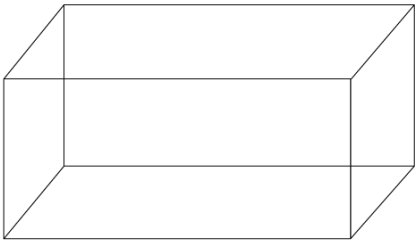
	Navn:		Skole:	
	Klasse: 20		Dato: 17. maj 2021	Fag: Matematik A

Opgave 004

Overfladeareal

Kasse

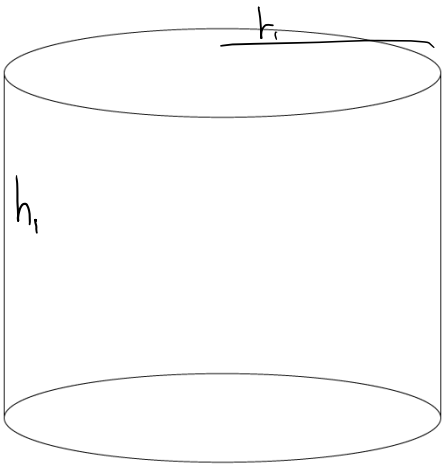


$$A_{kasse} = 6 \cdot x_1^2$$
$$\frac{A_{kasse}}{6} = x_1^2 \quad | \, Divider\ med\ 6$$
$$x_1 = \sqrt{\frac{A_{kasse}}{6}} \quad | \, Tag\ kvadratrod$$
$$x_1 = \sqrt{\frac{30}{6}} \quad | \, Indsæt\ tal$$
$$x_1 = \sqrt{5} \quad | \, Udregn\ brøk$$
$$x_1 = 2.24 \quad | \, Kvrod$$

$$V_{kasse} = x_1^3$$
$$V_{kasse} = 2.24^3$$
$$V_{kasse} = 11.24$$

Cylinder

Sætter r til af være 1.5, bare fordi jeg kan

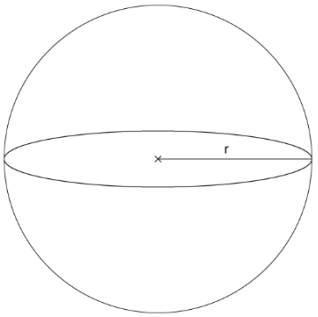


$$A_{cyl} = \pi \cdot r_1^2 \cdot 2 + 2 \cdot r_1 \cdot \pi \cdot h_1$$
$$A_{cyl} - \pi \cdot r_1^2 \cdot 2 = 2 \cdot r_1 \cdot \pi \cdot h_1 \quad | \, Minus\ \pi \cdot r_1^2 \cdot 2$$
$$\frac{A_{cyl} - \pi \cdot r_1^2 \cdot 2}{2 \cdot r_1 \cdot \pi} = h_1 \quad | \, Divider\ med\ 2 \cdot r_1 \cdot \pi$$
$$h_1 = \frac{A_{cyl} - \pi \cdot r^2 \cdot 2}{2 \cdot r \cdot \pi} \quad | \, Vend\ om$$
$$h_1 = \frac{30 - \pi \cdot 1.5^2 \cdot 2}{2 \cdot 1.5 \cdot \pi} \quad | \, Indsæt\ tal$$
$$h_1 = \frac{30 - \pi \cdot 2.25 \cdot 2}{2 \cdot 1.5 \cdot \pi} \quad | \, Udreng\ potens$$
$$h_1 = \frac{30 - 14.14}{2 \cdot 1.5 \cdot \pi} \quad | \, Gange\ sammen\ i\ tæller$$
$$h_1 = \frac{15.86}{2 \cdot 1.5 \cdot \pi} \quad | \, Minus\ i\ tælleren$$
$$h_1 = \frac{15.86}{9.42} \quad | \, Udregn\ nævner$$
$$h_1 = 1.68 \quad | \, Udregn\ brøk$$

$$V_{cylinder} = \pi \cdot r_1^2 \cdot h_1$$

$$V_{cylinder} = \pi \cdot 1.5^2 \cdot 1.68$$
$$V_{cylinder} = \pi \cdot 2.25 \cdot 1.68$$
$$V_{cylinder} = 11.88$$

