

# Sistema Diédrico

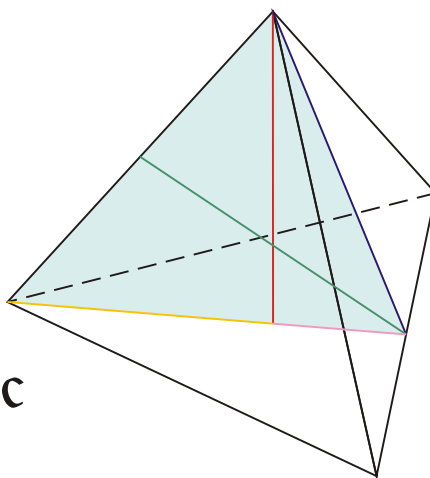
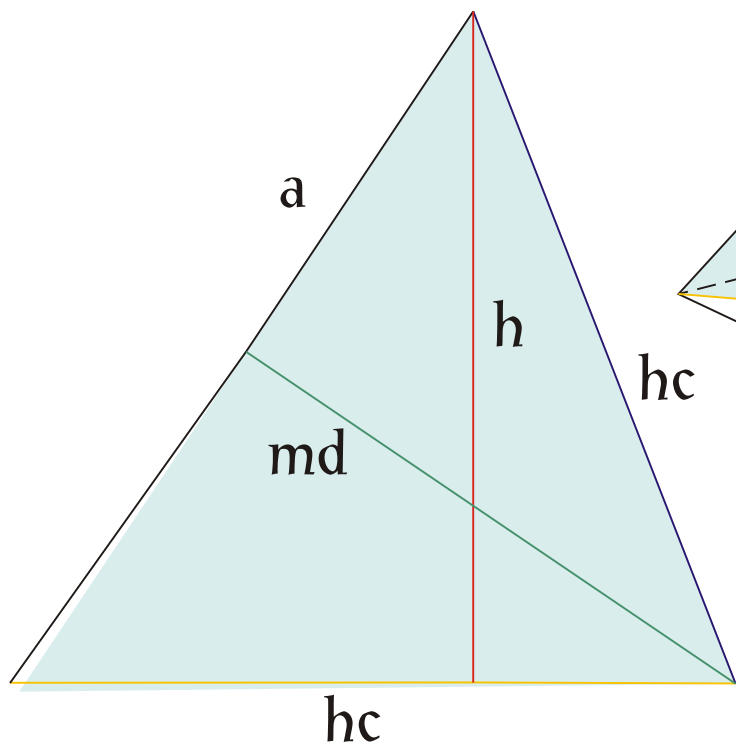
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## Poliedros regulares

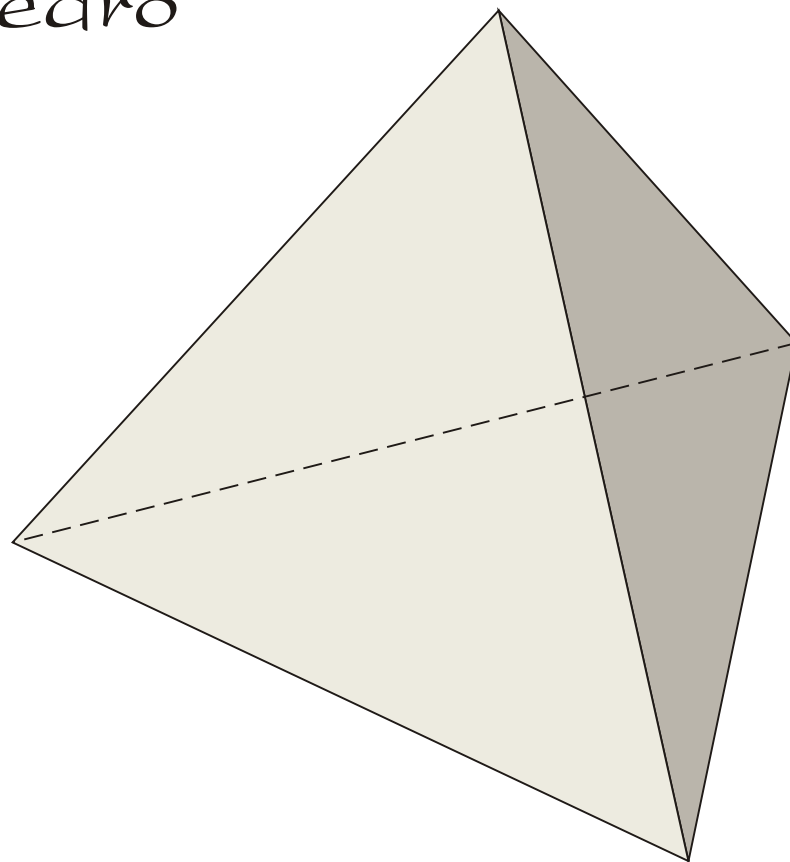
Obtencións xeométricas

Posicións sobre caras,  
vértices e aristas

# Poliedros regulares: Tetraedro

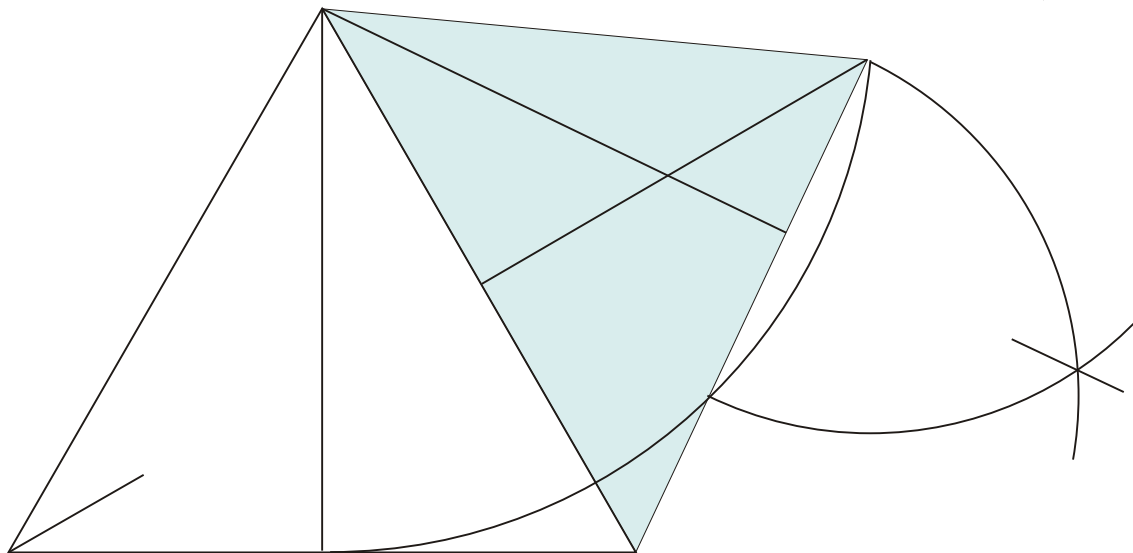


Sección principal



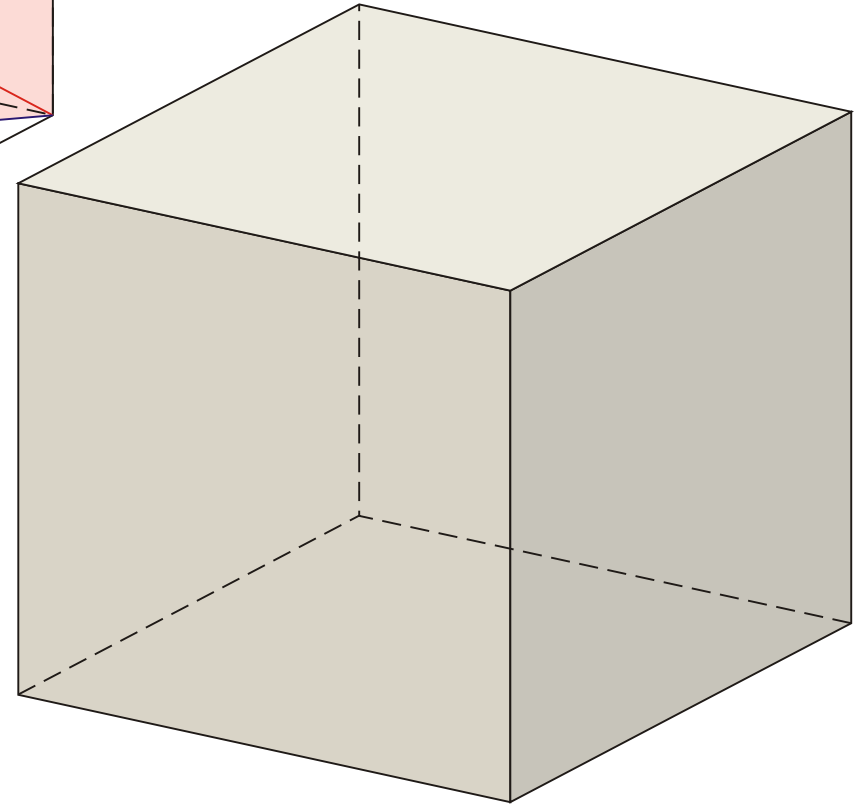
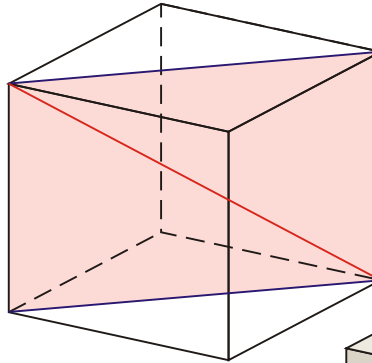
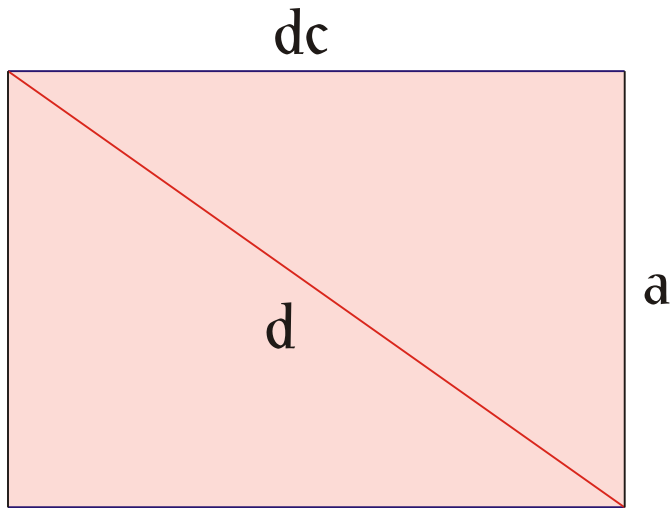
- $a =$  arista (1)
- $hc =$  altura de cara ( $\sqrt{3}/2$ )
- $h =$  altura do poliedro ( $\sqrt{6}/3$ )
- $md =$  mínima distância entre aristas non contíguas ( $\sqrt{2}/2$ )

Obtención xeométrica



# Poliedros regulares: Hexaedro

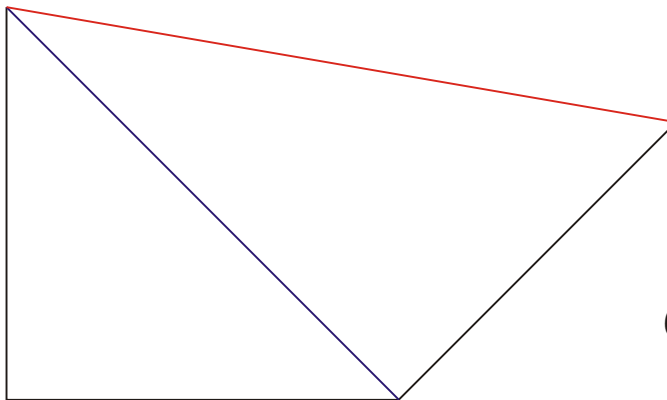
Sección principal



a = arista (1)

