Sendo o log de 2 = 0,30103, calcular o log 40.000:

log 40.000 = log (4 × 10.000) =

log (2^2 × 10.000) = 2 × log 2 + log 10.000 =

= 2 × 0,30103 + 4 = 0,60206 + 4 =

= 4,60206

Sendo o log 3 = 0,47712, calcular o log 0,003

log 3 = 0,47712

log 0,003 = log (3 × 0,001) = log 3 + log 0,001 = 0,47712 − $\bar{3}$

$2^x = 8$ $\quad 2^4 = 2^3$ $\quad$ 0,47712

log 8 = x $\quad$ 4 = 3 $\quad$ $\bar{3}$,00000

$\log_2 8 = 3$ $\quad$ $\bar{3}$,47712

$3^4 = 81$

$3^4 = 81$ $\quad 3^4 = 3^4$

$\log_3 81 = 4$ $\quad 4 = 4$

$\log_3 81 = 4$

log 2^4 = 1024 $\quad 2^4 = 1024$

$2^4 = 2^{10}$

$\log_2 1024 = 10$ $\quad 4 = 10$

21-5-62.

Logaritmos negativos e preparados:

1) Positivos { tem característica +, mantissa +

2) Preparados { tem característica −, mantissa +

3) Negativos { tem característica −, mantissa −

1) Ex:. +2 + 0,41723 = 2,41723

2) Ex:. −5 + 0,31612 = $\bar{5}$,31612

3) Ex:. −4 − 0,31420 = −4,31420

Transformação de um logaritmo preparado em logaritmo negativo.

log Prep. ⟶ log neg.

−c + m = −(c − m)

$\bar{3}$,30103 = −3 + 0,30103 =

= −(3 − 0,30103) = −2,69897.

log N ⟶ log P.

−c N = −c − 1 + 1 − m = −(c + 1) + (1 − m)

−2,69897 = −2 − 0,69897 =

= −(2 + 1) + (1 − 0,69897) = −3 + 0,30103 =

= $\bar{3}$,30103

Sendo o (~~log~~) logaritmo de N igual a $\bar{5},47712$, calcular o log. negativo de N

$\log N = \bar{5},47712$

$\log -N = -C + m = -(C-m) =$

$= -5 + 0,47712 = -(5 - 0,47712) =$

$= -4,52288$

-500000

47712

$-4,52288$

Sendo o log de $U = -1,397940$

$-(C+1)+(1-m) = -(1+1)+(1-0,397940)$

$= -2 + 0,602060 = 2,602060$

$U = 0,04$

Conversão de base:

Seja $a^y = N$.

Pela definição de log. temos que $y = \log_a N$, e pela 3ª propriedade dos log. temos $y \times \log a = \log N$.

Sendo isto uma verdade em quaisquer sistema de logaritmos é uma verdade no sistema de base b: temos $y \times \log_b a = \log_b N$

Substituindo y pelo seu valor igual da igualdade 1 temos: $\log_a N \times \log_b a = \log_b N$ e tirando desta igualdade o valor do $\log_a N$ temos:

$$\log_a N = \frac{\log_b N}{\log_b a}$$

Dado o log. de N na base b, para achar o log de N na base a, basta dividir o log de N na base b pelo log. de a na base b.

22-5-62.

Calcular o log. de 824 no sistema neperiano.

$b = 10$

$a = e = 2,718$

$$\log_e 824 = \frac{\log_{10} 824}{\log_{10} 2,718} = \frac{2,915927}{0,434249} = 6,714873$$

$2,915927 \quad | \; 0,434249$

$3104330 \quad 6,714873$

0645870

2116110

Calcular o log. de 0,025 no sistema de base 7.

$N = 0,025 \qquad b = 10 \qquad a = 7$

$$\log_a N = \frac{\log_b N}{\log_b a}$$

$$\log_7 0,025 = \frac{\log_{10} 0,025}{\log_{10} 7} = \frac{\bar{2},397940}{0,845098} =$$

$$= \frac{-2+0,397940}{0,845098} = \frac{-(2-0,397940)}{0,845098} =$$

$$= \frac{-1,602060}{0,845098} = -1,895709$$

$-1,602060 \quad | \; 0,845098$

$7569620 \quad -1,895709$

8088360

4824980

5994900

7921400

3155180

$$q = \sqrt[12]{0,08}$$

$$\log q = \frac{\log 0,08}{12} = \frac{\bar{2},903090}{12} =$$

$$= \frac{-2+0,903090}{12} = \frac{-(2-0,903090)}{12} = \frac{-1,096910}{12}$$

$= -1,096910 \quad | \; 12$

$0,0 \quad 0,008409$

200000

23-5-62.

Calcular o log de π : $\pi = 3,1416$

log de π = log 3,1416 = 0,497151.

3141	497068	138
3142	497206	

1 — 138 $\qquad q = 138 \times 0,6 = 82,8$

0,6 — q

497068

83

497151

$$q = \sqrt[4]{\frac{31,528^2 \times 0,042936^3}{45,7296^2}}$$

$$\log q = \frac{2 \times \log 31,528 + 3 \times \log 0,042936 + 2 \operatorname{cal} 45,72}{4}$$

$$\log q = \frac{2 \times 1,498696 + 3 \times \bar{2},632822 + 2 \times \bar{3},3398}{4}$$

$$\log q = \frac{2,997392 + \bar{5},898466 + \bar{4},679606}{4} =$$

$$= \frac{\bar{5},575464}{4} = \bar{2},893866.$$

$\bar{5},898466$

$\bar{4},679606$

$\bar{8},578072$

$+2,997392$

$\bar{5},575464$

$\bar{5},575464 \; | \; 4$

$37 \qquad \bar{2},893866$

15

34

26

24

0

$\log q = \bar{2},893866.$

log 31,528 = 1,498696

3152	498586
3153	498724

138

1 — 138

0,8 — φ

φ = 0,8 × 138 = 110,4

498586

110

498696

log : 31,528 = 1,498696

log : 0,042936

4293	632761
4294	632862

101

1 — 101

0,6 — φ

φ = 0,6 × 101 = 60 + 61

632761

61

632822

log 0,042936 = $\bar{2}$,632822.

φ = 0,0 783187.

7831	893817
7832	893873

56

1 — 56

087 — φ

56 — 1

49 — φ

$\varphi = \frac{49}{56} = 0{,}87$

φ = 56 × 0,87 = 48,7

49

7831

0,87

783187

$\varphi = \sqrt{\frac{K \ell R}{\pi}}$

K = 5,31

ℓ = 2,718

R = 0,24

$\log \varphi = \frac{\log \cdot K + \log E + \log R + \mathrm{Col}\,\pi}{2}$

$\log \varphi = \frac{\log 5{,}31 + \log 2{,}718 + \log 0{,}24 + \mathrm{Col}\,3{,}1416}{2}$

$\log \varphi = \frac{0{,}715095 + 0{,}434249 + \bar{1}{,}380211 + \bar{1}{,}502932}{2}$

0,715095

0,434249

$\bar{1}$,380211

$\bar{1}$,502932

0,032487

$\log \varphi = \frac{0{,}032487}{2}$

0,032487 | 12

0,0162435

log φ = 0,016243

φ = 1,038

25-5-62.

Equações exponenciais quando há expoente.

$2^y = 16 \therefore 2^y = 2^4 \therefore y = 4$

$2^y = 512 \therefore 2^y = 2^9 \therefore y = 9$

$4^y = 64 \therefore 4^y = 4^3 \therefore y = 3$

$\begin{cases} 2 \times 5^y = 250 \therefore 5^y = \frac{250}{2} \\ 5^y = 5^3 \therefore y = 3 \end{cases}$ $5^y = 125$

$\begin{cases} 5 \times 3^y = 405 \\ 3^y = 3^4 \end{cases}$ $3^y = \frac{405}{5}$ $3^y = 81$ $y = 4$

$\begin{cases} 5^{y^2} = 5^{3y} \\ y^2 - 3y = 0 \\ \boxed{y' = 0} \\ \boxed{y'' = 3} \end{cases}$ $y^2 = 3y$ $y(y-3) = 0$ $y - 3 = 0$

$\begin{cases} 31^{5y-15} = 1 \\ 31^{5y-15} = 31^0 \\ 5y - 15 = 0 \\ 5y = 15 \end{cases}$ $y = \frac{15}{5} = 3$ $y = 3$

$\begin{cases} 10^{3y-6} = 1 \\ 3y - 6 = 0 \\ 3y = 6 \end{cases}$ $10^{3y-6} = 10^0$ $y = \frac{y2}{y1} = 2$ $y = 2.$

$\begin{cases} 2^y = \frac{1}{4} \\ 3^{(2-y)(y-4)} = 27 \\ 3^{2y-8-y^2+4y} = \frac{1}{3^3} \\ 3^{2y-8-y^2+4y} = 3^{-3} \end{cases}$ $2y = \frac{1}{2^2}$ $2y = 2^{-2}$ $y = -2$ $2y - 8 - y^2 + 4y = -3$

$\begin{cases} y^2 - 6y + 5 = 0 \\ y = \frac{6 \pm \sqrt{36 - 20}}{2} \\ y = \frac{6 \pm \sqrt{16}}{2} \\ y'' = \frac{6-4}{2} = 1 \end{cases}$ $y' = \frac{6+4}{2}$ $y' = \frac{6+4}{2} = 5$

$\begin{cases} a^y = \sqrt[5]{a^2} \end{cases}$ $a^y = a^{\frac{2}{5}}$ $y = \frac{2}{5}$

$\begin{cases} \sqrt[y]{2} = 16^y \\ \frac{1}{y} = 4y \\ 1 = 4y \times y \\ y = \pm\sqrt{\frac{1}{4}} \end{cases}$ $2^{\frac{1}{y}} = 2^{4y}$ $y^2 = \frac{1}{4}$ $1 = 4y^2.$

$\begin{cases} 5^{\sqrt{y}} = 25 \\ y = 4 \end{cases}$ $5^{\sqrt{y}} = 5^2$ $\sqrt{y} = 2.$

$\begin{cases} \sqrt{a^{1-2y}} = \sqrt[5]{a^{1-7y}} \\ a^{\frac{1-2y}{2}} = a^{\frac{1-7y}{5}} \\ 5 - 10y = 2 - 14y \\ 4y = -3 \end{cases}$ $\frac{1-2y}{2} = \frac{1-7y}{5}$ $y = -\frac{3}{4}$

$5^{u^2-7u+10} = 625$

$5^{u^2-7u+10} = 5^4$

$u^2 - 7u + 10 = 4 \qquad u^2 - 7u + 6 = 0$

$u = \frac{7 \pm \sqrt{49-24}}{2}$

$u = \frac{7 \pm \sqrt{25}}{2} \qquad u = \frac{7 \pm 5}{2}$

$u' = \frac{7+5}{2} = \frac{12}{2} = 6 \qquad u' = 6$

$u'' = \frac{7-5}{2} = 1 \qquad u'' = 1.$

$3^{u+2} - 3^{u-2} = 80$

$3^u \times 3^2 - 3^u \div 3^2 = 80$

$3^u = y$

$y \times 9 - \frac{y}{9} = 80$

$9y - \frac{y}{9} = 80 \qquad 81y - y = 720$

$80y = 720 \qquad y = 9.$

$3^u = 3^2$

$u = 2$

4-6-62.

$3^{u+2} - 3^{u-2} = 80$

$3^u \times 3^2 - 3^u \div 3^2 = 80$

$3^u = y.$

$y \times 9 - \frac{y}{9} = 80$

$9y - \frac{y}{9} = 80$

$81y - y = 720$

$80y = 720$

$y = \frac{720}{80} \therefore y = 9$

$3^u = 9$

$3^u = 3^2$

$\boxed{u = 2}$

$7^u + 7^{u-1} + 7^{u-2} + 7^{u-3} = 400$

$7^u + 7^u \div 7 + 7^u \div 7^2 + 7^u \div 7^3 = 400$

$7^u = y$

$y + \frac{y}{7} + \frac{y}{7^2} + \frac{y}{7^3} = 400$

$y + \frac{y}{7} + \frac{y}{49} + \frac{y}{343} = 400$

$343y + 49y + 7y + y = 137200$

$400y = 137.200$

$y = \frac{137200}{400} \qquad y = 343$

$7^u = 343 \therefore 7^u = 7^3 \therefore u = 3.$

$5^{4-2} - 7^4 + 10 = 625$

$5^{4^2} - 7^4 + 10 = 5^4$

$4^2 - 7^4 + 10 = 4$

$4^2 - 7^4 + 6 = 0$

$4 = \frac{7 \pm \sqrt{49-24}}{2}$ $\quad 4 = \frac{7 \pm \sqrt{25}}{2}$

$4 = \frac{7 \pm 5}{2}$ $\quad 4' = \frac{7+5}{2} = \frac{12}{2} = 6$ $\quad 4' = 6$

$4'' = \frac{7-5}{2} = \frac{2}{2} = 1$ $\quad 4'' = 1$

$4 = 6$ ои 1.

$3^{2^4-1} - 3^4 - 3^{4-1} + 1 = 0$

$3^{2^4} \div 3 - 3^4 - 3^4 \div 3 + 1 = 0$

$(3^4)^2 \div 3 - 3^4 - 3^4 \div 3 + 1 = 0$

$3^4 = y$.

$y^2 \div 3 - y - y \div 3 + 1 = 0$

$\frac{y^2}{3} - y - \frac{y}{3} + 1 = 0$

$y^2 - 3y - y + 3 = 0$

$y^2 - 4y + 3 = 0$

$y = \frac{4 \pm \sqrt{16-12}}{2}$ $\quad y = \frac{4 \pm \sqrt{4}}{2}$

$y = \frac{4 \pm 2}{2}$ $\quad y' = \frac{4+2}{2} = 3$ $\quad y' = 3$

$y'' = \frac{4-2}{2} = \frac{2}{2} = 1$ $\quad y'' = 1$

$3^4 = 3$ $\quad 3^4 = 1 \therefore 3^4 = 3^0$

$\boxed{4 = 1}$ $\quad \boxed{4 = 0}$

$2^{4-3} + 2^{4-4} = 2^{4-2} - 2^{4-1} + 14$

$2^4 \div 2^2 + 2^4 \div 2^4 = 2^4 \div 2^2 - 2^4 \div 2 + 14$

$2^4 = y$.

$\frac{y}{8} + \frac{y}{16} = \frac{y}{4} - \frac{y}{2} + 14$

$2y + y = 4y - 8y + 224$

$2y + y - 4y + 8y = 224$

$7y = 224$ $\quad y = \frac{224}{7} = 32$.

$y = 32$.

$2^4 = 32$. $\quad 2^4 = 2^5$

$4 = 5$.

$6 - 6 - 62$.

$2^{4-2} - 2^{4-1} + 14 = 2^{4-3} + 2^{4-4}$

$2^4 \div 2^3 + 2^4 \div 2^4 = 2^4 \div 2^2 - 2^4 \div 2 + 14$

$2^4 = y$

$\frac{y}{8} + \frac{y}{16} = \frac{y}{4} - \frac{y}{2} + 14$

$2y + y = 4y - 8y + 14$

$2y + y - 4y + 8y = 224$

$7y = 224$ $\quad y = \frac{224}{7} \therefore y = 32$.

$2^4 = 32$ $\quad 2^4 = 2^5$ $\quad 4 = 5$.

