kasvu $682\pi - 600\pi = 82\pi$

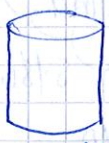
Prosenteissa $\frac{82\pi}{600\pi} \approx 0{,}137 \approx \underline{\underline{14\%}}$

c) $A_3 = 242\pi + \pi \cdot 22 \cdot 22$
$= 242\pi + 484\pi$
$= 726\pi$

Prosenteissa $\frac{726\pi - 600\pi}{600\pi} = \frac{126\pi}{600\pi}$
$\approx 21\%$

Syvennä s.186

19 Lieriön pinta-ala



(mm)
h = 1000
r = 400
d = 800

S108 Pohjiin käytettävä materiaali maksaa 2,35 €/dm²

Vaippaan käytettävä maksaa $0{,}8 \cdot 2{,}35$ €/dm² = 1,88 €/dm²

(koska 100% − 20% = 80% = 0,8)

Pohjien pinta-ala

$A_1 = 2\pi r^2 = 2 \cdot \pi (400\ mm)^2 \approx 100\,531\,0\ mm^2 \approx 100{,}53\ dm^2$

Pohjien hinta

$100{,}53\ dm^2 \cdot 2{,}35\ €/dm^2 \approx 236{,}24\ €$

Vaipan pinta-ala

$A_2 = \pi \cdot d \cdot h = \pi \cdot 800\ mm \cdot 1000\ mm \approx 251\,327\,4\ mm^2 \approx 251{,}32\ dm^2$

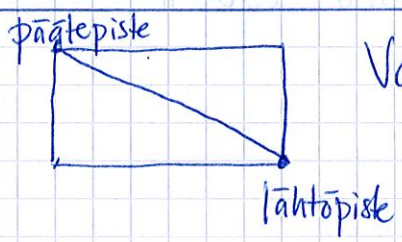
Vaipan hinta

$251{,}32\ dm^2 \cdot 1{,}88\ €/dm^2 \approx 472{,}48\ €$

Kokonaishinta

$236{,}24\ € + 472{,}48\ € = \underline{\underline{708{,}72\ €}}$

S.109



Vaippa

Jos lanka vedetään kireälle, se kulkee suorinta tietä eli muodostaa vaippaan lävistäjän

$\pi \cdot d = \pi \cdot 10\ cm$
$= 10\pi\ cm$

Pythagoraan lauseen avulla

$x^2 = 10^2 + (10\pi)^2$

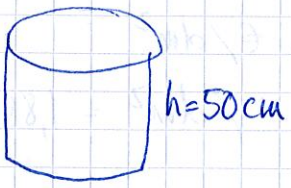
$x = \sqrt{10^2 + 100\pi^2}$

$x \approx 33\ cm$

Syvennä s.186

S 10

19 Lieriön pinta-ala



d=50cm
r=25cm

a) Täytettä tarvitaan

$V = A_p \cdot h$

$= \pi r^2 \cdot h$

$= \pi \cdot (25\,cm)^2 \cdot 50\,cm$

~~$\approx 321950\ cm^3$~~

$\approx 98174\ cm^3$

$\approx 98\ dm^3 \approx \underline{\underline{98\ l}}$ (yksikön voit valita itse)

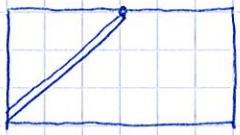
b) $A = 2\pi r^2 + \pi \cdot d \cdot h$

$= 2 \cdot \pi (25\,cm)^2 + \pi \cdot 50\,cm \cdot 50\,cm$

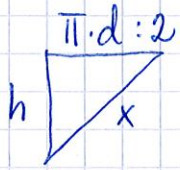
$\approx 11781\ cm^2$

$\approx 12000\ cm^2$

c)



Yksi koristenauha kulkee vaipan läpi kuvan osoittamalla tavalla



$x^2 = h^2 + (\pi \cdot d : 2)^2$

$x = \sqrt{h^2 + (\pi \cdot d : 2)^2}$

$= \sqrt{50^2 + (\pi \cdot 50 : 2)^2}$

$= \sqrt{2500 + 25^2 \pi^2}$

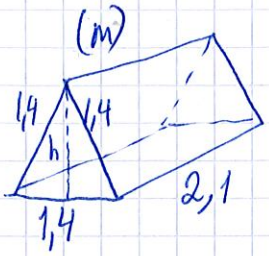
$= \sqrt{2500 + 625\pi^2}$

$\approx \underline{\underline{93\ cm}}$

Syvennä s.186

S111

19 Lieriön pinta-ala



a) Harjateltan korkeus

$0{,}7^2 + h^2 = 1{,}4^2$

$h = \sqrt{1{,}4^2 - 0{,}7^2}$ m

$\approx \underline{\underline{1{,}2\,m}}$

b) Kaukaan määrä

$A = 2 \cdot A_{kolmio} + 3 \cdot A_{suorakulmio}$

$= 2 \cdot \frac{1{,}4m \cdot 1{,}2m}{2} + 3 \cdot 1{,}4m \cdot 2{,}1\,m$

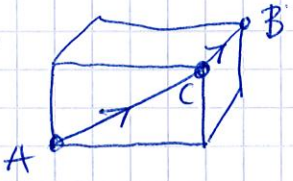
$= 1{,}68\,m^2 + 8{,}82\,m^2$

$= 10{,}5\,m^2$

Saumavarat mukaan lukien

$1{,}05 \cdot 10{,}5\,m^2 = 11{,}025\,m^2 \approx 11\,m^2$

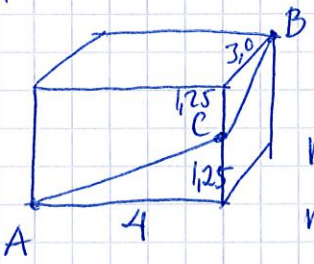
S112



matka $AC = \sqrt{4^2 + 3^2} = 5{,}0$ m

matka CB 3,0 m

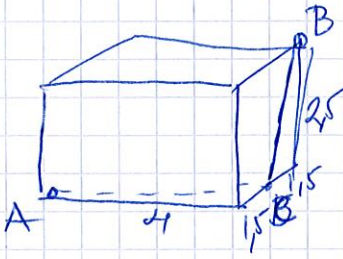
summa 8,0 m



matka $AC = \sqrt{4^2 + (1{,}25)^2} \approx 4{,}19$

matka $CB = \sqrt{(1{,}25)^2 + 3^2} \approx 3{,}25$

summa 7,44 m



matka $AC = \sqrt{4^2 + 1{,}5^2} \approx 4{,}27$

matka $CB = \sqrt{1{,}5^2 + 2{,}5^2} \approx 2{,}92$

Summa 7,19 m lyhin?

S113 Kuusivuisen särmiön vaippa muodostuu kuudesta tahkosta.

Pois leikattujen särmiöiden vaipat muodostuvat myös kuudesta tahkosta, joista jokainen on yhtä suuri kuin kuin kuusisivuisen särmiön vaipan tahko.

Täten pinta-alat ovat yhtä suuret.