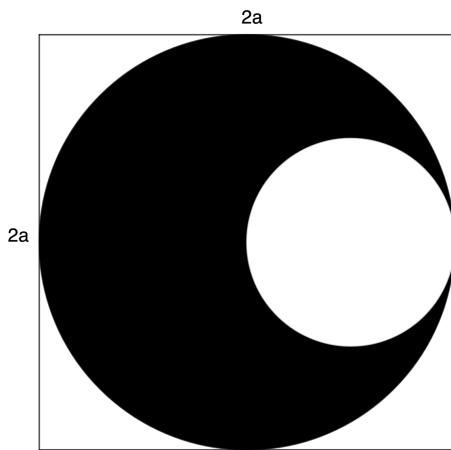


Markiere immer mit Farbe die verschiedenen Radien oder Durchmesser und schreibe den korrekten Term dazu.

Gib das Resultat in einem Term mit entsprechender Variable an. Vereinfache den Term so weit wie möglich.

Berechne den Umfang und die Fläche dieser Figuren.

a) Niveau 1



$$d_{\text{kleiner Kreis}} = a$$

$$u_{\text{kleiner Kreis}} = a\pi$$

$$d_{\text{grosser Kreis}} = 2a$$

$$u_{\text{grosser Kreis}} = 2a\pi$$

$$u_{\text{Total}} = a\pi + 2a\pi = \underline{\underline{3a\pi}}$$

$$r_{\text{kleiner Kreis}} = \frac{a}{2}$$

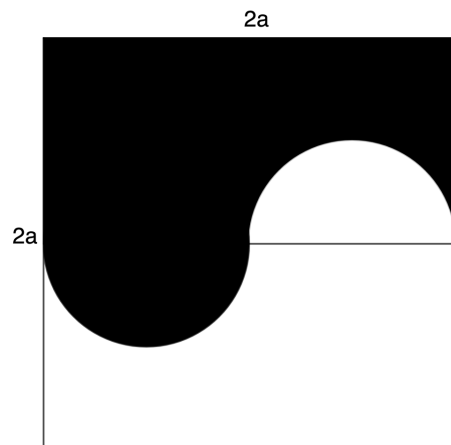
$$A_{\text{kleiner Kreis}} = \left(\frac{a}{2}\right)^2 \cdot \pi = \frac{a^2\pi}{4}$$

$$r_{\text{grosser Kreis}} = a$$

$$A_{\text{grosser Kreis}} = a^2\pi$$

$$A_{\text{Total}} = a^2\pi - \frac{a^2\pi}{4} = \frac{4a^2\pi}{4} - \frac{a^2\pi}{4} = \underline{\underline{\frac{3a^2\pi}{4}}}$$

b) Niveau 1



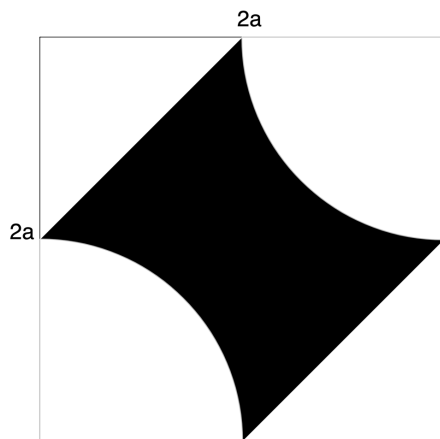
$$d_{\text{Kreis}} = a$$

$$u_{\text{Kreis}} = a\pi$$

$$u_{\text{Total}} = \underline{\underline{4a + a\pi}}$$

$$A_{\text{Total}} = 2a \cdot a = \underline{\underline{2a^2}}$$

c) Niveau 2



$$d_{\text{Kreis}} = 2a$$

$$u_{\text{Viertelkreis}} = \frac{2a\pi}{4}$$

$$\text{Diagonale im Quadrat} = \sqrt{a^2 + a^2} = a\sqrt{2}$$

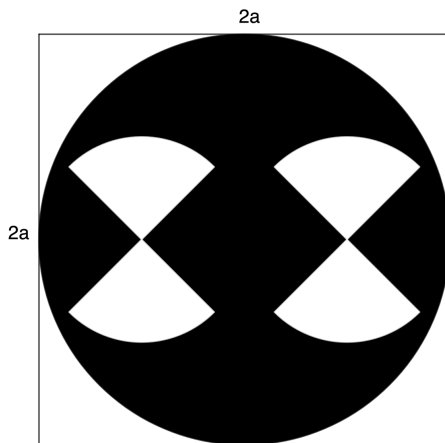
$$u_{\text{Total}} = 2a\sqrt{2} + 2 \cdot \frac{2a\pi}{4} = \underline{\underline{2a\sqrt{2} + a\pi}}$$

