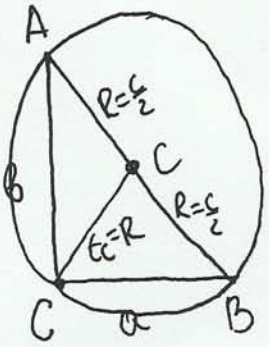
PRAVOUGLI TROUGAO



$c^2 = a^2 + b^2$

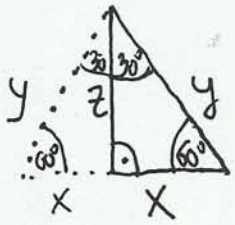
$P = \frac{a \cdot b}{2}$

$P = \frac{c \cdot h_c}{2}$

$O = a + b + c$

$R = \frac{c}{2}$ $t_c = R$

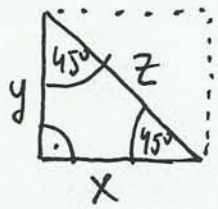
30°, 60° ДОПУНА ДО ЕДНАКОСТРАНИЧЕН



$y = 2x$

$z = \frac{y\sqrt{3}}{2}$

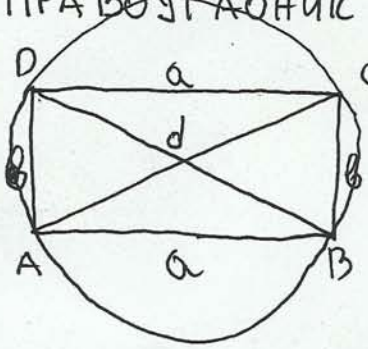
45°, 45° КВАДРАТ



$x = y$

$z = x\sqrt{2}$

ПРАВОУГАОНИК



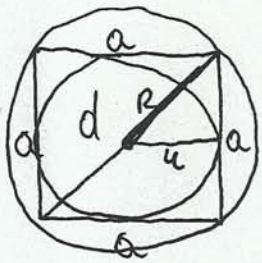
$d^2 = a^2 + b^2$

$P = a \cdot b$

$O = 2a + 2b$

$R = \frac{d}{2}$

КВАДРАТ



$d = a\sqrt{2}$

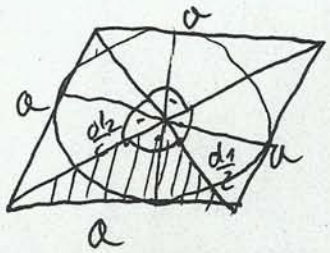
$P = a^2$

$O = 4a$

$u = \frac{a}{2}$

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

РОМБ

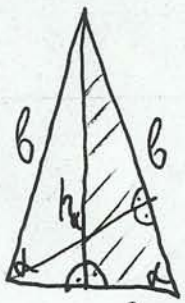


$a^2 = \left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2$

$P = \frac{d_1 \cdot d_2}{2}$ $P = a \cdot h$

$u = \frac{h}{2}$ $O = 4a$

ЕДНАКОКРАКЪ ТРОУГАО



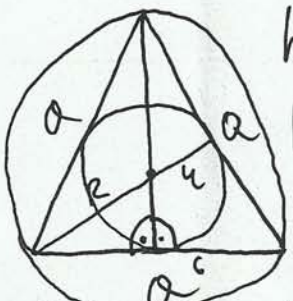
$b^2 = \left(\frac{a}{2}\right)^2 + h_a^2$