Kugle

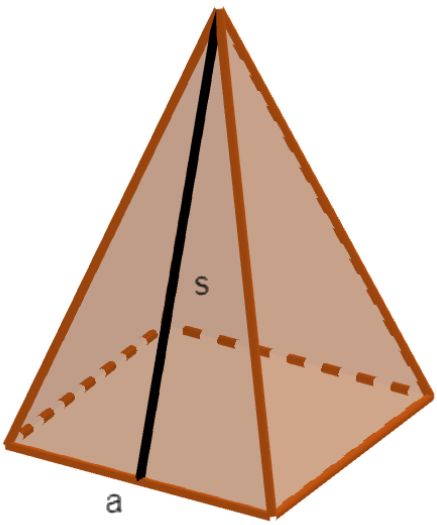


$A_{kugle} = 4 \cdot \pi \cdot r^2$	Formel for kugle areal
$\frac{A_{kugle}}{4 \cdot \pi} = r^2$	Divider med 4pi
$\sqrt{\frac{A_{kugle}}{4 \cdot \pi}} = r$	Kvrod
$r = \sqrt{\frac{30}{4 \cdot \pi}}$	Indsæt tal
$r = \sqrt{2.39}$	Brøk
$r = 1.55$	Kvrod

$$V_{kugle} = \frac{4}{3} \cdot \pi \cdot r^3$$
$$V_{kugle} = \frac{4}{3} \cdot \pi \cdot 1.55$$
$$V_{kugle} = 15.6$$

Pyramide

a = 4



$A = a^2 + a \cdot \sqrt{\left(\frac{a}{2}\right)^2 + h^2}$	Formel for overfladeareal
$A - a^2 = a \cdot \sqrt{\left(\frac{a}{2}\right)^2 + h^2}$	Minus a^2
$\frac{A-a^2}{a} = \sqrt{\left(\frac{a}{2}\right)^2 + h^2}$	Divider med a
$\left(\frac{A-a^2}{a}\right)^2 = \left(\frac{a}{2}\right)^2 + h^2$	Fjern kvrod
$\left(\frac{A-a^2}{a}\right)^2 - \left(\frac{a}{2}\right)^2 = h^2$	Minus $\frac{a^2}{2}$
$\sqrt{\left(\frac{A-a^2}{a}\right)^2 - \left(\frac{a}{2}\right)^2} = h$	Fjern potens
$h = \sqrt{\frac{30-4^2}{4}^2 - \frac{4^2}{2}}$	Indsæt tal
$h = \sqrt{\frac{30-16}{4}^2 - \frac{4^2}{2}}$	Udregn potens
$h = \sqrt{\frac{30-16}{4}^2 - 2^2}$	Udregn brøk

$h = \sqrt{\frac{14^2}{4} - 2^2}$ Minus i brøk

$h = \sqrt{3.5^2 - 2^2}$ Udregn brøk

$h = \sqrt{12.25 - 4}$ Udregn potens

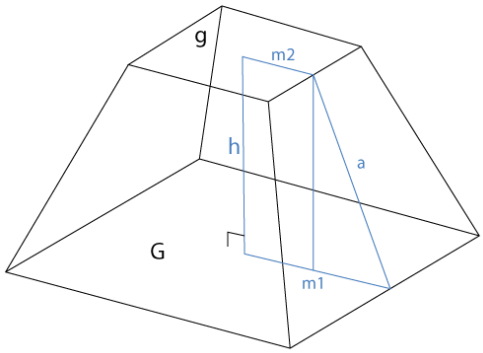
$h = \sqrt{8.25}$ Minus

$h = 2.87$ Udregn kvrod

$$V_{kegle} = \frac{1}{3} \cdot h \cdot a^2$$
$$V_{kegle} = \frac{1}{3} \cdot 2.87 \cdot 4^2 \quad | \, Indsæt\ tal$$
$$V_{kegle} = \frac{1}{3} \cdot 2.87 \cdot 16 \quad | \, Potens$$
$$V_{kegle} = 15.31 \quad | \, Gange$$