$100 \times 10^{4} = \sqrt[4]{1000^5}$

$10^2 \times 10^4 = \sqrt[4]{(10^3)^5}$

$10^{2+4} = \sqrt[4]{10^{15}}$

$10^{2+4} = 10^{\frac{15}{4}}$

$2+4 = \frac{15}{4}$

$2(4)+4^2 = 15$

$2^2 + 2(4) - 15 = 0$

$4 = \frac{-2 \pm \sqrt{4+60}}{2}$ $\quad 4 = \frac{-2 \pm \sqrt{64}}{2}$ $\therefore 4 = \frac{-2 \pm 8}{2}$

$4' = \frac{-2+8}{2} = \frac{6}{2} = 3 \therefore 4' = 3$

$4'' = \frac{-2-8}{2} = \frac{-10}{2} = -5 \therefore 4'' = -5$

$(a4)^2 = (a4)^4$

$a^{24} = a^{4^2}$

$4^2 = 24$

$4^2 - 24 = 0$

$4(4-2) = 0 \quad \therefore 4' = 0$

$4 - 2 = 0 \quad \therefore 4'' = 2.$

$2^{44^2-1} = 1 \qquad 2^{44^2-1} = 2^0$

$44^2 - 1 = 0 \qquad 44^2 = 1$

$4^2 = \frac{1}{4} \therefore 4 = \pm\sqrt{\frac{1}{2}}$

$4 = \pm \frac{1}{2}.$

$5^{4-1} + 5^{4-2} + 5^{4-3} + 5^{4-4} = 780$

$5^4 \div 5 + 5^4 \div 5^2 + 5^4 \div 5^3 + 5^4 \div 5^4 = 780$

$5^4 = y.$

$y \div 5 + y \div 5^2 + y \div 5^3 + y \div 5^4 = 780$

$\frac{y}{5} + \frac{y}{25} + \frac{y}{125} + \frac{y}{625} = 780$

$125y + 25y + 5y + y = 487500$

$156y = 487500$

$y = \frac{487500}{156} \qquad y = 3125$

$y = 3125 \qquad 5^4 = y \therefore 5^4 = 3125$

$5^4 = 5^5 \qquad 4 = 5$

$9^4 + 3^4 = 90$

$(3^2)^4 + 3^4 = 90$

$(3^4)^2 + 3^4 = 90$

$3^4 = y.$

$y^2 + y = 90$

$y^2 + y - 90 = 0$

$y = \frac{-1 \pm \sqrt{1+360}}{2} \therefore y = \frac{-1 \pm \sqrt{361}}{2} \therefore y = \frac{-1 \pm 19}{2}$

$y' = \frac{-1+19}{2} \therefore y' = \frac{18}{2} \therefore y' = 9$

$y'' = \frac{-1-19}{2} \therefore y'' = \frac{-20}{2} \therefore y'' = -10$

$3^4 = 9 \qquad 3^4 = 3^2$ $\boxed{4 = 2}$

~~$3^4 = -10$~~

$25^y - 5^y = 600$

$(5^2)^y - 5^y = 600$

$(5^y)^2 - 5^y = 600$

$5^y = y$

$y^2 - y = 600$

$y^2 - y - 600 = 0$

$y = \frac{1 \pm \sqrt{1+2400}}{2}$ $\quad y = \frac{1 \pm \sqrt{2401}}{2}$

$y = \frac{1 \pm 49}{2}$

$y' = \frac{1+49}{2} \therefore y' = \frac{50}{2} \therefore \boxed{y = 25}$

$y'' = \frac{1-49}{2} \therefore y'' = \frac{-48}{2} \quad y'' = -24$

$5^y = 25 \quad 5^y = 5^2 \quad \boxed{y = 2}$

$\sqrt[4]{4^{4^y}} \times \sqrt[2]{2^{y-1}} = 4$

$(2^2)^{\frac{1}{4}} \times 2^{\frac{1}{4}-1} = 2^2$

$2^{\frac{2}{4}} \times 2^{\frac{1}{4}-1} = 2^2$

$2^{\frac{2}{4}+\frac{1}{4}-1} = 2^2$

$\frac{2}{4} + \frac{1}{4-1} = 2.$ $\quad \therefore$

~~$2(4-1) + 4 = 2(4-1).4$~~

$2(4-1) + 4 = 2 \cdot 4 (4-1)$

$2y - 2 + 4 = 2y^2 - 2y$

$-2y^2 + 2y + 2y + 4 - 2 = 0 \quad (-1)$

$2y^2 - 2y - 2y - 4 + 2 = 0$

$2y^2 - 5y + 2 = 0$

$y = \frac{5 \pm \sqrt{25-16}}{2} \therefore y = \frac{5 \pm \sqrt{9}}{2} \therefore y = \frac{5 \pm 3}{2}$

$y' = \frac{5+3}{4} \therefore y' = \frac{8}{4} \therefore \boxed{y' = 2}$

$y'' = \frac{5-3}{4} \therefore y'' = \frac{2}{4} \therefore \frac{1}{2} = y''$

8/6/62.

$3^{4+1} - 3^{3-4} = 80$

$3^4 \times 3 - 3^3 \div 3^4 = 80$

$3^y = y.$

$3y - \frac{27}{y} = 80$

$3y^2 - 27 = 80y$

$3y^2 - 80y - 27 = 0$

$y = \frac{80 \pm \sqrt{6400+324}}{6} \therefore y = \frac{80 \pm \sqrt{6724}}{6}$

$y = \frac{80 \pm 82}{6} \quad y' = \frac{80+82}{6} \therefore y' = \frac{162}{6} \therefore 27$

$\boxed{y' = 27}$

$y'' = \frac{80-82}{6} \therefore y'' = \frac{-2}{6}$

$\boxed{y'' = -\frac{1}{3}}$

$3^y = y$ ∴ $3y = 27$ ∴ $3^y = 3^3$

$\boxed{y = 3}$

$2^{\sqrt{y}} = 32.$

$2^{\sqrt{y}} = 2^5$

$\sqrt{y} = 5$

y

$2^{y^2+y} = 1$

$2^{y^2+y} = 2^0$

$y^2 + y = 0$

$y(y+1) = 0$

$y' = 0$

$y'' + 1 = 0$

$y'' = -1$

$a^{(y-1)y} = a^{3y}$

$(y-1)y = 3y$

$y^2 - y - 3y = 0$

$y^2 - 4y = 0$

$y(y-4) = 0$ $\boxed{y' = 0}$

$y'' - 4 = 0$

$\boxed{y'' = 4}$

$2^{y+1} + 2^{y-1} = 80$

$2^y \cdot 2 + 2^y \div 2 = 80$

$2^y = y.$

$y \cdot 2 + \frac{y}{2} = 80$

$2y + \frac{y}{2} = 80$ ∴ $4y + y = 160.$

$5y = 160$

$2^y = 32$

$y = \frac{160}{5}$

$2^y = \frac{5}{2}^5$

$y = 32.$

$\boxed{y = 5}$

$3^{-y} = \frac{1}{81}$

$3^{-y} = \frac{1}{3^4}$

$3^{-y} = \frac{1}{3^y}$

$-y = -4$

$y = 4$

$a^y = \frac{1}{9}$

$3^y = \frac{1}{9}$

$3^y = \frac{1}{3^2}$

$3y = 3^2$

$y = -2.$

$10 \cdot \log y = 1000$

$10 \cdot \log y = 10^3$

$\log y = 3$

$y = 1000$

$\log 2 = 0{,}30103$

$2^y = 5$

$y \times \log 2 = \log 5.$

$y = \frac{\log 5}{\log 2}$

$\log 5 = \log\left(\frac{10}{2}\right) = \log 10 - \log 2.$

$\log 10 = 1.$

$\log 2 = 0{,}30103.$

$\log 5 = 0{,}69897$

1.000000

0.30103

0,69897

11/6/62.

$0,48^{2u} = 5,329.$

$2u \times \log 0,48 = \log 5,329.$

$2u = \frac{\log 5,329}{\log 0,48}$

$2u = \frac{0,726646}{\bar{1},681241}$

$2u = \frac{0,726646}{\bar{1}+0,681241} = \frac{0,726646}{-(1-0,681241)}$

$2u = \frac{0,726646}{-0,318759} = -2,27$

0,726646 | −0,318759
−2,27

$u = \frac{-2,27}{2}$ $u = -1,135$

$81,324^{u+1} = 729,316$

$(u+1) \log 81,324 = \log 729,316.$

$(u+1) = \frac{\log 729,316}{\log 81,324}$

$u+1 = \frac{2,862916}{1,910219} = 1,4987$

$u+1 = 1,4987$

$u = 1,4987 - 1 = 0,4987.$

$u = 0,4987$

$\log 729,316 = 2,862916$

7293	= 862906
7294	862966

60

1 —— 60

0,16 —— u

$u = 0,16 \times 60 = 9,6$ → 10

862906
+10
862916

$\log 81,324 = 1,910219.$

8132	910197
8133	910251

54

1 —— 54

0,4 —— u

$u = 0,4 \times 54 = 21,6$ → 22.

910197
22
910219

2,862916 | 1,910219
0952697 0 | 1,4987
18860940
16689690
14079380
707847.

12/6/62.

$\log 2 = 0{,}30103$

Calcular q na equação

$2^q \times 5^q = 8$

$\log 5 = \log\left(\frac{10}{2}\right) = \log 10 - \log 2 =$

$= 1 - 0{,}30103 = 0{,}69897$

$\log 8 = \log 2^3 = 3 \times \log 2 =$

$= 3 \times 0{,}30103 = 0{,}90309$

$\log 8 = 0{,}90309$

1,00000	
0,30103	
0,69897	

$q \times \log 2 + q \times \log 5 =$

$= \log 8$

$q(\log 2 + \log 5) = \log 8$

$q = \frac{\log 8}{\log 2 + \log 5}$ $\quad q = \frac{0{,}90309}{0{,}30103 + 0{,}69897} =$

$= \frac{0{,}90309}{1}$ $\quad \therefore 0{,}90309 \div 1 = 0{,}90309$

$q = 0{,}90309$

$0{,}81^q = 0{,}094$

$q = \frac{\log 0{,}094}{\log 0{,}81}$ $\quad \therefore q = \frac{\bar{2}{,}973128}{\bar{1}{,}908485} =$

$= \frac{-(2 - 0{,}973128)}{-(1 - 0{,}908485)} = \frac{1{,}026872}{0{,}091515} =$

$q = \frac{-1{,}026872}{-0{,}091515} = 11{,}2207.$

$-1{,}026872 \quad \overline{+0{,}091515}$

$11172 \quad 11{,}2207$

202070

190400

0737000

$q = 11{,}2207.$

$5{,}2438^q = 5{,}8136$

$q \times \log 5{,}2438 = \log 5{,}8136$

$q = \frac{\log 5{,}8136}{\log 5{,}2438}$ $\quad \therefore q = \frac{0{,}764445}{0{,}719647}$

5813	764400	75
5814	764475	

$1 \text{ —— } 75$

$0{,}6 \text{ —— } 6$

$q = 75 \times 0{,}6 = 45$

764400

45

764445

5243	719580	83
5244	719663	

$1 \text{ —— } 83$

$0{,}8 \text{ —— } 6$

$q = 83 \times 0{,}8 = 66{,}8$

719580

67

719647

$0,764445 \mid 0,719647$
$044798 \quad 1,04$
1612218
$q = 1,04.$

$0,764445 \mid 0,719647$
$44798 \quad 1,04$
161918
$q = 1,04.$

15/6/62.

$16 : 8 : 4 : 2 : 1 : \frac{1}{2} : \frac{1}{4} : \ldots \quad 0.$

$S_n = \frac{a_1 - a_n q}{1-q}$

$S_n = \frac{16 - 0 \times \frac{1}{2}}{1 - \frac{1}{2}} \quad \therefore \quad S_n = \frac{16}{\frac{1}{2}}$

$S_n = 32.$

$10^{\log q} = 1 \qquad 10^{\log q} = 10^0$

$\log q = 0 \qquad q = 1$

$q \ldots q^{10}$

$q = \sqrt[n-1]{\frac{a_n}{a_1}} \qquad q = \sqrt[3]{\frac{q^{10}}{q}} \qquad q = \sqrt[3]{q^9}$

$q = q^3 \qquad q : q^4 : q^7 : q^{10}$

$S_n = 230$

$a_1 + a_n = 46$

$S_n = \frac{(a_1 + a_n)n}{2} \qquad 230 = \frac{46n}{2}$

$230 = 23n \quad \therefore \quad n = \frac{230}{23} \quad \therefore$

$n = 10$

$51,718^{2q-1} = 6824,76$

$(2q-1) \log 51,718 = \log 6824,76$

$(2q-1) = \frac{\log 6824,76}{\log 51,718}.$

$(2q-1) = \frac{3,834088}{1,713642}$

5171	713575
5172	713659

84

1 — 84

98 — q

$q = 0,76 \times 0 \qquad q = 0,8 \times 84 = 67,20 \to 67.$

6824	834039
6825	834103

64.

1 — 64

0,76 — 6

$q = 0,76 \times 64 = 48,64$

834039
49
834088

713575
67
713642

$(2y-1) = \frac{3,834088}{1,713642}$ $\quad 3,834088 \;\; \frac{1,713642}{2,23}$

$(2y-1) = 2,23$

$2y = 1+223 \qquad 2y = 3,23$

$y = \frac{3,23}{2} \qquad y = 1,615.$

19/6/62.

$7894^{y^4-13y^2+36} = 1.$

$7894^{y^4-13y^2+36} = 7894^0$

$y^4-13y^2+36 = 0$

$y = \pm\sqrt{\frac{-b \pm \sqrt{b^2-4ac}}{2a}}$.

$y = \pm\sqrt{\frac{13 \pm \sqrt{169-144}}{2}}$

$y = \pm\frac{\sqrt{13 \pm \sqrt{25}}}{2} \qquad y = \pm\frac{\sqrt{13\pm 5}}{2}$

$y' = +\frac{\sqrt{13+5}}{2} \qquad y' = 3$

$y'' = -\frac{\sqrt{13+5}}{2} \qquad y'' = -3$

$y''' = +\frac{\sqrt{13-5}}{2} \qquad y''' = +2$

$y'''' = -\frac{\sqrt{13-5}}{2} \qquad y'''' = -2.$

$4^y + 2^y = 20$

$(2^2)^y + 2^y = 20$

$(2^y)^2 + 2^y = 20$

$2^y = y.$

$y^2 + y = 20$

$y^2 + y - 20 = 0$

$y = -\frac{1 \pm \sqrt{1+80}}{2}$

$y = \frac{-1\pm 9}{2} \qquad y' = \frac{-1+9}{2} \qquad y' = 4$

$y'' = \frac{-1-9}{2} \qquad y'' = -5$

$2^y = 4 \qquad 2^y = 2^2 \qquad \boxed{y = 2}$

$5^{y+1} - 5^{y-1} = 600 \;\therefore\; 5^y \cdot 5 - 5^y \div 5 = 600$

$5^y = y.$

$5y - \frac{y}{5} = 600$

$25y - y = 3000$

$24y = 3000$

$y = \frac{3000}{24} \qquad y = 125$

$5^y = 125 \qquad 5^y = 5^3 \qquad \boxed{y = 3}$

22/6/62.

$a_n = a_1 + (n-1)r.$

$S_n = \frac{[a_1 + r(n-1) + a_1]n}{2}$

$S_n = \frac{[2a_1 + rn - r]n}{2}$

$3861 = \frac{[2\cdot5 + 7n - 7]n}{2}$

$7722 = [10 + 7n - 7]n$

$7722 = [3 + 7n]n$

$7722 = 7n^2 + 3n.$

$7n^2 + 3n - 7722 = 0$

$n = \frac{-3 \pm \sqrt{9 - 4\cdot7\cdot(-7722)}}{14}$

$n = \frac{-3 \pm \sqrt{216225}}{14}$

$n = \frac{-3 \pm 465}{14}$

$n' = \frac{-3+465}{14} \therefore n' = \frac{462}{14} \therefore n' = 33$

$n'' = \frac{-3-465}{14} \therefore n'' = \frac{-468}{14}$

$S_n = 3861$

$r = 7$

$a_1 = 5$

$n = ?$

$a_n = ?$

$a^q = a$

$q^2 = 1 \quad q = 1 \quad q = \pm\sqrt{1} \quad \boxed{q = \pm 1}$

$a^q = \frac{1}{a^q} \quad a^q = a^{-q} \quad q = -q$

$4^q + 16^q = 272.$

$4^q + (4^2)^q = 272.$

$4^q + (4^q)^2 = 272.$

$4^q = y.$

$y^2 + y = 272$

$y^2 + y - 272 = 0.$

$y = \frac{-1 \pm \sqrt{1 + 1088}}{2}$

$y = \frac{-1 \pm \sqrt{1089}}{2} \quad y = \frac{-1 \pm 33}{2}$

$y' = \frac{-1+33}{2}$

$y' = 16$

$y'' = \frac{-1-33}{2} \therefore y'' = -17$

$y = 4^q \quad y = 16 \therefore 4^q = 16$

$4^q = 4^2. \quad q = 2.$

$a^{4q^2} = a \quad a^{4q^2} = a^1.$

$4q^2 = 1. \quad 4q^2 - 1 = 0$

$q = \pm\sqrt{\frac{1}{4}}$

$q = \frac{1}{2}$

25/6/62.

