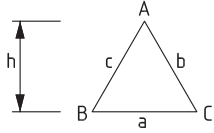
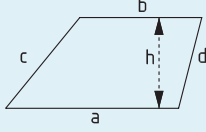
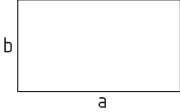
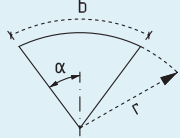

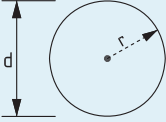
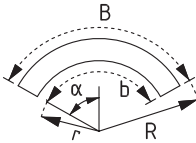
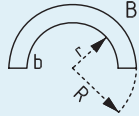
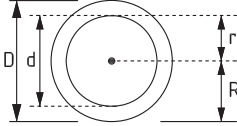
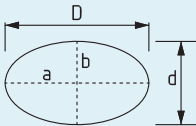
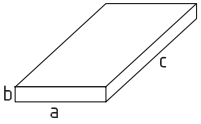
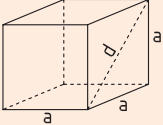
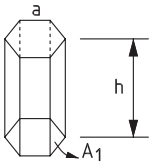
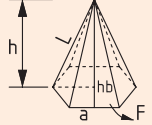
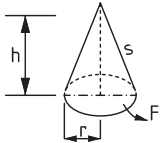
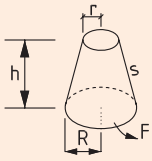
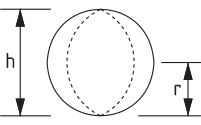
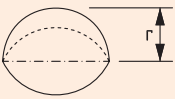


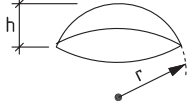
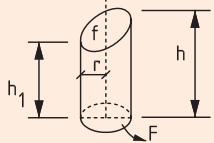
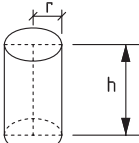
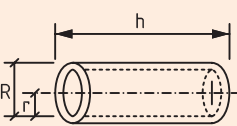
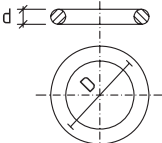
1.10 ALAN VE ÇEVRE HESAPLARI

		ALAN	ÇEVRE
ÜÇGEN		$A = \frac{1}{2} \cdot a \cdot h$	$U = a + b + c$
YAMUK (Trapez)		$A = \frac{a+b}{2} \cdot h$	$U = a + b + c + d$
DİKDÖRTGEN		$A = a \cdot b$	$U = 2(a + b)$
DAİRE DİLİMİ		$A = \frac{b \cdot r}{2} = \frac{\alpha^\circ}{180} \cdot r^2 \cdot \pi$ $b = r \cdot \pi \cdot \frac{\alpha^\circ}{90}$ yay boyu	$U = 2r + b$
YARIM DAİRE		$A = \frac{1}{2} \cdot \pi \cdot r^2$	$U = r(2 + \pi) = 5,14 \cdot r$
DAİRE		$A = r^2 \cdot \pi = \pi \frac{d^2}{4}$	$U = 2\pi \cdot r = \pi \cdot d$
DAİRE HALKASI DİLİMİ		$A = \frac{a}{180} \cdot \pi \cdot (R^2 - r^2)$	$U = 2(R - r) + B + b$
YARIM DAİRE HALKASI		$A = \frac{\pi}{2} \cdot (R^2 - r^2)$	$U = 2(R - r) = B + b$
DAİRE HALKASI		$A = \pi \cdot (R^2 - r^2)$	$U = 2\pi(R + r)$
ELİPS ÇEMBERİ		$A = \frac{\pi \cdot d \cdot D}{4}$	$U = \frac{a+b}{2} \cdot \pi$