$$r_{\text{Kreis}} = a$$

$$A_{\text{Viertelkreis}} = \frac{a^2\pi}{4}$$

$$A_{\text{Total}} = (2a)^2 - a^2 - \frac{2a^2\pi}{4} = 4a^2 - a^2 - \frac{a^2\pi}{2} = \underline{\underline{3a^2 - \frac{a^2\pi}{2}}}$$

d) Niveau 2



$$d_{\text{grosser Kreis}} = 2a$$

$$u_{\text{grosser Kreis}} = 2a\pi$$

$$d_{\text{kleiner Kreis}} = a$$

$$u_{\text{kleiner Viertelkreis}} = \frac{a\pi}{4}$$

$$u_{\text{Total}} = 2a\pi + 4 \cdot \frac{a\pi}{4} + 8 \cdot \frac{a}{2} = \underline{\underline{3a\pi + 4a}}$$

$$r_{\text{grosser Kreis}} = a$$

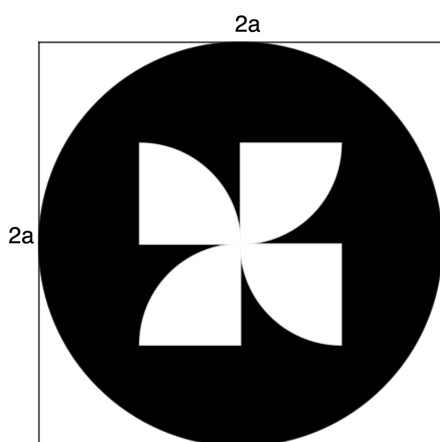
$$A_{\text{grosser Kreis}} = a^2\pi$$

$$r_{\text{kleiner Kreis}} = \frac{a}{2}$$

$$A_{\text{kleiner Viertelkreis}} = \frac{\left(\frac{a}{2}\right)^2 \cdot \pi}{4} = \frac{a^2\pi}{4 \cdot 4}$$

$$A_{\text{Total}} = a^2\pi - 4 \cdot \frac{a^2\pi}{16} = \frac{4a^2\pi}{4} - \frac{a^2\pi}{4} = \underline{\underline{\frac{3a^2\pi}{4}}}$$

e) Niveau 2



$$d_{\text{grosser Kreis}} = 2a$$

$$u_{\text{grosser Kreis}} = 2a\pi$$

$$d_{\text{kleiner Kreis}} = a$$

$$u_{\text{kleiner Viertelkreis}} = \frac{a\pi}{4}$$

$$u_{\text{Total}} = 2a\pi + 4 \cdot \frac{a\pi}{4} + 8 \cdot \frac{a}{2} = \underline{\underline{3a\pi + 4a}}$$

$$r_{\text{grosser Kreis}} = a$$

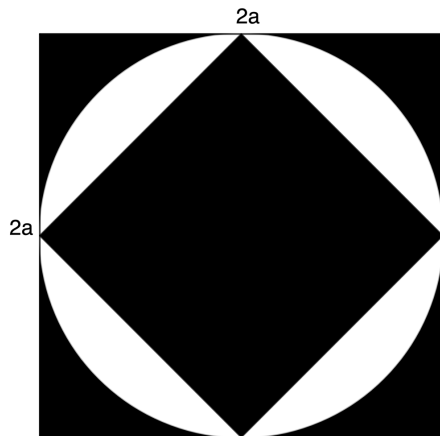
$$A_{\text{grosser Kreis}} = a^2\pi$$

$$r_{\text{kleiner Kreis}} = \frac{a}{2}$$

$$A_{\text{kleiner Viertelkreis}} = \frac{\left(\frac{a}{2}\right)^2 \cdot \pi}{4} = \frac{a^2\pi}{4 \cdot 4}$$