$P = \frac{a \cdot h_a}{2}$

$P = \frac{b \cdot h_b}{2}$

$O = a + 2b$

ЕДНАКОСТРАНИЧЕН



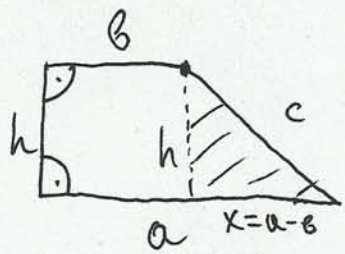
$h = \frac{a\sqrt{3}}{2}$

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

$O = 3a$

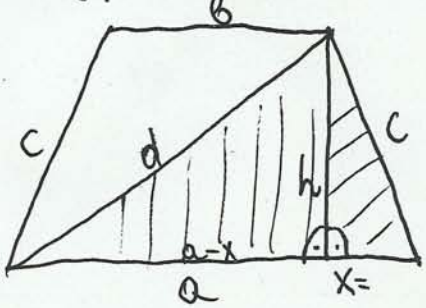
$u = \frac{1}{3}h = \frac{a\sqrt{3}}{6}$ $R = \frac{2}{3}h = \frac{a\sqrt{3}}{3}$

~~ЈЕА~~ ПРАВОУГЛИ ТРАПЕЗ



$c^2 = h^2 + x^2$

ЕДНАКОКРАКЪ ТРАПЕЗ



$x = \frac{a-b}{2}$

$c^2 = h^2 + x^2$

$d^2 = h^2 + (a-x)^2$

$m = \frac{a+b}{2}$

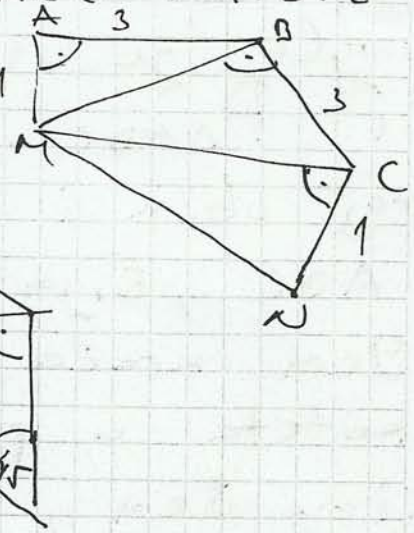
$P = m \cdot h$

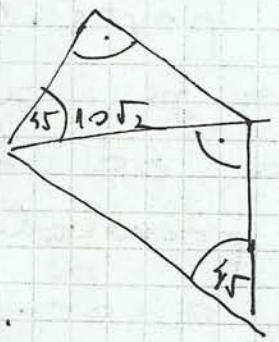
$O = a + b + 2c$

1) KATETE PRAVOUGLOG TROUGLA SU 15cm i 20cm KOLIKO JE TEME PRAVOG UGLA UDALJENO OD HIPOTENUZE? KOLIKO JE PODNOŽJE HIPOTENUZINE VISINE UDALJENO OD KRAĆE KATETE?

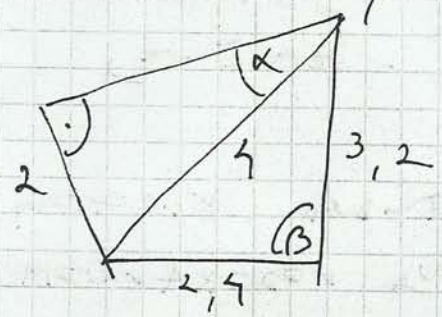
2) Naći dužinu MN

3) Izračunaj O i P četvorougla





4) Naći $\alpha+\beta$.



5) Izračunaj obim i površinu trougla čija visina CD gradi sa stranicom AC ugao od 60°, a sa stranicom BC ugao od 30°.

6) DUŽINE KATETA PRAVOUGLOG TROUGLA SU 1 i $\sqrt{3}$. KOLIKA JE POVRŠINA I OBIM KRUGA OPISANOG OKO TOG TROUGLA.

7) IZRAČUNATI OBIM TROUGLA ABC AKO JE VISINA KOJA ODGOVARA STRANICI AB 5cm, UNUTRAŠNJI UGAO KOD TEMENA A 45°, A UNUTRAŠNJI UGAO KOD TEMENA B 30°.

8) Osnovica jednakokrakog trougla je dva puta duža od kraka. Naći površinu tog trougla ako mu je obim 65.

9) Zbir hipotenuze i jedne katete pravouglog trougla je 64, a njihova razlika 36. Naći $P_{\triangle ABC}$.

