



Kaflipróf 3

kafli 6

STÆF2RH05
Haustönn 2018

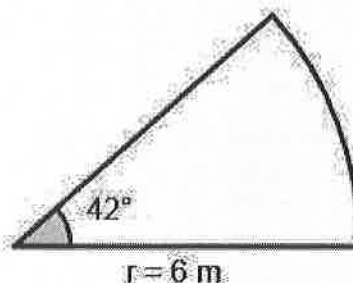
Nafn: kennaralausa

Einkunn:

1. (20%) Reiknaðu flatarmál og ummál hringgeirans á myndinni.

Flatarmál: 13,19 m²

Ummál: 16,40 m



$$① F = \pi \cdot r^2 \cdot \frac{x^\circ}{360^\circ} = \pi \cdot 6^2 \cdot \frac{42^\circ}{360^\circ} = \frac{36 \cdot \pi \cdot 42^\circ}{360^\circ} = 13,1946 \approx \underline{\underline{13,19 \text{ m}^2}}$$

$$② (u = b \cdot \pi \cdot \frac{x^\circ}{360^\circ} + 2r \quad \text{L} = 2 \cdot r \cdot \pi \cdot \frac{x^\circ}{360^\circ} + 2r \quad \text{L} = 2 \cdot 6 \cdot \pi \cdot \frac{42^\circ}{360^\circ} + 2 \cdot 6)$$

$$u = b \cdot \pi \cdot \frac{x^\circ}{360^\circ} + 2r = 2 \cdot 6 \cdot \pi \cdot \frac{42^\circ}{360^\circ} + 2 \cdot 6 = 16,3982 \approx \underline{\underline{16,40 \text{ m}}}$$

2. (16%) Flatarmál hrings er 58,088 cm².
Hvert er ummál hans?

Ummál: 27,02 cm

① Finnum r:

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

$$\frac{\pi \cdot r^2}{\pi} = \frac{58,088 \text{ cm}^2}{\pi} \rightarrow r = \sqrt{\frac{58,088 \text{ cm}^2}{\pi}} = 4,29999 \approx \underline{\underline{4,30 \text{ cm}}}$$

② $u = 2 \cdot r \cdot \pi = 2 \cdot 4,30 \cdot \pi = 27,0176 \text{ cm} \approx \underline{\underline{27,02 \text{ cm}}}$

3. (14%) Einn hektari eru $100 \text{ m} \times 100 \text{ m}$. $= 10.000 \text{ m}^2$

a) Jörð er 230 hektarar. Hver er stærð hennar í fermetrum (m^2)?

b) Hvað eru 230 hektarar margir ferkílómetrar (km^2)?

a) $230 \cdot 10.000 \text{ m}^2 = 2.300.000 \text{ m}^2$

b)

$$\begin{array}{ccccccc} \text{km}^2 & - & \text{hm}^2 & - & \text{dam}^2 & - & \text{m}^2 \\ & & 2 & , & 30 & & 00 & 00 \end{array}$$

$230 \text{ ha} = \underline{\underline{2,3 \text{ km}^2}}$

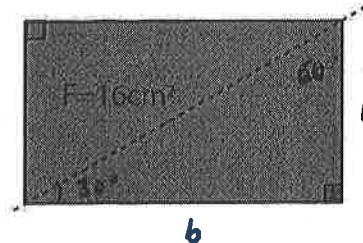
4. (10%) Flatarmál rétthyrnings er 16 cm^2 . Hornalínan myndar 30° og 60° horn við hliðarlínur. Notaðu jöfnur um sérstaka þríhyrninga til að reikna hliðarlengdir hans.

① sérstakur þríhyrningur

$30^\circ - 60^\circ - 90^\circ$

Lengri skammhlid = styttri hlid $\cdot \sqrt{3}$

$b = l \cdot \sqrt{3}$



② $F = l \cdot b$

$l \cdot b = 16 \text{ cm}^2$

$l \cdot l\sqrt{3} = 16 \text{ cm}^2$

Lengd: 3,04 cm

$$\frac{l^2 \sqrt{3}}{\sqrt{3}} = \frac{16 \text{ cm}^2}{\sqrt{3}}$$

$l^2 = 9,237604 \text{ cm}^2$

breidd: 5,27 cm

$l = \sqrt{9,237604 \text{ cm}^2}$

$l = 3,039342 \text{ cm} \approx \underline{\underline{3,04 \text{ cm}}}$

③ $b = l \cdot \sqrt{3} = 3,04 \cdot \sqrt{3} = 5,265434 \approx \underline{\underline{5,27 \text{ cm}}}$

5. (10%) Hver er hliðarlengd fernings sem hefur sama tölu gildi fyrir ummál og flatarmál?

