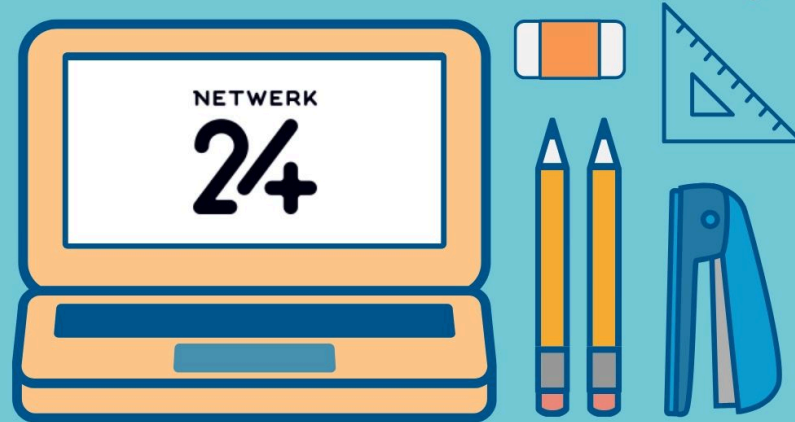


#MYSKOOL

AANLYN HULP

vir hoërskoolleerlinge

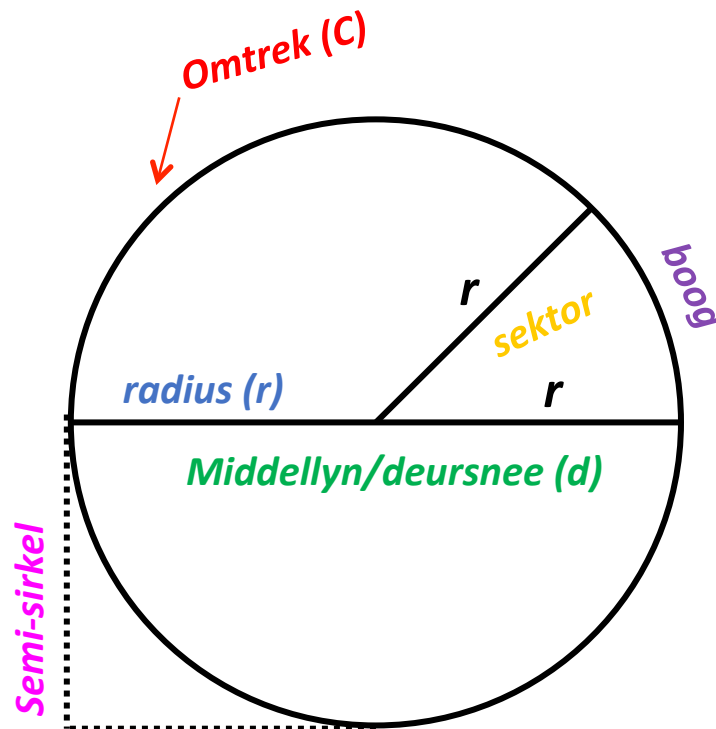


Les 11

Omtrek en oppervlakte (2)



Sirkels



Midellyn/deursnee (d):

- ✓ `n Lyn wat van die een kant van die sirkel na die ander kant deur die middelpunt verbind kan word.
- ✓ $Deursnee = 2 \times radius$

Radius (r):

- ✓ `n Lyn vanaf die middelpunt van die sirkel tot by enige punt op die omtrek van die sirkel.
- ✓ $Radius = Deursnee / 2$

Boog:

- ✓ `n Gedeelte van die omtrek van die sirkel.

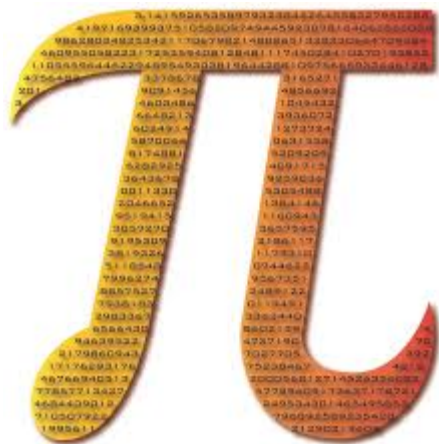
Sektor:

- ✓ Die oppervlakte tussen twee radiusse en `n boog.