10) Izračunaj obim i površinu pravouglog trougla ABC, čija je jedna kateta 21 a druga 9cm kraća od hipotenuze.

11) Jedna kateta u pravouglom trouglu ima dužinu 8cm, a druga je dva puta kraća od hipotenuze. Izračunaj $O_\triangle$ i $P_\triangle$?

12) VRABAC SEDI NA VRHU STABLA VISOKOG 10M. SENKA TOG STABLA NA PODNOŽJU JE 20M. KOLIKO JE VRABAC UDALJEN OD SVOJE SENKE?

13) STABLO DRVETA VISOKO JE 25M. PRELOMLJENO JE I VRHOM DODIRUJE ZEMLJU NA UDALJENOSTI 5M OD PODNOŽJA. NA KOJOJ VISINI JE STABLO PRELOMLJENO?

14) JEDNA KATETA PRAVOUGLOG TROUGLA JE ZA 2CM DUŽA OD DRUGE KATETE I ZA 2CM KRAĆA OD HIPOTENUZE. ODREDI O I P TROUGLA

15) AKO SVAKU STRANICU KVADRATA POVEĆAMO ZA 5 cm, POVRŠINA ĆE MU SE POVEĆATI ZA 95 cm². IZRAČUNAJ O i P PRVOBITNOG KVADRATA.

16) DUŽA STRANICA PRAVOUGAONIKA JE 6 cm I SA DIJAGONALOM OBRAZUJE UGAO OD 30°. IZRAČUNATI O i P PRAVOUGAONIKA.

17) OBIM KVADRATA JE $48\sqrt{2}$, NAĆI NJEGOVU DIJAGONALU.

18) JEDNA STRANICA PRAVOUGAONIKA JE 12 cm A NJEGOVA DIJAGONALA JE 8 cm DUŽA OD DRUGE STRANICE. NAĆI O i P PRAVOUGAONIKA.

19) PRAVOUGAONIK JE UPISAN U KRUG POLUPREČNIKA 15 cm. JEDNA NJEGOVA STRANICA JE 24 cm. NAĆI P PRAVOUGAONIKA.

20) Jedna dijagonala romba je poduđarna drugoj stranici, a druge ima dužinu 6 cm Naći površinu, stranicu, i visinu romba.

21) Obim romba je 100 cm a jedna dijagonala 40 cm. Naći površinu i visinu.

22) JEDAN UGAO ROMBA JE 120°, a STRANICA 4 cm. NAĆI POVRŠINU ROMBA.

23) Površina romba je 24 cm², a jedna dijagonala 6 cm. Naći obim romba.

24) Izračunaj površinu trapeza čiji je krak $d = 8$ cm, kraće osnovice $b = 9$ cm ugao kod temena C 120°, a kod temena D 150°.

25) Osnovice pravouglog trapeza su 12 cm i 8 cm a njegov oštar ugao 45°. Odredi obim trapeza

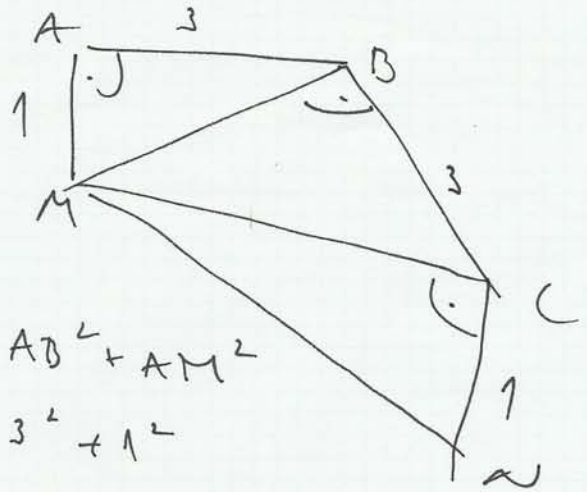
26) Osnovica pravouglog trapeza su 8cm i 20cm a oštar ugao je 30°. Naći površinu trapeza.

