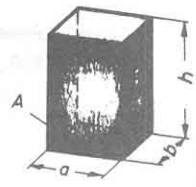
# احجام

## منشور




حجم = سطح قاعده × ارتفاع

$V = A \cdot h$

$V = A \cdot h$

$V = A_{\square} \cdot h$

$V = A_{\square} \cdot h$

$V = a \cdot b \cdot h$

سطح کل جانبی

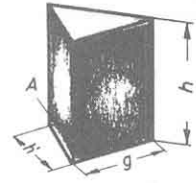
$A_0 = 2A_{\square} + 4A_{\square}$

$A =$ مربع

$A_0 = 2A_{\square} + 2A_{\square 1} + 2A_{\square 3}$

$A =$ مستطیل

## منشور




$V = A \cdot h$

$V = A_{\Delta} \cdot h$

$V = \frac{g \cdot h'}{2} \cdot h$

$A_0 = 2A_{\Delta} + 3A_{\square 1}$

$A =$ مثلث متساوی الاضلاع

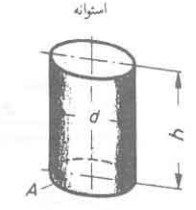
$A_0 = 2A_{\Delta} + A_{\square 1} + A_{\square 2} + A_{\square 3}$

$A =$ مثلث نا منظم

$A_0 = 2A_{\Delta} + n \cdot A_{\square}$

$A =$ چندگوش منظم

## استوانه




$V = A \cdot h$

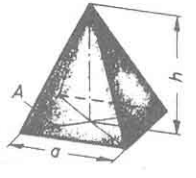
$V = A_{\bigcirc} \cdot h$

$V = \frac{\pi}{4} \cdot d^2 \cdot h$

سطح جانبی

$A_M = \pi \cdot d \cdot h$

## هرم




حجم = $\frac{\text{سطح قاعده} \times \text{ارتفاع}}{3}$

$V = \frac{A \cdot h}{3}$

$V = \frac{A_{\square} \cdot h}{3}$

$V = \frac{a \cdot b \cdot h}{3}$

سطح کل جانبی

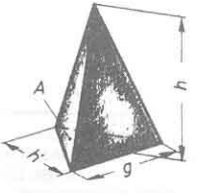
$A_0 = A_{\square} + 4A_{\Delta 1}$

$A =$ مربع

$A_0 = A_{\square} + 2A_{\Delta 1} + 2A_{\Delta 2}$

$A =$ مستطیل

## هرم




$V = \frac{A \cdot h}{3}$

$V = \frac{A_{\Delta} \cdot h}{3}$

$V = \frac{g \cdot h' \cdot h}{3}$

$A_0 = A_{\Delta} + 3A_{\Delta 1}$

$A =$ مثلث متساوی الاضلاع

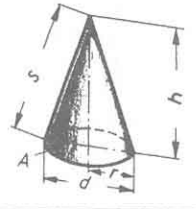
$A_0 = A_{\Delta} + A_{\Delta 1} + A_{\Delta 2} + A_{\Delta 3}$

$A =$ مثلث نا منظم

$A_0 = A_{\Delta} + n \cdot A_{\Delta 1}$

$A =$ چندگوش منظم

## مخروط




$V = \frac{A \cdot h}{3}$

$V = \frac{A_{\bigcirc} \cdot h}{3}$

$V = \frac{\pi}{4} \cdot d^2 \cdot \frac{h}{3}$

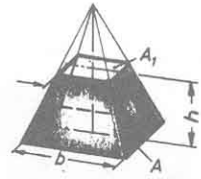
$A_0 = \frac{\pi}{4} \cdot d(d + 2s)$

سطح جانبی

$A_M = \frac{\pi \cdot d \cdot s}{2}$

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

## هرم ناقص




$$V = \frac{h}{3} \cdot (a^2 + a \cdot b + b^2) \qquad A = \text{مربع}$$

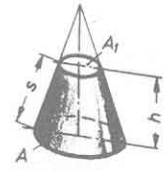
$$V \approx A_m \cdot h \quad V \approx \left(\frac{a+b}{2}\right)^2 \cdot h \qquad A = \text{مربع}$$

$$V \doteq \frac{h}{3}\left(A + \sqrt{A \cdot A_1} + A_1\right) \qquad A = \text{گوش}$$

سطح کل جانبی

$A_O =$ جمع کل سطوح

## مخروط ناقص




$$V = \frac{\pi}{12} \cdot h \cdot (D^2 + D \cdot d + d^2) \qquad \frac{\pi}{12} = 0{,}261$$

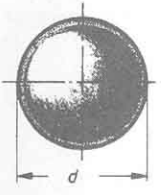
$$A_M = \pi \cdot \frac{d+D}{2} \cdot s$$

$$s = \sqrt{h^2 + (R-r)^2}$$

سطح کل جانبی

$$A_O = A + A_1 + A_M$$

## کره




سطح کل جانبی

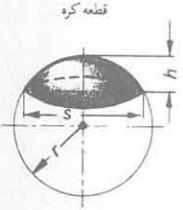
$$V = \frac{2}{3} \cdot \frac{\pi}{4} \cdot d^2 \cdot d$$

$$V = \frac{\pi}{6} \cdot d^3$$

$$V = 0{,}5236 \cdot d^3$$

$$A_O = \pi \cdot d^2$$

## قطعه کره




سطح جانبی

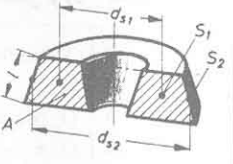
$$V = \pi \cdot h^2 \cdot \left(r - \frac{h}{3}\right)$$

$$V = \pi \cdot h \left(\frac{s^2}{8} + \frac{h^2}{6}\right)$$

$$A_M = 2 \cdot \pi \cdot r \cdot h$$

$$A_M = \frac{\pi}{4}\left(s^2 + 4h^2\right)$$

## احجام دورانی




قاعده کولدین

$V =$ سطح مولد طول مرکز ثقل

$M =$ ضلع مولد طول مرکز ثقل

$S =$ مرکز ثقل

$$V = A \cdot \pi \cdot d_{s1}$$

سطح جانبی

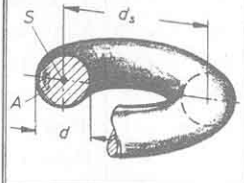
$$A_M = l \cdot \pi \cdot d_{s2}$$

سطح کل جانبی

$$A_O = U_A \cdot \pi \cdot d_{s1}$$

$U_A =$ محیط مقطع

## حلقه استوانه




سطح کل جانبی

سطح جانبی

$$V = \frac{\pi}{4} \cdot d^2 \cdot \pi \cdot d_s$$

$$A_O = A_M = U \cdot \pi \cdot d_s$$

$$A_O = \pi \cdot d \cdot \pi \cdot d_s$$