Semi-sirkel:

- ✓ Die helfte van `n volle sirkel.

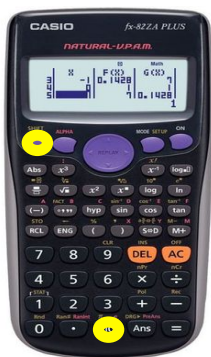
Sirkels



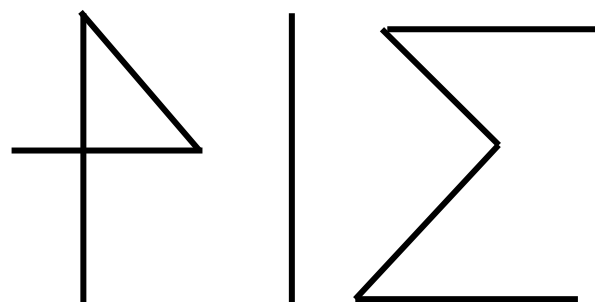
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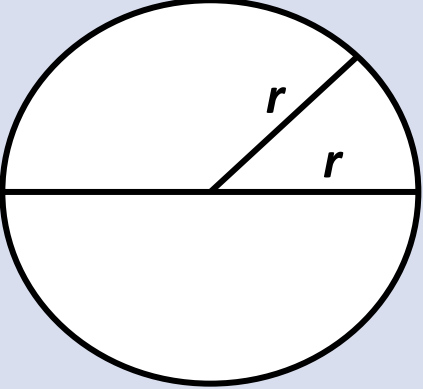
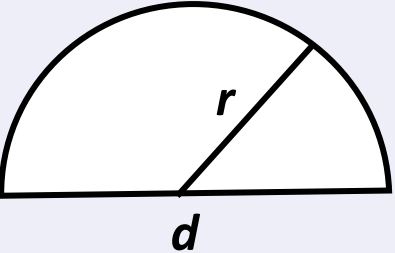
Hoe kry ek π op my sakrekenaar?



1. Druk "Shift"
2. Druk " $\times 10^{\uparrow} x$ " om π te kry.

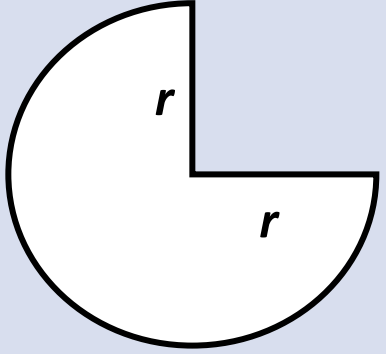
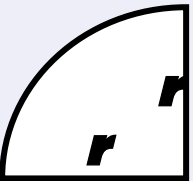


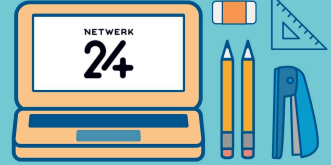
Sirkels

Vorm	Omtrek	Oppervlakte
<p>Sirkel:</p> 	$C = 2\pi r$ of $C = \pi d$	$A = \pi r^2$
<p>Semi sirkel:</p> 	$C = 1/2 (2\pi r) + d$ $\therefore C = \pi r + d$	$A = 1/2 (\pi r^2)$



Sirkels

Vorm	Omtrek	Oppervlakte
<p>Driekwart-sirkel:</p>  <p>A diagram of a three-quarter circle (Driekwart-sirkel) with radius r. The circle is missing a 90-degree sector, leaving a 270-degree arc. The two radii forming the corner are labeled r.</p>	$C = \frac{3}{4} (2\pi r) + 2r$	$A = \frac{3}{4} (\pi r^2)$
<p>Kwart-sirkel</p>  <p>A diagram of a quarter circle (Kwart-sirkel) with radius r. The circle is missing a 270-degree sector, leaving a 90-degree arc. The two radii forming the corner are labeled r.</p>	$C = \frac{1}{4} (2\pi r) + 2r$	$A = \frac{1}{4} (\pi r^2)$





