

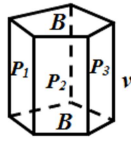
Formule - geometrijska tijela - osnovna škola

Prizme

Oznake:

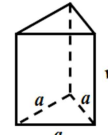
V – volumen (obujam),
 O – oplošje,
 v - visina tijela,
 D – duljina prostorne dijagonale,
 d, d_1, d_2, \dots - duljine plošnih dijagonala,
 B - površina baze,
 P - površina pobočja (kod uglatih tijela) ili površina plašta (kod obliha tijela),
 P_1, P_2, \dots - površine pobočki (bočnih strana),
 P_{DP} - površina dijagonalnog presjeka (kod uglatih tijela),
 P_{OP} - površina osnovog presjeka (kod obliha tijela)

Općenito (bilo koja) prizma



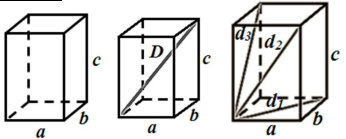
$$\begin{aligned}
 V &= B \cdot v \\
 O &= 2B + P \\
 P &= P_1 + P_2 + P_3 + \dots
 \end{aligned}$$

pravilna trostrana prizma



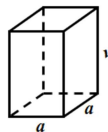
$$\begin{aligned}
 V &= B \cdot v \\
 V &= \frac{a^2 \sqrt{3}}{4} \cdot v \\
 B &= \frac{a^2 \sqrt{3}}{4} & O &= 2B + P \\
 P_1 &= a \cdot v & O &= \frac{a^2 \sqrt{3}}{2} + 3av \\
 P &= 3av
 \end{aligned}$$

kvadar

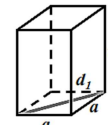


$$\begin{aligned}
 d_1 &= \sqrt{a^2 + b^2} \\
 d_2 &= \sqrt{a^2 + c^2} \\
 d_3 &= \sqrt{b^2 + c^2} \\
 V &= a \cdot b \cdot c \\
 O &= 2ab + 2ac + 2bc \\
 D &= \sqrt{a^2 + b^2 + c^2} \\
 P_{DP} &= d_1 \cdot c
 \end{aligned}$$

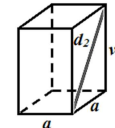
pravilna četverostrana prizma



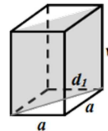
$$\begin{aligned}
 V &= B \cdot v \\
 V &= a^2 \cdot v \\
 O &= 2B + P \\
 O &= 2a^2 + 4av \\
 B &= a^2 \\
 P_1 &= a \cdot v \\
 P &= 4av
 \end{aligned}$$



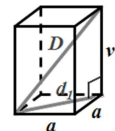
$$d_1 = a\sqrt{2}$$



$$d_2 = \sqrt{a^2 + v^2}$$



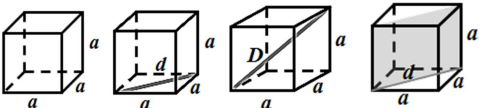
$$P_{DP} = d_1 \cdot v$$



$$D = \sqrt{d_1^2 + v^2}$$

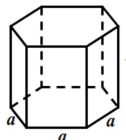
$$D = \sqrt{2a^2 + v^2}$$

kocka

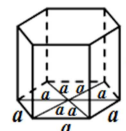


$$\begin{aligned}
 V &= a^3 & d &= a\sqrt{2} & P_{DP} &= d \cdot a \\
 O &= 6a^2 & D &= a\sqrt{3}
 \end{aligned}$$

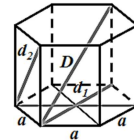
pravilna šesterostrana prizma



$$\begin{aligned}
 V &= B \cdot v \\
 V &= \frac{3a^2 \sqrt{3}}{2} \cdot v \\
 O &= 2B + P \\
 O &= 3a^2 \sqrt{3} + 6av \\
 B &= \frac{3a^2 \sqrt{3}}{2} \\
 P_1 &= a \cdot v \\
 P &= 6av
 \end{aligned}$$



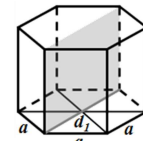
$$d_1 = 2a$$



$$d_2 = \sqrt{a^2 + v^2}$$

$$D = \sqrt{d_1^2 + v^2}$$

$$D = \sqrt{4a^2 + v^2}$$



$$P_{DP} = d_1 \cdot v$$

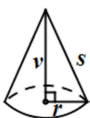
Obla tijela

kugla



$$\begin{aligned}
 V &= \frac{4}{3} r^3 \pi \\
 O &= 4r^2 \pi
 \end{aligned}$$

stožac

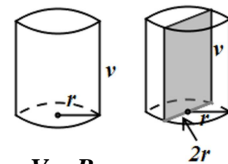


$$\begin{aligned}
 V &= \frac{1}{3} \cdot B \cdot v & v &= \sqrt{s^2 - r^2} \\
 V &= \frac{1}{3} r^2 \pi \cdot v & s &= \sqrt{v^2 + r^2} \\
 B &= r^2 \pi & r &= \sqrt{s^2 - v^2} \\
 P &= r \pi s & P_{OP} &= r \cdot v \\
 O &= B + P & & \\
 O &= r^2 \pi + r \pi s & &
 \end{aligned}$$



$$P_{OP} = r \cdot v$$

valjak

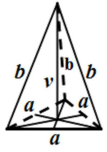


$$\begin{aligned}
 V &= B \cdot v & B &= r^2 \pi \\
 V &= r^2 \pi \cdot v & P &= 2r \pi v \\
 O &= 2B + P & P_{OP} &= 2r \cdot v \\
 O &= 2r^2 \pi + 2r \pi v
 \end{aligned}$$

