Мрежа и површина правилне тростране призме 07.12.20.
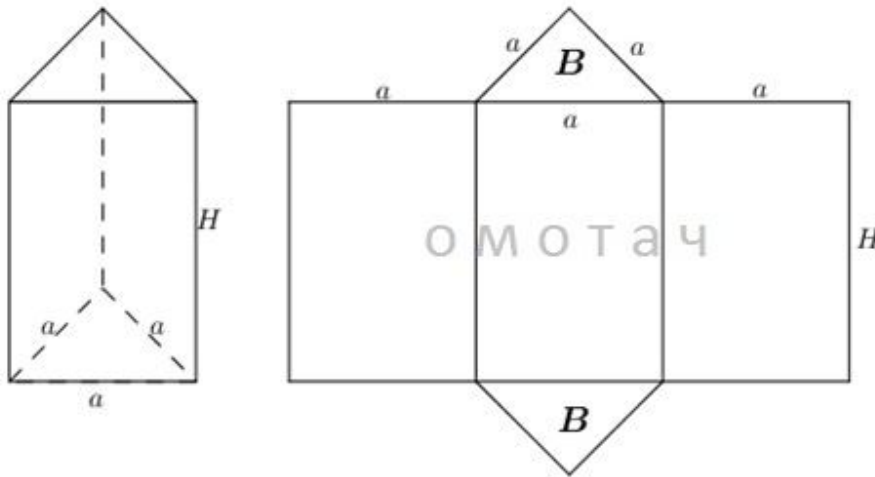
Код правилне тростране призме основа је једнакостранични троугао.

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

Површина омотача:
$$M = 3aH$$

Површина призме:
$$P = 2B + M$$
$$P = 2 \cdot \frac{a^2\sqrt{3}}{4} + 3aH$$
$$P = \frac{a^2\sqrt{3}}{2} + 3aH$$

Задаци (без запремине): 285.a) , 288., 290., 292.

285.a) $a = 6cm$

$\qquad H = 8cm$

$\qquad \underline{P = ?}$

$\qquad B = \frac{a^2\sqrt{3}}{4} = \frac{6^2\sqrt{3}}{4} = \frac{36\sqrt{3}}{4}$

$\qquad B = 9\sqrt{3}cm^2$

$\qquad M = 3aH = 3 \cdot 6 \cdot 8$

$\qquad M = 144cm^2$

$\qquad P = 2B + M$

$\qquad P = 2 \cdot 9\sqrt{3}cm^2 + 144cm^2$

$\qquad P = (18\sqrt{3} + 144)cm^2$

$\qquad P = 18(\sqrt{3} + 8)cm^2$

288. $B = 4\sqrt{3}cm^2$

$\qquad M = 96cm^2$

$\qquad \underline{a = ? \quad H = ?}$

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

$\qquad \frac{a^2\sqrt{3}}{4} = 4\sqrt{3}cm^2 \quad /:\sqrt{3}$

$\qquad \frac{a^2}{4} = 4cm^2 \quad /\cdot 4$

$\qquad a^2 = 4 \cdot 4cm^2$

$\qquad a = \sqrt{16cm^2}$

$\qquad a = 4cm$

$\qquad 3aH = M$

$\qquad 3 \cdot 4 \cdot H = 96$

$\qquad H = 96 : 12$

$\qquad H = 8cm$

290. $a = 9cm$
$d = 15cm$
$\underline{P = ?}$

$H^2 = d^2 - a^2$
$H^2 = 15^2 - 9^2$
$H^2 = 225 - 81 = 144$
$H = \sqrt{144}$
$H = 12cm$
$B = \frac{a^2\sqrt{3}}{4} = \frac{9^2\sqrt{3}}{4}$

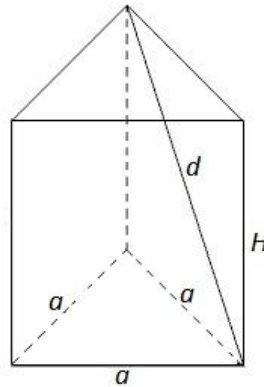$B = \frac{81\sqrt{3}}{4} cm^2$

$M = 3aH = 3 \cdot 9 \cdot 12$

$M = 324 cm^2$

$P = 2B + M$

$P = 2 \cdot \frac{81\sqrt{3}}{4} cm^2 + 324 cm^2$

$P = (\frac{81\sqrt{3}}{2} + 324) cm^2$

$P = 81(\frac{\sqrt{3}}{2} + 4) cm^2$

Домаћи задатак: 292.

Мала помоћ:

$h^2 = a^2 - \left(\frac{a}{2}\right)^2$

$h^2 = \frac{a^2}{1} - \frac{a^2}{4}$

$h^2 = \frac{4a^2}{4} - \frac{a^2}{4}$

$h^2 = \frac{3a^2}{4}$

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

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