Pyramidestub

$m_1 = 1$
$m_2 = 0.5$



$$A = m_1^2 \cdot 4 + m_2^2 \cdot 4 + 2 \cdot (2 \cdot m_2 + 2 \cdot m_1) \cdot \sqrt{h^2 + (m_2 - m_1)^2}$$
$$A - m_1^2 \cdot 4 - m_2^2 \cdot 4 = 2 \cdot (2 \cdot m_2 + 2 \cdot m_1) \cdot \sqrt{h^2 + (m_2 - m_1)^2}$$

Isoler en masse lort

$$\frac{A - m_1^2 \cdot 4 - m_2^2 \cdot 4}{2 \cdot (2 \cdot m_2 + 2 \cdot m_1)} = \sqrt{h^2 + (m_2 - m_1)^2}$$

Divider med an masse lort

$$\left(\frac{A - m_1^2 \cdot 4 - m_2^2 \cdot 4}{2 \cdot (2 \cdot m_2 + 2 \cdot m_1)}\right)^2 = h^2 + (m_2 - m_1)^2$$

Indsæt potens

$$\left(\frac{A - m_1^2 \cdot 4 - m_2^2 \cdot 4}{2 \cdot (2 \cdot m_2 + 2 \cdot m_1)}\right)^2 - (m_2 - m_1)^2 = h^2$$

Minus noget mere

$$h = \sqrt{\left(\frac{A - m_1^2 \cdot 4 - m_2^2 \cdot 4}{2 \cdot (2 \cdot m_2 + 2 \cdot m_1)}\right)^2 - (m_2 - m_1)^2}$$

$$h = \sqrt{\left(\frac{30 - 1^2 \cdot 4 - 0.5^2 \cdot 4}{2 \cdot (2 \cdot 0.5 + 2 \cdot 1)}\right)^2 - (1 - 0.5)^2}$$

Indsæt tal

$$h = \sqrt{\left(\frac{25}{6}\right)^2 - 0.5^2}$$

Fuck

$$h = \sqrt{4.17^2 - 0.5^2}$$

Potens

$$h = \sqrt{17.39 - 0.25}$$

Minus

$$h = \sqrt{17.14}$$

Kvrod

$$h = 4.14$$

$$\begin{aligned} G &= m_1^2 \cdot 4 \\ G &= 1^2 \cdot 4 \quad | \, Indsæt\ tal \\ G &= 4 \quad | \, Udregn \end{aligned}$$

$$\begin{aligned} g &= m_2^2 \cdot 4 \\ g &= 0.5^2 \cdot 4 \quad | \, Indsæt\ tal \\ g &= 1 \quad | \, Udregn \end{aligned}$$

$$\begin{aligned} V_{pyrstub} &= \frac{h}{3} \cdot \left(G + g + \sqrt{G + g}\right) \\ V_{pyrstub} &= \frac{4.14}{3} \cdot \left(4 + 1 + \sqrt{4 + 1}\right) \quad | \, Indsæt\ tal \\ V_{pyrstub} &= 1.38 \cdot \left(4 + 1 + \sqrt{4 + 1}\right) \quad | \, Brøk \\ V_{pyrstub} &= 1.38 \cdot \left(5 + \sqrt{5}\right) \quad | \, Plus \\ V_{pyrstub} &= 1.38 \cdot 7.24 \quad | \, Regn\ parentes \\ V_{pyrstub} &= 9.99 \quad | \, Gange \end{aligned}$$

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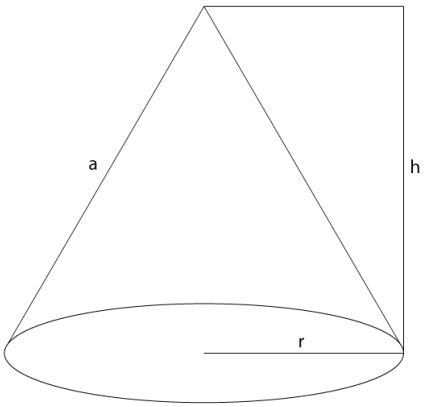
Klasse: 20htxcR	Lærer: Mirsad Kadribasic	Dato: 17. maj 2021	Fag: Matematik A

Kegle

Sætter r til 1.5



$A_{kegle} = \pi \cdot r \cdot \sqrt{r^2 + h^2} + \pi \cdot r^2$ Formel for areal