27) Dužine osnovica AB i CD trapeza ABCD su 8cm i 6cm. Ako je EF srednja linija XY sečе dijagonalu AC u tački E a BD u tački F. Izračunati dužinu duži XE, EF i YF.

28) Izračunati obim jednakokrakog trapeza ako su mu oštri uglovi 45°, dužina visine $2\sqrt{2}$cm a površina $32\,cm^2$.

29) Izračunati površinu jednakokrakog trapeza čije su dijagonale uzajamno normalne a dužina visine 5cm

(2)



$MB^2 = AB^2 + AM^2$

$MB^2 = 3^2 + 1^2$

$MB^2 = 10$ $\quad MB = \sqrt{10}$ cm

$MC^2 = MB^2 + BC^2$

$MC^2 = (\sqrt{10})^2 + 3^2$

$MC^2 = 10 + 9$

$MC^2 = 19$

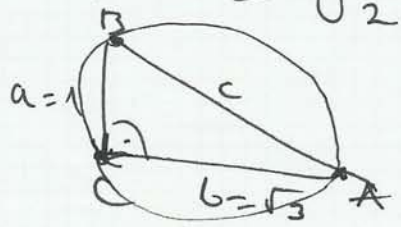
$MC = \sqrt{19}$ cm

$MN^2 = MC^2 + CN^2$

$MN^2 = 19 + 1 = 20$

$MN = \sqrt{20}$ cm

(6)



$c^2 = a^2 + b^2$

$c^2 = 1^2 + (\sqrt{3})^2 = 1 + 3 = 4$

$c = 2$

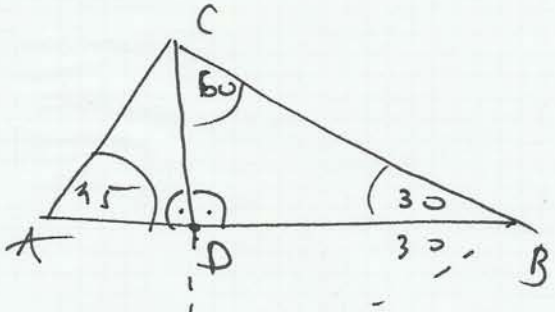
$r = \frac{c}{2} = \frac{2}{2}$

$r = 1$

$P = r^2\pi = \pi$ cm^2

$O = 2r\pi = 2\pi$ cm

(7)



$AD = CD = 5$

$AC = AD\sqrt{2} = 5\sqrt{2}$

$CB = 2CD = 2 \cdot 5 = 10$

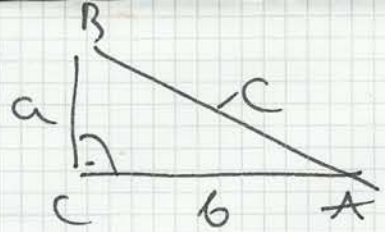
$DB = \frac{CB}{2}\sqrt{3} = \frac{10}{2}\sqrt{3} = 5\sqrt{3}$

$O = AB + BC + CA = AD + DB + BC + CA =$

$= 5 + 5\sqrt{3} + 10 + 5\sqrt{2} = 15 + 5\sqrt{3} + 5\sqrt{2} =$

$= 5(3 + \sqrt{3} + \sqrt{2})$

(9)



$$\left.\begin{aligned} c+a&=64\\ c-a&=36\end{aligned}\right\}+$$

(sistem dve jednačine sa dve nepoznate)