Calcular o logaritmo de π no sistema de base e.

$\log \pi = 0,497151.$

$\log_e \pi = \frac{\log_{10} \pi}{\log_{10} e}$

$e = 2,718.$

3141	497068	138
3142	497206	

1 — 138

0,6 — 4

$4 = 0,6 \times 138 = 82,8$

83.

497068

83

497151

$\frac{\log_{10} \pi}{\log_{10} e} = \frac{0,497151}{0,434249}$

497151 | 434249

062920 | 1,144

194710

210714 0

37014 4.

$1 : \frac{1}{2} : \frac{1}{4} : \frac{1}{8} \ldots\ldots$

$S_n = \frac{a_1 - a_n q}{1 - q}$ $\quad S_n = \frac{1 - \frac{1}{2} \times 0}{1 - \frac{1}{2}}$

$S_n = \frac{1}{\frac{1}{2}}$ $\quad S_n = \frac{1 \times 2}{1}$

$S_n = 2.$

$S_\infty = \frac{a_1 - a_n q}{1 - q}$

$S_\infty = \frac{1 - 0 \times \frac{1}{2}}{1 - \frac{1}{2}} \therefore S_\infty = \frac{1}{1 - \frac{1}{2}}$

$S_\infty = \frac{1}{\frac{1}{2}} \therefore S_\infty = 1 \times 2$

$S_\infty = 2.$

$-2000. - 1997. - 1994 \ldots\ldots + \infty$

$S_n = \frac{(a_1 + a_n) n}{2}.$

$S_n = \frac{(-2000 + \infty) \infty}{2}$ $\quad S_n = \frac{+\infty}{2}$

$S_n = +\infty$

Interpolar 2 meios geométricos em 4^0 e 4^9

$a^1 = 4^0$

$n = 4$

$a_4 = 4^9$

$q = \sqrt[n-1]{\frac{a_n}{a_1}}$

$q = \sqrt[3]{4^9}$

$q = 4^3$

$4^0 : 4^3 : 4^6 : 4^9.$

Calcular a soma de todos os múltiplos de 7 entre 100 e 200.

$100 \mid \underline{17}$ $\quad 98+7=105$
$30 \quad 14$
2

$200 \mid \underline{17}$ $\quad : 196$
$60 \quad 28$
4

$a_1 = 105$
$a_n = 196$
$r = 7$
$n = ?$

$$n = \frac{a_n - a_1}{r} + 1$$

$$n = \frac{196-105}{7} + 1 \qquad n = \frac{91}{7} + 1$$

$n = 13 + 1 \therefore n = 14$

$$S_n = \frac{(a_1 + a_n)n}{2}$$

$$S_n = \frac{(105+196)14}{2} \qquad S_n = \frac{301 \times 14^{7}}{2}$$

$S_n = 301 \times 7 = 2107$ $\qquad S_n = 2107.$

30-7-62.

Geometria no espaço.

Comprimento
Largura
Altura

Ponto: definição

não se define o verdadeiro ponto. Não tem dimensões.

Linha reta: origina-se no + infinito e vai até - infinito.
Possue comprimento.
Cortada em 2 partes tem-se um segmento.

Postulado:
Toda a reta que tem dois pontos de contacto com o plano "está toda contida no plano".

Espaço: Tem três dimensões: comprimento, largura e altura.

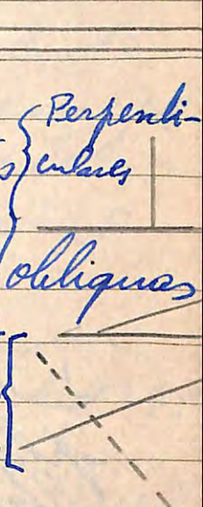
Volume: É a porção limitada de um plano.

Posições relativas no espaço:
1) de reta e reta (uma em relação a outra)
2) de reta e plano
3) de plano e plano.

1º caso: Posição relativa de duas retas.
Complanares:
quando situadas no mesmo plano.

1º caso:

- Posição Relativa de duas retas
  - Complanares quando situadas no mesmo plano
    - Paralelas
    - Concorrentes
      - Perpendiculares
      - Oblíquas
  - não complanares: retas que se cruzam no espaço



2º caso.

- Posição Relativa de reta e plano
  - A reta não toca no plano (paralela ao plano)
  - A reta toca num ponto do plano (a reta é interceptada pelo plano).
  - A reta tem dois pontos de contacto com o plano (a reta está toda contida no plano)

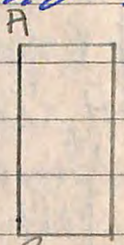
3º caso: Posições Relativas de dois planos

Os planos não têm ponto de contacto: (paralelos)
Os planos têm uma infinidade de pontos de contacto em linha reta: (se interceptam)
Os planos têm três pontos de contactos não em linha reta: (se confundem).

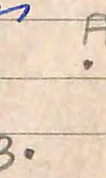
31-7-62.

Determinação de um plano.

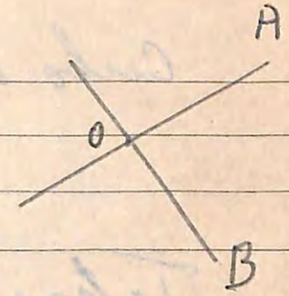
Uma reta e um ponto fora desta reta, determina um plano e sòmente um.



Três pontos não em linha reta determinam um plano e somente um.



Duas retas concorrentes determinam um plano e sòmente um.

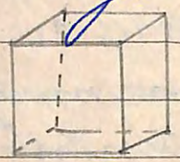


Postulado de Euclides

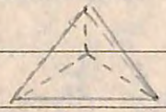
Em virtude do postulado de Euclides concluem-se que duas retas paralelas determinam um plano e sòmente um.

Polígono no plano	Poliedro no espaço
Triângulo: 3 lados	Tetraedro: 4 faces
quadrilatero: 4 "	pentaedro: 5 "
pentágono: 5 "	exaedro: 6 "
exágono: 6 "	eptaedro: 7 "
eptágono: 7 "	Octaedro: 8 "
Octógono: 8 "	eneáedro: 9 "
eneágono: 9 "	decaedro: 10 "
decágono: 10 "	undecaedro: 11 "
undecagono: 11 "	dodecaedro: 12 "
dodecagono: 12 "	pentadecaedro: 15 "
pentadecagono: 15 "	icosaedro: 20 "
icoságono: 20 "	

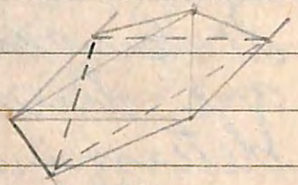
Cubo ou exaedro regular.



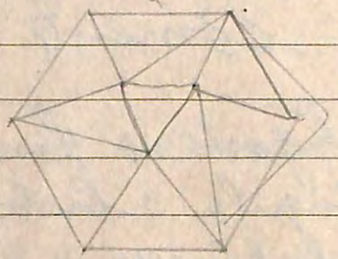
Tetraedro regular.



Octaedro regular.

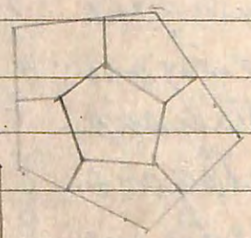


Icosaedro regular.

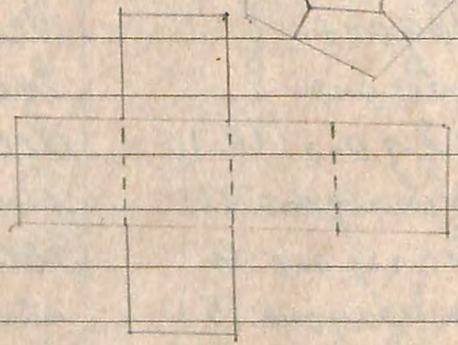


1:/8/62.

Dodecaedro regular.

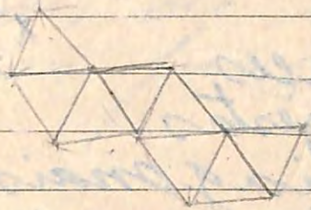


Cubo:



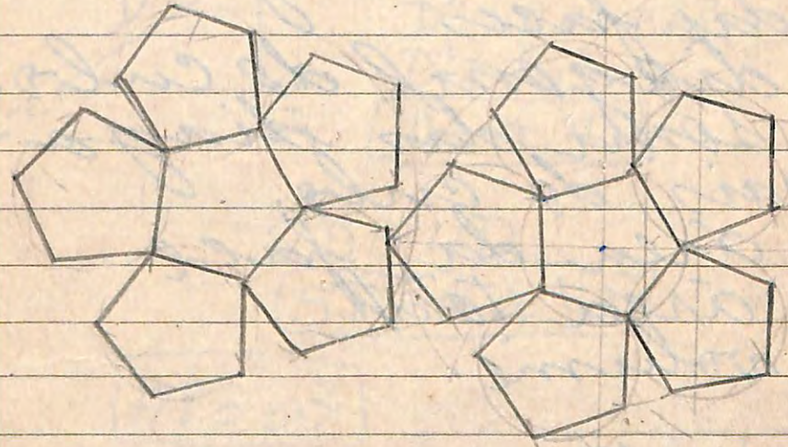
Tetraedro:

Octaedro:

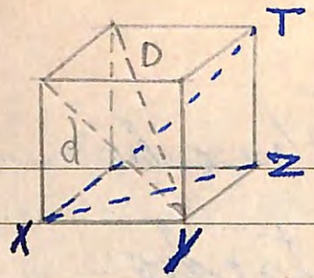


Icosaedro.

Dodecaedro.



Excedro:



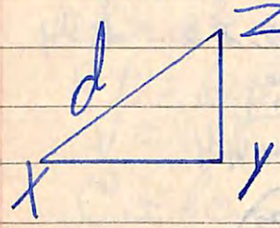
6 faces
12 arestas
12 diagonais das faces
4 diagonais do cubo

a: aresta
Sa: soma das arestas
d: diagonal da face.
Sd: soma das diagonais das faces.
D: diagonal do cubo.
SD: soma das diagonais do cubo.
Af: área da face.
At: área total
V: volume.

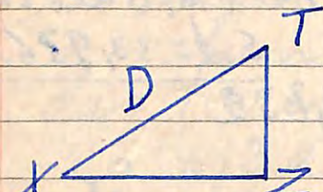
$Sa = 12a$.
$Sd = 12d$.
$SD = 4D$
$At = 6Af$.

Calcular todos os elementos de um cubo em função das arestas.

$Sa = 12a$.



$d^2 = a^2 + a^2$
$d^2 = 2a^2$
$\boxed{d = a\sqrt{2}}$



$D^2 = d^2 + a^2$
$D^2 = 2a^2 + a^2$
$D^2 = 3a^2$
$\boxed{D = a\sqrt{3}}$

$SD = 4D$
$\boxed{SD = 4a\sqrt{3}}$

$\boxed{Af = a^2}$

$At = 6Af$ $\boxed{At = 6a^2}$

$\boxed{V = a^3}$

$\sqrt{2} = 1{,}414$ $\sqrt{3} = 1{,}732$
$\sqrt{5} = 2{,}236$.

Calcular todos os elementos de um cubo sabendo que a aresta mede 2 m.

$Sa = 12a$ $Sa = 12 \times 2 = 24$

$\boxed{Sa = 24\ m}$

$d = a\sqrt{2}$ $d = 2 \times 1{,}414$

$\boxed{d = 2{,}828\ m}$

$Sd = 12d$. $Sd = 12 \times 2{,}828\ m$

$Sd = 12 \times 2 \times 1{,}414$ $Sd = 33{,}936\ m$

$D = a\sqrt{3}$ $D = 2 \times 1{,}732$

$\boxed{D = 3{,}464}$

$SD\ 4a\sqrt{3}$ $SD = 4 \times 2 \times 1{,}732$

$\boxed{SD = 13{,}856\ m}$

$Af = a^2$ $Af = 2^2$ $\boxed{Af = 4\ m^2}$

$At = 6a^2$ $At = 6 \cdot 2^2$

$At = 6 \times 4$ $\boxed{At = 24\ m^2}$

$V = a^3$ $V = 2^3$

$\boxed{V = 8\ m^3}$

$Sa = 12a$.

$d = a\sqrt{2}$

$Sd = 12a\sqrt{2}$

$D = a\sqrt{3}$

$SD = 4a\sqrt{3}$

$Af = a^2$

$At = 6a^2$

$V = a^3$

Calcular todos os elementos de um cubo em função da soma das arestas.

$Sa = 12a$. $a = \frac{Sa}{12}$

$d = a\sqrt{2}$, $d = \frac{Sa\sqrt{2}}{12}$

$Sd = \frac{Sa \cdot \sqrt{2}}{12} \times 12$ $Sd = Sa\sqrt{2}$.

$D = a\sqrt{3}$ $D = \frac{Sa\sqrt{3}}{12}$

$SD = 4a\sqrt{3}$ $SD = 4\frac{Sa\sqrt{3}}{12}$ $SD = \frac{Sa\sqrt{3}}{3}$.

$Af = a^2$ $Af = \frac{Sa^2}{144}$

$At = 6Af$ $At = 6\frac{Sa^2}{144}$ $At = \frac{Sa^2}{24}$

$V = a^3$. $V = \frac{Sa^3}{1728} = \left(\frac{Sa}{12}\right)^3$

Calcular todos os elementos de um cubo, sabendo-se que a soma das arestas medem 0,12 dm.

$a = \frac{Sa}{12}$ $a = \frac{0,12}{12}$ $a = 0,01$ dm.

$d = \frac{Sa\sqrt{2}}{12} = \frac{0,12 \times 1,414}{12}$ $d = 0,01414$ dm.

$Sd = Sa\sqrt{2}$ $Sd = 0,12 \times 1,414$

$Sd = 0,16968$ dm.

$D = \frac{Sa\sqrt{3}}{12}$ $D = \frac{0,12 \times 1,732}{12}$ $D = 0,01732$ dm.

$SD = \frac{Sa\sqrt{3}}{3}$ $SD = \frac{0,12^3}{144} \frac{0,12 \times 1,732}{3}$

$SD = 0,04 \times 1,732$ $SD = 0,06928$ dm

$Af = \frac{Sa^2}{144}$ $Af = \frac{0,12^2}{144}$ $Af = \frac{0,0144}{144}$

$Af = 0,0001$ dm².

$At = \frac{Sa^2}{24}$ $At = 0,0006$ dm²

$V = \frac{Sa^3}{1728}$ $V = \frac{0,12^3}{1728}$ $V = 0,000001$ dm³

3/8/62.

Calcular todos os elementos de um cubo em função da diagonal da face. (d)

$d = a\sqrt{2}$ $a = \frac{d}{\sqrt{2}}$ $a = \frac{d\sqrt{2}}{\sqrt{2}\sqrt{2}}$ $a = \frac{d\sqrt{2}}{\sqrt{4}}$

$\boxed{a = \frac{d\sqrt{2}}{2}}$

$Sa = 12a$ $Sa = 12\frac{d\sqrt{2}}{2}$

$Sa = \boxed{6d\sqrt{2}}$

$\boxed{Sd = 12d}$

$D = a\sqrt{3}$ $D = \frac{d\sqrt{2}}{2} \times \sqrt{3}$ $\boxed{D = \frac{d\sqrt{6}}{2}}$

$SD = 4D$ $SD = 4\frac{d\sqrt{6}}{2}$ $\boxed{SD = 2d\sqrt{6}}$

$Af = a^2$ $Af = (\frac{d\sqrt{2}}{2})^2$ $Af = \frac{2d^2}{4}$ $\boxed{Af = \frac{d^2}{2}}$

$At = 6Af$ $At = 6\frac{d^2}{2}$ $\boxed{At = 3d^2}$

$V = a^3$ $V = (\frac{d\sqrt{2}}{2})^3$ $V = \frac{d^3 \times 2\sqrt{2}}{8}$ $\boxed{V = \frac{d^3\sqrt{2}}{4}}$

6/8/62.