$h = \sqrt{\frac{A_{kegle} - 2\pi A r^2}{\pi^2 \cdot r^2}}$ Isoler h

$h = \sqrt{\frac{30 - 2\pi \cdot 30 \cdot 1.5^2}{\pi^2 \cdot 1.5^2}}$ Indsæt tal

$h = \sqrt{\frac{30 - 2\pi \cdot 30 \cdot 1.5^2}{22.21}}$ Uregn nævner

$h = \sqrt{\frac{-394.12}{22.21}}$ Udregn tæller

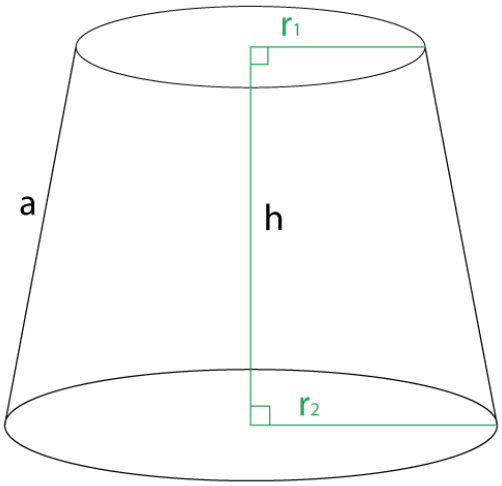
$h = \sqrt{-17.75}$ Brøk

$h = 4.21$ Tager kvrod af det posetive tal

$$V_{kegle} = \frac{1}{3} \cdot h \cdot (\pi \cdot r^2)$$
$$V_{kegle} = 9.92$$

Kegle stub

Sætter $r_1 = 1.5$ og $r_2 = 1$



$A_{keglestub} = \pi \cdot (r_1 + r_2) \cdot a + \pi \cdot r_1^2 + \pi \cdot r_2^2$

$\frac{A_{keglestub} - \pi \cdot r_1^2 - \pi \cdot r_2^2}{\pi \cdot (r_1 + r_2)} = a$ Isoler a

$a = \frac{30 - \pi \cdot 1.5^2 - \pi \cdot 1^2}{\pi \cdot (1.5 + 1)}$ Indsæt tal

$a = \frac{30 - \pi \cdot 1.5^2 - \pi \cdot 1^2}{7.85}$ Udregn tæller

$a = \frac{19.89}{7.85}$ Udregn nævner

$a = 2.52$ Brøk

$h = \sqrt{a^2 - (r_1 - r_2)^2}$

$h = \sqrt{2.52^2 - (1.5 - 1)^2}$ Indsæt tal

$h = \sqrt{2.52^2 - 0.5^2}$ Minus

$h = \sqrt{6.35 - 0.25}$ Potens

$h = \sqrt{6.1}$ Minus

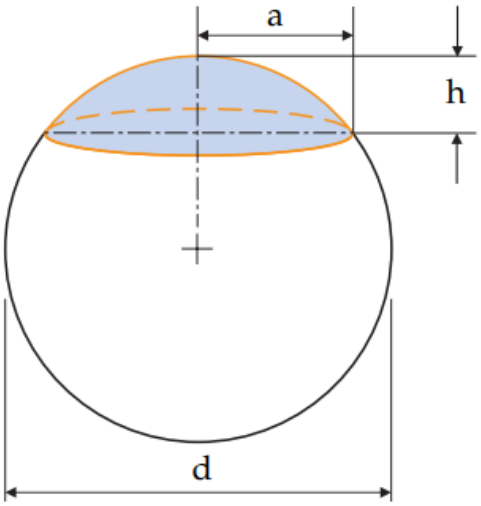
$h = 2.47$ Kvrod

$$V_{keglestub} = \frac{1}{3} \cdot \pi \cdot h \cdot (r_1^2 + r_2^2 + r_1 \cdot r_2)$$
$$V_{keglestub} = \frac{1}{3} \cdot \pi \cdot 2.47 \cdot (1.5^2 + 1^2 + 1.5 \cdot 1) \mid Indsæt\ tal$$

$$V_{keglestub} = \frac{1}{3} \cdot \pi \cdot 2.47 \cdot 4.75 \quad | \, Parentes$$
$$V_{keglestub} = 12.29 \quad | \, Gange$$