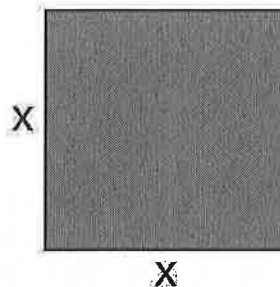
① $F = l \cdot b = x \cdot x = x^2$

② $U = 4x$

③ $F = U$

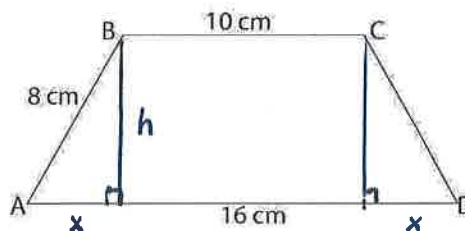
$$\frac{x^2}{x} = \frac{4x}{x}$$

$$\underline{x = 4}$$



Ferningur hefur allar hliðar jafnstórar

6. (10%) Reiknaðu flatarmál og ummál jafnarma trapisunnar á myndinni.



Flatarmál: 96,46 cm²

Ummál: 42 cm

① $2x = 16 - 10 = 6$

$$x = 6/2 = \underline{3 \text{ cm}}$$

② $h^2 + 3^2 = 8^2$

$$h^2 = 8^2 - 3^2 = 64 - 9 = 55$$

$$h = \sqrt{55} = 7,41619 \approx \underline{7,42 \text{ cm}}$$

③ $F = \frac{(a+b) \cdot h}{2}$

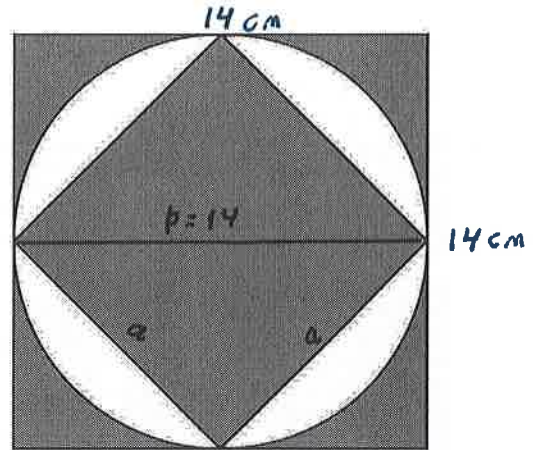
$$F = \frac{(10+16) \cdot 7,42}{2} = 13 \cdot 7,42$$

$$F = \underline{96,46 \text{ cm}^2}$$

④ $U = 8 + 10 + 8 + 16 = \underline{42 \text{ cm}}$

7. (20%) Á myndinni eru tveir ferningar og hringur með þvermálið 14 cm.

a) Hvert er flatarmál skyggða svæðisins?



Flatarmál: 140,07 cm²

$$\textcircled{1} F_{\text{skyggt}} = F_{\square} - F_{\circ} + F_{\diamond}$$

$$\textcircled{4} F_{\square} = x \cdot x = 14 \cdot 14 = \underline{196 \text{ cm}^2}$$

$$\textcircled{2} r = \frac{\text{þvermál}}{2} = \frac{14 \text{ cm}}{2} = \underline{7 \text{ cm}}$$

$$\textcircled{3} \text{ Ferningur með hliðarlengdina } 14 \text{ cm}$$

$$\textcircled{5} F_{\circ} = \pi \cdot r^2 = \pi \cdot 7^2 = 153,93804 \approx \underline{153,94 \text{ cm}^2}$$

$$\textcircled{6} \text{ Finnum hliðarlengd minni ferningsins } a$$

$$a^2 + a^2 = 14^2 \rightarrow 2a^2 = 14^2 \rightarrow a^2 = \frac{196}{2} = 98$$

$$a = \sqrt{98} = 9,89949 \approx \underline{9,90}$$

b) Hvert er ummál skyggða svæðisins?

Ummál: 139,58 cm

$$\textcircled{7} F_{\diamond} = a \cdot a = 9,90 \cdot 9,90 = \underline{98,01}$$

$$\textcircled{8} F_{\text{skyggt}} = F_{\square} - F_{\circ} + F_{\diamond} = 196 \text{ cm}^2 - 153,94 \text{ cm}^2 + 98,01 \text{ cm}^2$$

$$= \underline{140,07 \text{ cm}^2}$$

$$\textcircled{9} U = 4 \cdot x + p \cdot \pi + 4 \cdot a$$

$$U = 4 \cdot 14 + 14 \cdot \pi + 4 \cdot 9,90$$

$$U = 56 \text{ cm} + 43,98 \text{ cm} + 39,6 \text{ cm} = \underline{139,58 \text{ cm}}$$