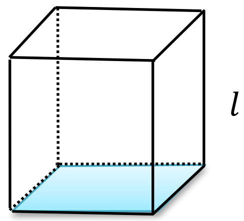
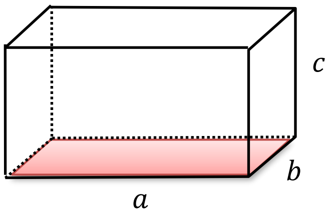
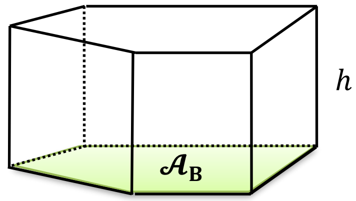
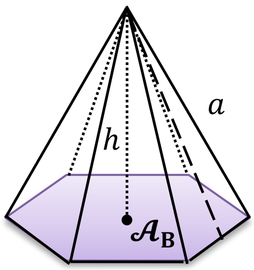
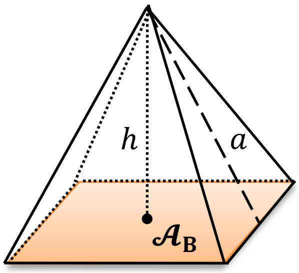
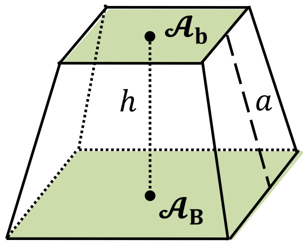
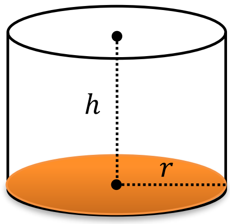
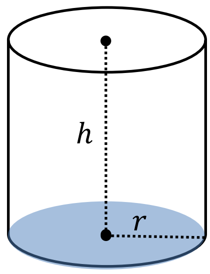
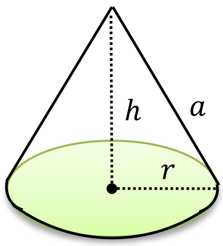
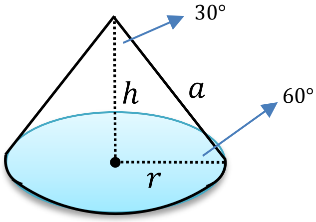
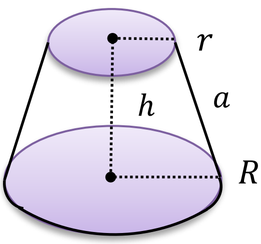
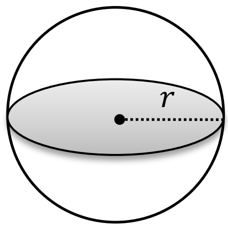
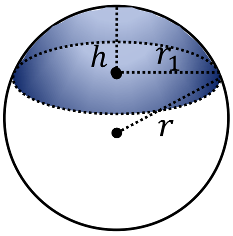
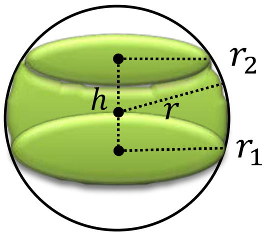
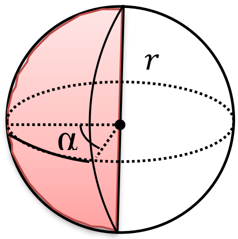
Volumi e Aree delle superfici delle principali figure solide

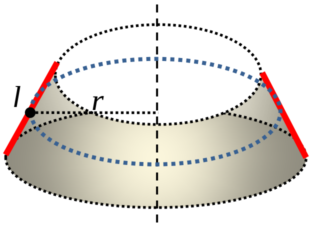
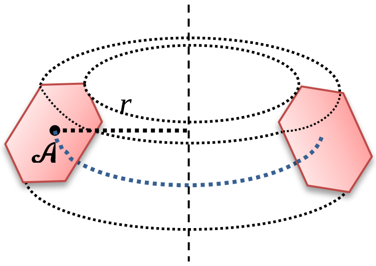
cubo	parallelepipedo rettangolo	prisma retto
		
$\mathcal{V} = l^3$	$\mathcal{V} = a \cdot b \cdot c$	$\mathcal{V} = \mathcal{A}_B \cdot h$
$\mathcal{A}_B = l^2$ $\mathcal{A}_L = 4l^2$	$\mathcal{A}_B = ab$ $\mathcal{A}_L = (2a+2b)c$	$\mathcal{A}_B$ $\mathcal{A}_L = perimetro\ di\ base \cdot h$

piramide retta a base regolare	piramide retta	tronco di piramide
		
$\mathcal{V} = \frac{\mathcal{A}_B \cdot h}{3}$	$\mathcal{V} = \frac{\mathcal{A}_B \cdot h}{3}$	$\mathcal{V} = \frac{1}{3}h\left(\mathcal{A}_B + \mathcal{A}_b + \sqrt{\mathcal{A}_B \cdot \mathcal{A}_b}\right)$
$\mathcal{A}_B$ $\mathcal{A}_L = \frac{perimetro\ di\ base \cdot a}{2}$	$\mathcal{A}_B$ $\mathcal{A}_L = somma\ aree\ facce\ laterali$	$\mathcal{A}_B + \mathcal{A}_b$ $\mathcal{A}_L = somma\ aree\ facce\ laterali$