Sirkels



1) Bereken die omtrek en oppervlakte van die volgende

Omtrek:

$$C = 2\pi r$$

$$C = 2\pi(21)$$

$$C = 131,95 \text{ cm}$$

Oppervlakte:

$$A = \pi r^2$$

$$A = \pi(21)^2$$

$$A = 1385,44 \text{ cm}^2$$

Omtrek:

$$d^2 = 80^2 + 60^2 \text{ [Pythagoras]}$$

$$\sqrt{d^2} = \sqrt{10\,000}$$

$$d = 100 \text{ cm}$$

$$\therefore r = 50 \text{ cm}$$

$$C = 2\pi r$$

$$C = 2\pi(50)$$

$$C = 314,16 \text{ cm}$$

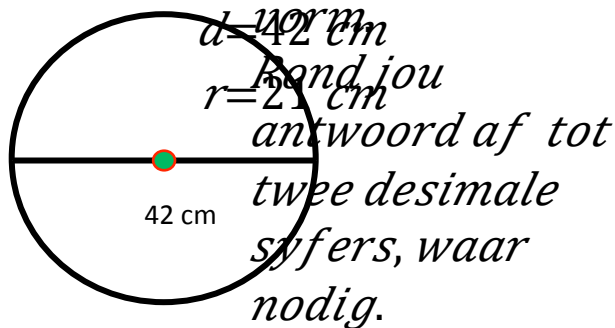
Oppervlakte:

$$A = \pi r^2$$

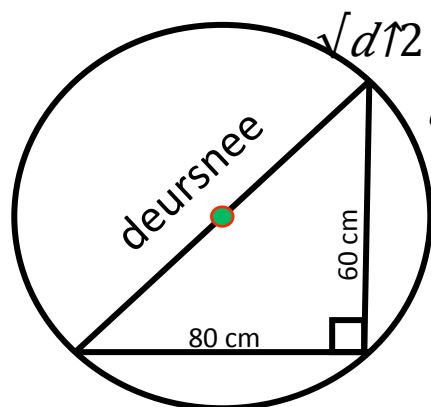
$$A = \pi(50)^2$$

$$A = 7853,98 \text{ cm}^2$$

a)



b)



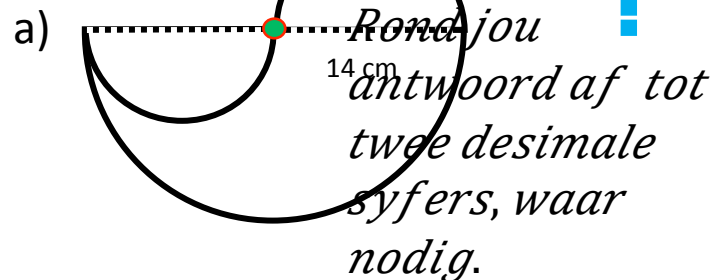


Sirkels



2) Bereken die omtrek en oppervlakte van die volgende vorm.

Omtrek



Oppervlakte:

Groot semi sirkel **Klein semi sirkel**

$$C = 1/2 (2\pi r) \qquad C = 1/2 (2\pi r)$$

$$C = 1/2 (2\pi(14)) \qquad C = 1/2 (2\pi(7))$$

$$C = 43,98 \text{ cm} \qquad C = 21,99 \text{ cm}$$

$$\therefore \text{Totale omtrek} = 43,98 + 21,99 + 21,99$$

$$\therefore \text{Totale omtrek} = \mathbf{87,96 \text{ cm}}$$

Groot semi sirkel **Klein semi sirkel**

$$A = 1/2 \pi r^2 \qquad A = 1/2 \pi r^2$$

$$A = 1/2 \pi (14)^2 \qquad A = 1/2 \pi (7)^2$$

$$A = 307,88 \text{ cm}^2 \qquad A = 76,97 \text{ cm}^2$$

$$\therefore \text{Totale oppervlakte} = 307,88 + 76,97 - 76,97$$

$$\therefore \text{Totale oppervlakte} = \mathbf{307,88 \text{ cm}^2}$$



Sirkels



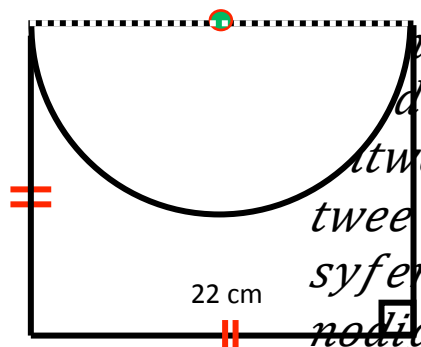
3) Bereken die omtrek en oppervlakte van die volgende