Calcular todos os elementos de um cubo em função da soma das diagonais das faces.

$Sa = 12a$
$Sd = 12d$
$SD = 4D$
$At = 6Af.$

$Sd = 12a\sqrt{2}$
$a = \frac{Sd}{12\sqrt{2}}$
$a = \frac{Sd\sqrt{2}}{12.\sqrt{2}.\sqrt{2}}$
$\boxed{a = \frac{Sd\sqrt{2}}{24}}$

$d = a\sqrt{2}$
$Sd = 12a\sqrt{2}$
$D = a\sqrt{3}$
$Af = a^2$
$At = 6Af.$
$V = a^3$

$Sa = 12a$
$Sa = 12 \times \frac{Sd\sqrt{2}}{24}$
$\boxed{Sa = \frac{Sd.\sqrt{2}}{2}}$

$Sd = 12d.$
$\boxed{d = \frac{Sd}{12}}$

$D = a\sqrt{3}$ $\quad D = \frac{Sd\sqrt{2}}{24}\sqrt{3}$ $\quad \boxed{D = \frac{Sd\sqrt{6}}{24}}$

$SD = 4D$ $\quad SD = 4 \times \frac{Sd\sqrt{6}}{24}$ $\quad \boxed{SD = \frac{Sd\sqrt{6}}{6}}$

$Af = a^2$ $\quad Af = \left(\frac{Sd\sqrt{2}}{24}\right)^2$ $\quad Af = \frac{Sd^2 \times 2}{576}$

$\boxed{Af = \frac{Sd^2}{288}}$

$At = 6Af$ $\quad At = 6 \times \frac{Sd^2}{288}$ $\quad \boxed{At = \frac{Sd^2}{48}}$

$V = a^3$ $\quad V = \left(\frac{Sd\sqrt{2}}{24}\right)^3$ $\quad V = \frac{Sd^3.\sqrt{2}.2}{576 \times 24 \times 2}$

$\boxed{V = \frac{Sd^3\sqrt{2}}{6912}}$

Calcular todos os elementos de um cubo, sabendo-se que a soma das diagonais das faces é igual a $\sqrt{2}$ dm.

$a = \frac{Sd\sqrt{2}}{24}$ $\quad a = \frac{\sqrt{2}\sqrt{2}}{12}$ $\quad a = \frac{1}{12}.$ $\quad a = 0{,}083$ dm.

$Sa = \frac{Sd\sqrt{2}}{2} = \frac{\sqrt{2}\sqrt{2}}{2}$ $\quad Sa = 1$ dm.

$d = \frac{Sd}{12}$ $\quad d = \frac{\sqrt{2}}{12} = \frac{1{,}414}{12}$ $\quad d = 0{,}117$ dm.

$Sd = \sqrt{2}$ dm.

$D = a^3 = \frac{Sd\sqrt{6}}{24} = \frac{\sqrt{2}\sqrt{6}}{24} = \frac{\sqrt{12}}{24} = \frac{2\sqrt{3}}{24} = \frac{\sqrt{3}}{12} =$

$= \frac{1{,}732}{12} = 0{,}142$ dm.

$SD = \frac{Sd\sqrt{6}}{6} = \frac{\sqrt{2}\sqrt{6}}{6} = \frac{\sqrt{12}}{6} = \frac{2\sqrt{3}}{6} = \frac{\sqrt{3}}{3} =$

$= \frac{1{,}732}{3} = 0{,}577$ dm.

$Af = a^2 = \frac{Sd^2}{288} = \frac{(\sqrt{2})^2}{288} = \frac{2}{288} = \frac{1}{144} = 0{,}007$ dm^2.

$At = \frac{Sd^2}{48} = \frac{(\sqrt{2})^2}{48} = \frac{2}{48} = \frac{1}{24} = 0{,}04$ dm^2.

$V = \frac{Sd^3\sqrt{2}}{6912} = \frac{(\sqrt{2})^3\sqrt{2}}{6912} = \frac{\sqrt{8}\sqrt{2}}{6912} = \frac{\sqrt{16}}{6912} = \frac{4}{6912} =$

$= 0{,}0005$ dm^3.

A diagonal da face de um cubo mede $2\sqrt{2}$ dm. Calcular os demais elementos deste cubo.

$d = 2\sqrt{2}$ dm.

$a = \frac{d}{\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{2}} = 2$ dm. $a = 2$ dm

$Sa = 12a$ $Sa = 2 \times 12$ $Sa = 24$ dm.

$Sd = 12d$. $Sd = 12 \times 2 \times \sqrt{2}$ $Sd = 24\sqrt{2}$.

$D = a\sqrt{3}$ $D = 2\sqrt{3}$ $D = 2 \times 1{,}732$

$D = 3{,}464$ dm.

$SD = 4D$ $SD = 4 \times 3{,}464$ $SD = 13{,}856$ dm.

$Af = a^2$ $Af = 4$ dm^2.

$At = 6Af$. $At = 6 \times 4$ $At = 24$ dm^2.

$V = a^3$ $V = 8$ dm^3.

Calcular todos os elementos de um cubo em função da sua diagonal D.

$D = a\sqrt{3}$ $a = \frac{D}{\sqrt{3}}$ $a = \frac{D\sqrt{3}}{\sqrt{3}\sqrt{3}}$ $\boxed{a = \frac{D\sqrt{3}}{3}}$

$d = \frac{D\sqrt{3}}{3}\sqrt{2}$ $\boxed{d = \frac{D\sqrt{6}}{3}}$

$Sd = 12d$. $Sd = 12 \times \frac{D\sqrt{6}}{3}$

$\boxed{Sd = 4 \times D\sqrt{6}}$.

$\boxed{SD = 4D}$

$Sa = 12a$ $Sa = 12\frac{D\sqrt{3}}{3}$

$Sa = \boxed{4D\sqrt{3}}$

$Af = a^2$ $Af = \left(\frac{D\sqrt{3}}{3}\right)^2$ $Af = \frac{D^2 \times 3}{9}$

$\boxed{Af = \frac{D^2}{3}}$.

$At = 6Af$ $At = 6 \times \frac{D^2}{3}$ $\boxed{At = 2D^2}$

$V = a^3$ $V = \left(\frac{D\sqrt{3}}{3}\right)^3$ $V = \frac{D^3 \times 3\sqrt{3}}{27}$

$\boxed{V = \frac{D^3\sqrt{3}}{9}}$

7/8/62.

Calcular todos os elementos de um cubo em função da soma das diagonais do mesmo cubo. $\underline{SD}$.

$SD = 4a\sqrt{3}$

$a = \frac{SD}{4\sqrt{3}}$ $a = \frac{SD\sqrt{3}}{4\sqrt{3}\sqrt{3}}$ $\boxed{a = \frac{SD\sqrt{3}}{4 \times 3}}$

$Sa = 12a$ $Sa = 12\frac{SD\sqrt{3}}{12}$ $\boxed{Sa = SD\sqrt{3}}$

$d = a\sqrt{2}$ $d = \frac{SD\sqrt{3}}{12}\sqrt{2}$ $\boxed{d = \frac{SD\sqrt{6}}{12}}$

$Sd = 12d \quad Sd = 12 \times \frac{SD\sqrt{6}}{12} \quad \boxed{Sd = SD\sqrt{6}}$

$SD = 4D \quad \boxed{D = \frac{SD}{4}}$

$Af = a^2 \quad Af = \left(\frac{SD\sqrt{3}}{12}\right)^2 \quad \boxed{Af = \frac{SD^2 \times 3}{144}}$

$\boxed{Af = \frac{SD^2}{48}}$

$At = 6Af \quad At = 6 \times \frac{SD^2}{48} \quad \boxed{At = \frac{SD^2}{8}}$

$V = a^3 \quad V = \left(\frac{SD\sqrt{3}}{12}\right)^3 \quad V = \frac{SD^3 \times 3\sqrt{3}}{1728}$

$\boxed{V = \frac{SD^3\sqrt{3}}{576}}$

Calcular todos os elementos de um cubo em função da área da face. Af.

$Af = a^2 \quad a = \sqrt{Af}$

$Sa = 12a \quad \boxed{Sa = 12\sqrt{Af}}$

$d = a\sqrt{2} \quad d = \sqrt{2}\sqrt{Af}$

$Sd = 12a \quad \boxed{Sd = 12\sqrt{2Af}}$

$D = a\sqrt{3} \quad D = (\sqrt{Af})\sqrt{3} \quad D = \sqrt{Af}\sqrt{3}$

$\boxed{D = \sqrt{3Af}}$

$SD = 4D \quad \boxed{SD = 4\sqrt{3Af}}$

$\boxed{At = 6Af.}$

$V = a^3 \quad V = (\sqrt{Af})^3 \quad V = \sqrt{Af^2 \times Af}$

$\boxed{V = Af\sqrt{Af}}$

8/8/62.

$Sa = 12a$
$Sd = 12d$
$SD = 4D$
$At = 6Af.$
$d = a\sqrt{2}$
$D = a\sqrt{3}$
$V = a^3$
$Af = a^2.$

Calcular todos os elementos de um cubo em função da área total. At.

$At = 6Af = 6a^2.$

$a^2 = \frac{At}{6} \quad a = \sqrt{\frac{At}{6}}$

$a = \sqrt{\frac{6At}{6 \times 6}} \quad \boxed{a = \frac{\sqrt{6At}}{6}}$

$Sa = 12a. \quad Sa = 12 \times \frac{\sqrt{6At}}{6}$

$\boxed{Sa = 2\sqrt{6At}}$

$d = a\sqrt{2} \quad d = \frac{\sqrt{6At}}{6} \times \sqrt{2} \quad d = \frac{\sqrt{12At}}{6}$

$d = \frac{\sqrt{4 \times 3At}}{6} \quad d = \frac{2\sqrt{3At}}{6} \quad \boxed{d = \frac{\sqrt{3At}}{3}}$

$Sd = 12d \quad Sd = 12 \times \frac{\sqrt{3At}}{3} \quad \boxed{Sd = 4\sqrt{3At}}$

$D = a\sqrt{3} \quad D = \frac{\sqrt{6At}}{6} \times \sqrt{3} \quad D = \frac{\sqrt{18At}}{6}$

$D = \frac{\sqrt{9 \times 2At}}{6} \quad D = \frac{3\sqrt{2At}}{6} \quad \boxed{D = \frac{\sqrt{2At}}{2}}$

$SD = 4D \therefore SD = 4 \times \frac{\sqrt{2At}}{2}$ $\boxed{SD = 2\sqrt{2At}}$

$At = 6Af$ $\boxed{Af = \frac{At}{6}}$

$V = a^3 \therefore V = \left(\frac{\sqrt{6At}}{6}\right)^3$ $V = \frac{\sqrt{36 \times 6 \times At^2 \times At}}{216}$

$V = \frac{6At\sqrt{6At}}{216}$ $\boxed{V = \frac{At\sqrt{6At}}{36}}$

Calcular todos os elementos de um cubo em função do volume. V

$V = a^3$ $\boxed{a = \sqrt[3]{V}}$

$Sa = 12a$ $\boxed{Sa = 12\sqrt[3]{V}}$

$d = a\sqrt{2}$ $\boxed{d = \sqrt[3]{V}\sqrt{2}}$

$Sd = 12d.$

$\boxed{Sd = 12\sqrt[3]{V}\sqrt{2}}$

$D = a\sqrt{3}$ $\boxed{D = \sqrt[3]{V}\sqrt{3}}$

$SD = 4D$ $\boxed{SD = 4\sqrt[3]{V}\sqrt{3}}$

$Af = a^2$ $Af = (\sqrt[3]{V})^2$ $Af = \sqrt[3]{V^2}$

$At = 6Af$ $At = 6\sqrt[3]{V^2}$

$\sqrt{8.35.76}$ | 289

4 | $2 \times 2 = 4$

43.5 | $48 \times 8 = 384$

384 | $2 \times 28 = 56$

517.6 | $569 \times 9 = 5121$

5121 | 55

$\sqrt[3]{175.616}$ | 56

125 | $5^2 \times 3 = 75$

50616 | $56^3 = 175.616$

175616 | 0

$\sqrt[3]{78.912.356}$ | 428

64 | $4^2 \times 3 = 48$

14912 | $42^3 = 74088$

74088 | $42^2 \times 3 = 5292.$

4824356 | $428^3 = 78402752$

78402752 | 509594

$\sqrt[3]{0,000.000.064}$ | 0,004

$\sqrt[4]{0,0000.0000.0004}$ | 0,002

$\sqrt[4]{987.5427.1245}$ |

Calcular todos os elementos de um cubo, sabendo-se que o seu volume é igual a $0,064\ dm^3$ $V = 0,064\ dm^3$.

$a = \sqrt[3]{V}$ $a = \sqrt[3]{0,064}$ $a = 0,4\ dm$.

$Sa = 12\sqrt[3]{V}$ $Sa = 12\sqrt[3]{0,064}$ $Sa = 12 \cdot 0,4$

$\boxed{Sa = 4,8\ dm}$

$d = \sqrt[3]{V}\sqrt{2}$ $d = \sqrt[3]{0,064}\sqrt{2}$ $d = 0,4 \times 1,414$

$\boxed{d = 0,5656\ dm}$

$Sd = 12\sqrt[3]{V}\sqrt{2}$ $Sd = 12 \times \sqrt[3]{0,064} \times 1,414$

$Sd = 12 \times 0,4 \times 1,414$ $\underline{Sd = 6,7876\ dm}$.

$D = \sqrt[3]{V}\sqrt{3}$ $D = \sqrt[3]{0,064}\sqrt{3}$ $D = 0,4 \times 1,732$

$\underline{D = 0,6928}$.

$SD = 4\sqrt[3]{V}\sqrt{3}$ $SD = 4\sqrt[3]{0,064}\sqrt{3}$

$SD = 4 \times 0,4 \times 1,732$ $SD = 2,7712\ dm$

$Af = \sqrt[3]{V^2}$ $Af = \sqrt[3]{0,064^2}$ $Af = \sqrt[3]{0,004096}$

$At = 6\sqrt[3]{0,004096}$

10/8/62.

Calcular o volume de um cubo, sabendo-se que a sua diagonal de sua face é $5\sqrt{2}\ dm$.

$d = a\sqrt{2}$ $a\sqrt{2} = 5\sqrt{2}$ $a = 5$

$V = a^3$ $V = 5^3$ $V = 125\ dm^3$.

Calcular a área total de um cubo, sabendo-se que a diagonal do mesmo cubo é igual a $10\sqrt{3}\ dm$.

$D = 10\sqrt{3}$ $D = a\sqrt{3}$

$a\sqrt{3} = 10\sqrt{3}$ $a = 10$

$At = 6a^2$. $At = 6 \times 10^2$ $At = 600\ dm^2$.

O Volume de um cubo é igual a $0,000729\ cm^3$. Calcular a soma das arestas.

$a = \sqrt[3]{V}$ $a = \sqrt[3]{0,000729} = 0,09$.

$Sa = 12a$ $Sa = 12 \times 0,09$ $Sa = 1,08\ cm$.

Calcular a área total de um cubo, sabendo-se que a soma da aresta com a diagonal da face é igual a $2,414\ dm$.

$a + d = 2,414\ dm$.

$d = a\sqrt{2}$ $a + a\sqrt{2} = 2,414$

$a(1+\sqrt{2}) = 2,414$ $a = \frac{2,414}{1+\sqrt{2}}$.