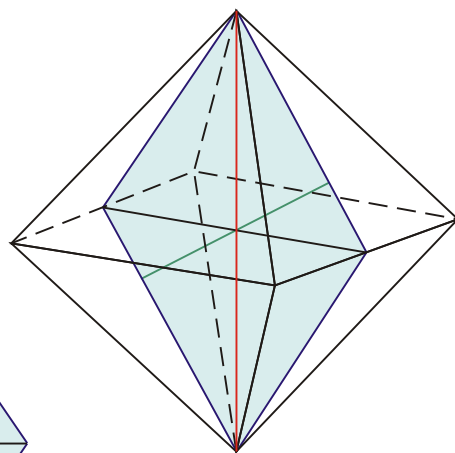
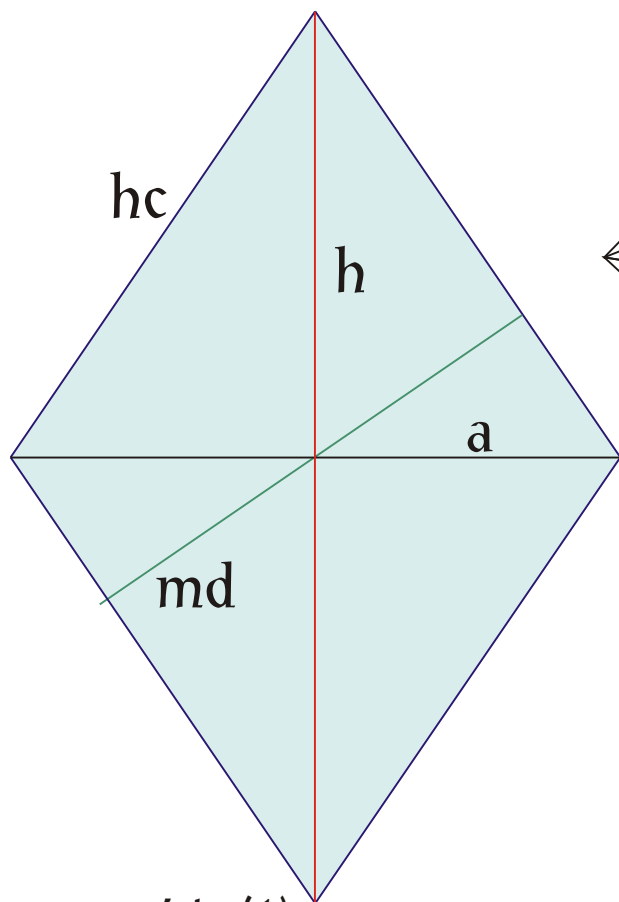
dc = diagonal de cara ( $\sqrt{2}$ )

d = diagonal do poliedro ( $\sqrt{3}$ )

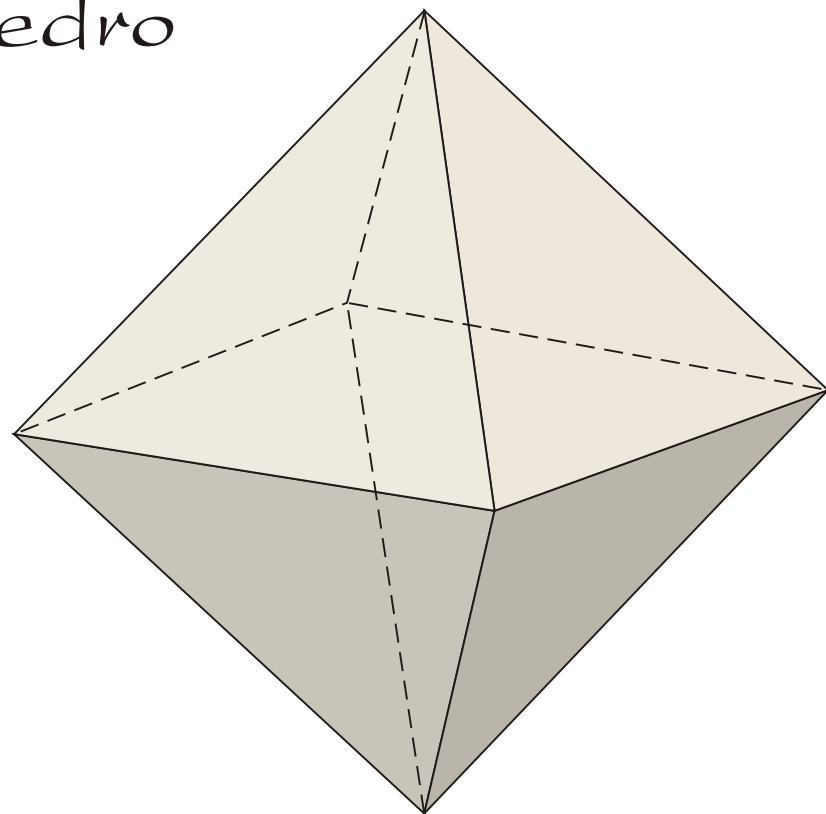


Obtención xeométrica

# Poliedros regulares: Octaedro



Sección principal



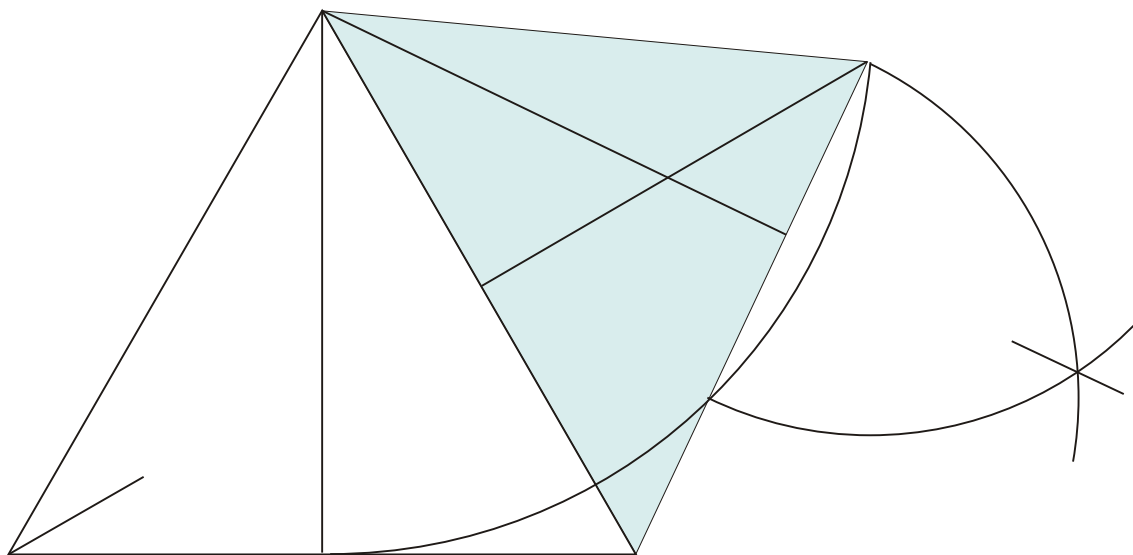
$a =$  arista (1)

$hc =$  altura de cara ( $\sqrt{3}/2$ )

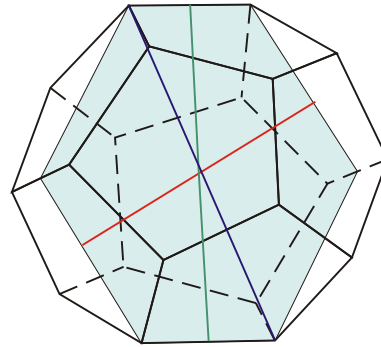
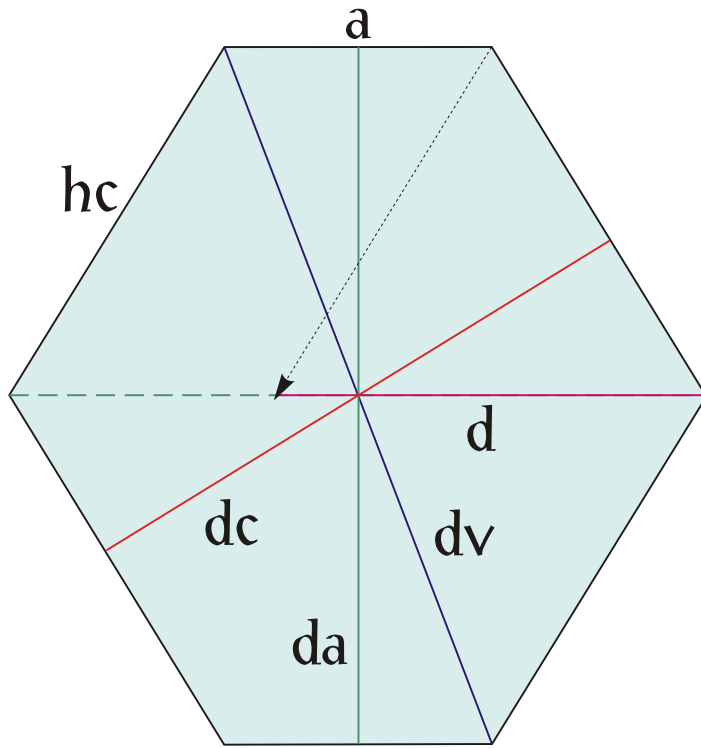
$h =$  altura do poliedro ( $\sqrt{2}$ )

$md =$  mínima distância entre caras contrárias ( $\sqrt{6}/3$ )

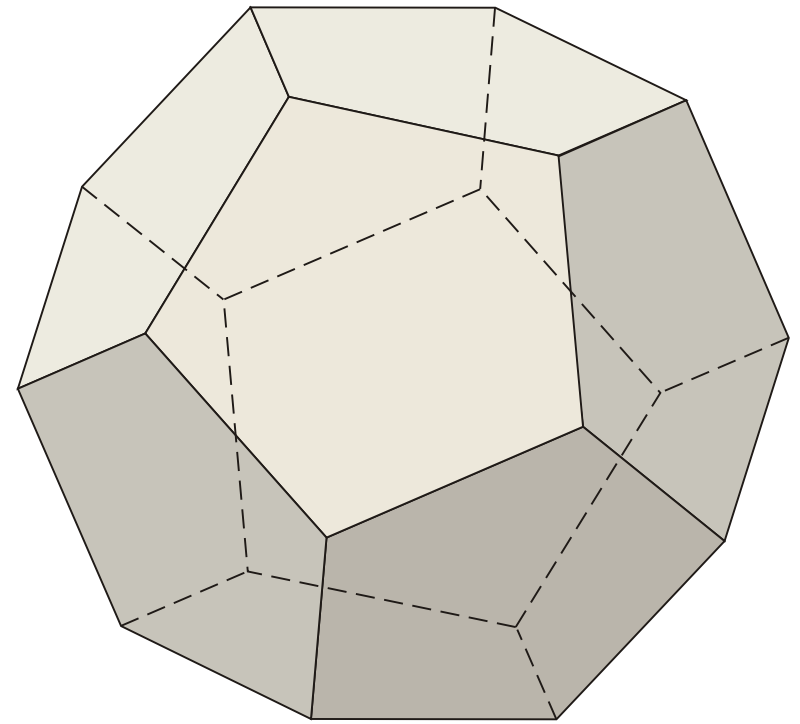
Obtención xeométrica



# Poliedros regulares: Dodecaedro



Sección principal



$a$  = arista (1)

$hc$  = altura de cara ( $\sqrt{\phi^2 + \phi^4}/2$ ) = 1'53883

$dc$  = distancia entre caras opostas ( $[1/\sqrt{5} + 1] hc$ )

$dv$  = distancia entre vértices opostos ( $\sqrt{\phi^4 + 1}/2$ ) = 1'4

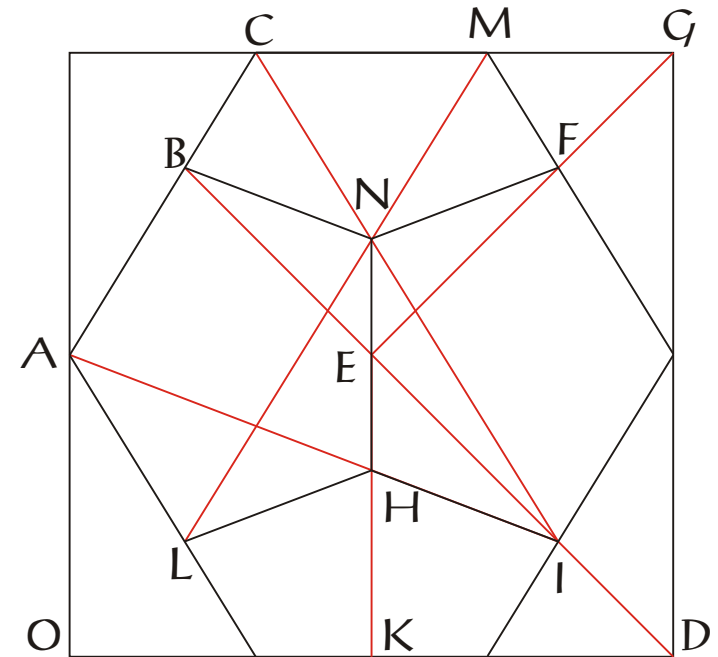
$da$  = distancia entre aristas opostas ( $\phi^2$ ) =  $a+d$

$d$  = diagonal de cara ( $\phi$ )