Omtrek:

$$P = (22 \times 3) + \frac{1}{2} (2\pi r)$$

Antwoord af tot twee desimale syfers, waar nodig.

$$P = 100,56 \text{ cm}$$



Oppervlakte:

$A(\text{vierkant}) = s^2$

$$A(\text{vierkant}) = 22^2$$

$$A(\text{vierkant}) = 484 \text{ cm}^2$$

$$A = \frac{1}{2} \pi r^2$$

$$A = \frac{1}{2} \pi (11)^2$$

$$A = 190,07 \text{ cm}^2$$

$$\therefore \text{Totale oppervlakte} = 484 - 190,07$$

$$\therefore \text{Totale oppervlakte} = 293,93 \text{ cm}^2$$



Sirkels

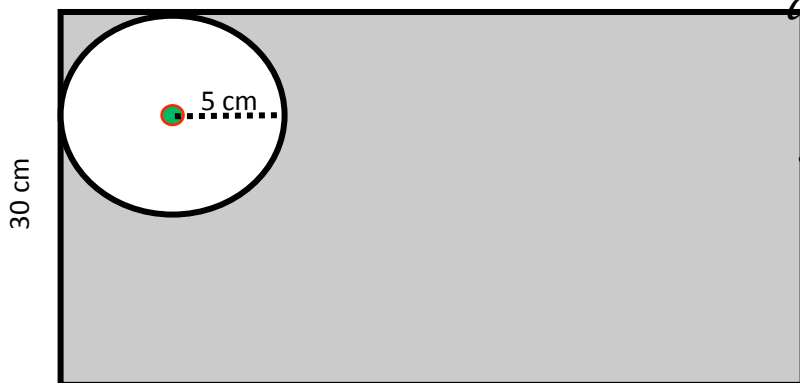


4) Identiese sirkels word uit reghoekige karton gesny.

Die lengte van die reghoek is 90 cm en die breedte is 30 cm.

Die radius van elke sirkel is 5 cm.

Bereken die oppervlakte karton wat oorbly nadat al die sirkels uitgeknip is.



a) Deursnee = 10 cm

$$\text{Lengte: } 90 \div 10 = 9$$

$$\text{Breedte: } 30 \div 10 = 3$$

$$\therefore 9 \times 3 = \mathbf{27 \text{ sirkels}}$$

$$b) A = \pi r^2$$

$$A = \pi(5)^2$$

$$A = 78,54 \text{ cm}^2 \quad \therefore 78,54 \times 27 = \mathbf{2120,58 \text{ cm}^2}$$

$$\text{Oppervlakte reghoek) = } l \times b$$

$$\text{Oppervlakte reghoek) = } 90 \times 30$$

$$\text{Oppervlakte reghoek) = } 2700 \text{ cm}^2$$

$$\therefore \text{Totale oppervlakte} = 2700 - 2120,58$$

$$\therefore \text{Totale oppervlakte} = \mathbf{579,42 \text{ cm}^2}$$

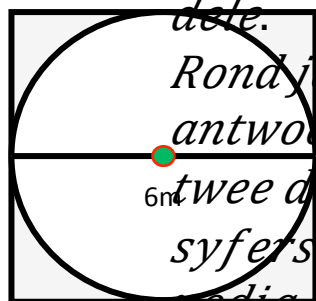
Sirkels



5) Bereken die oppervlakte van die geskakeerde dele.