$$2c=100$$

$$c=50$$

$$c+a=64$$

$$50+a=64 \Rightarrow a=64-50$$

$$a=14$$

$$b^2=c^2-a^2$$

$$b^2=50^2-14^2=2304$$

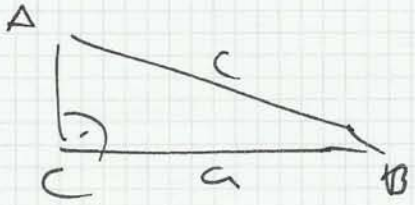
$$b=48$$

$$P=\frac{a\cdot b}{2}=\frac{14\cdot 48}{2}=336\ cm^2$$

$$O=a+b+c=14+48+50=112\ cm$$

(10) ~~dato~~ $a=21\ cm$

$b=c-9\ cm$



$$c^2=a^2+b^2$$

$$c^2=a^2+(c-9)^2$$

$$c^2=21^2+c^2-18c+81$$

$$18c=522$$

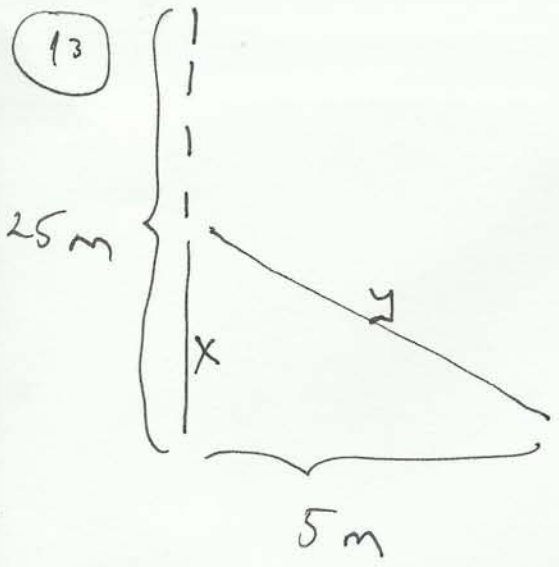
$$c=29\ cm$$

$$b=c-9=29-9=20\ cm$$

$$P=\frac{a\cdot b}{2}=\frac{21\cdot 20}{2}=210\ cm^2$$

$$O=a+b+c=21\ cm+20\ cm+29\ cm=70\ cm$$

(13)



$x + y = 25 \quad y = 25 - x$

$y^2 = x^2 + 5^2$

$(25-x)^2 = x^2 + 5^2$

$625 - 50x + x^2 = x^2 + 5^2$

$50x = 600$

$x = 12\,m$

STABLO JE PREOMLJENO NA VISINI OD 12 m.

(14)

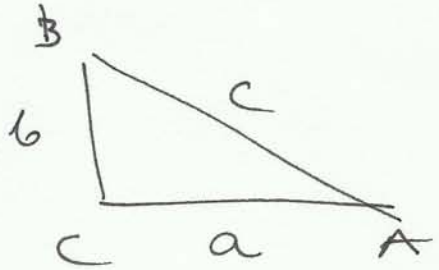
$a = b + 2$

$a = c - 2$

$c^2 = a^2 + b^2$

$b = a - 2$

$c = a + 2$



$c^2 = a^2 + b^2$

$(a+2)^2 = a^2 + (a-2)^2$

$a^2 + 4a + 4 = a^2 + a^2 - 4a + 4$

$a^2 - 8a = 0$

$a(a-8) = 0$

$a - 8 = 0$

$a = 8\,cm$

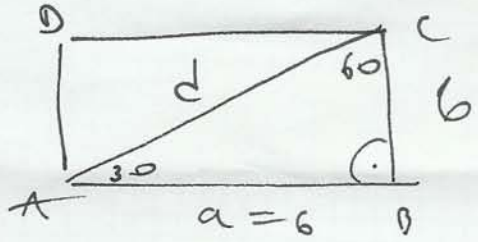
$b = a - 2 = 8 - 2 = 6\,cm$

$c = a + 2 = 8 + 2 = 10\,cm$

$P = \frac{a \cdot b}{2} = \frac{8 \cdot 6}{2} = 24\,cm^2$

$O = a + b + c = 8 + 6 + 10 = 24\,cm$

(16) $a = 6$



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

$6 = \frac{d}{2}\sqrt{3}$

$d = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = 4\sqrt{3}$

$b = \frac{d}{2} = \frac{4\sqrt{3}}{2} = 2\sqrt{3}$

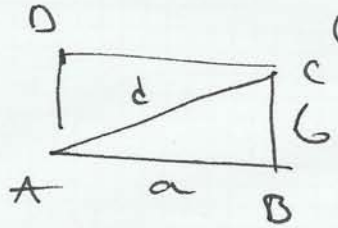
$P = a \cdot b = 6 \cdot 2\sqrt{3} = 12\sqrt{3}$