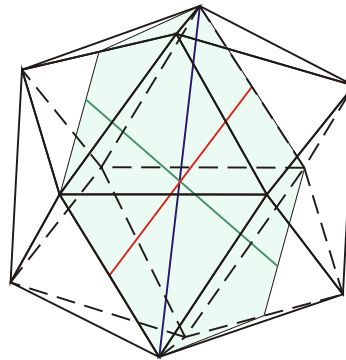
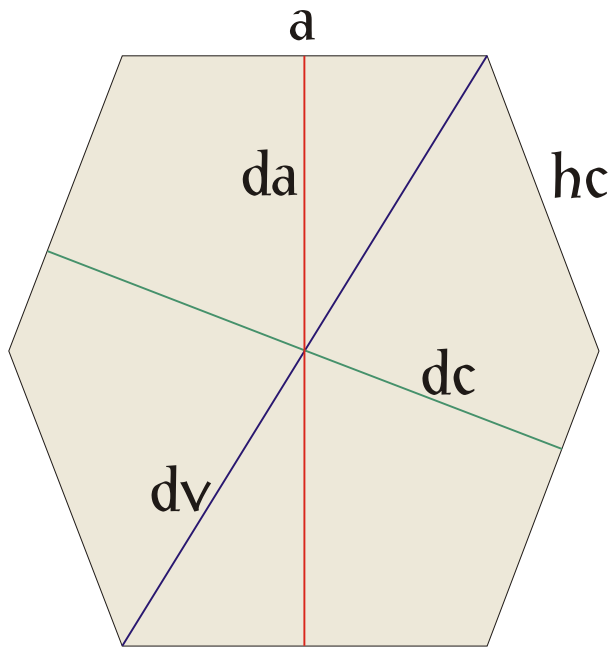
Relaciones áureas:  $CM$  (arista)  $1/\phi$   $BF$  (diagonal)

$BF = 1/\phi OD$  (dist. aristas opostas).  $AC \phi AB$ ,

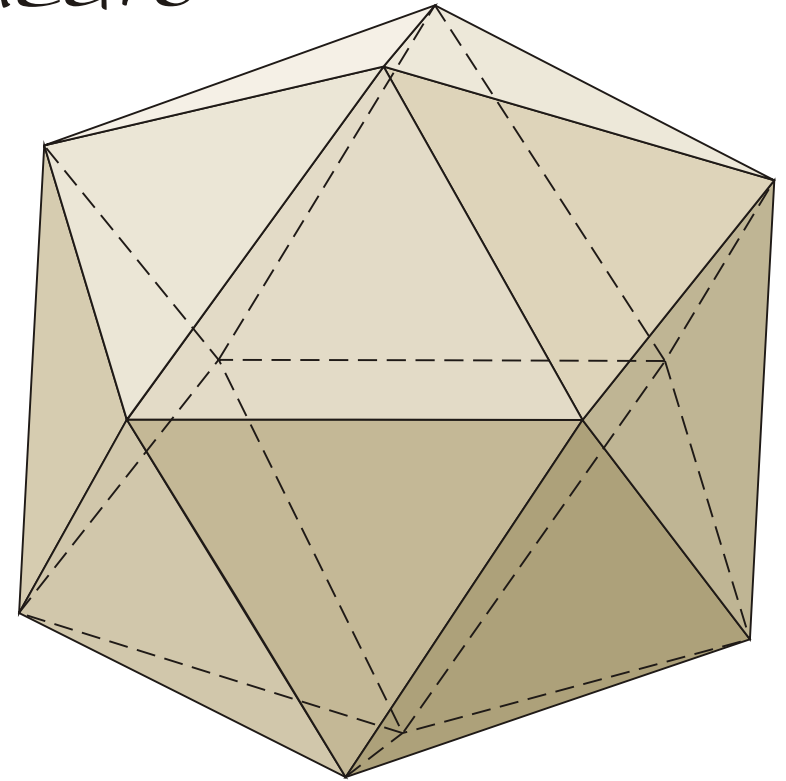
$DB \phi DE$ ,  $EG \phi EF$ ,  $AI \phi AH$ ,  $KE \phi KH$ ,  $LM \phi LN$ .



# Poliedros regulares: Icosaedro



Sección principal



$a$  = arista (1)

$hc$  = altura de cara ( $\sqrt{3}/2$ )

$da$  = distancia entre aristas opostas ( $\phi$ )

$dc$  = distancia entre caras opostas ( $\phi^2 - 1/\sqrt{3}$ ) = 1,51

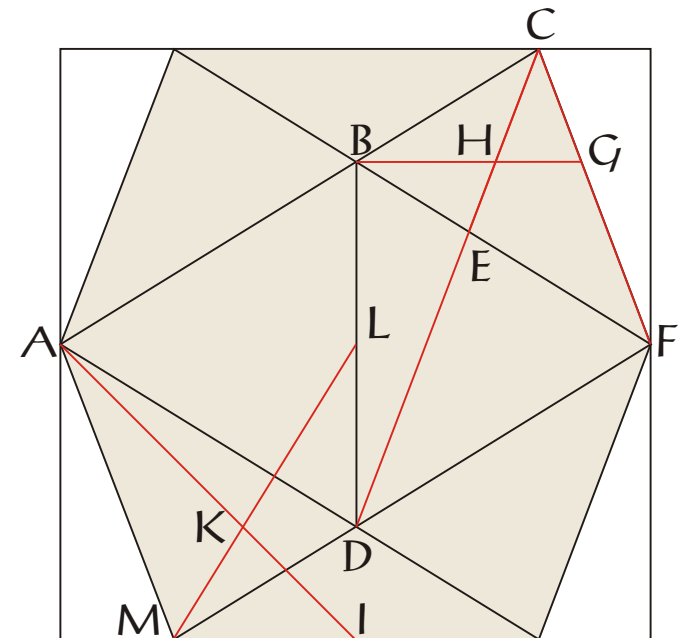
$dv$  = distancia entre vértices opostos ( $\sqrt{\phi^2 + 1}$ )

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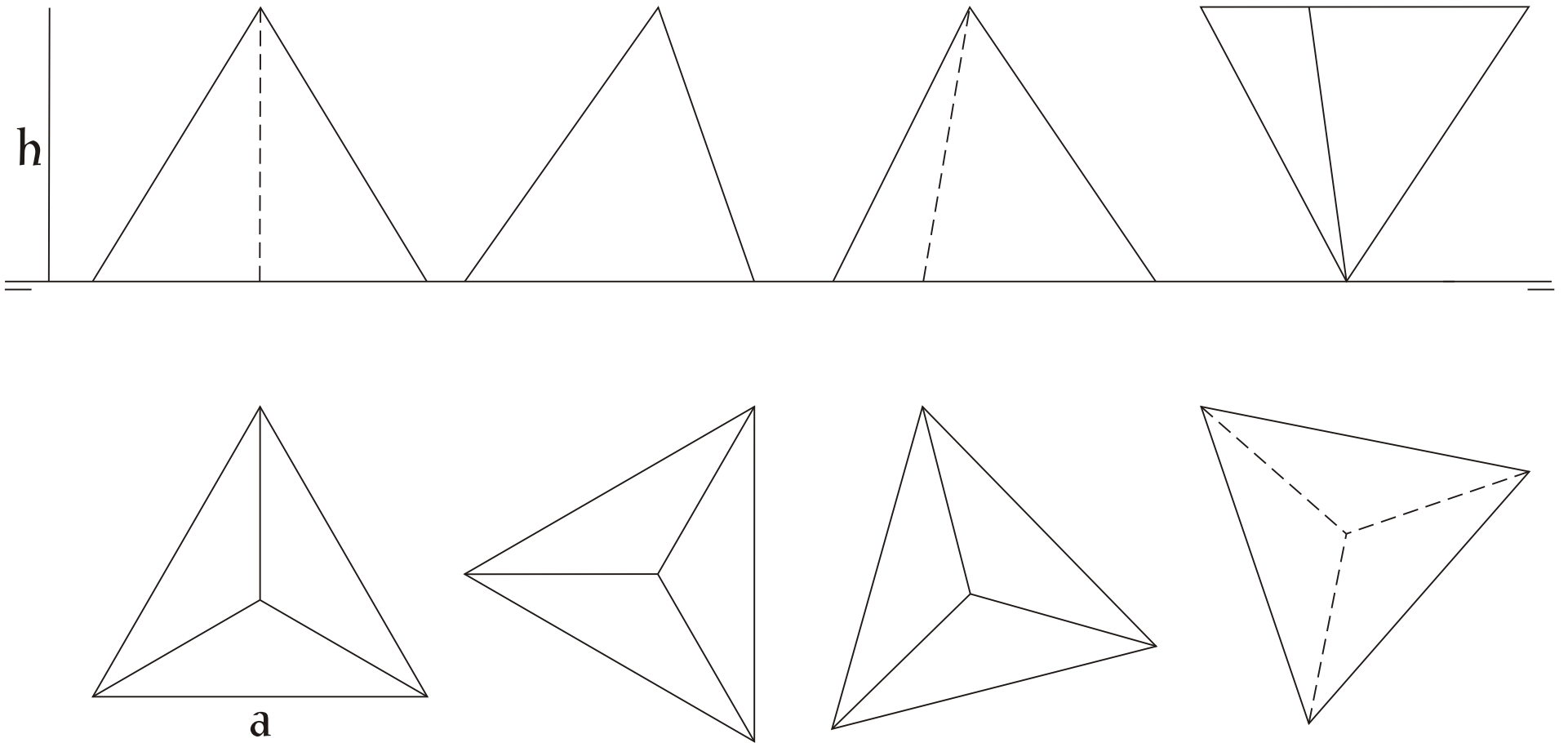
Relaciones áureas:  $BD$  (arista)  $1/\phi$   $AF$  ( $da$ )

$AC \phi AB$ ,  $DC \phi DE$ ,  $FB \phi FE$ ,  $FC \phi FG$ ,

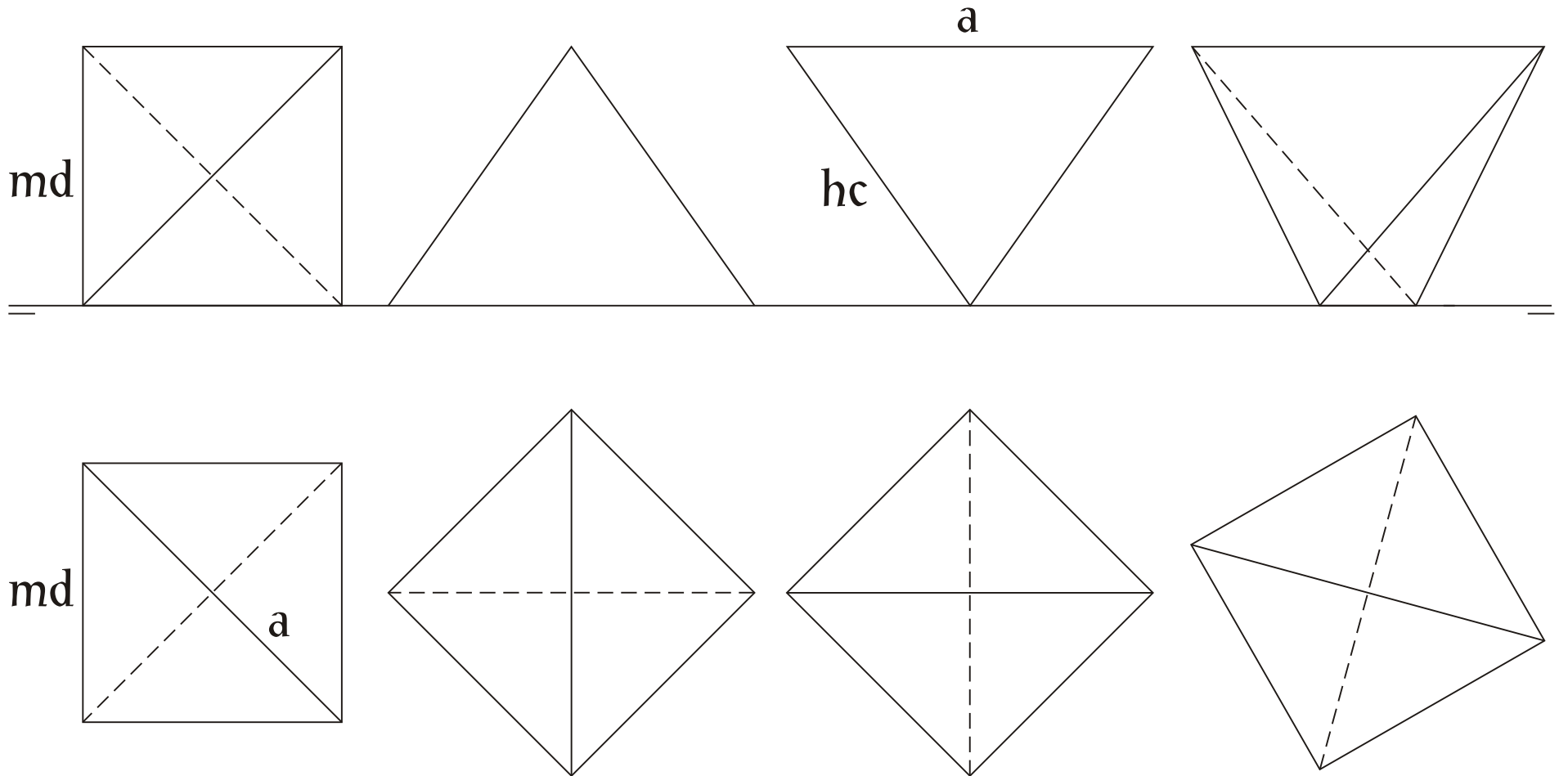
$CE \phi CH$ ,  $BG \phi BH$ .  $AI \phi AK$ ,  $LM \phi LK$ .



