

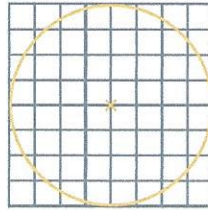
## 20 Ympyrän pinta-ala

- a)  $32 \text{ m}^2$  b)  $1\,430 \text{ m}^2$
  - a)  $9\,500 \text{ m}^2$  b)  $6,2 \text{ m}^2$
  - a)  $79 \text{ cm}^2$  b)  $20 \text{ cm}^2$
  - a)  $65,8 \text{ m}^2$  b)  $10 \text{ m}^2$
  - $113 \text{ cm}^2$
  - a)  $310 \text{ cm}^2$   
b)  $1\,260 \text{ cm}^2$   
c)  $5\,030 \text{ cm}^2$   
d) Pinta-ala kasvaa nelinkertaiseksi.
  - a)  $28 \text{ cm}^2$  b)  $3,4 \text{ cm}^2$  c)  $110 \text{ cm}^2$
  - a)  $6,4 \text{ cm}^2$  b)  $1,9 \text{ cm}^2$
  - $100 \text{ mm}^2$  pienempi
  - Pinta-ala alussa  $113 \text{ cm}^2$  ja lopussa  $452 \text{ cm}^2$  eli pinta-ala nelinkertaistuu.
  - a)  $10,0 \text{ cm}$  b)  $1,98 \text{ cm}$
  - Neliön pinta-ala on  $6,25 \text{ m}^2$  ja ympyrän  $7,96 \text{ m}^2$ .
  - $1\,700 \text{ m}^2$
  - $18\,000 \text{ €}$
  - a)  $150 \text{ m}^2$  b)  $38 \text{ m}^2$
  - a)  $240 \text{ mm}^2$  b)  $12 \text{ cm}^2$
  - $6\,427 \text{ m}^2$
  - $6,9 \text{ ha}$
  - a)  $12,9 \text{ m}$  b)  $1,7 \text{ cm}$
  - $28 \text{ cm}$
  - a) kehän pituus kaksinkertaistuu  
b) pinta-ala nelinkertaistuu
  - a) kehän pituus kolminkertaistuu  
b) pinta-ala yhdeksänkertaistuu
- PULMA**  $2,28 \text{ cm}^2$

## 21 Ympyrälaskuja

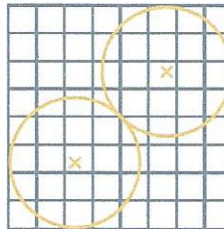
- a)  $18 \text{ m}$  b)  $26 \text{ m}^2$
- a)  $42,4 \text{ cm}$  b)  $143 \text{ cm}^2$
- $50 \text{ cm}^2$
- $18 \text{ m}$
- a)  $19 \text{ m}$  b)  $140 \text{ m}^2$
- yksi vuosi (vastauksen saa päätellä)
- a)  $38 \text{ m}^2$  b)  $25 \text{ m}^2$  c)  $80 \text{ m}^2$
- $13 \text{ m}$
- $5,3$  kierrosta
- $130 \text{ cm}^2$
- $1\,800 \text{ m}^2$
- $56 \text{ m}$
- $1\,960 \text{ cm}^2$
- a)  $19,7 \text{ m}$  b)  $31,0 \text{ m}^2$
- $21,5 \text{ m}^2$
- a)  $424 \text{ cm}$  b)  $710$  kierrosta
- $80 \text{ cm}^2$
- $19 \text{ cm}^2$

19. a)



8,0 cm

b)



4,7 cm

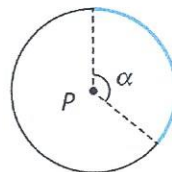
20. a)  $38 \text{ cm}^2$  b)  $7,0 \text{ cm}$

21.  $3,1605$

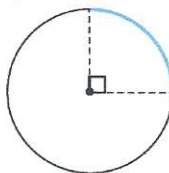
**PULMA** a)  $1,14 \text{ cm}^2$  b)  $2,00 \text{ cm}^2$

## 22 Ympyrän kulmia

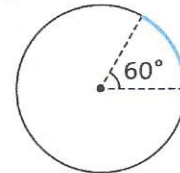
- Kulma  $\alpha$  on keskuskulma ja kulma  $\beta$  on kehäkulma.
- a)  $\alpha = 20^\circ$  b)  $\alpha = 75^\circ$
- 



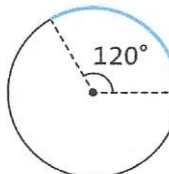
4. a)



b)



c)



5. a)  $45^\circ$  b)  $72^\circ$  c)  $100^\circ$

6. a)  $70^\circ$  b)  $150^\circ$  c)  $180^\circ$

7. a)  $12,5^\circ$  b)  $300^\circ$

8. a)  $\alpha = 164^\circ$  b)  $\alpha = 120^\circ$

9. a)  $\alpha = 90^\circ$  b)  $\alpha = 150^\circ$

10. a)  $\alpha = 82^\circ$  ja  $\beta = 98^\circ$  b)  $\alpha = 44^\circ$  ja  $\beta = 136^\circ$