Kugle kalot

$$h = 1.5$$



$A = \pi \cdot d \cdot h$

$d = \frac{A}{\pi \cdot h}$ Divider med pi h

$d = \frac{30}{\pi \cdot 1.5}$ Indsæt tal

$d = \frac{30}{4.71}$ Gange

$d = 6.37$ Brøk

$$V_{kalot} = \frac{\pi}{6} \cdot h^2 \cdot (3d - 2h)$$
$$V_{kalot} = \frac{\pi}{6} \cdot 1.5^2 \cdot (3 \cdot 6.37 - 2 \cdot 1.5) \quad | \, Indsæt\ tal$$
$$V_{kalot} = \frac{\pi}{6} \cdot 2.25 \cdot (19.11 - 3) \quad | \, Gange$$
$$V_{kalot} = \frac{\pi}{6} \cdot 2.25 \cdot 16.11 \quad | \, Minus$$
$$V_{kalot} = 18.98 \quad | \, Gange$$

Rangeret efter volumen

1. Kalot
2. Kugle
3. Pyramide
4. keglestub
5. Cylinder
6. Kasse
7. Pyramide stub
8. Kegle

Rumfang

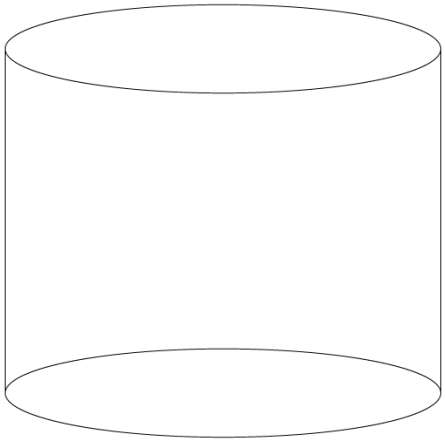
Kasse

$$V = s^3$$
$$10 = s^3 \quad | \, Indsæt\ tal$$
$$s = \sqrt[3]{10} \quad | \, Kubikrod$$
$$s = 2.15 \quad | \, Udregn$$

$$A_{kasse} = 6 \cdot s^2$$
$$A_{kasse} = 6 \cdot 2.15^2 \quad | \, Indsæt\ tal$$
$$A_{kasse} = 6 \cdot 4.62 \quad | \, Potens$$
$$A_{kasse} = 27.74 \quad | \, Gange$$

Cylinder

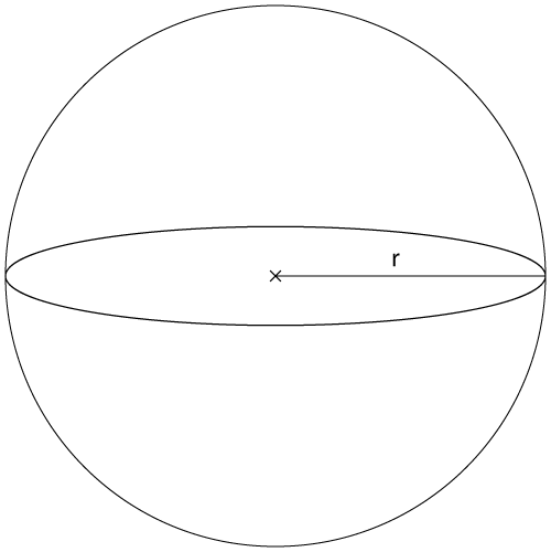
$$r = 1.5$$



$$V = \pi \cdot r^2 \cdot h$$
$$\frac{V}{\pi \cdot r^2} = h \quad | \, Divider$$
$$h = \frac{10}{\pi \cdot 1.5^2} \quad | \, Indsæt\ tal$$
$$h = \frac{10}{\pi \cdot 2.25} \quad | \, Potens$$
$$h = \frac{10}{7.07} \quad | \, Gange$$
$$h = 1.41 \quad | \, Divider$$

$$A_{cyl} = \pi \cdot r^2 \cdot 2 + 2 \cdot \pi \cdot r \cdot h$$
$$A_{cyl} = \pi \cdot 1.5^2 \cdot 2 + 2 \cdot \pi \cdot 1.5 \cdot 1.41 \quad | \, Indsæt\ tal$$
$$A_{cyl} = 27.43 \quad | \, Gange$$