# Tetraedro. Posicións sobre unha cara e un vértice.

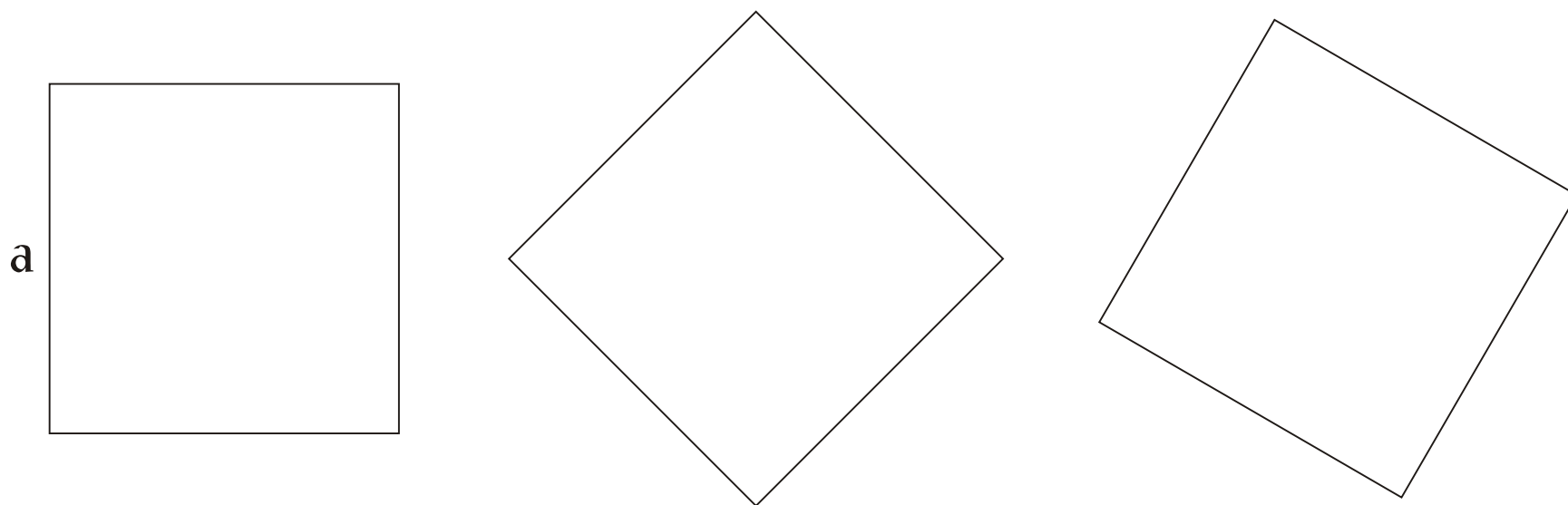
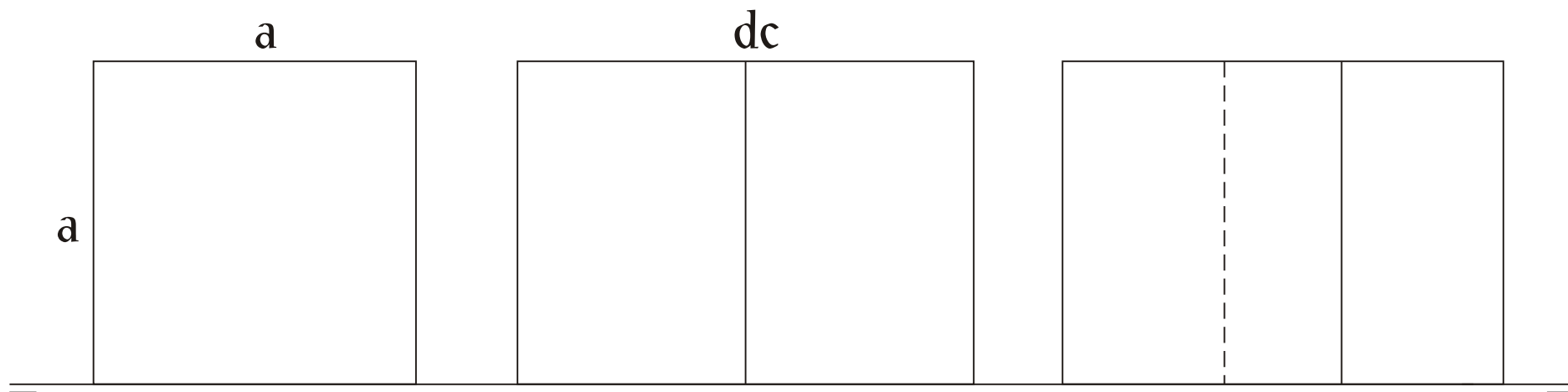


# Tetraedro. Posicións sobre unha arista.





# Hexaedro. Posicións sobre unha cara.



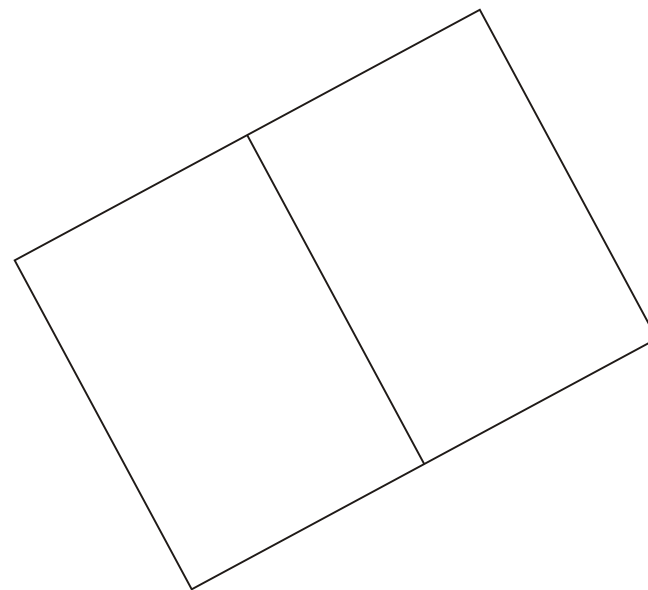
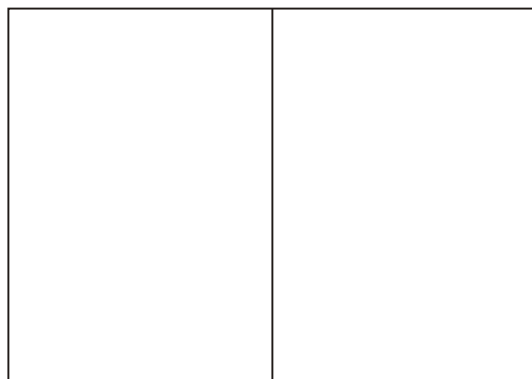
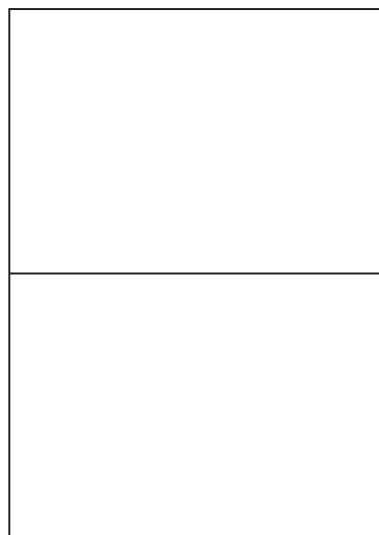
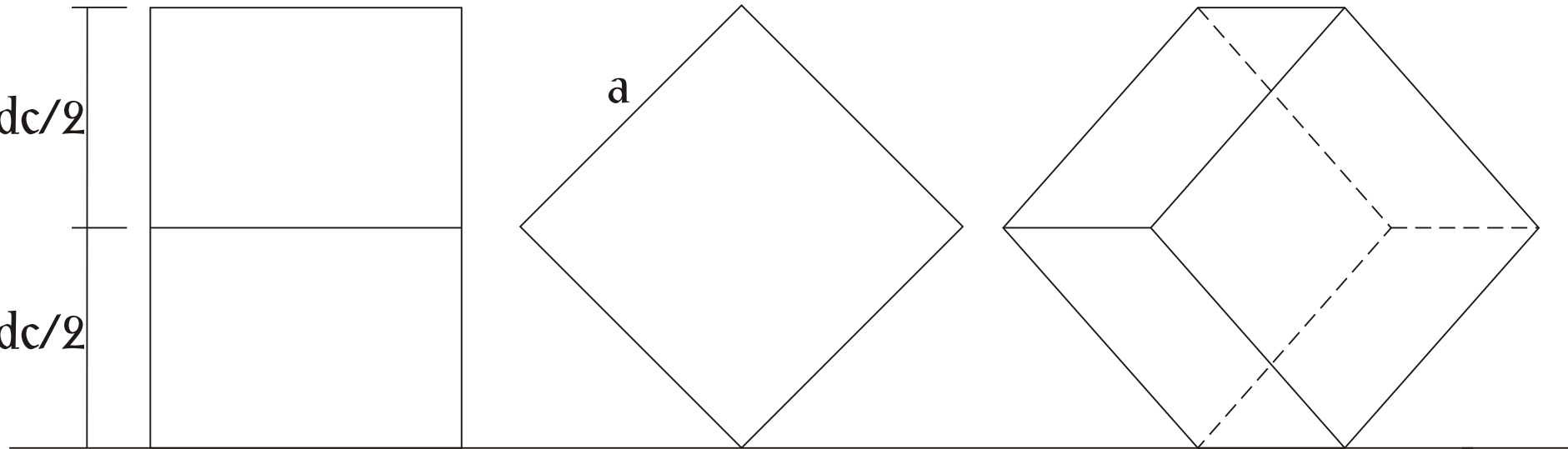
# Hexaedro. Posicións sobre unha arista.