cilindro	cilindro equilatero ($h = 2r$)	cono
		
$\mathcal{V} = \mathcal{A}_B \cdot h = \pi \cdot r^2 \cdot h$	$\mathcal{V} = \mathcal{A}_B \cdot h = 2 \cdot \pi \cdot r^3$	$\mathcal{V} = \frac{\mathcal{A}_B \cdot h}{3} = \frac{\pi \cdot r^2 \cdot h}{3}$
$\mathcal{A}_B = \pi r^2$ $\mathcal{A}_L = 2\pi r h$	$\mathcal{A}_B = \pi r^2$ $\mathcal{A}_L = 4\pi r^2$	$\mathcal{A}_B = \pi r^2$ $\mathcal{A}_L = \pi r a$

cono equilatero ($a = 2r \quad h = \sqrt{3}\, r$)	tronco di cono	sfera
		
$\mathcal{V} = \frac{\mathcal{A}_B \cdot h}{3} = \frac{\pi \cdot r^3}{\sqrt{3}}$	$\mathcal{V} = \frac{1}{3}\pi\, h(R^2 + r^2 + Rr)$	$\mathcal{V} = \frac{4}{3} \cdot \pi \cdot r^3$
$\mathcal{A}_B = \pi r^2$ $\mathcal{A}_L = 2\pi r^2$	$\mathcal{A}_B = \pi(r^2 + R^2)$ $\mathcal{A}_L = \pi(r+R)a$	$\mathcal{A} = 4 \cdot \pi \cdot r^2$

segmento sferico ad 1 base	segmento sferico a 2 basi	spicchio sferico
		
$\mathcal{V}=\frac{h}{2}\pi r_1^2+\frac{4}{3}\pi\left(\frac{h}{2}\right)^3$	$\mathcal{V}=\frac{h\pi}{2}(r_1^2+r_2^2)+\frac{4}{3}\pi\left(\frac{h}{2}\right)^3$	$\mathcal{V}=\frac{\alpha^\circ}{270^\circ}\pi r^3=\frac{2}{3}\pi r^3\alpha_{rad}$
$\mathcal{A}=2\pi r h$	$\mathcal{A}=2\pi r h$	$\mathcal{A}=\frac{\alpha^\circ}{90^\circ}\pi r^2=2\pi r^2\alpha_{rad}$

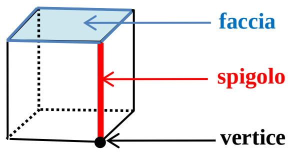
1^0 teorema di Guldino	2^0 teorema di Guldino
l'area della **superficie** generata da una linea (o da un poligono) in rotazione intorno ad un asse è uguale al prodotto della circonferenza descritta dal suo baricentro per la sua lunghezza (o perimetro)	il **volume** generato da una superficie in rotazione intorno ad un asse è uguale al prodotto della circonferenza descritta dal suo baricentro per l'area della sua superficie
	
$\mathcal{A}=2\pi r l$	$\mathcal{V}=2\pi r S$

formula di Eulero

Si definisce:

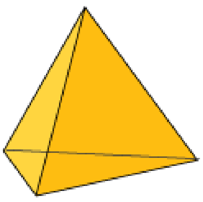
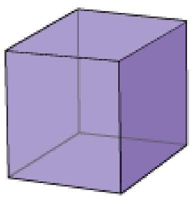
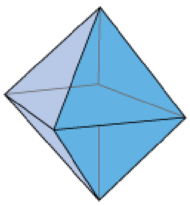
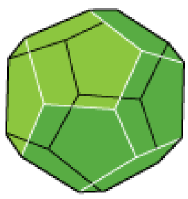
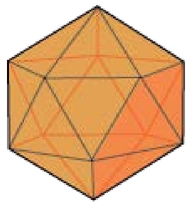
- **poliedro** un solido dello spazio la cui frontiera è l'unione delle sue facce
- **faccia** ogni figura piana che compone il poliedro
- **spigolo** ogni segmento di incontro delle facce
- **vertice** ogni punto di incontro degli spigoli

per tutti i poliedri vale la **formula di Eulero**: $\boldsymbol{Facce + Vertici - Spigoli = 2}$



solidi platonici o poliedri regolari

I solidi platonici sono quei solidi le cui facce, tutte uguali tra loro, sono formate da poligoni regolari e tali che in ogni vertice concorrono lo stesso numero di spigoli. I solidi platonici, si può dimostrare, che sono solo cinque:

tetraedro 4 triangoli equilateri	*esaedro (cubo)* 6 quadrati	*ottaedro* 8 triangoli equilateri	*dodecaedro* 12 pentagoni regolari	*icosaedro* 20 triangoli equilateri
				

Il volume dei solidi platonici si calcola moltiplicando il cubo dello spigolo per un numero caratteristico di ogni solido:

$\mathcal{V}=l^3\cdot 0,1179$	$\mathcal{V}=l^3$	$\mathcal{V}=l^3\cdot 0,4714$	$\mathcal{V}=l^3\cdot 7,6631$	$\mathcal{V}=l^3\cdot 2,1817$