$a = \frac{2,414}{1+1,414}$ $a = \frac{2,414}{2,414}$ $a = 1$

$At = 6a^2$ $At = 6 \times 1^2$ $At = 6\ dm^2$.

Calcular o volume de um cubo, sabendo-se que a soma da aresta com a sua diagonal é: 2,732 dm.

$a + D = 2{,}732$ dm

$a + a\sqrt{3} = 2{,}732$ dm

$a(1+\sqrt{3}) = 2{,}732$

$a = \frac{2{,}732}{1+\sqrt{3}}$ $a = \frac{2{,}732}{1+1{,}732}$ $a = \frac{2{,}732}{2{,}732}$

$a = 1$. $V = a^3$ $V = 1^3$ $V = 1\ dm^3$.

Calcular a diagonal do cubo, sabendo-se que a sua área total e o volume são expressos pelos mesmos valor numérico absoluto, respectivamente em dm^3 e dm^2.

$V = a^3$ $\frac{a^3}{a^2} = 6$ $a = 6$

$At = 6a^2$

$D = a\sqrt{3}$ $D = 6 \times 1{,}732$. $D = 10{,}39$ dm.

Calcular o volume de um cubo, sabendo-se que a área da face e a aresta são representado pelo mesmo valor numérico absoluto, respectivamente: em dm^2 e dm^3.

$Af = a^2$ $\frac{a^2}{a} = \frac{a}{a}$ $a = 1$.

$a^2 = a$

$V = a^3$ $V = 1^3$ $V = 1\ dm^3$.

A diagonal da face de um cubo é igual a 8 dm. Calcular a área total.

$d^2 = a^2 + a^2$ $d^2 = 2a^2$.

$8^2 = a^2 + a^2$ $8^2 = 2a^2$

$a^2 = \frac{64}{2}$ $a^2 = 32$.

$At = 6a^2$ $At = 6 \times 32$. $At = 192\ dm^2$.

13/8/62.

Octaedro regular.

12 arestas, 8 faces Δ

24 medianas, 3 diagonais

a = aresta.

Sa = soma das arestas

m = mediana da face

Sm = soma das medianas das faces.

D = diagonal

SD = soma das diagonais

Af = área da face.

At = área total

V = volume.

$Sa = 12a$

~~$At =$~~ $At = 8Af$.

$Sm = 24m$.

$SD = 3D$.

Calcular todos os elementos de um octaedro regular, em função da aresta a.

$\boxed{Sa = 12a}$

$m^2 = a^2 - \left(\frac{a}{2}\right)^2$.

$m^2 = a^2 - \frac{a^2}{4}$

$m^2 = \frac{4a^2 - a^2}{4}$

$m^2 = \frac{3a^2}{4}$

$\boxed{m = \frac{a\sqrt{3}}{2}}$

$Sm = 24m$. $Sm = \frac{24}{1} \times \frac{a\sqrt{3}}{2}$ $\boxed{Sm = 12a\sqrt{3}}$

$D^2 = a^2 + a^2$ $D^2 = 2a^2$ $\boxed{D = a\sqrt{2}}$

$SD = 3D$ $\boxed{SD = 3a\sqrt{2}}$

$Af = \frac{a \times m}{2}$ $Af = \frac{a \times \frac{a\sqrt{3}}{2}}{2}$ $\boxed{Af = \frac{a^2\sqrt{3}}{4}}$

$At = 8Af$ $At = 8\frac{a^2\sqrt{3}}{4}$ $\boxed{At = 2a^2\sqrt{3}}$

Volume da pirâmide = $\frac{\text{área da base} \times \text{altura}}{3}$

$V = \frac{\text{área da base} \times \text{altura}}{3}$

$V = \frac{\text{área da base} \times 2\text{alturas}}{3}$.

área da base = a^2.

2 alturas = $2H = D$.

$V = \frac{a^2 \times D}{3}$ $V = \frac{a^2 \times a\sqrt{2}}{3}$ $V = \frac{a^3\sqrt{2}}{3}$.

14/8/62. $a = 2\,dm$.

$Sa = 12a$ $Sm = 24m$.

$SD = 3D$ $At = 8Af$. $m = \frac{a\sqrt{3}}{2}$.

$Sm = 12a\sqrt{3}$ $D = a\sqrt{2}$.

$SD = 3a\sqrt{2}$. $Af = \frac{a^2\sqrt{3}}{4}$

$At = 2a^2\sqrt{3}$ $V = \frac{a^3\sqrt{2}}{3}$

$Sa = 12a = 12 \times 2$ $Sa = 24\,dm$.

$m = \frac{a\sqrt{3}}{2} \therefore m = \frac{3 \times 1{,}732}{2}$ $m = 1{,}732\,dm$

$Sm = 12a\sqrt{3}$ $Sm = 12 \times 2 \times 1{,}732 = 41{,}568\,dm$.

$D = a\sqrt{2}$ $D = 2 \times 1{,}414$ $D = 2{,}828\,dm$.

$SD = 3a\sqrt{2}$ $SD = 3 \times 2 \times 1{,}414$ $SD = 8{,}484\,dm$.

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{4 \times 1{,}732}{4}$ $Af = 1{,}732\,dm^2$.

$At = 2a^2\sqrt{3}$ $At = 2 \times 4 \times 1{,}732$ $At = 13{,}856\,dm^2$.

$V = \frac{a^3\sqrt{2}}{3}$ $V = \frac{8 \times 1{,}414}{3}$ $V = 3{,}77\,dm^3$.

Calcular todos os elementos de um octaedro regular em função da soma das arestas Sa.

$Sa = 12a$ $\quad \boxed{a = \frac{Sa}{12}}$

$m = \frac{a\sqrt{3}}{2}$ $\quad m = \frac{\frac{Sa}{12} \times \sqrt{3}}{2}$ $\quad \boxed{m = \frac{Sa\sqrt{3}}{24}}$

$Sm = 24m$ $\quad Sm = 24 \frac{Sa\sqrt{3}}{24}$

$\boxed{Sm = Sa\sqrt{3}}$

$D = a\sqrt{2}$ $\quad \boxed{D = \frac{Sa\sqrt{2}}{12}}$

$SD = 3D$ $\quad SD = 3 \times \frac{Sa\sqrt{2}}{12}$ $\quad \boxed{SD = \frac{Sa\sqrt{2}}{4}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $\quad Af = \frac{\left(\frac{Sa}{12}\right)^2\sqrt{3}}{4}$ $\quad Af = \frac{\frac{Sa^2}{144}\sqrt{3}}{4}$

$\boxed{Af = \frac{Sa^2\sqrt{3}}{576}}$

$At = 8Af$ $\quad At = 8 \times \frac{Sa^2\sqrt{3}}{576}$ $\quad \boxed{At = \frac{Sa^2\sqrt{3}}{72}}$

$V = \frac{a^3\sqrt{2}}{3}$ $\quad V = \frac{\left(\frac{Sa}{12}\right)^3\sqrt{2}}{3}$ $\quad V = \frac{\frac{Sa^3}{1728} \times \sqrt{2}}{3}$

$\boxed{V = \frac{Sa^3\sqrt{2}}{5184}}$

Calcular todos os elementos de um octaedro regular em função da mediana da face: m.

$m = \frac{a\sqrt{3}}{2}$ $\quad 2m = a\sqrt{3}$.

$a = \frac{2m}{\sqrt{3}}$ $\quad a = \frac{2m\sqrt{3}}{\sqrt{3}\sqrt{3}}$ $\quad \boxed{a = \frac{2m\sqrt{3}}{3}}$

$Sa = 12a$ $\quad Sa = 12 \times \frac{2m\sqrt{3}}{3}$ $\quad \boxed{Sa = 8m\sqrt{3}}$

$\boxed{Sm = 24m}$

$D = a\sqrt{2}$ $\quad D = \frac{2m\sqrt{3}\sqrt{2}}{3}$ $\quad \boxed{D = \frac{2m\sqrt{6}}{3}}$

$SD = 3D$ $\quad SD = 3\frac{2m\sqrt{6}}{3}$ $\quad \boxed{SD = 2m\sqrt{6}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $\quad Af = \frac{\left(\frac{2m\sqrt{3}}{3}\right)^2\sqrt{3}}{4}$ $\quad Af = \frac{\frac{4m^2 \cdot 3}{9}\sqrt{3}}{4}$

$Af = \frac{4m^2 \times 3\sqrt{3}}{36 \cdot 3}$ $\quad \boxed{Af = \frac{m^2\sqrt{3}}{3}}$

$At = 8Af$ $\quad At = 8 \times \frac{m^2\sqrt{3}}{3}$ $\quad \boxed{At = \frac{8m^2\sqrt{3}}{3}}$

$V = \frac{a^3\sqrt{2}}{3}$ $\quad V = \frac{\left(\frac{2m\sqrt{3}}{3}\right)^3\sqrt{2}}{3}$ $\quad V = \frac{\frac{8m^3 \cdot 3\sqrt{3}}{27}\sqrt{2}}{3}$

$V = \frac{8m^3 \times \cancel{3}\sqrt{3}\sqrt{2}}{\cancel{81}\,27}$ $\quad \boxed{V = \frac{8m^3\sqrt{6}}{27}}$

17/8/62.

$Sa = 12a$ $Sm = 24m$.

$SD = 3D$ $At = 8Af$ $m = \frac{a\sqrt{3}}{2}$

$Sm = 12a\sqrt{3}$ $D = a\sqrt{2}$

$SD = 3a\sqrt{2}$ $Af = \frac{a^2\sqrt{3}}{4}$

$At = 2a^2\sqrt{3}$ $V = \frac{a^3\sqrt{2}}{3}$

$Sm = 12a\sqrt{3}$ $a = \frac{Sm}{12\sqrt{3}}$

$a = \frac{Sm\sqrt{3}}{12\times\sqrt{3}\times\sqrt{3}}$ $\boxed{a = \frac{Sm\sqrt{3}}{12\times 3}}$

$Sa = 12a$ $Sa = 12 \times \frac{Sm\sqrt{3}}{36}$

$\boxed{Sa = \frac{Sm\sqrt{3}}{3}}$

$Sm = 24m$ $\boxed{m = \frac{Sm}{24}}$

$D = a\sqrt{2}$ $D = \frac{Sm\sqrt{3}}{36} \times \sqrt{2}$ $\boxed{D = \frac{Sm\sqrt{6}}{36}}$

$SD = 3D$ $SD = 3\frac{Sm\sqrt{6}}{36}$ $\boxed{SD = \frac{Sm\sqrt{6}}{12}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{\left(\frac{Sm\sqrt{3}}{36}\right)^2\sqrt{3}}{4}$ $Af = \frac{\frac{Sm^2\times 3\sqrt{3}}{36\times 36}}{4}$

$Af = \frac{Sm^2\times 3\sqrt{3}}{\frac{36}{12}\times 36\times 4}$ $\boxed{Af = \frac{Sm^2\times\sqrt{3}}{1728}}$

$At = 8Af$ $At = 8\frac{Sm^2\times\sqrt{3}}{1728}$ $\boxed{At = \frac{Sm^2\sqrt{3}}{216}}$.

$V = \frac{a^3\sqrt{2}}{3}$ $V = \frac{\left(\frac{Sm\sqrt{3}}{36}\right)^3\sqrt{2}}{3}$ $V = \frac{\frac{Sm^3\times 3\times\sqrt{3}}{36\times 36\times 36}\sqrt{2}}{3}$.

$V = \frac{Sm^3\times 3\sqrt{6}}{36\times 36\times 36\times 3}$ $V = \frac{Sm^3\sqrt{6}}{36^3}$ $\boxed{V = \frac{Sm^3\sqrt{6}}{46656}}$

20/8/62.

$Sa = 12a$ $Sm = 24m$.

$SD = 3D$ $At = 8Af$.

$m = \frac{a\sqrt{3}}{2}$ $Sm = 12a\sqrt{3}$

$D = a\sqrt{2}$ $SD = 3a\sqrt{2}$

$Af = \frac{a^2\sqrt{3}}{4}$

SD

$SD = 3a\sqrt{2}$. $a = \frac{SD}{3\sqrt{2}}$ $a = \frac{SD\sqrt{2}}{3\times 2}$ $\boxed{a = \frac{SD\sqrt{2}}{6}}$

$Sa = 12a$. $Sa = 12\frac{SD\sqrt{2}}{6}$ $\boxed{Sa = 2SD\sqrt{2}}$.

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{SD\sqrt{2}}{6}\times\sqrt{3}}{2}$ $\boxed{M = \frac{SD\sqrt{6}}{12}}$

$Sm = 24m$. $Sm = 24\times\frac{SD\sqrt{6}}{12}$ $\boxed{Sm = 2SD\sqrt{6}}$

$SD = 3D$ $\boxed{D = \frac{SD}{3}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{\left(\frac{SD\sqrt{2}}{6}\right)^2\sqrt{3}}{4}$ $Af = \frac{\frac{SD^2\times 2}{36}\sqrt{3}}{4}$

$Af = \frac{SD^2\times 2\times\sqrt{3}}{144}$ $\boxed{Af = \frac{SD^2\sqrt{3}}{72}}$

$At = 8Af$ $At = 8\frac{SD^2\sqrt{3}}{72}$ $\boxed{At = \frac{SD^2\sqrt{3}}{9}}$

$V = \frac{a^3\sqrt{2}}{3}$ $V = \frac{\left(\frac{SD\sqrt{2}}{6}\right)^3\sqrt{2}}{3}$ $V = \frac{\frac{SD^3 \times 2\sqrt{2}}{216}\sqrt{2}}{3}$

$V = \frac{SD^3 \times 2 \times 2}{216 \times 3}$ $V = \frac{SD^3}{162}$

Calcular todos os elementos de um octaedro regular, sabendo-se que a soma das diagonais é igual a $3\sqrt{2}$ dm. $SD = 3\sqrt{2}$ dm

$a = \frac{SD\sqrt{2}}{6}$ $a = \frac{3\sqrt{2}\sqrt{2}}{6}$ $a = \frac{6}{6}$ $\boxed{a = 1 \text{ dm}}$

$m = \frac{SD\sqrt{6}}{12} = \frac{3\sqrt{2}\sqrt{2}\sqrt{3}}{12} = \frac{\sqrt{3}}{2} = \frac{1,732}{2} = \boxed{0,866 \text{ dm}}$

$Sm = 2SD\sqrt{6}$ $Sm = 2 \times 3\sqrt{2} \times \sqrt{3} \times \sqrt{2}$.

$Sm = 12\sqrt{3}$ $Sm = 12 \times 1,732$. $Sm = 20,784$ dm.

$Sa = 2SD\sqrt{2}$. $Sa = 2 \times 3 \times \sqrt{2} \times \sqrt{2}$.

$Sa = 12$ dm.

$Af = \frac{SD^2\sqrt{3}}{72}$ $Af = \frac{(3\sqrt{2})^2\sqrt{3}}{72}$ $Af = \frac{1}{\cancel{8}\cancel{4}} \frac{\cancel{18} \times \sqrt{3}}{\cancel{72}}$

$Af = \frac{\sqrt{3}}{4}$ $Af = 0,433$ dm^2.

$At = \frac{SD^2\sqrt{3}}{9}$ $At = \frac{(3\sqrt{2})^2\sqrt{3}}{9}$ $At = \frac{\cancel{18} \times 2 \times \sqrt{3}}{\cancel{9}\ 1}$

$At = 3,464$ dm^2.

$V = \frac{SD^3}{162}$ $V = \frac{(3\sqrt{2})^3}{162}$ $V = \frac{\cancel{27} \times 2\sqrt{2}}{\cancel{162}\ \cancel{6}_3}$ $V = \frac{\sqrt{2}}{3}$

$V = \frac{1,414}{3}$ $V = 0,471$ dm^3.

$D = \frac{SD}{3}$ $D = \frac{3\sqrt{2}}{3}$ $D = \sqrt{2}$ $D = 1,414$ dm.

27/8/62.