a

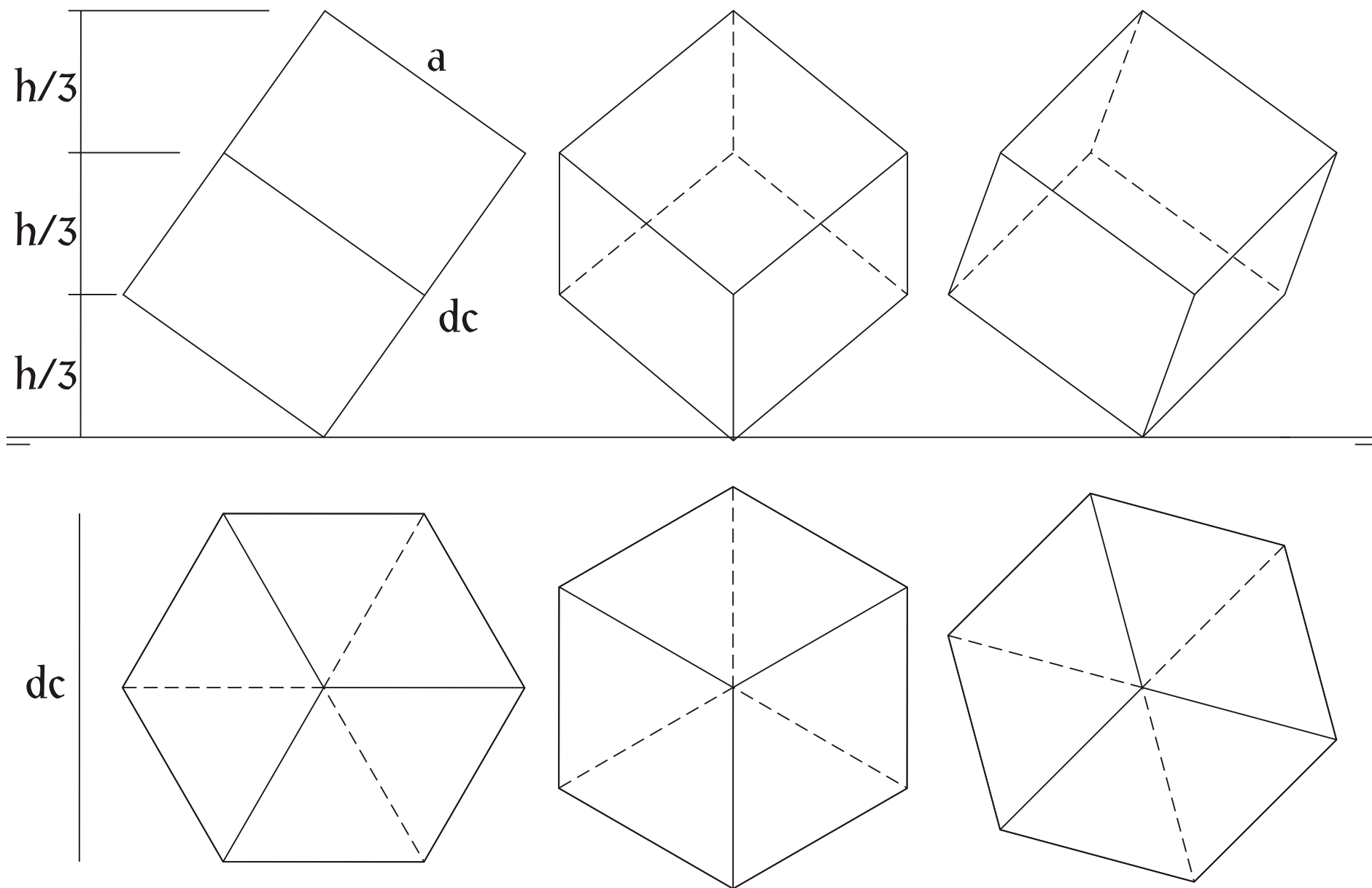
dc/2

dc/2

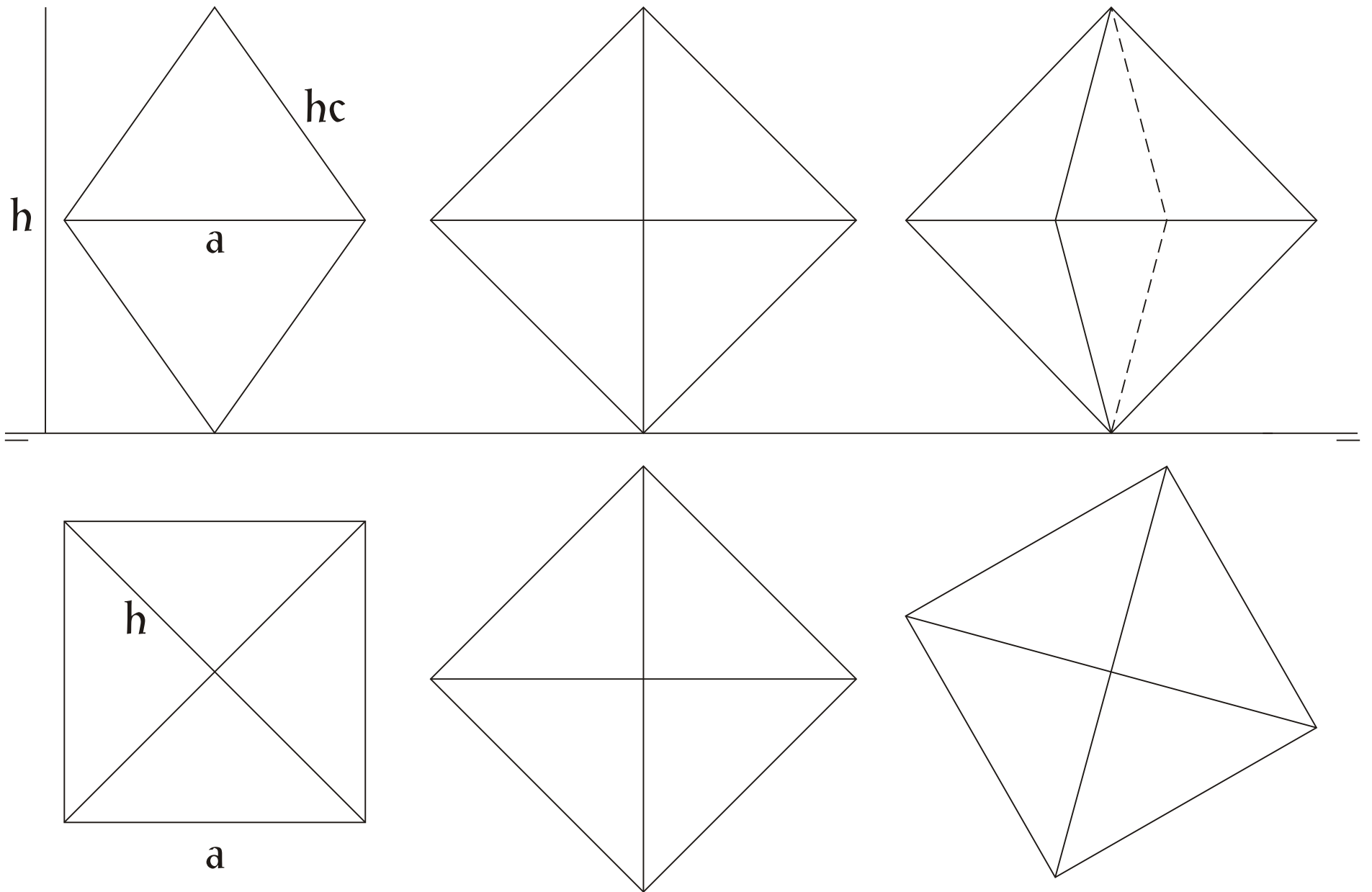
a



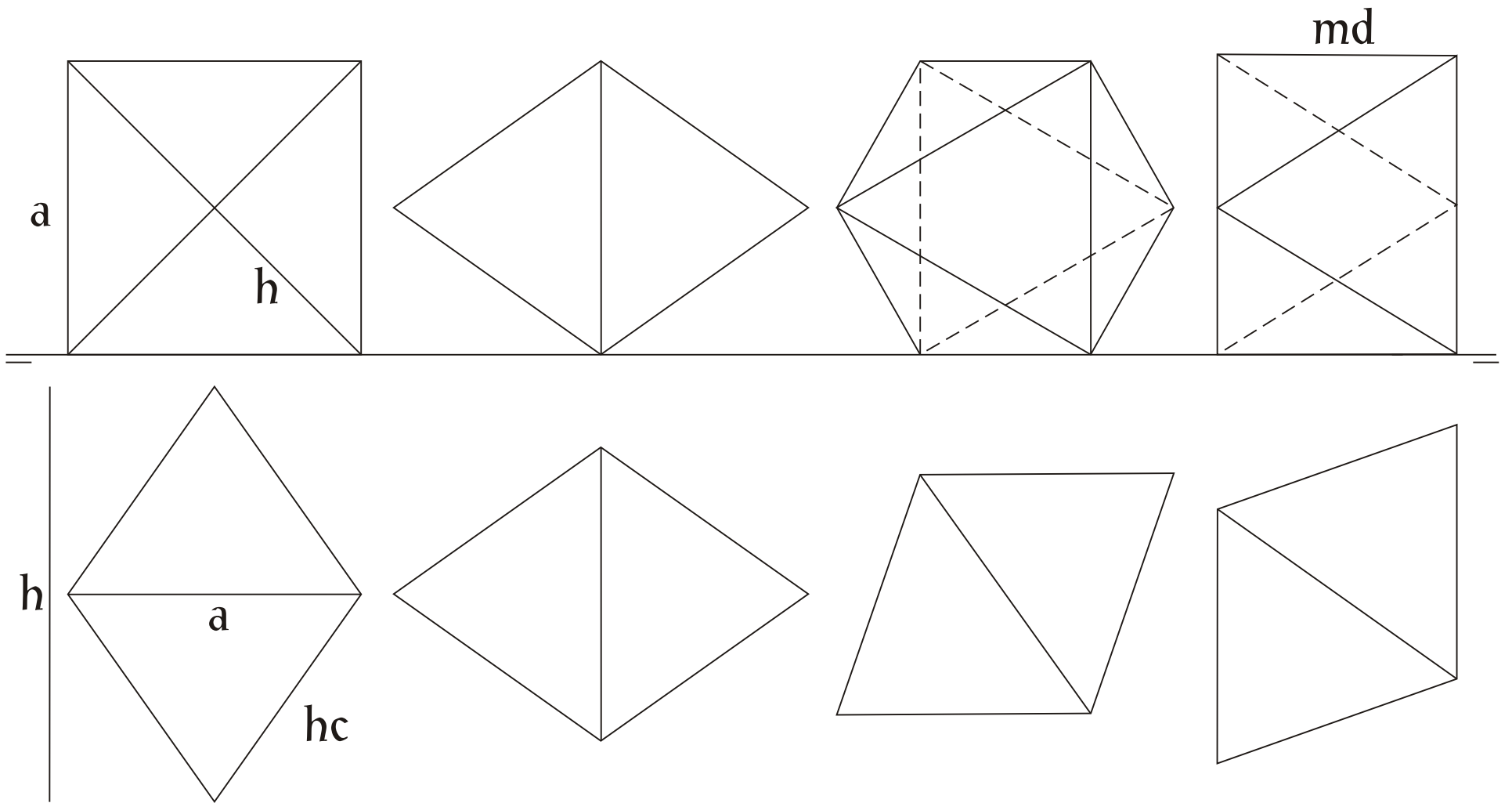
# Hexaedro. Posicións sobre un vértice.



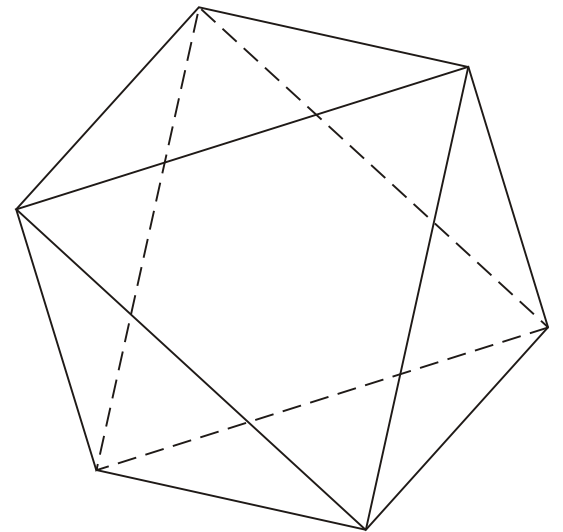
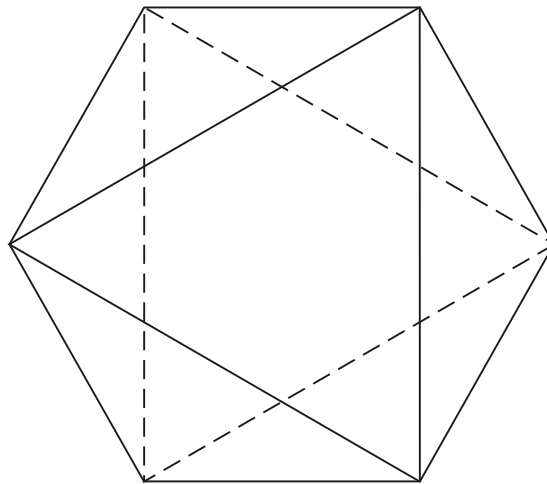
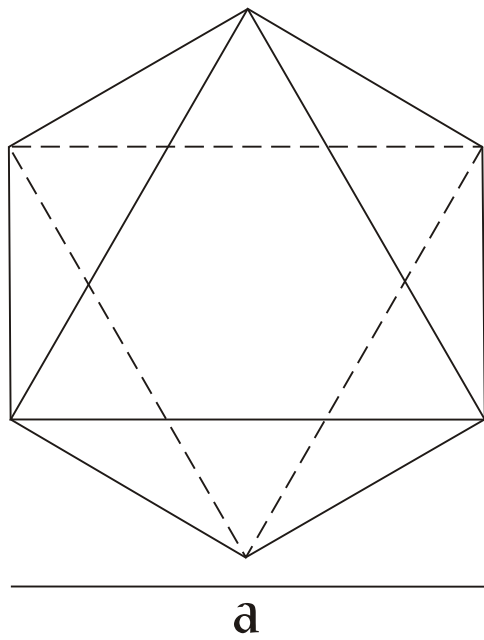
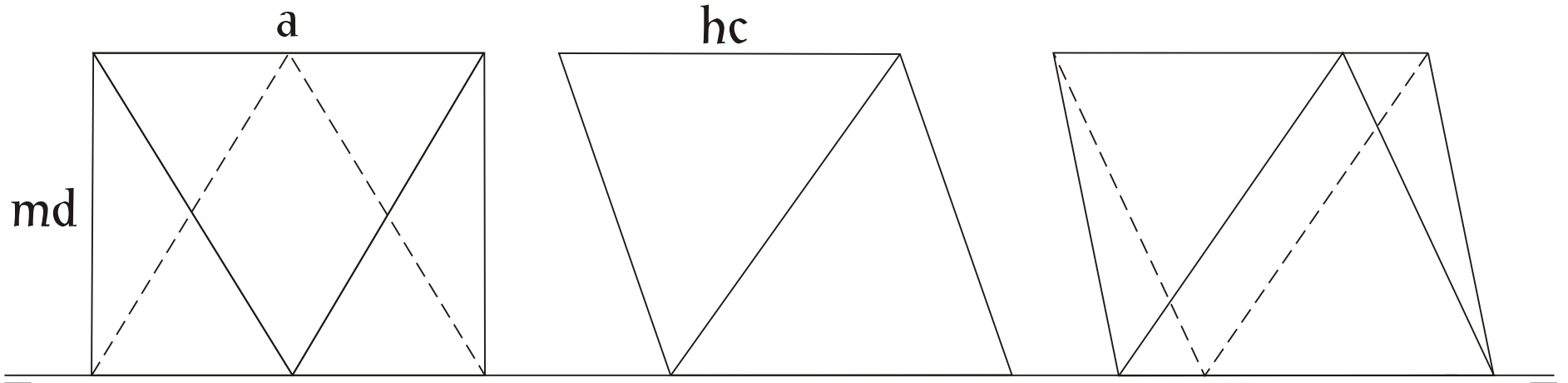
# Octaedro. Posicións sobre un vértice.