$$A_{\text{Total}} = a^2\pi - 4 \cdot \frac{a^2\pi}{16} = \frac{4a^2\pi}{4} - \frac{a^2\pi}{4} = \underline{\underline{\frac{3a^2\pi}{4}}}$$

f) Niveau 2



$$d_{\text{Kreis}} = 2a$$

$$u_{\text{Kreis}} = 2a\pi$$

$$\text{Diagonale im Quadrat} = \sqrt{a^2 + a^2} = a\sqrt{2}$$

$$u_{\text{Total}} = 2a\pi + 4 \cdot a\sqrt{2} + 4 \cdot 2a = \underline{\underline{2a\pi + 4a\sqrt{2} + 8a}}$$

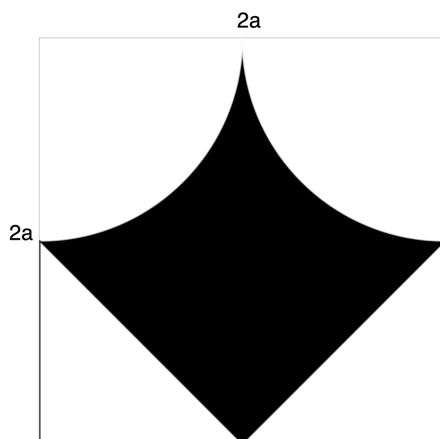
$$r_{\text{Kreis}} = a$$

$$A_{\text{Kreis}} = a^2\pi$$

$$A_{\text{Total}} = (2a)^2 - a^2\pi + 2a^2 = 4a^2 - a^2\pi + 2a^2 =$$

$$\underline{\underline{6a^2 - a^2\pi}}$$

g) Niveau 2



$$d_{\text{Kreis}} = 2a$$

$$u_{\text{Halbkreis}} = \frac{2a\pi}{2} = a\pi$$

$$\text{Diagonale im Quadrat} = \sqrt{a^2 + a^2} = a\sqrt{2}$$

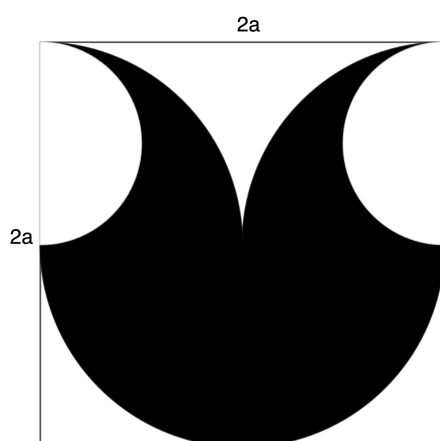
$$u_{\text{Total}} = a\pi + 2 \cdot a\sqrt{2} = \underline{\underline{a\pi + 2a\sqrt{2}}}$$

$$r_{\text{Kreis}} = a$$

$$A_{\text{Halbkreis}} = \frac{a^2\pi}{2}$$

$$A_{\text{Total}} = 2a^2 - \frac{a^2\pi}{2} + a^2 = \underline{\underline{3a^2 - \frac{a^2\pi}{2}}}$$

h) Niveau 2



$$d_{\text{grosser Kreis}} = 2a$$

$$u_{\text{grosser Kreis}} = 2a\pi$$

$$d_{\text{kleiner Kreis}} = a$$

$$u_{\text{kleiner Kreis}} = a\pi$$

$$u_{\text{Total}} = 2a\pi + a\pi = \underline{\underline{3a\pi}}$$

$$r_{\text{grosser Kreis}} = a$$

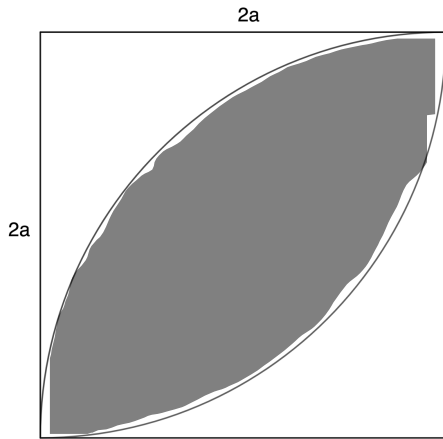
$$A_{\text{grosser Kreis}} = a^2\pi$$

$$r_{\text{kleiner Kreis}} = \frac{a}{2}$$

$$A_{\text{kleiner Kreis}} = \left(\frac{a}{2}\right)^2 \cdot \pi = \frac{a^2\pi}{4}$$