$Sa = 12a$. $SD = 3D$

$Sm = 24m$. $At = 8Af$.

$m = \frac{a\sqrt{3}}{2}$ $Sm = 12a\sqrt{3}$.

$D = a\sqrt{2}$ $SD = 3a\sqrt{2}$.

$Af = \frac{a^2\sqrt{3}}{4}$ $At = 2.a^2\sqrt{3}$.

$Af = \frac{a^2\sqrt{3}}{4}$ $\frac{Af}{}$

$4Af = a^2\sqrt{3}$. $a^2 = \frac{4Af}{\sqrt{3}}$.

$a^2 = \frac{4Af\sqrt{3}}{\sqrt{3}\sqrt{3}}$ $a^2 = \frac{4Af\sqrt{3}}{3}$ $a = \sqrt{\frac{4Af\sqrt{3}}{3}}$

$a = \frac{\sqrt{4Af\sqrt{3}}\sqrt{3}}{\sqrt{3}\sqrt{3}}$ $a = \frac{\sqrt{12Af\sqrt{3}}}{3}$

$a = \frac{\sqrt{4 \cancel{3} 3Af\sqrt{3}}}{3}$ $\boxed{a = \frac{2\sqrt{3Af\sqrt{3}}}{3}}$

$Sa = 12a$. $Sa = 12 \times \frac{2\sqrt{3Af\sqrt{3}}}{3}$

$\boxed{Sa = 8\sqrt{3Af\sqrt{3}}}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{2\sqrt{3Af\sqrt{3}}}{3} \times \sqrt{3}}{2.}$

$m = \frac{2\sqrt{9Af\sqrt{3}}}{6}$ $m = \frac{6\sqrt{Af\sqrt{3}}}{6}$ $\boxed{m = \sqrt{Af\sqrt{3}}}$

$SM. = 24m$ $\boxed{Sm = 24\sqrt{Af\sqrt{3}}}$

$D = a\sqrt{2}$. $D = \frac{2\sqrt{3Af\sqrt{3}}\sqrt{2}}{3}$

$\boxed{D = \frac{2\sqrt{6Af\sqrt{3}}}{3}}$

$SD = 3D$ $SD = 3 \times \frac{2\sqrt{6Af\sqrt{3}}}{3}$

$\boxed{SD = 2\sqrt{6Af\sqrt{3}}}$

$\boxed{At = 8Af.}$

$V = \frac{a^3\sqrt{2}}{3}$ $V = \frac{\left(\frac{2\sqrt{3Af\sqrt{3}}}{3}\right)^3\sqrt{2}}{3}$.

$V = \frac{\frac{8\sqrt{2}7Af^3 \times 3\times\sqrt{3}}{27} \times \sqrt{2}}{3}$

$V = \frac{8\sqrt{81Af^3\sqrt{3}} \times \sqrt{2}}{81}$. $V = \frac{72.Af\sqrt{2Af\sqrt{3}}}{81}$

$\boxed{V = \frac{8Af\sqrt{2Af\sqrt{3}}}{9}}$

$At = 2a^2\sqrt{3}$ $a^2 = \frac{At}{2\sqrt{3}}$ AT

$a^2 = \frac{At\sqrt{3}}{2\sqrt{3}\sqrt{3}}$ $a^2 = \frac{At\sqrt{3}}{2\times3}$ $a^2 = \frac{At\sqrt{3}}{6}$

$a = \frac{\sqrt{At\sqrt{3}}}{\sqrt{6}}$ $\boxed{a = \frac{\sqrt{6At\sqrt{3}}}{6}}$

$Sa = 12a$ $\boxed{Sa = 12.\frac{\sqrt{6At\sqrt{3}}}{6}}$

$\boxed{Sa = 2\sqrt{6At\sqrt{3}}}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\sqrt{6At\sqrt{3}} \times \sqrt{3}}{2.}$

$m = \frac{\sqrt{18At\cdot\sqrt{3}}}{12}$ $m = \frac{3\sqrt{2At\sqrt{3}}}{12.}$ $\boxed{m = \frac{\sqrt{2At\sqrt{3}}}{4}}$

$Sm = 24m$ $Sm = 24\frac{\sqrt{2At\sqrt{3}}}{4}$

$Sm = 6\sqrt{2At\sqrt{3}}$

$D = a\sqrt{2}$ $D = \frac{\sqrt{6At\sqrt{3}} \times \sqrt{2}}{6}$ $D = \frac{\sqrt{12At\sqrt{3}}}{6}$

$D = \frac{2\sqrt{3At\sqrt{3}}}{6}$ $\boxed{D = \frac{\sqrt{3At\sqrt{3}}}{3}}$

$SD = 3D$ $SD = 3\frac{\sqrt{3At\sqrt{3}}}{3}$

$\boxed{SD = \sqrt{3At\sqrt{3}}.}$

$V = \frac{a^3\sqrt{2}}{3}$ $V = \frac{\left(\frac{\sqrt{6AT\sqrt{3}}}{6}\right)^3\sqrt{3}}{3}$

$V = \frac{\frac{\sqrt{216AT^3\times3\times\sqrt{3}}}{216} \times \sqrt{3}}{3}$ $V = \frac{\sqrt{36\times6\times9\times AT^3\times\sqrt{3}}}{216\times3}$

$V = \frac{6\times3AT\sqrt{6AT\sqrt{3}}}{216\times3}$ $\boxed{V = \frac{AT\sqrt{6AT\sqrt{3}}}{36}}$

28/8/62.

$Sa = 12a$. $Sm = 24m$.

$SD = 3D$ $At = 8Af$.

$m = \frac{a\sqrt{3}}{2}$ $Sm = 12a\sqrt{3}$.

$D = a\sqrt{2}$. $SD = 3a\sqrt{3}$.

$Af = \frac{a^2\sqrt{3}}{4}$ $At = 2a^2\sqrt{3}$.

V

$V = \frac{a^3\sqrt{2}}{3}$ $3V = a^3\sqrt{2}$ $a^3 = \frac{3V}{\sqrt{2}}$.

$a^3 = \frac{3V\sqrt{2}}{2}$ $a = \frac{\sqrt[3]{3xV\cdot\sqrt{2}}}{\sqrt[3]{2}}$

$a = \frac{\sqrt[3]{3V\sqrt{2}}\ \sqrt[3]{4}}{\sqrt[3]{2}\ \sqrt[3]{4}}$ $a = \frac{\sqrt[3]{12V\sqrt{2}}}{\sqrt[3]{8}}$

$$\boxed{a = \frac{\sqrt[3]{12V\sqrt{2}}}{2}}$$

$Sa = 12a$ $Sa = 12\frac{\sqrt[3]{12V\sqrt{2}}}{2}$

$$\boxed{Sa = 6\sqrt[3]{12V\sqrt{2}}}$$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{\sqrt[3]{12V\sqrt{2}}}{2}x\sqrt{3}}{2}$

$$\boxed{m = \frac{\sqrt[3]{12V\sqrt{2}}\sqrt{3}}{4}}$$

$Sm = 24m$ $Sm = 24\frac{\sqrt[3]{12V\sqrt{2}}\sqrt{3}}{4}$

$$\boxed{Sm = 6\sqrt[3]{12V\sqrt{2}}\sqrt{3}}$$

$D = a\sqrt{2}$ $\boxed{D = \frac{\sqrt[3]{12V\sqrt{2}}\sqrt{2}}{2}}$ $\sqrt{2}$.

$SD = 3D$ $\boxed{SD = \frac{3\sqrt[3]{12V\sqrt{2}}\sqrt{2}}{2}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{\left(\frac{\sqrt[3]{12V\sqrt{2}}}{2}\right)^2\sqrt{3}}{4}$

$Af = \frac{\frac{\sqrt[3]{144V^2x2}}{4}x\sqrt{3}}{4}$ $Af = \frac{\sqrt[3]{8x36V^2}\sqrt{3}}{16}$

$Af = \frac{2\sqrt[3]{36V^2}\sqrt{3}}{16}$ $\boxed{Af = \frac{\sqrt[3]{36V^2}\sqrt{3}}{8}}$

$At = 8Af$ $At = 8\frac{\sqrt[3]{36V^2}\sqrt{3}}{8}$

$$\boxed{At = \sqrt[3]{36V^2}\sqrt{3}.}$$

Tetraedro

4 faces 6 arestas 12 medianas
4 alturas. (da face)

a = aresta.
Sa = soma das arestas.
m = mediana da face
Sm = soma das medianas da face.
H = altura
SH = soma das alturas.
Af = área da face.
At = área total
V = volume.

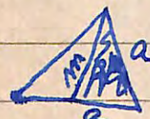
$S_a = 6a$ $S_m = 12m$.

$S_h = 4h$. $A_t = 4A_f$.

29/8/62.

a

$S_a = 6a$



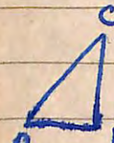
$m^2 = a^2 - \left(\frac{a}{2}\right)^2$.

$m^2 = a^2 - \frac{a^2}{4}$ $m^2 = \frac{4a^2 - a^2}{4}$

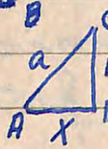
$m^2 = \frac{3a^2}{4}$ $\boxed{m = \frac{a\sqrt{3}}{2}}$

$S_m = 12m$ $S_m = 12 \cdot \frac{a\sqrt{3}}{2}$.

$\boxed{S_m = 6a\sqrt{3}}$



$\frac{1}{2}m = q$ $q = \frac{2}{3}$ de m. $q = \frac{2}{3} \times m$.



$H^2 = a^2 - q^2$.

$q = \frac{2}{3} \times \frac{a\sqrt{3}}{2}$ $q = \frac{a\sqrt{3}}{3}$

$H^2 = a^2 - \left(\frac{a\sqrt{3}}{3}\right)^2$ $H^2 = a^2 - \frac{3a^2}{9}$

$H^2 = \frac{9a^2 - 3a^2}{9}$ $H^2 = \frac{6a^2}{9}$ $\boxed{H = \frac{a\sqrt{6}}{3}}$

$S_H = 4H$ $\boxed{S_H = \frac{4a\sqrt{6}}{3}}$

$A_f = \frac{a \times \frac{a\sqrt{3}}{2}}{2}$ $\boxed{A_f = \frac{a^2\sqrt{3}}{4}}$

$A_t = 4A_f$ $A_t = 4 \times \frac{a^2\sqrt{3}}{4}$ $\boxed{A_t = a^2\sqrt{3}}$

$V = \frac{a^3\sqrt{2}}{12}$

$V = \frac{\text{área da base} \times \text{altura}}{3}$

$V = \frac{\frac{a^2\sqrt{3}}{4} \times \frac{a\sqrt{6}}{3}}{3}$ $V = \frac{a^3\sqrt{18}}{4 \times 3 \times 3}$ $V = \frac{3a^2\sqrt{2}}{36}$.

$\boxed{V = \frac{a^3\sqrt{2}}{12}}$

Calcular todos os elementos de um tetraedro regular, sabendo-se que a aresta mede $\sqrt{3}$ dm.

$S_a = 6a$ $S_a = 6 \times \sqrt{3}$ $S_a = 6 \times 1{,}732$.

$\boxed{S_a = 10{,}392 \text{ dm}}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\sqrt{3}\sqrt{3}}{2}$ $m = \frac{3}{2}$

$\boxed{m = 1{,}5 \text{ dm}}$

$S_m = 6a\sqrt{3}$ $S_m = 6 \times \sqrt{3}\sqrt{3}$

$S_m = 6 \times 3$ $\boxed{S_m = 18 \text{ dm}}$

$S_H \frac{4a\sqrt{6}}{3}$ $S_H = \frac{4\sqrt{3}\sqrt{6}}{3}$ $S_H = \frac{4\sqrt{18}}{4}$ $S_H = \frac{4 \times 3\sqrt{2}}{3}$

$S_H = \frac{4\sqrt{2}}{3}$ $S_H = 4 \times 1{,}414$ $\boxed{S_H = 5{,}656 \text{ dm}}$

$H = \frac{a\sqrt{6}}{3} = \frac{\sqrt{3}\sqrt{6}}{3} = \frac{\sqrt{18}}{3} = \frac{3\sqrt{2}}{3} = \sqrt{2} = \boxed{1{,}414 \text{ dm}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{(\sqrt{3})^2\sqrt{3}}{4}$ $Af = \frac{3 \times 1,732}{4}$

$\boxed{Af = 1,299\ dm^2}$

$At = a^2\sqrt{3}$ $At = (\sqrt{3})^2\sqrt{3}$

$At = 3 \times 1,732$ $\boxed{At = 5,196\ dm^2}$

$V = \frac{a^3\sqrt{2}}{12}$ $V = \frac{(\sqrt{3})^3\sqrt{2}}{12}$ $V = \frac{3\sqrt{3}\sqrt{2}}{12}$

$V = \frac{\sqrt{3}\sqrt{2}}{4}$ $V = \frac{1,732 \times 1,414}{4}$

$V = 0,866 \times 0,707$ $\boxed{V = 0,612262\ dm^3}$

Calcular todos os elementos de um tetraedro em função da soma das arestas SA $SA = 6a$.

$\boxed{a = \frac{Sa}{6}}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{Sa}{6}\sqrt{3}}{2}$ $\boxed{m = \frac{Sa\sqrt{3}}{12}}$

$Sm = 12m.$ $Sm = 12 \times \frac{Sa\sqrt{3}}{12}$

$\boxed{Sm = Sa\sqrt{3}}$

$H = \frac{a\sqrt{6}}{3}$ $H = \frac{\frac{Sa}{6} \times \sqrt{6}}{3}$ $\boxed{H = \frac{Sa\sqrt{6}}{18}}$

$SH = 4H$ $SH = 4\frac{Sa\sqrt{6}}{18}$ $\boxed{SH = \frac{2Sa\sqrt{6}}{9}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{(\frac{Sa}{6})^2\sqrt{3}}{4}$

$\boxed{Af = \frac{Sa^2\sqrt{3}}{144}}$

$At = 4Af$ $At = 4 \times \frac{Sa^2\sqrt{3}}{144}$ $\boxed{At = \frac{Sa^2\sqrt{3}}{36}}$

$V = \frac{a^3\sqrt{2}}{12}$ $V = \frac{(\frac{Sa}{6})^3\sqrt{2}}{12}$ $\boxed{V = \frac{Sa^3\sqrt{2}}{2592}}$

m

$m = \frac{a\sqrt{3}}{2}$ $2m = a\sqrt{3}$

$a = \frac{2m}{\sqrt{3}}$ $\boxed{a = \frac{2m\sqrt{3}}{3}}$

$Sa = 6a$ $Sa = 6\frac{2m\sqrt{3}}{3}$ $\boxed{Sa = 4m\sqrt{3}.}$

$H = \frac{a\sqrt{6}}{3}$ $H = \frac{\frac{2m\sqrt{3}}{3} \times \sqrt{6}}{3}$

$H = \frac{2m\sqrt{3} \times \sqrt{6}}{9}$ $H = \frac{2m\sqrt{18}}{9}$ $H = \frac{6m\sqrt{2}}{9}$

$\boxed{H = \frac{2m\sqrt{2}}{3}}$

$SH = 4H.$ $SH = 4\frac{2m\sqrt{2}}{3}$ $\boxed{SH = \frac{8m\sqrt{2}}{3}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{(\frac{2m\sqrt{3}}{3})^2\sqrt{3}}{4}$

$Af = \frac{\frac{4m^2 \cdot 3}{9}\sqrt{3}}{4}$ $Af = \frac{4m^2 \cdot 3\sqrt{3}}{9 \times 4}$ $\boxed{Af = \frac{m^2\sqrt{3}}{3}}$

$At = 4Af$ $At = 4\frac{m^2\sqrt{3}}{3}$ $\boxed{At = \frac{4m^2\sqrt{3}}{3}}$

$V = \frac{a^3\sqrt{2}}{12}$ $V = \frac{\left(\frac{2m\sqrt{3}}{3}\right)^3}{12}\sqrt{2}$ $V = \frac{\frac{8m^3 \times 3\sqrt{3}}{27}\sqrt{2}}{12}$

$V = \frac{\frac{8}{9}m^3 \times \frac{1}{3}\sqrt{6}}{\frac{27}{9} \times 12 \cdot 3} = \boxed{\frac{2m^3\sqrt{6}}{27}}$

$Sm = 6a\sqrt{3}$ $a = \frac{Sm}{6\sqrt{3}}$ $\boxed{a = \frac{Sm\sqrt{3}}{18}}$

$Sa = 6a$ $sa = 6\frac{Sm\sqrt{3}}{18}$ $\boxed{sa = \frac{Sm\sqrt{3}}{3}}$

$Sm = 12m$ $\boxed{m = \frac{Sm}{12}}$

$H = \frac{a\sqrt{6}}{3}$ $H = \frac{\frac{Sm\sqrt{3}}{18}\sqrt{6}}{3}$ $H = \frac{Sm\sqrt{18}}{54}$

$H = \frac{3Sm\sqrt{2}}{54}$ $\boxed{H = \frac{Sm\sqrt{2}}{18}}$

$SH = 4H$ $SH = 4\frac{Sm\sqrt{2}}{18}$ $\boxed{SH = \frac{2Sm\sqrt{2}}{9}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{\left(\frac{Sm\sqrt{3}}{18}\right)^2\sqrt{3}}{4}$ $Af = \frac{\frac{Sm^2 \times 3}{18 \times 18}\sqrt{3}}{4}$

$Af = \frac{Sm^2 \times 3\sqrt{3}}{4 \times 18 \times 18}$ $\boxed{Af = \frac{Sm^2\sqrt{3}}{432}}$

$At = 4Af$ $At = 4\frac{Sm^2\sqrt{3}}{432}$ $\boxed{At = \frac{Sm^2\sqrt{3}}{432}}$

31/8/162.