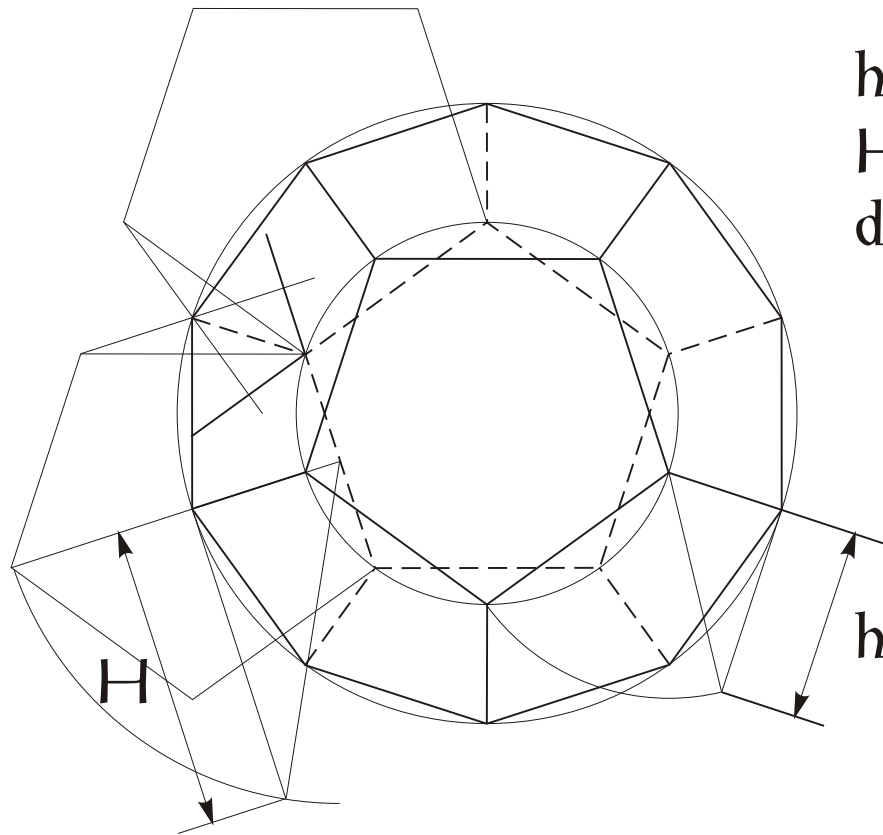
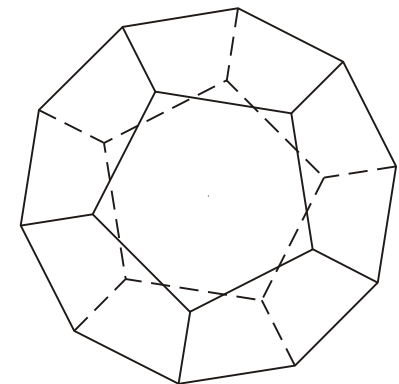
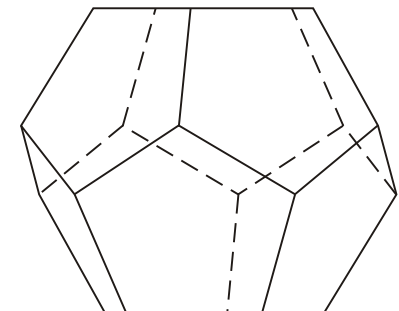
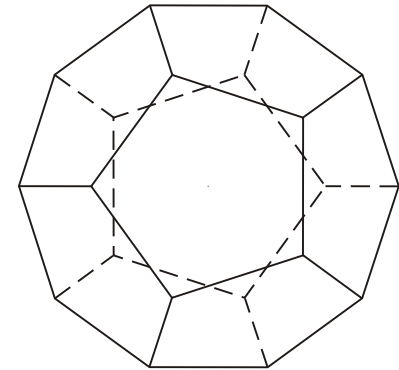
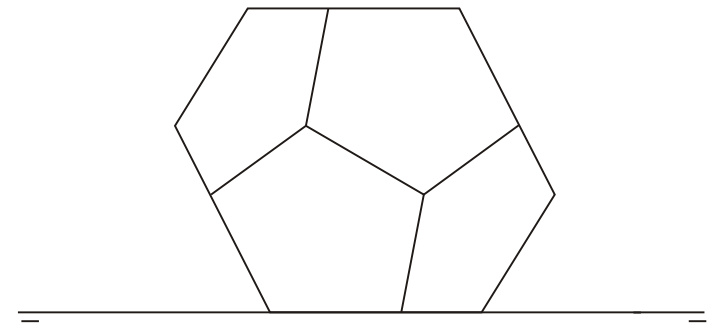
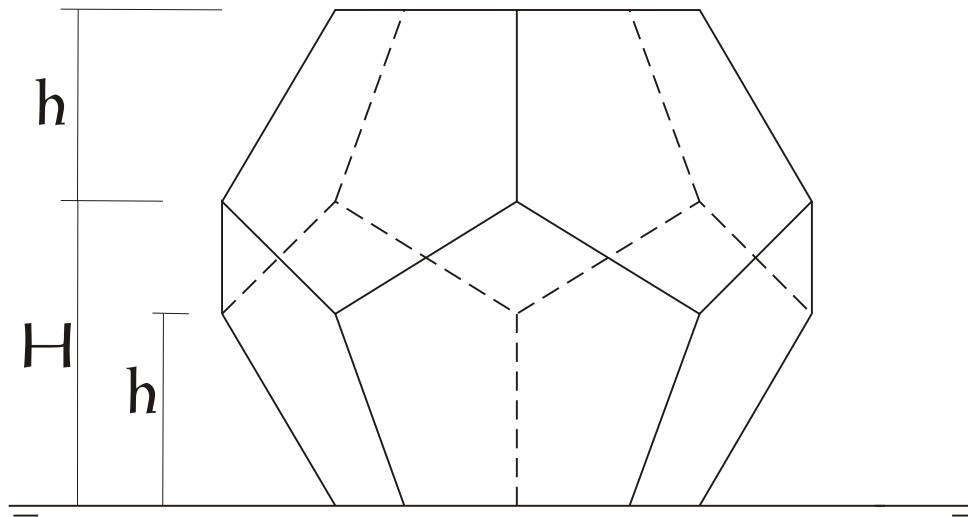
# Octaedro. Posicións sobre unha arista.



# Octaedro. Posicións sobre unha cara.



# Dodecaedro. Posicións sobre unha cara.

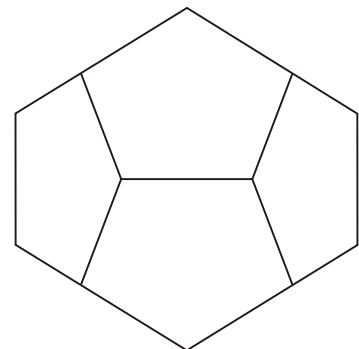
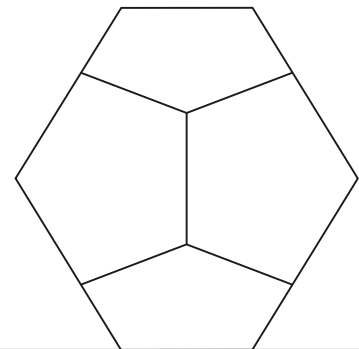
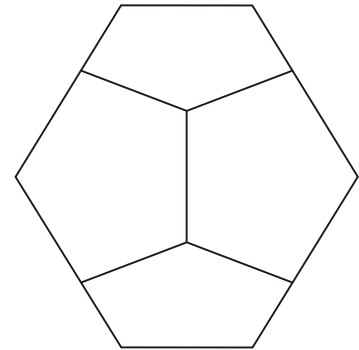
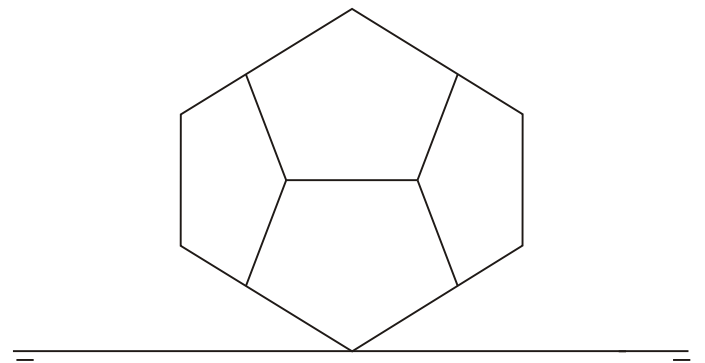
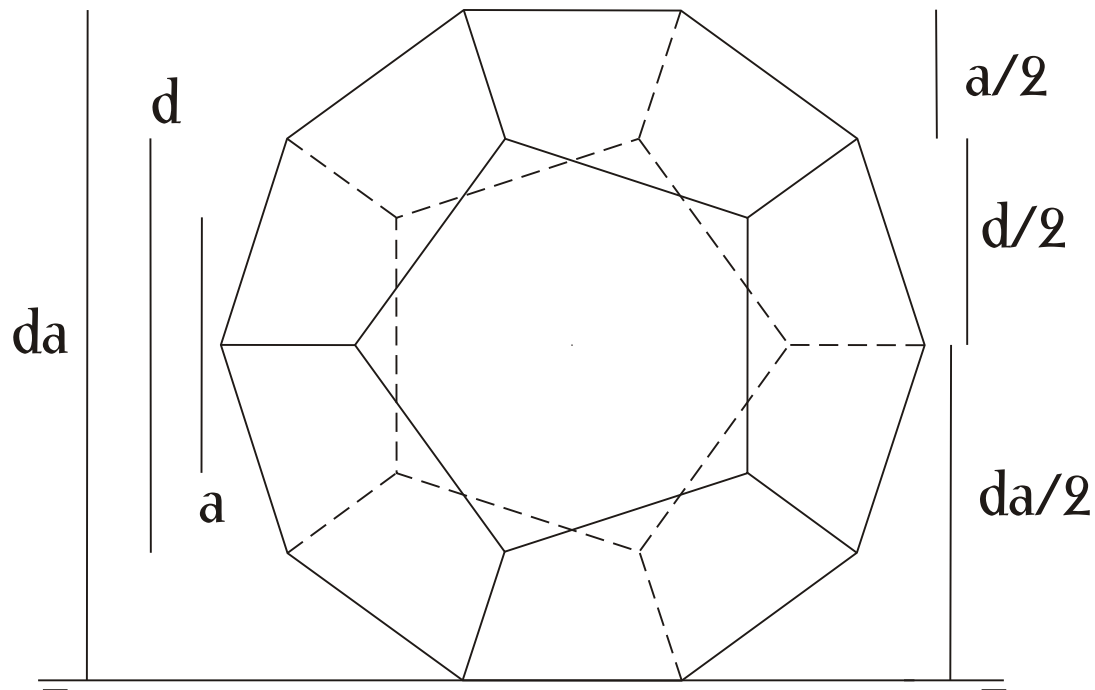