HACİM VE ALAN HESAPLARI

		HACİM	ALAN
DİKDÖRTGEN PRİZMA		$V = a \cdot b \cdot c$	$A = 2(a \cdot a \cdot c + b \cdot c)$
KÜP		$V = a^3 = \frac{d^3}{2.828}$	$A = 6 \cdot a^2 = 3d^2$
PRİZMA		$A = A_1 \cdot h$ $A_1 = 2,598 \cdot a$	U = Altıgen çevresi $A_1 =$ Altıgen yüzey h = Yükseklik $A = U \cdot h + 2A_1$ $A_1 = 2,598 \cdot a$
PİRAMİT		$A = \frac{1}{3} \cdot F \cdot h$	$h_b = \sqrt{h^2 + \frac{a^2}{4}}$ $L = \sqrt{hb^2 \frac{a^2}{4}}$ $A = F + 6 \left(\frac{hbxa}{2} \right)$ $F = 2,598 \cdot a^2$
KONİ		$A = \frac{1}{3} \cdot F \cdot h$	$A = \pi \cdot r \cdot s + \pi \cdot r^2$ $S = \sqrt{h^2 + r^2}$
KESİK KONİ		$V = (R^2 + r^2 + R \cdot r) \frac{\pi \cdot h}{3}$	$A = (R + r) \cdot \pi \cdot s + \pi(R^2 + r^2)$ $S = \sqrt{h^2 + (R - r)^2}$
KÜRE		$V = \frac{4}{3} \cdot \pi \cdot r^3$ $V = 4,189 \cdot r^3$ $V = 0,5236 \cdot d^3$	$A = 4 \cdot \pi \cdot r^2$ $A = \pi \cdot d^2$
KESİK KÜRE		$V = \frac{2}{3} \cdot \pi \cdot r^3$	$A = 3\pi \cdot r^2$

HACİM VE ALAN HESAPLARI

		HACİM	ALAN
KÜRE PARÇASI		$V = \pi \cdot h^2 \left(r - \frac{1}{3}h \right)$	$a = 2\pi \cdot r \cdot h + \pi(2 \cdot r \cdot h - h^2)$ $A = \pi \cdot h(4r - h)$
KESİK SİLİNDİR		$V = \pi r^2 \cdot \frac{h + h_1}{2}$	$A = \pi \cdot r \cdot (h + h_1) + F + f$
SİLİNDİR		$V = \pi \cdot r^2 \cdot h$	$A = 2\pi \cdot r \cdot h + 2\pi \cdot r^2$
İÇİ BOŞ SİLİNDİR		$V = \pi \cdot h(R^2 - r^2)$	$A = 2 \cdot \pi \cdot h(R + r) + 2\pi \cdot (R^2 - r^2)$
SİLİNDİRİM HALKA		$V = \frac{\pi \cdot d^2}{4} \cdot \pi \cdot D$	$A = \pi \cdot d \cdot \pi \cdot D$

Tablo → 1.55

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Tel: (0312) 311 24 44 (pbx) **Fax:** (0312) 311 74 31

kareltesisat@gmail.com

KESİTLERİN ÖZELLİKLERİ

A = Alan

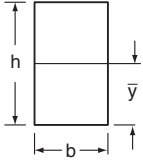
I = $Ak^2 =$ Atalet Momenti

J = Polar Atalet Momenti

Z = Mukavemet Momenti

k = Dönme Yarıçapı

\bar{y} = Ağırlık Merkezi Uzaklığı



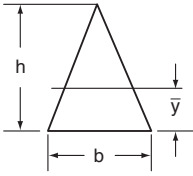
$$A = bh$$

$$I = \frac{bh^3}{12}$$

$$Z = \frac{bh^2}{6}$$

$$k = 0.28h$$

$$\bar{y} = \frac{h}{2}$$



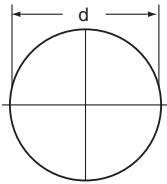
$$A = \frac{bh}{2}$$

$$I = \frac{bh^3}{36}$$

$$Z = \frac{bh^2}{24}$$

$$k = 0.236h$$

$$\bar{y} = \frac{h}{3}$$



$$A = \frac{\pi d^2}{4}$$

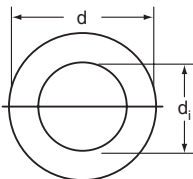
$$I = \frac{\pi d^4}{64}$$

$$Z = \frac{\pi d^3}{32}$$

$$J = \frac{\pi d^4}{32}$$

$$k = \frac{d}{4}$$

$$\bar{y} = \frac{d}{2}$$



$$A = \frac{\pi}{4}(d^2 - d_i^2)$$

$$I = \frac{\pi}{64}(d^4 - d_i^4)$$

$$Z = \frac{\pi}{32d}(d^4 - d_i^4)$$

$$J = \frac{\pi}{32}(d^4 - d_i^4)$$

$$k = \sqrt{\frac{d^2 + d_i^2}{16}}$$

$$\bar{y} = \frac{d}{2}$$