Kugle

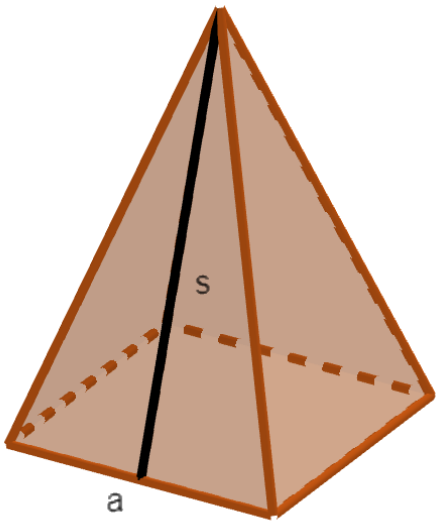


$$V = \frac{4}{3} \cdot \pi \cdot r^3$$
$$r^3 = \frac{V}{\frac{4}{3} \cdot \pi} \quad | \, Divider\ med\ \frac{4}{3}\pi$$
$$r = \sqrt[3]{\frac{V}{\frac{4}{3} \cdot \pi}} \quad | \, Kubik\ rod$$
$$r = \sqrt[3]{\frac{10}{\frac{4}{3} \cdot \pi}} \quad | \, Indsæt\ tal$$
$$r = \sqrt[3]{\frac{10}{4.19}} \quad | \, Gange$$
$$r = \sqrt[3]{2.39} \quad | \, Kubikrod$$
$$r = 1.34 \quad | \, Tag\ rod$$

$$A_{kugle} = 4 \cdot \pi \cdot r^2$$
$$A_{kugle} = 4 \cdot \pi \cdot 1.34^2 \quad | \, Indsæt\ tal$$
$$A_{kugle} = 4 \cdot \pi \cdot 1.8 \quad | \, Potens$$
$$A_{kugle} = 22.62 \quad | \, Gange$$

Pyramide

$$a = 4$$



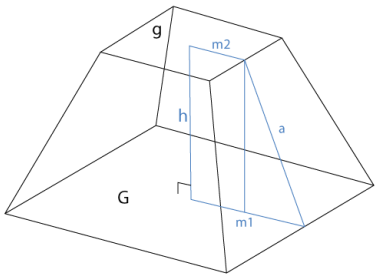
$$V = \frac{1}{3} \cdot h \cdot a^2$$
$$\frac{V}{\frac{1}{3} a^2} = h \quad \text{Diver med } \frac{1}{3} \cdot a^2$$
$$h = \frac{10}{\frac{1}{3} 4^2} \quad \text{Indsæt tal}$$
$$h = \frac{10}{\frac{1}{3} 16} \quad \text{Udregn potens}$$
$$h = \frac{10}{5.33} \quad \text{Udregn nævner}$$
$$h = 1.88 \quad \text{Brøk}$$

$$A_{kegle} = a^2 + a \cdot \sqrt{\frac{a^2}{4} + h^2}$$
$$A_{kegle} = 4^2 + 4 \cdot \sqrt{\frac{4^2}{4} + 1.88^2} \quad | \, Indsæt\ tal$$

$$A_{kegle} = 16 + 4 \cdot \sqrt{\frac{16}{4} + 3.53} \quad | \, Udregn\ potens$$
$$A_{kegle} = 16 + 4 \cdot \sqrt{4 + 3.53} \quad | \, Udreng\ brøk$$
$$A_{kegle} = 16 + 4 \cdot \sqrt{7.53} \quad | \, Plus$$
$$A_{kegle} = 16 + 4 \cdot 2.74 \quad | \, Kvrod$$
$$A_{kegle} = 16 + 10.96 \quad | \, Gange$$
$$A_{kegle} = 26.96 \quad | \, Plus$$

Pyramidestub

$$m_1 = 1$$
$$m_2 = 0.5$$



$$G = m_1^2 \cdot 4$$
$$G = 1^2 \cdot 4 \quad | \, Indsæt\ tal$$
$$G = 4 \quad | \, Udregn$$