$$h = 1/\phi H$$

$$H = 1/\phi dc$$

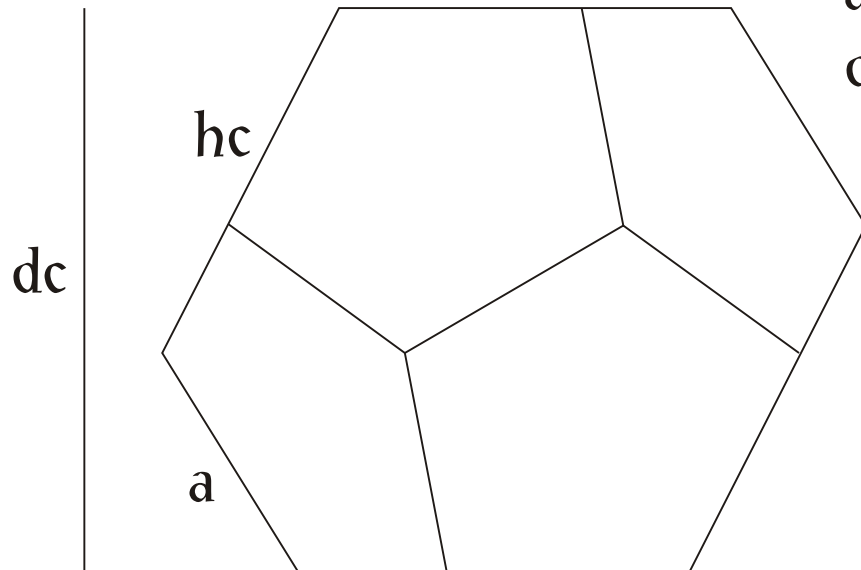
$$dc = h + H$$

# Dodecaedro. Posicións sobre unha arista.



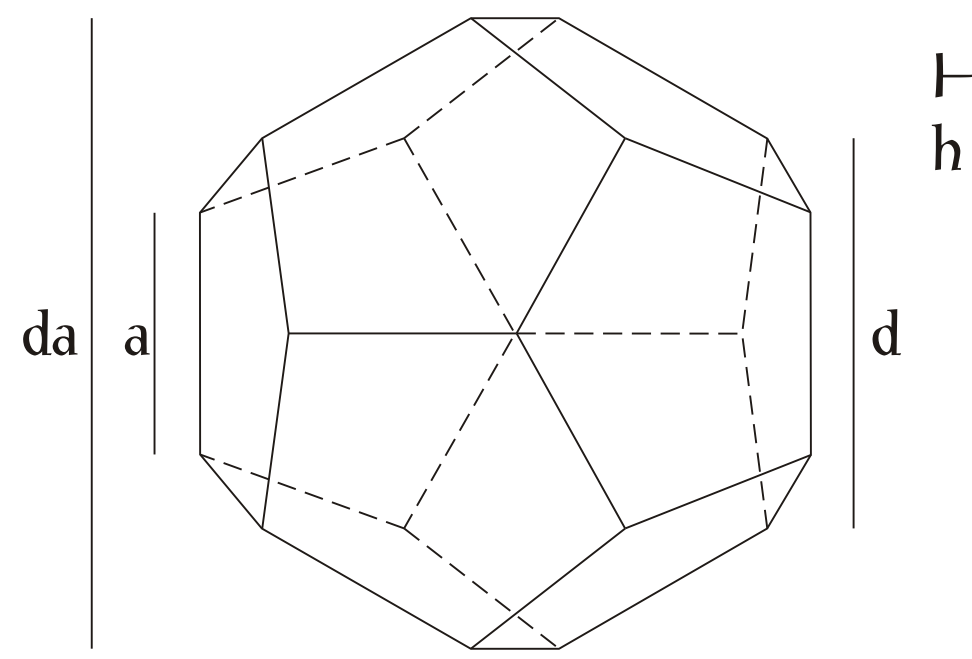
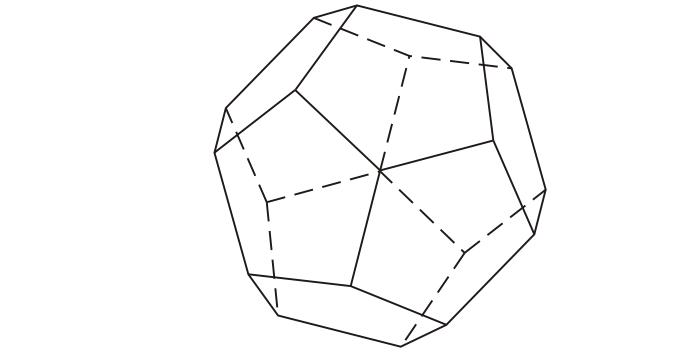
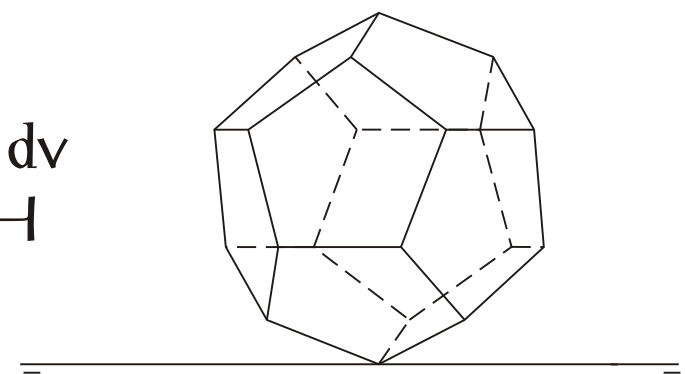
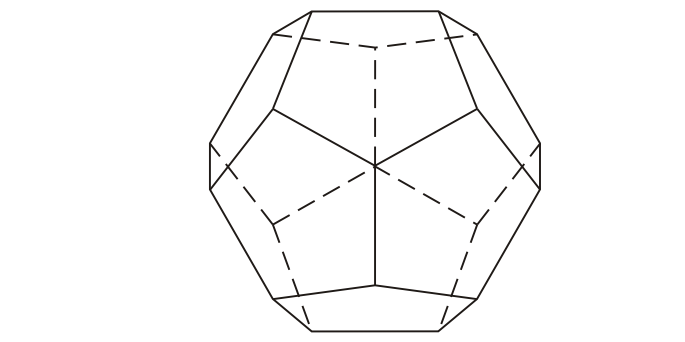
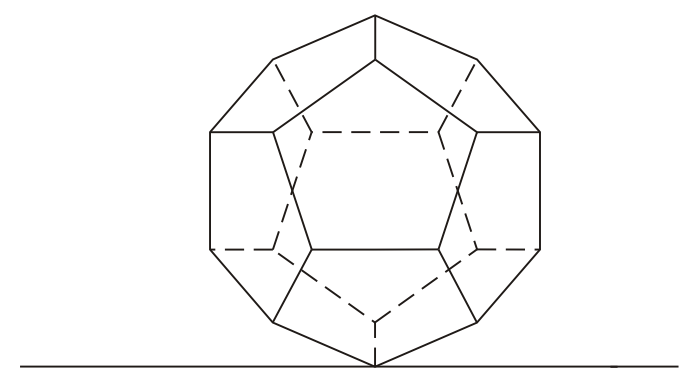
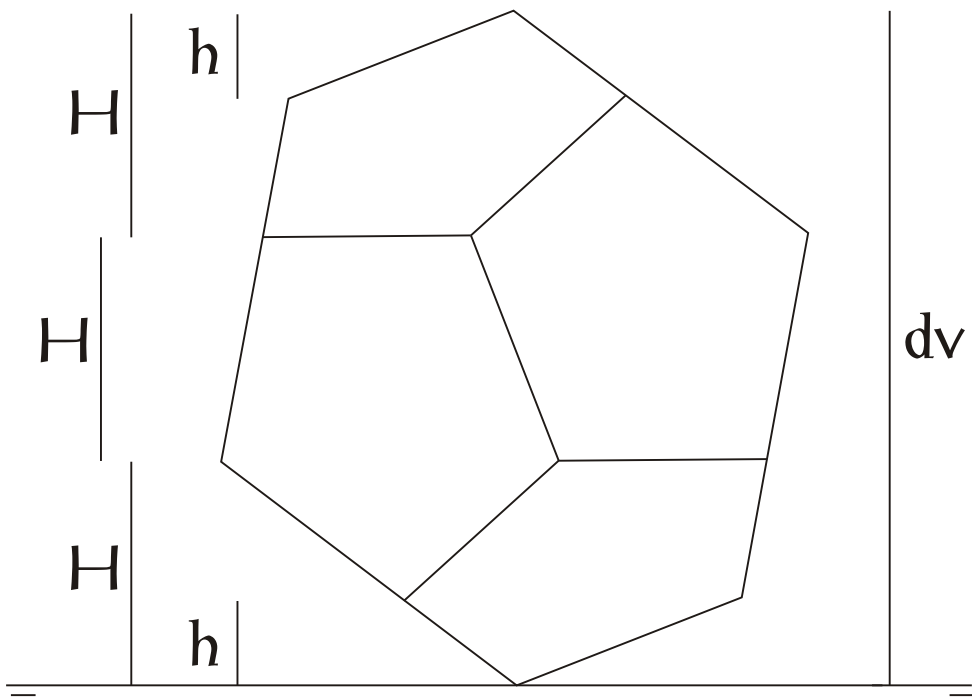
$$a = 1/\phi d$$

$$d = 1/\phi da$$





# Dodecaedro. Posicións sobre un vértice.

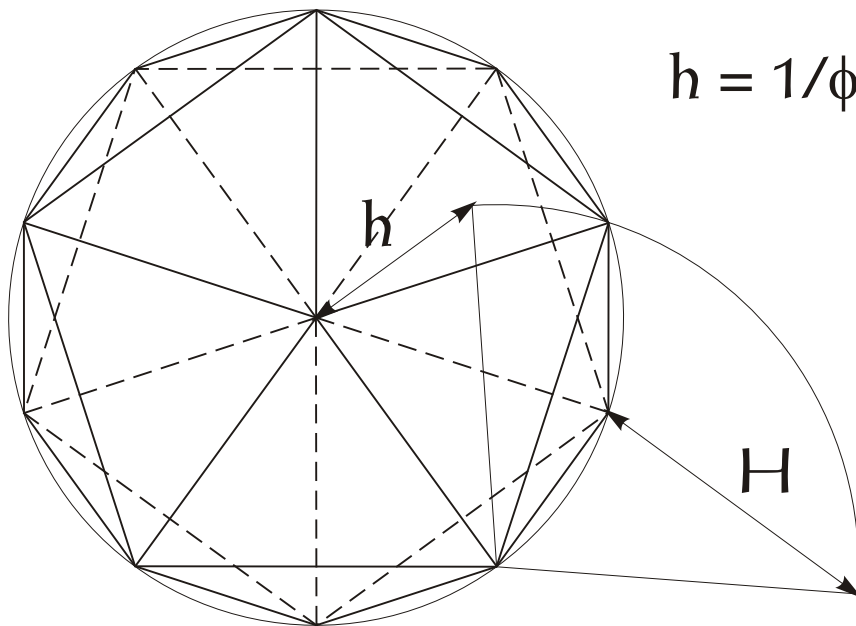
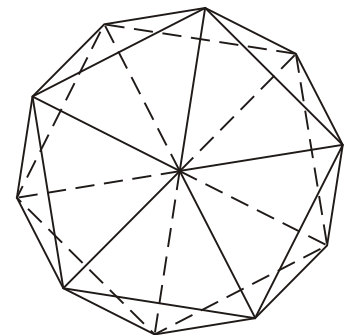
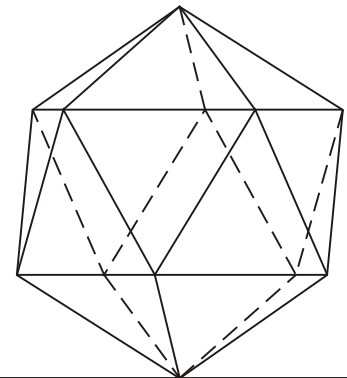
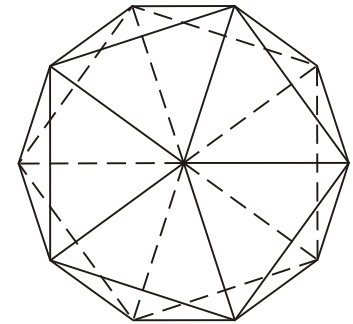
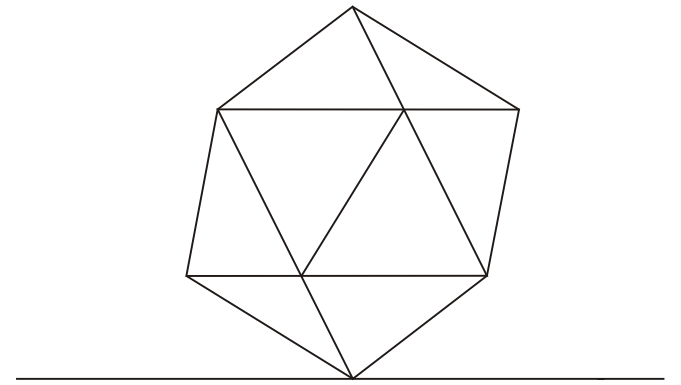
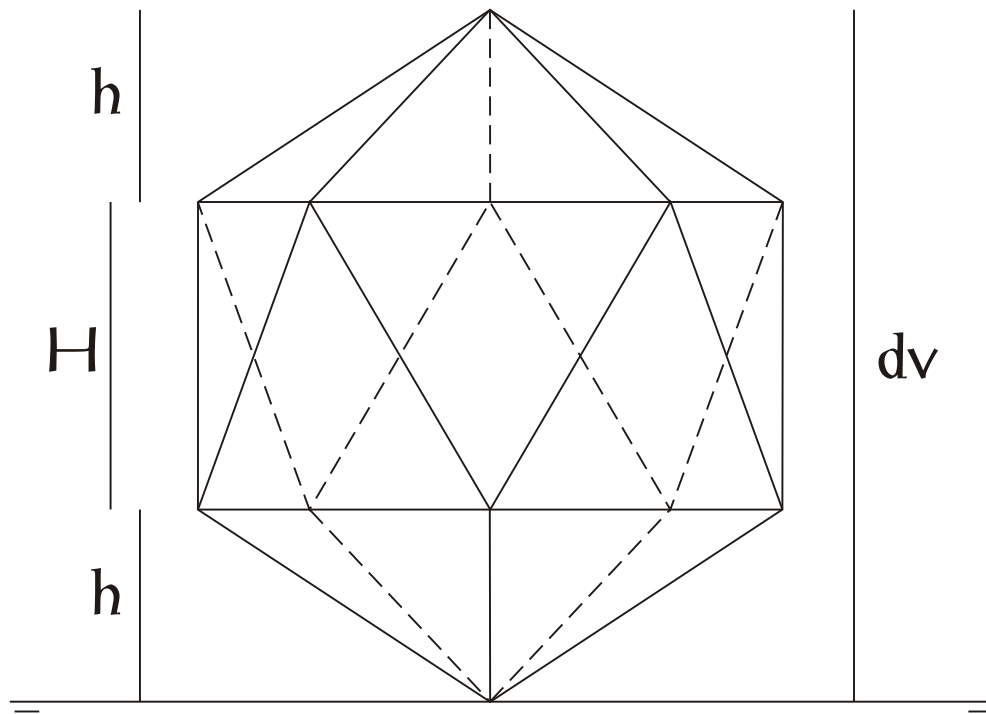