$Sa = 6a$. $Sm = 12m$. $SH = 4H$.

$At = 4Af$

$m = \frac{a\sqrt{3}}{2}$ $Sm = 6a\sqrt{3}$.

$H = \frac{a\sqrt{6}}{3}$ $SH = \frac{4a\sqrt{6}}{3}$ $Af = \frac{a^2\sqrt{3}}{4}$

$At = a^2\sqrt{3}$.

$V = \frac{a^3\sqrt{2}}{12}$.

H:

$H = \frac{a\sqrt{6}}{3}$ $3H = a\sqrt{6}$ $a = \frac{3H}{\sqrt{6}}$

$a = \frac{3H\sqrt{6}}{6}$ $\boxed{a = \frac{H\sqrt{6}}{2}}$

$Sa = 6a$ $sa = 6\frac{H\sqrt{6}}{2}$ $\boxed{Sa = 3H\sqrt{6}}$

$\boxed{SH = 4H}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{H\sqrt{6}}{2}\sqrt{3}}{2}$ $m = \frac{H\sqrt{6}\sqrt{3}}{4}$

$m = \frac{H\sqrt{18}}{4}$ $\boxed{m = \frac{3H\sqrt{2}}{4}}$

$Sm = 12m$ $Sm = 12\frac{3H\sqrt{2}}{4}$

$\boxed{Sm = 9H\sqrt{2}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{\left(\frac{H\sqrt{6}}{2}\right)^2\sqrt{3}}{4}$

$Af = \frac{\frac{H^2 \times 6}{4}\sqrt{3}}{4}$ $Af = \frac{H^2 \times 6 \times \sqrt{3}}{16}$ $\boxed{Af = \frac{3H^2\sqrt{3}}{8}}$

$At = 4Af.$ $At = 4 \times \frac{3H^2\sqrt{3}}{8}$

$\boxed{At = \frac{3H^2\sqrt{3}}{2}}$

$V = \frac{a^3\sqrt{2}}{12}$ $V = \frac{\left(\frac{H\sqrt{6}}{2}\right)^3\sqrt{2}}{12}$ $V = \frac{\frac{H^3 \times 6 \times \sqrt{6}}{8}\sqrt{2}}{12}$

$V = \frac{6H^3\sqrt{12}}{8 \times 12}$ $V = \frac{H^3 \times 12\sqrt{3}}{8 \times 12}$ $\boxed{V = \frac{H^3\sqrt{3}}{8}}$

Calcular todos os elementos de um tetraedro, conhecendo-se h.

$H = \sqrt{6}\ dm.$

$a = \frac{H\sqrt{6}}{2}$ $a = \frac{\sqrt{6}\sqrt{6}}{2}$ $a = \frac{6}{2}$ $\boxed{a = 3\ dm}$

$Sa = 3H\sqrt{6}$ $Sa = 3\sqrt{6}\sqrt{6}$ $Sa = 3 \times 6$

$\boxed{Sa = 18\ dm}$

$m = \frac{3H\sqrt{6}}{4}$ $m = \frac{3\sqrt{6}\sqrt{6}}{4}$ $m = \frac{3\sqrt{6}}{2}$

$m = \frac{\frac{3H}{\sqrt{6}} \times \sqrt{3}}{2}$ $m = \frac{\frac{3\sqrt{6}\sqrt{6}}{6} \times \sqrt{3}}{2}$ $m = \frac{3 \times 6 \times \sqrt{3}}{12 \cdot 2}$

$m = \frac{3 \times \sqrt{3}}{2}$ $m = \frac{3 \times 1{,}732}{2}$ $\boxed{m = 2{,}598\ dm}$

$Sm = \frac{9}{4}H\sqrt{2}$ $Sm = 9\sqrt{6}\sqrt{2}$

$Sm = 9\sqrt{12}$ $Sm = 18\sqrt{3}$ $\boxed{Sm = 31{,}176\ dm}$

$SH = 4H$ $SH = 4 \times \sqrt{6}$ $SH = 4 \times \sqrt{3} \times \sqrt{2}.$

$\boxed{SH = 4 \times 1{,}732 \times 1{,}414 = 9{,}807}$

$Hf = \frac{3H^2\sqrt{3}}{8}$ $Af = \frac{3(\sqrt{6})^2\sqrt{3}}{8}$ $Af = \frac{3 \times 6 \times \sqrt{3}}{8}$

$Af = \frac{3 \times 3 \times \sqrt{3}}{4}$ $Hf = \frac{9 \times 1{,}732}{4}$ $\boxed{Af = 3{,}897\ dm^2}$

$At = \frac{3H^2\sqrt{3}}{2}$ $At = \frac{3(\sqrt{6})^2\sqrt{3}}{2}$ $At = \frac{3 \times 6 \times \sqrt{3}}{2}$

$At = \frac{3 \times 3 \times \sqrt{3}}{2}$ $At = 9 \times 1{,}732$ $\boxed{At = 15{,}588\ dm^2}$

$V = \frac{H^3\sqrt{3}}{8}$ $V = \frac{(\sqrt{6})^3\sqrt{3}}{8}$

$V = \frac{6\sqrt{6}\sqrt{3}}{8}$ $V = \frac{6\sqrt{18}}{8}$ $V = \frac{18\sqrt{2}}{8}$

$V = \frac{9\sqrt{2}}{4}$ $V = \frac{9 \times 1{,}414}{4}$ $V = \frac{12{,}726}{4}$

$\boxed{V = 3{,}182\ dm^3}$

4/9/62.

$Sa = 6a$ $\quad Sm = 12m.$

$SH = 4H$ $\quad AT = 4Af.$

$m = \frac{a\sqrt{3}}{2}$ $\quad Sm = 6a\sqrt{3}$

$H = \frac{a\sqrt{6}}{3}$ $\quad SH = 4\frac{a\sqrt{6}}{3}$

$Af = \frac{a^2\sqrt{3}}{4}$ $\quad AT = a^2\sqrt{3}$

$V = \frac{a^3\sqrt{2}}{12}$

$SH.$

$SH = \frac{4a\sqrt{6}}{3}$ $\quad 3SH = 4a\sqrt{6}$ $\quad a = \frac{3SH}{4\sqrt{6}}$

$a = \frac{3SH\sqrt{6}}{4\sqrt{6}\sqrt{6}}$ $\quad a = \frac{3SH\sqrt{6}}{4\times 6}$ $\quad \boxed{a = \frac{SH\sqrt{6}}{8}}$

$Sa = 6a$ $\quad Sa = 6\frac{SH\sqrt{6}}{8}$ $\quad \boxed{Sa = \frac{3SH\sqrt{6}}{4}}$

$m = \frac{a\sqrt{3}}{2}$ $\quad m = \frac{\frac{SH\sqrt{6}}{8}\sqrt{3}}{2}$ $\quad m = \frac{SH\sqrt{18}}{16}$

$\boxed{m = \frac{3SH\sqrt{2}}{16}}$

$Sm = 12m$ $\quad Sm = \frac{12\times 3SH\sqrt{2}}{16}$

$\boxed{Sm = \frac{9SH\sqrt{2}}{4}}$

$SH = 4H$ $\quad \boxed{H = \frac{SH}{4}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $\quad Af = \frac{\left(\frac{SH\sqrt{6}}{8}\right)^2\sqrt{3}}{4}$ $\quad Af = \frac{\frac{SH^2\times 6}{64}\sqrt{3}}{4}$

$Af = \frac{6SH\sqrt{3}}{64\times 4}$ $\quad \boxed{Af = \frac{3SH\sqrt{3}}{128}}$

$At = 4Af$ $\quad At = 4\frac{3SH\sqrt{3}}{128}$ $\quad \boxed{AT = \frac{3SH\sqrt{3}}{32}}$

$V = \frac{a^3\sqrt{2}}{12}$ $\quad V = \frac{\left(\frac{SH\sqrt{6}}{8}\right)^3\sqrt{2}}{12}$ $\quad V = \frac{SH^3\times 6\sqrt{6}\sqrt{2}}{512\times 12}.$

$V = \frac{SH^3\times 12\sqrt{3}}{512\times 12}$ $\quad \boxed{V = \frac{SH^3\sqrt{3}}{512}}$

Af

$Af = \frac{a^2\sqrt{3}}{4}$ $\quad 4Af = a^2\sqrt{3}$ $\quad a^2 = \frac{4Af}{\sqrt{3}}$

$a^2 = \frac{4Af\sqrt{3}}{\sqrt{3}\sqrt{3}}$ $\quad a = \frac{\sqrt{4Af\sqrt{3}}}{\sqrt{3}}$ $\quad a = \frac{\sqrt{4Af\sqrt{3}}\sqrt{3}}{3}$

$\boxed{a = \frac{2\sqrt{3Af\sqrt{3}}}{3}}$

$Sa = 6a$ $\quad Sa = 6\frac{2\sqrt{3Af\sqrt{3}}}{3}$

$\boxed{Sa = 4\sqrt{3Af\sqrt{3}}}$

$m = \frac{a\sqrt{3}}{2}$ $\quad m = \frac{\frac{2\sqrt{3Af\sqrt{3}}}{3}\sqrt{3}}{2}$ $\quad m = \frac{2\sqrt{9Af\sqrt{3}}}{6}$

$m = \frac{6\sqrt{Af\sqrt{3}}}{6}$ $\quad \boxed{m = \sqrt{Af\sqrt{3}}}$

$S_m = 12m$ $\boxed{S_m = 12\sqrt{Af\sqrt{3}}}$

$H = \frac{a\sqrt{6}}{3}$ $H = \frac{2\sqrt{3Af\sqrt{3}}\sqrt{6}}{3}$ $H = \frac{2\sqrt{18Af\sqrt{3}}}{9}$

$H = \frac{6\sqrt{2Af\sqrt{3}}}{9}$ $\boxed{H = \frac{2\sqrt{2Af\sqrt{3}}}{3}}$

$SH = 4H$ $SH = 4\frac{2\sqrt{2Af\sqrt{3}}}{3}$

$\boxed{SH = \frac{8\sqrt{2Af\sqrt{3}}}{3}}$

$\boxed{At = 4Af}$

$V = \frac{a^3\sqrt{2}}{12}$ $V = \frac{\left(\frac{2\sqrt{3Af\sqrt{3}}}{3}\right)^3\sqrt{2}}{12}$

$V = \frac{8\sqrt{27Af^3 \times 3\sqrt{3}}\sqrt{2}}{27 \times 12}$ $V = \frac{8\sqrt{81Af^3\sqrt{3}}\sqrt{2}}{27 \times 12}$

$V = \frac{2\sqrt{2Af\sqrt{2Af\sqrt{3}}}}{27 \times 12 \cdot 3}$ $\boxed{V = \frac{2Af\sqrt{2Af\sqrt{3}}}{9}}$

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$Sa = 6a$ $Sm = 12m$ $SH = 4H$.

$At = 4Af$.

$m = \frac{a\sqrt{3}}{2}$ $Sm = 6a\sqrt{3}$ $H = \frac{a\sqrt{6}}{3}$

$SH = \frac{4a\sqrt{6}}{3}$ $Af = \frac{a^2\sqrt{3}}{4}$ $At = a^2\sqrt{3}$.

$V = \frac{a^3\sqrt{2}}{12}$.

AT

$At = a^2\sqrt{3}$ $a^2 = \frac{At}{\sqrt{3}}$ $a^2 = \frac{At\sqrt{3}}{3}$

$a = \frac{\sqrt{At\sqrt{3}}}{\sqrt{3}}$ $\boxed{a = \frac{\sqrt{3At\sqrt{3}}}{3}}$

$Sa = 6a$. $Sa = 6\frac{\sqrt{3At\sqrt{3}}}{3}$

$\boxed{Sa = 2\times\sqrt{3At\sqrt{3}}}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{\sqrt{3At\sqrt{3}}}{3}\sqrt{3}}{2}$ $m = \frac{\sqrt{9At\sqrt{3}}}{6}$

$m = \frac{3\sqrt{At\sqrt{3}}}{6}$ $\boxed{m = \frac{\sqrt{At\sqrt{3}}}{2}}$

$Sm = 12m$ $Sm = 12\frac{\sqrt{At\sqrt{3}}}{2}$

$\boxed{Sm = 6\sqrt{At\sqrt{3}}}$

$H = \frac{a\sqrt{6}}{3}$ $H = \frac{\sqrt{3AT\sqrt{3}}}{3}\sqrt{6}$ $H = \frac{\sqrt{18AT\sqrt{3}}}{9}$

$H = \frac{3\sqrt{2At\sqrt{3}}}{9}$ $\boxed{H = \frac{\sqrt{2At\sqrt{3}}}{3}}$

$SH = 4H$ $\boxed{SH = 4\frac{\sqrt{2At\sqrt{3}}}{3}}$

$\boxed{Af = \frac{At}{4}}$ $V = \frac{a^3\sqrt{2}}{12}$. $V = \frac{\left(\frac{\sqrt{3AT\sqrt{3}}}{3}\right)^3\sqrt{2}}{12}$

$V = \frac{\sqrt{27AT^3 \times 3\sqrt{3}}\sqrt{2}}{27 \times 12}$. $V = \frac{\sqrt{81AT^3 \times \sqrt{3}}}{27 \times 12}\sqrt{2}$.

o prof. não encontrou este result.