$O = 2(a+b) = 2(6+2\sqrt{3})$

$O = 4(3+\sqrt{3})$

(18) $a = 12\,cm$

$d = b + 8\,cm$



$d^2 = a^2 + b^2$

$(b+8)^2 = a^2 + b^2$

$b^2 + 16b + 64 = 12^2 + b^2$

$16b = 144 - 64$

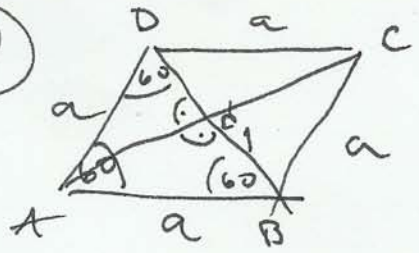
$16b = 80$

$b = 5$ $\quad d = b + 8 = 5 + 8 = 13$

$P = a \cdot b = 12 \cdot 5 = 60\,cm^2$

$O = 2(a+b) = 2(12+5) = 34\,cm$

20



$a = d_1$

$d_2 = 6$

$\frac{d_2}{2} = \frac{a}{2}\sqrt{3}$

$\frac{6}{2} = \frac{a}{2}\sqrt{3}$

$a = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\boxed{a = 2\sqrt{3}}$

$d_1 = a = 2\sqrt{3}$

$P = \frac{d_1 \cdot d_2}{2}$

$P = \frac{2\sqrt{3} \cdot 6}{2}$

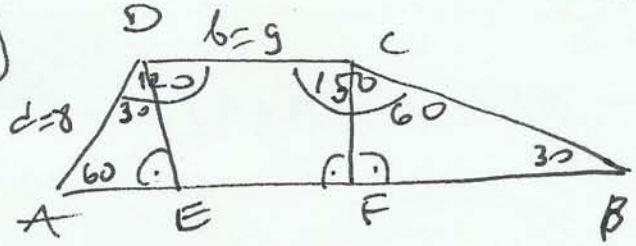
$\boxed{P = 6\sqrt{3}}$

$P = a \cdot h$

$6\sqrt{3} = 2\sqrt{3} \cdot h$

$\boxed{h = 3}$

24



$AE = \frac{d}{2} = \frac{8}{2} = 4$

$DE = \frac{d}{2}\sqrt{3} = \frac{8}{2}\sqrt{3} = 4\sqrt{3}$

$CF = DE = 4\sqrt{3}$

$CB = 2\,CF = 2 \cdot 4\sqrt{3} = 8\sqrt{3}$

$FB = \frac{CB}{2}\sqrt{3} = \frac{8\sqrt{3}}{2}\sqrt{3} = 12$

$m = \frac{AB + CD}{2}$

$AB = AE + EF + FB = 4 + 9 + 12 = 25$

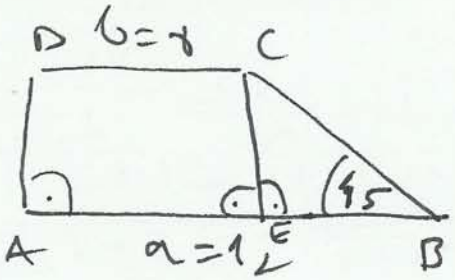
$m = \frac{25 + 9}{2} = 17$

$P = m \cdot h = m \cdot DE$

$P = 17 \cdot 4\sqrt{3}$

$P = 68\sqrt{3}$

25



$BE = a - b = 12 - 8 = 4$

$CE = EB = 4$

$CB = EB\sqrt{2} = 4\sqrt{2}$

$AD = CE = 4$

$O = AB + BC + CD + DA$

$O = 12 + 4\sqrt{2} + 8 + 4 = 24 + 4\sqrt{2} = 4(6 + \sqrt{2})$