Formule - geometrijska tijela - osnovna škola

Piramide

pravilna trostrana piramida



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

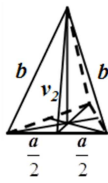
$$P = 3 \cdot \frac{a \cdot v_2}{2}$$

$$V = \frac{1}{3} \cdot B \cdot v$$

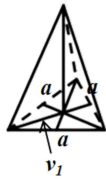
$$V = \frac{a^2 \sqrt{3}}{12} \cdot v$$

$$O = B + P$$

$$O = \frac{a^2 \sqrt{3}}{4} + 3 \cdot \frac{a \cdot v_2}{2}$$



$$v_2 = \sqrt{b^2 - \left(\frac{a}{2}\right)^2}$$



$$v_1 = \frac{a \sqrt{3}}{2}$$

Oznake:

V – volumen (obujam),

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v - visina tijela,

D – duljina prostorne dijagonale,

d, d₁, d₂, ... - duljine plošnih dijagonala,

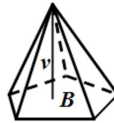
B - površina baze,

P - površina pobočja (kod uglatih tijela) ili površina plašta (kod oblih tijela),

P₁, P₂, ... - površine pobočki (bočnih strana)

P_{DP} - površina dijagonalnog presjeka

Općenito (bilo koja) piramida

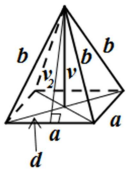


$$V = \frac{1}{3} \cdot B \cdot v$$

$$O = B + P$$

$$P = P_1 + P_2 + P_3 + \dots$$

pravilna četverostrana piramida



$$B = a^2$$

$$P = 2 \cdot a \cdot v_2$$

$$P_1 = \frac{a \cdot v_2}{2}$$

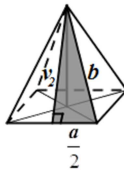
$$V = \frac{1}{3} \cdot B \cdot v$$

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

$$V = \frac{1}{3} \cdot a^2 \cdot v$$

$$O = B + P$$

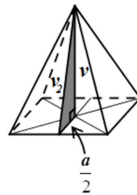
$$O = a^2 + 2 \cdot a \cdot v_2$$



$$v_2 = \sqrt{b^2 - \left(\frac{a}{2}\right)^2}$$

$$b = \sqrt{v_2^2 + \left(\frac{a}{2}\right)^2}$$

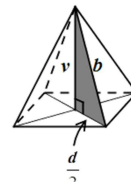
$$\frac{a}{2} = \sqrt{b^2 - v_2^2}$$



$$v_2 = \sqrt{v^2 + \left(\frac{a}{2}\right)^2}$$

$$v = \sqrt{v_2^2 - \left(\frac{a}{2}\right)^2}$$

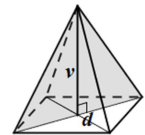
$$\frac{a}{2} = \sqrt{v^2 - v_2^2}$$



$$v = \sqrt{b^2 - \left(\frac{d}{2}\right)^2}$$

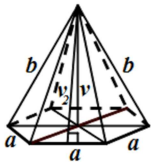
$$b = \sqrt{v^2 + \left(\frac{d}{2}\right)^2}$$

$$\frac{d}{2} = \sqrt{b^2 - v^2}$$



$$P_{DP} = \frac{d \cdot v}{2}$$

pravilna šesterostrana piramida

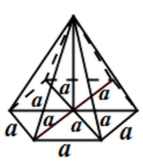


$$V = \frac{1}{3} \cdot B \cdot v$$

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

$$O = B + P$$

$$O = \frac{3a^2 \sqrt{3}}{2} + 3 \cdot a \cdot v_2$$

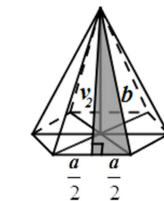
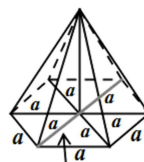


$$B = \frac{3a^2 \sqrt{3}}{2}$$

$$P = 3 \cdot a \cdot v_2$$

$$P_1 = \frac{a \cdot v_2}{2}$$

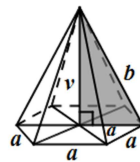
$$d = 2a$$



$$v_2 = \sqrt{b^2 - \left(\frac{a}{2}\right)^2}$$

$$b = \sqrt{v_2^2 + \left(\frac{a}{2}\right)^2}$$

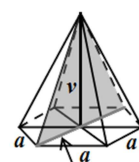
$$\frac{a}{2} = \sqrt{b^2 - v_2^2}$$



$$v = \sqrt{b^2 - a^2}$$

$$b = \sqrt{v^2 + a^2}$$

$$a = \sqrt{b^2 - v^2}$$



$$P_{DP} = a \cdot v$$