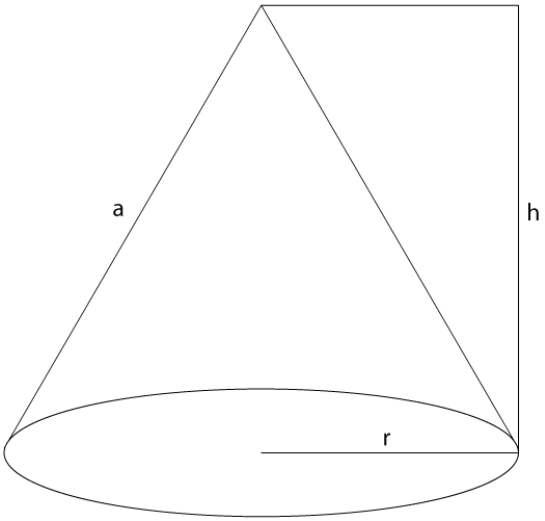
$$g = m_2^2 \cdot 4$$
$$g = 0.5^2 \cdot 4 \quad | \, Indsæt\ tal$$
$$g = 1 \quad | \, Udregn$$

$$V = \frac{h}{3} \cdot \left(G + g + \sqrt{G + g}\right)$$
$$\frac{V}{\left(G + g + \sqrt{G + g}\right)} = \frac{h}{3} \quad | \, Divider$$
$$\frac{V \cdot 3}{\left(G + g + \sqrt{G + g}\right)} = h \quad | \, Gange\ 3$$

$$h = \frac{10 \cdot 3}{4 + 1 + \sqrt{4 + 1}} \quad | \, Indsæt\ tal$$
$$h = \frac{30}{5 + \sqrt{5}} \quad | \, Simplificer$$
$$h = \frac{30}{7.24} \quad | \, Plus$$
$$h = 4.14 \quad | \, Brøk$$

$$A = m_1^2 \cdot 4 + m_2^2 \cdot 4 + 2 \cdot (2 \cdot m_2 + 2 \cdot m_1) \cdot \sqrt{h^2 + (m_2 - m_1)^2}$$
$$A = 1^2 \cdot 4 + 0.5^2 \cdot 4 + 2 \cdot (2 \cdot 0.5 + 2 \cdot 1) \cdot \sqrt{4.14^2 + (1 - 0.5)^2} \quad | \, Indsæt\ tal$$
$$A = 5 + 2 \cdot 3 \cdot \sqrt{17.14 + 0.5^2} \quad | \, Simplificer$$
$$A = 5 + 2 \cdot 3 \cdot \sqrt{17.14 + 0.25} \quad | \, Potens$$
$$A = 5 + 2 \cdot 3 \cdot \sqrt{17.39} \quad | \, Plus$$
$$A = 5 + 2 \cdot 3 \cdot 4.17 \quad | \, Kvrod$$
$$A = 30 \quad | \, Udregn$$

Kegle



$$r = 2$$

$$h = \frac{V}{\frac{1}{3} \cdot \pi \cdot r^2}$$

$$h = \frac{10}{\frac{1}{3} \cdot \pi \cdot 2^2} \quad | \, Indsæt\ tal$$

$$h = \frac{10}{\frac{1}{3} \cdot \pi \cdot 4} \quad | \, Potens$$

$$h = \frac{10}{4.19} \quad | \, Gange$$

$$h = 2.39 \quad | \, Brøk$$

$$A_{kegle} = \pi \cdot r \cdot \sqrt{r^2 + h^2}$$

$$A_{kegle} = \pi \cdot 2 \cdot \sqrt{2^2 + 2.39^2} \quad | \, Indsæt\ tal$$

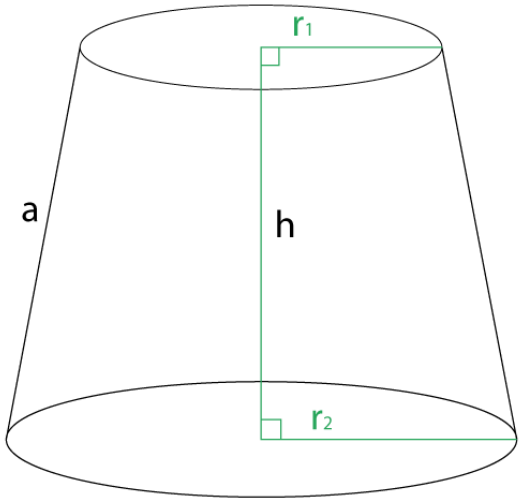
$$A_{kegle} = \pi \cdot 2 \cdot \sqrt{4 + 5.71} \quad | \, Potens$$