$$A_{\text{Total}} = a^2\pi - \frac{a^2\pi}{4} = \frac{4a^2\pi}{4} - \frac{a^2\pi}{4} = \underline{\underline{\frac{3a^2\pi}{4}}}$$

i) Niveau 3



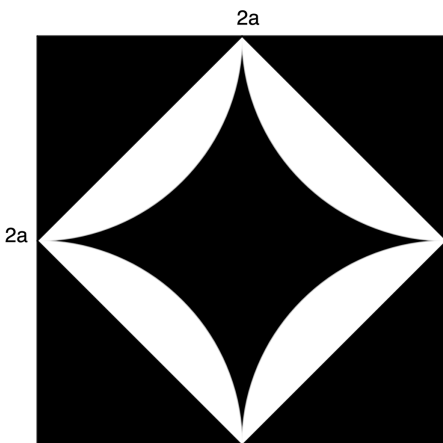
$$d_{\text{Kreis}} = 4a \quad u_{\text{Viertelkreis}} = \frac{4a\pi}{4} = a\pi$$

$$u_{\text{Total}} = a\pi + a\pi = \underline{\underline{2a\pi}}$$

$$r_{\text{Kreis}} = 2a \quad A_{\text{Viertelkreis}} = \frac{(2a)^2\pi}{4} = \frac{4a^2\pi}{4} = a^2\pi$$

$$A_{\text{Total}} = a^2\pi + a^2\pi - (2a)^2 = \underline{\underline{2a^2\pi - 4a^2}}$$

j) Niveau 3



$$d_{\text{Kreis}} = 2a \quad u_{\text{Kreis}} = 2a\pi$$

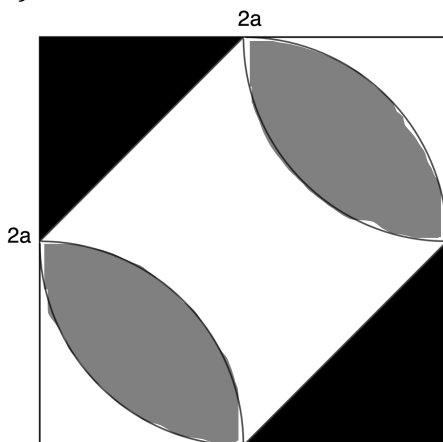
$$\text{eine Diagonale} = \sqrt{a^2 + a^2} = \sqrt{2a^2} = a\sqrt{2}$$

$$u_{\text{Total}} = 4 \cdot 2a + 4 \cdot a\sqrt{2} + 2a\pi = \underline{\underline{8a + 4a\sqrt{2} + 2a\pi}}$$

$$r_{\text{Kreis}} = a \quad A_{\text{Viertelkreis}} = \frac{a^2\pi}{4}$$

$$A_{\text{Total}} = (2a)^2 - 4 \cdot \frac{a^2\pi}{4} + 2a^2 = \underline{\underline{6a^2 - a^2\pi}}$$

k) Niveau 3



$$d_{\text{Kreis}} = 2a \quad u_{\text{Viertelkreis}} = \frac{2a\pi}{4} = \frac{a\pi}{2}$$

$$\text{eine Diagonale} = \sqrt{a^2 + a^2} = \sqrt{2a^2} = a\sqrt{2}$$

$$u_{\text{Total}} = 4a + 4 \cdot \frac{a\pi}{2} + 2 \cdot a\sqrt{2} = \underline{\underline{4a + 2a\pi + 2a\sqrt{2}}}$$

$$r_{\text{Kreis}} = a \quad A_{\text{Viertelkreis}} = \frac{a^2\pi}{4}$$

$$A_{\text{Total}} = 4 \cdot \frac{a^2\pi}{4} - 2a^2 + a^2 = \underline{\underline{a^2\pi - a^2}}$$