$V=\frac{9\sqrt{2}AT^3\sqrt{3}}{27\times 12}$ $V=\frac{\sqrt{2}AT^3\sqrt{3}}{36}$ $\boxed{V=\frac{AT\sqrt{2}AT\sqrt{3}}{36}}$

V

$V=\frac{a^3\sqrt{2}}{12}$ $12V=a^3\sqrt{2}$ $a^3=\frac{12V}{\sqrt{2}}$

$a^3=\frac{12V\sqrt{2}}{2}$ $\boxed{a^3=6V\sqrt{2}}$

$\boxed{a=\sqrt[3]{6V\sqrt{2}}}$

$Sa=6a$ $\boxed{Sa=6\sqrt[3]{6V\sqrt{2}}}$

$m=\frac{a\sqrt{3}}{2}$ $\boxed{m=\frac{\sqrt[3]{6V\sqrt{2}}\sqrt{3}}{2}}$

$Sm=12m$ $Sm=12\frac{\sqrt[3]{6V\sqrt{2}}\sqrt{3}}{2}$

$\boxed{Sm=6\sqrt[3]{6V\sqrt{2}}\sqrt{3}}$

$Af=\frac{a^2\sqrt{3}}{4}$ $Af=\frac{\left(\sqrt[3]{6V\sqrt{2}}\right)^2\sqrt{3}}{4}$

$Af=\frac{\sqrt[3]{36V^2\cdot 12}\sqrt{3}}{4}$ $Af=\frac{\sqrt[3]{72V^2}\sqrt{3}}{4}$

$Af=\frac{2\sqrt[3]{9V2}\sqrt{3}}{4}$ $\boxed{Af=\frac{\sqrt[3]{9V^2}\sqrt{3}}{2}}$

$AT=4Af$ $At=4\frac{\sqrt[3]{9V^2}\sqrt{3}}{2}$

$\boxed{AT=2\sqrt[3]{9V^2}\sqrt{3}}$

$H=\frac{a\sqrt{6}}{3}$ $\boxed{H=\frac{\sqrt[3]{6V\sqrt{2}}\sqrt{6}}{3}}$

$SH=4H.$ $\boxed{SH=4\frac{\sqrt[3]{6V\sqrt{2}}\sqrt{6}}{3}}$

Dodecaedro regular.

12 faces · pentagonais
30 arestas

$Af=\frac{AB\times a}{2}+\frac{BC\times a}{2}+\frac{CD\times a}{2}+\frac{DE\times a}{2}+\frac{EA\times a}{2}$

$Af=\frac{a(AB+BC+CD+DE+EA)}{2}$

$AB+BC+CD+DE+EA=2p.$

$Af=\frac{2p\times a}{2}$ $\boxed{Af=p\times a}$

$\boxed{Sa=30a}$

$At=12Af$ $\boxed{At=12p\times a}$

Icosaedro regular.

20 faces. Triangulares
30 arestas
60 medianas
$Sa = 30a$. $Sm = 60m$.
$At = 20Af$.
a = aresta
Sa = soma das arestas
m = mediana da face.
Sm = soma das med. das faces.
Af = área da face.
At = área total.

$m^2 = a^2 - \left(\frac{a}{2}\right)^2$ $\quad m^2 = a^2 - \frac{a^2}{4}$

$m^2 = \frac{3a^2}{4}$ $\quad \boxed{m = \frac{a\sqrt{3}}{2}}$

$Sm = 60m$ $\quad Sm = 60\frac{a\sqrt{3}}{2}$ $\quad \boxed{Sm = 30a\sqrt{3}}$

$\boxed{Sa = 30a}$

$Af = \frac{a \times m}{2}$ $\quad Af = \frac{a \times \frac{a\sqrt{3}}{2}}{2}$ $\quad \boxed{Af = \frac{a^2\sqrt{3}}{4}}$

$At = 20Af$ $\quad At = 20\frac{a^2\sqrt{3}}{4}$ $\quad \boxed{At = 5a^2\sqrt{3}}$

$m = \frac{a\sqrt{3}}{2}$ $\quad 2m = a\sqrt{3}$

$a = \frac{2m}{\sqrt{3}}$ $\quad \boxed{a = \frac{2m\sqrt{3}}{3}}$

$Sa = 30a$ $\quad Sa = 30\frac{2m\sqrt{3}}{3}$

$\boxed{Sa = 20m\sqrt{3}}$

$\boxed{Sm = 60m}$

$Af = \frac{a^2\sqrt{3}}{4}$ $\quad Af = \frac{\left(\frac{2m\sqrt{3}}{3}\right)^2\sqrt{3}}{4}$

$Af = \frac{\frac{4m^2 \times 3}{9}\sqrt{3}}{4}$ $\quad Af = \frac{12m^2\sqrt{3}}{36}$

$\boxed{Af = \frac{m^2\sqrt{3}}{3}}$

$At = 20Af$ $\quad \boxed{At = 20\frac{m^2\sqrt{3}}{3}}$

Sm

$Sm = 60m$. $\boxed{m = \frac{Sm}{60}}$

$Sm = 30a\sqrt{3}$ $a = \frac{Sm}{30\sqrt{3}}$

$\boxed{a = \frac{Sm\sqrt{3}}{90}}$

$Sa = 30a$ $Sa = 30\frac{Sm\sqrt{3}}{90}$

$\boxed{Sa = \frac{Sm\sqrt{3}}{3}}$

$Af = \frac{a^2\sqrt{3}}{4}$ $Af = \frac{\left(\frac{Sm\sqrt{3}}{90}\right)^2\sqrt{3}}{4}$

$Af = \frac{Sm^2 x 3x\sqrt{3}}{8100x4}$ $Af = \frac{Sm^2 x\sqrt{3}}{2700x4}$

$\boxed{Af = \frac{Sm^2 x\sqrt{3}}{10800}}$

$At = 20\,Af$ $At = 20\frac{Sm^2 x\sqrt{3}}{10800}$

$\boxed{At = \frac{Sm^2\sqrt{3}}{540}}$

Af

$Af = \frac{a^2\sqrt{3}}{4}$ $4Af = a^2\sqrt{3}$ $a^2 = \frac{4Af}{\sqrt{3}}$

$a^2 = \frac{4Af\sqrt{3}}{3}$ $a = \sqrt{\frac{4Af\sqrt{3}}{3}}$ $a = \frac{\sqrt{4x3Af\sqrt{3}}}{3}$

$\boxed{a = \frac{2\sqrt{3Af\sqrt{3}}}{3}}$

$Sa = 30a$ $Sa = 30\frac{2\sqrt{3Af\sqrt{3}}}{30}$

$\boxed{Sa = 20\sqrt{3Af\sqrt{3}}}$

$\boxed{At = 20\,Af}$

$m = \frac{a\sqrt{3}}{2}$ $m = \frac{\frac{2\sqrt{3Af\sqrt{3}}}{3}\sqrt{3}}{2}$ $m = \frac{2\sqrt{9AF\sqrt{3}}}{6}$

$m = \frac{6\sqrt{Af\sqrt{3}}}{6}$ $\boxed{m = \sqrt{Af\sqrt{3}}}$

$Sm = 60m$ $\boxed{Sm = 60\sqrt{Af\sqrt{3}}}$

AT.

$AT = 5a^2\sqrt{3}$ $\quad a^2 = \frac{AT}{5\sqrt{3}}$

$a^2 = \frac{AT\sqrt{3}}{15}$ $\quad a = \sqrt{\frac{AT\sqrt{3}}{15}}$ $\quad \boxed{a = \frac{\sqrt{15AT\sqrt{3}}}{15}}$

$Sa = 30a$. $\quad Sa = 30\frac{\sqrt{15AT\sqrt{3}}}{15}$

$\boxed{Sa = 2\sqrt{15AT\sqrt{3}}}$

$AT = 20Ap$ $\quad \boxed{Ap = \frac{AT}{20}}$

$m = \frac{a\sqrt{3}}{2}$ $\quad m = \frac{\sqrt{15AT\sqrt{3}}\sqrt{3}}{15\times 2}$

$m = \frac{\sqrt{45AT\sqrt{3}}}{30}$ $\quad m = \frac{1}{10}\sqrt{05AT\sqrt{3}}$

$\boxed{m = \frac{\sqrt{05AT\sqrt{3}}}{10}}$

$Sm = 60m$

$Sm = 60\frac{\sqrt{5AT\sqrt{3}}}{10}$ $\quad Sm = \frac{60}{10}\sqrt{5AT\sqrt{3}}$

$\boxed{Sm = 6\sqrt{5AT\sqrt{3}}}$

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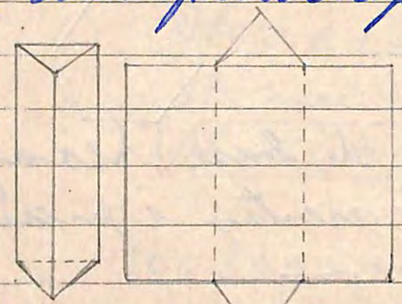
Prismas em geral.

Prisma (paralelograma) é um poliedro que tem duas bases iguais e paralelas.

As faces laterais são paralelogramo.

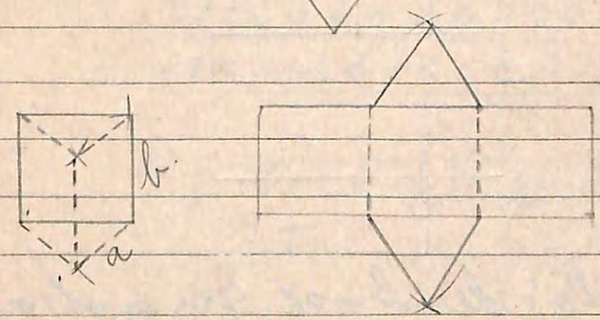
Se tiver todas as faces em forma de paralelogramo é um paralelepipedo.

Fig 6



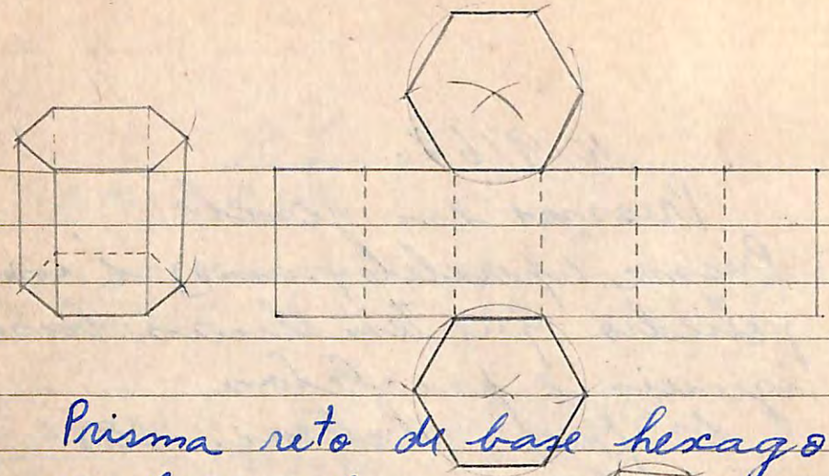
Prisma reto de base triangulgr regular.

Fig 7



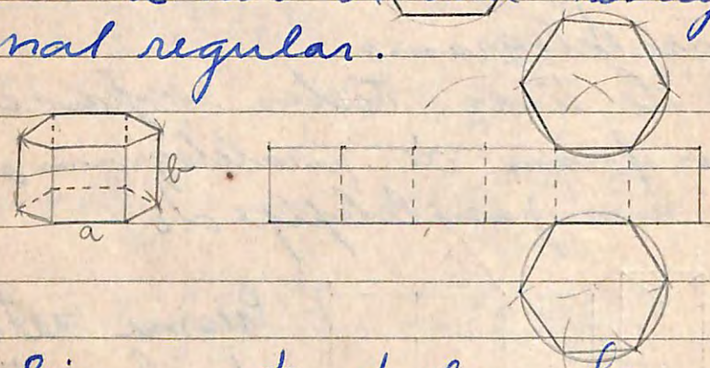
Prisma reto de base triangular. De arestas iguais (a = b).

Fig 8



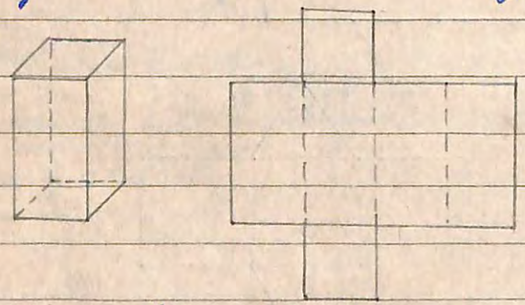
Prisma reto de base hexagonal regular.

Fig 9



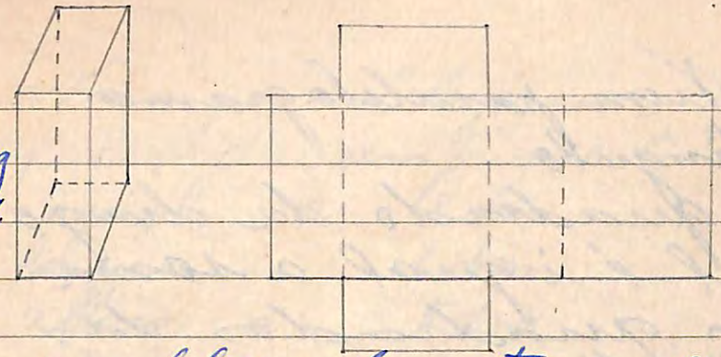
Prisma reto de base hexagonal regular, de arestas iguais. a = b

Fig 10



Prisma reto de base quadrangular regular ou paralelepípedo reto de bases quadradas.

Fig 11.



paralelepípedo retângulo.

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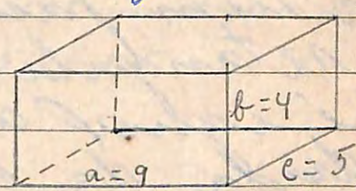


$At = ac + ac + bc + bc$

$At = 2ac + 2bc.$

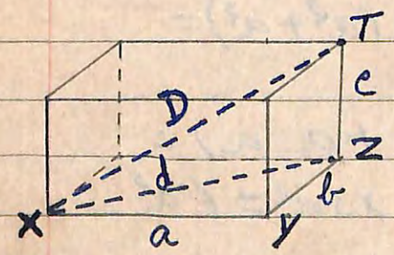
$\boxed{At = 2(ac + bc)}$

$At = ab + ab + ac + ac + bc + bc.$

$At = 2ab + 2bc + 2ac.$

$\boxed{At = 2(ab + ac + bc)}$

$V = 9 \times 4 \times 5$ $\boxed{V = a.b.c}$



Δ XYZ

$d^2 = a^2 + b^2.$

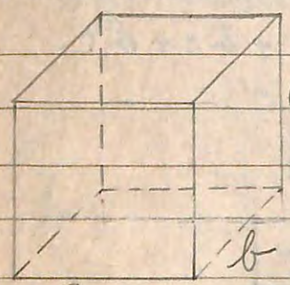
Δ X.Z.T. $D^2 = d^2 + c^2$

$\boxed{D^2 = a^2 + b^2 + c^2.}$

$\boxed{D = \sqrt{a^2 + b^2 + c^2}}$

Num paralelogramo retângulo.
O quadrado da diagonal é igual a soma dos quadrados das três dimensões.
Num paral. retangular, a diagonal é igual a raiz quadrada da soma dos quadrados das três dimensões.

Cubo:



$a = b = c.$

$Al = 2(ac + bc)$

$At = 2(ab + bc + bc)$

$V = a \cdot b \cdot c.$

$D = \sqrt{a^2 + b^2 + c^2}.$

$Al = 2(a.a + a.a) = 2(a^2 + a^2) =$
$= 2 \times 2a^2 = 4a^2.$

$At = 2(a.a + a.a + a.a) =$
$= 2 \times (a^2 + a^2 + a^2) = 2 \times 3a^2 = 6a^2$

$V = a \times a \times a = a^3$

$D = \sqrt{a^2 + a^2 + a^2} \therefore D = \sqrt{3a^2} \therefore D = a\sqrt{3}$

Num paralelogramo retangular o comprimento é igual a 8 dm
largura 6 dm
altura 5 dm.
Calcular a area lateral, area total, o volume e a diag.

$Al = 8 \times 5 + 8 \times 5 + 6 \times 5 + 6 \times 5$

$Al = 2(8 \times 5 + 6 \times 5)$

$Al = 2(40 + 30)$

$Al = 140\ dm^2.$

$At = Al + 2(8 \times 6)$

$At = 140 + 96$

$At = 236\ dm^2.$

$V = a.b.c \quad V = 8 \times 6 \times 5 \quad V = 240\ dm^3.$

$D = \sqrt{a^2 + b^2 + c^2} \quad D = \sqrt{8^2 + 6^2 + 5^2}$

$D = \sqrt{64 + 36 + 25} \quad D = \sqrt{125}.$

$D = 5\sqrt{5}.$