$$H = 1/3 dv$$

$$h = 1/\phi^2 H$$

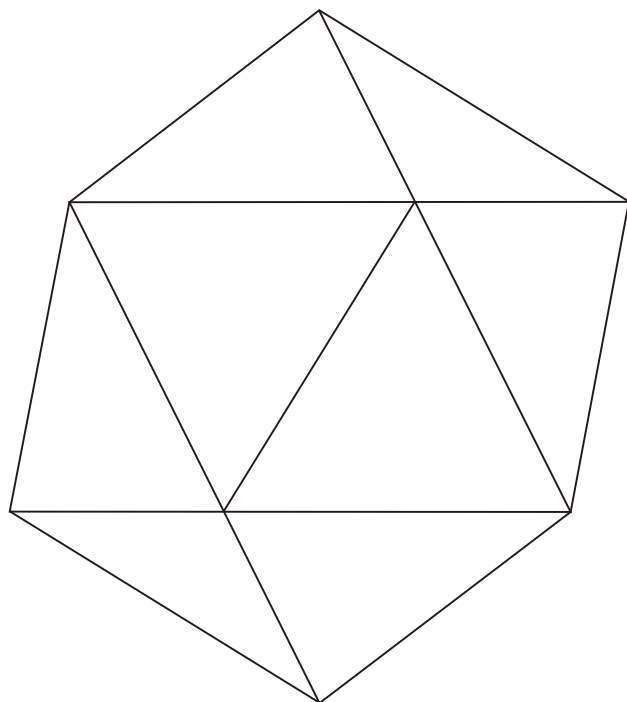
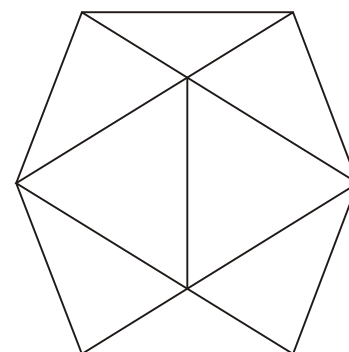
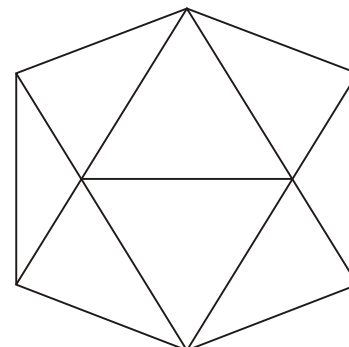
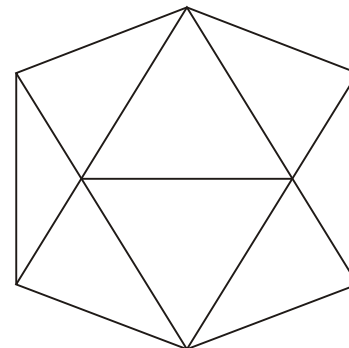
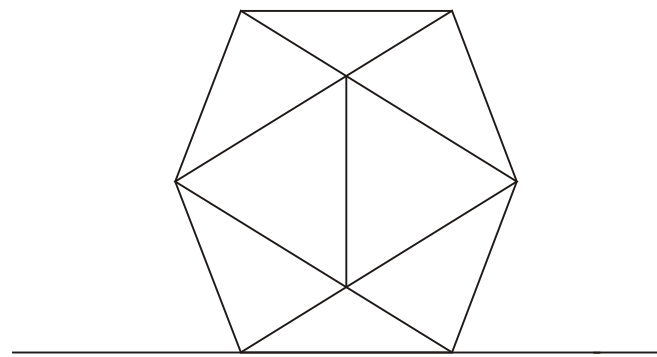
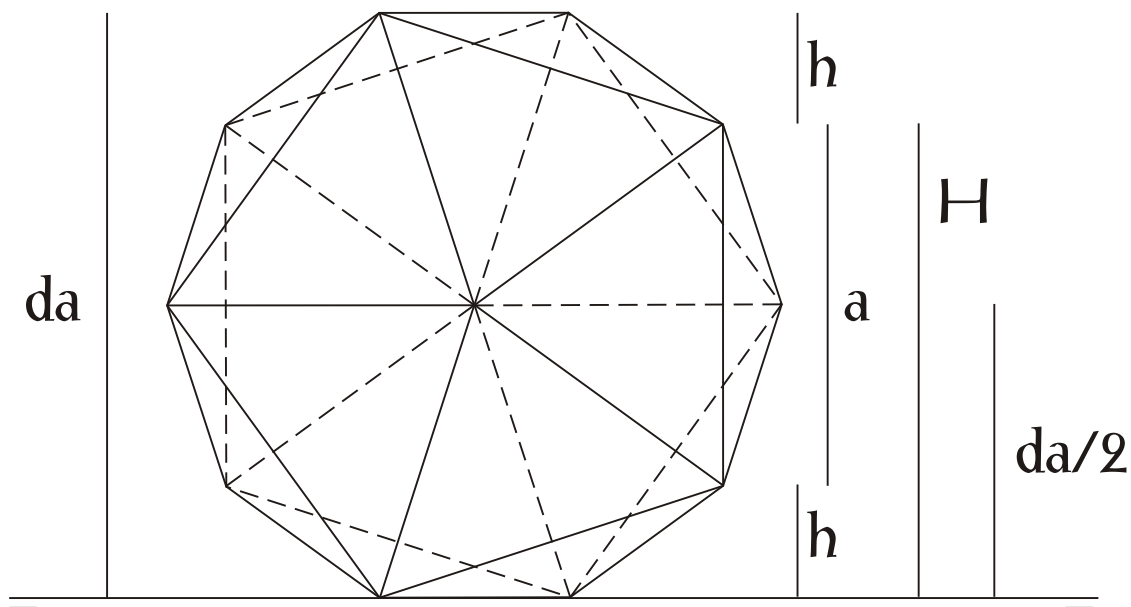
$d$

# Icosaedro. Posicións sobre un vértice.



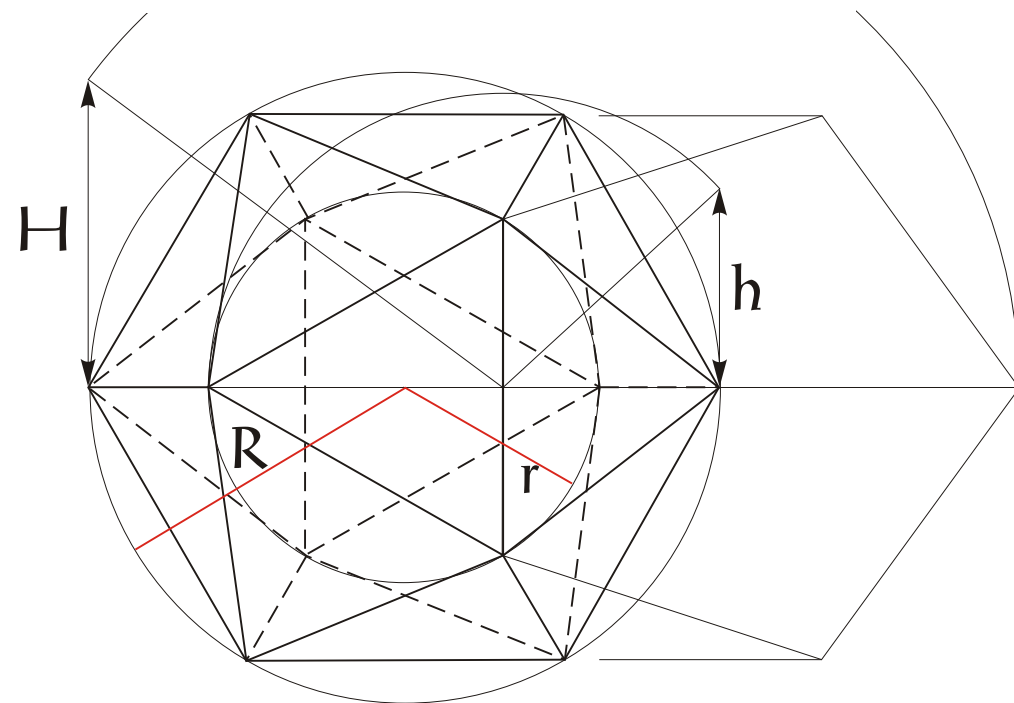
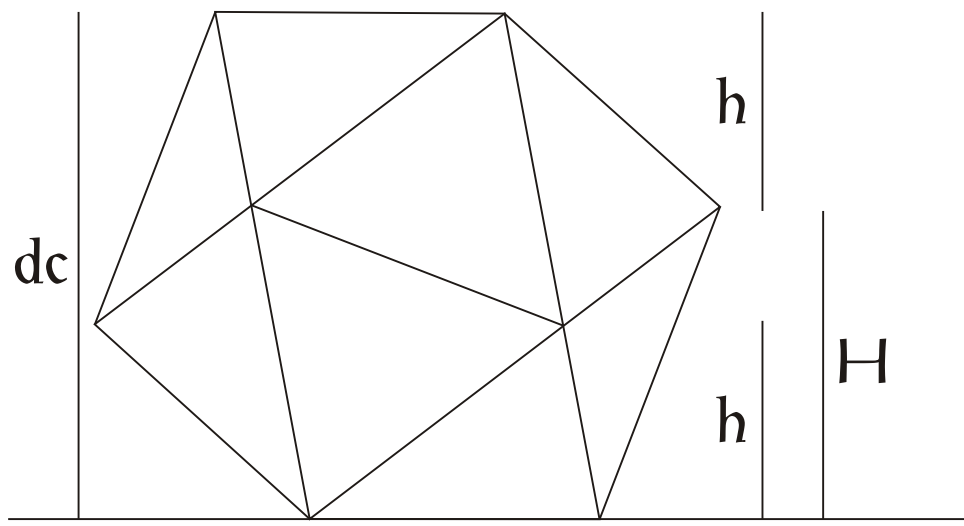
$$h = 1/\phi H$$

# Icosaedro. Posicións sobre unha arista.



$$\begin{aligned}
 a &= \phi da \\
 h &= 1/\phi da/2 \\
 da/2 &= \phi H \\
 H &= a+h
 \end{aligned}$$

# Icosaedro. Posicións sobre unha cara.



$$h = 1/\phi H$$

$$H = 1/\phi dc$$

$$r = 1/\phi R$$