Oppervlakte:

a)



Rond jou antwoord af tot twee desimale syfers, waar nodig.

$$A(\text{sirkel}) = \pi r^2 \quad A(\text{vierkant}) = s^2$$

$$A = \pi(3)^2 \quad A(\text{vierkant}) = 6^2$$

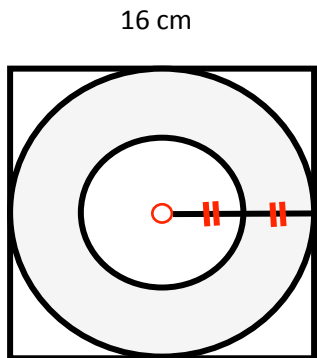
$$A = 28,27 \text{ m}^2 \quad A(\text{vierkant}) = 36 \text{ m}^2$$

$$\therefore \text{Totale oppervlakte} = 36 - 28,27 \text{ m}^2$$

$$\therefore \text{Totale oppervlakte} = 7,73 \text{ m}^2$$

Oppervlakte:

b)



$$A(\text{sirkel}) = \pi r^2$$

$$A(\text{sirkel}) = \pi r^2$$

$$A = \pi(8)^2$$

$$A = \pi(4)^2$$

$$A = 201,06 \text{ cm}^2$$

$$A = 50,26 \text{ cm}^2$$

$$\therefore \text{Totale oppervlakte} = 201,06 - 50,26 \text{ m}^2$$

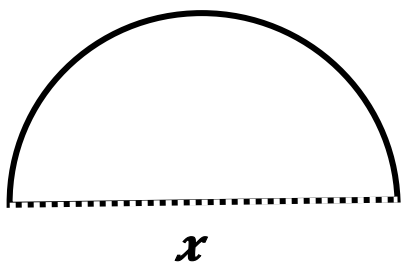
$$\therefore \text{Totale oppervlakte} = 150,80 \text{ m}^2$$



Sirkels



6) Bereken die onbekende waarde van die semi sirkel met 'n oppervlakte van 8π . Rond jou antwoord af tot twee desimale syfers, waar nodig.



$$A = \frac{1}{2} \pi r^2$$

$$2 \times 8\pi = \pi r^2$$

$$2(8\pi) / \pi = r^2$$

$$\sqrt{16} = \sqrt{r^2}$$

$$r = 4$$

$$\therefore d = 4 \times 2$$

$$\therefore x = 8 \text{ e}$$



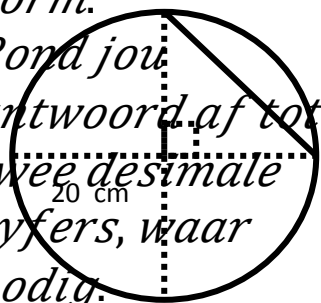


Ekstra oefening

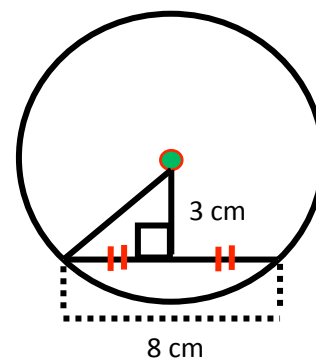
Bereken die omtrek en oppervlakte van die volgende vorm.

a)

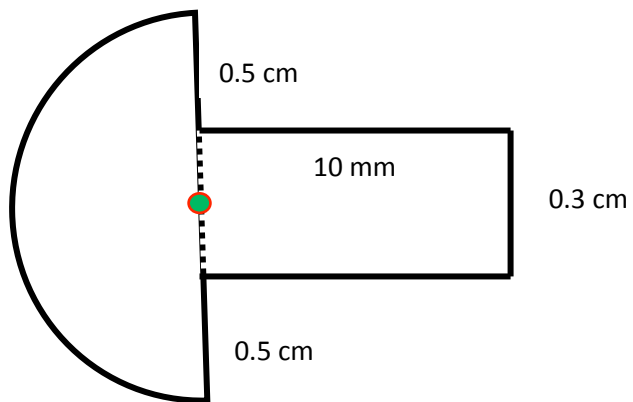
Rond jou antwoord af tot twee desimale syfers, waar nodig.



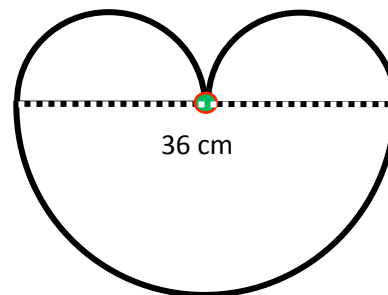
b)



c)



d)



Die einde van die les!