$$A_{kegle} = \pi \cdot 2 \cdot \sqrt{9.71} \quad | \, Plus$$

$$A_{kegle} = \pi \cdot 2 \cdot 3.12 \quad | \, Kvrod$$

$$A_{kegle} = 19.61 \quad | \, Gange$$

Keglestub



$$r1 = 1$$

$$r2 = 2$$

$$h = \frac{10}{\frac{1}{3} \cdot \pi \cdot (r1^2 + r2^2 + r1 \cdot r2)}$$

$$h = \frac{10}{\frac{1}{3} \cdot \pi \cdot (1^2 + 2^2 + 1 \cdot 2)} \quad | \, Indsæt\ tal$$

$$h = \frac{10}{\frac{1}{3} \cdot \pi \cdot 7} \quad | \, Parentes$$

$$h = \frac{10}{7.33} \quad | \, Gange$$

$$h = 1.36 \quad | \, Brøk$$

$$a = \sqrt{h^2 + (r2 - r1)^1}$$

$$a = \sqrt{1.36^2 + (2 - 1)^2} \quad | \, Indsæt\ tal$$

$$a = \sqrt{1.36^2 + 1^2} \quad | \, Minus$$

$$a = \sqrt{1.85 + 1} \quad | \, Potens$$

$$a = \sqrt{2.85} \quad | \, Plus$$

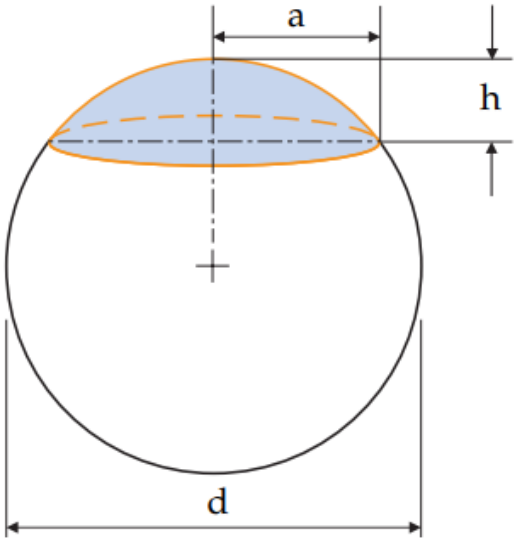
$$a = 1.69 \quad | \, Kvrod$$

$$A_{keglestub} = \pi \cdot a \cdot (r1 + r2)$$
$$A_{keglestub} = \pi \cdot 1.69 \cdot (1 + 2) \quad | \, Indsæt\ tal$$
$$A_{keglestub} = \pi \cdot 1.69 \cdot 3 \quad | \, Plus$$
$$A_{keglestub} = 15.93 \quad | \, Gange$$

Kugle kalot

$$h = 1.5$$

$$d = \frac{6V + 2\pi h^3}{3\pi h^2}$$
$$d = \frac{6 \cdot 10 + 2\pi \cdot 1.5^3}{3\pi \cdot 1.5^2} \quad \text{Indsæt tal}$$
$$d = \frac{6 \cdot 10 + 2\pi \cdot 3.38}{3\pi \cdot 2.25} \quad \text{Potens}$$
$$d = \frac{60 + 21.24}{21.21} \quad \text{Gange i alle led}$$
$$d = \frac{81.24}{21.21} \quad \text{Plus}$$
$$d = 3.83 \quad \text{Brøk}$$



$$A_{kalot} = \pi \cdot d \cdot h$$
$$A_{kalot} = \pi \cdot 3.83 \cdot 1.5 \quad | \, Indsæt\ tal$$
$$A_{kalot} = 18.05 \quad | \, Gange$$

Rangeret efter overflade areal

1. Pyramide stub
2. Kasse
3. Cylinder
4. Pyramide
5. Kugle
6. Kegle
7. Kugle kalot
8. Keglestub