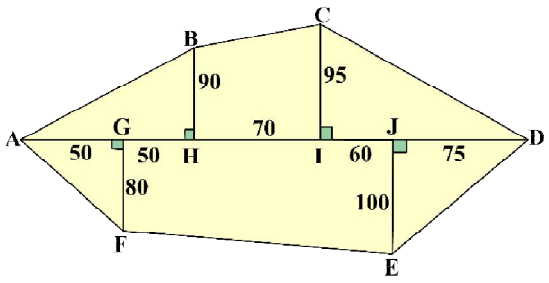
15- {k=QG

1- lkcrP;kHk[kMkP;kvkjk[kMÓko#uR;kp{k=QG dk<k-
¼lo ekiehVje/; vkgr½



mdy % $l(AG) = 50$ eh] $l(GH) = 50$ eh] $l(GF) = 80$ eh]
$l(BH) = 90$ eh] $l(HI) = 70$ eh] $l(CI) = 95$eh]
$l(IJ) = 60$ eh] $l(JD) = 75$eh] $l(JE) = 100$ eh

j[k BH,j[k CI,j[k FG vkf.kj[k EJgik;kADojycvkgr-

(i) $l(AH) = l(AG) + l(GH)$

$l(AH) = 50 + 50 = 100$eh

ΔBAH p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(AH) \times l(BH)$

$= \frac{1}{2} \times 100 \times 90$

$= 50 \times 90$

ΔBAH p {k=QG= 4500 pkeh

(ii) □BHICgk leycpkdkuvkg-

leycpkdkuBHICp {k=QG

$= \frac{1}{2} \times$ (lekrjckt tphcjh t) ×mph

$= \frac{1}{2} \times [[l(BH) + l(CI)] \times l(HI)]$

$= \frac{1}{2} \times [(90 + 95) \times 70]$

$= \frac{1}{2} \times [185 \times 70]$

$= 185 \times 35 = 6475$

leycpkdkuBHICp {k=QG= 6475 pkeh

(iii) $l(ID) = l(IJ) + l(JD)$

$l(ID) = 60 + 75 = 135$eh-

ΔCID p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(ID) \times l(CI)$

$= \frac{1}{2} \times 135 \times 95$

ΔCIDp {k=QG = 6412.5pkeh

(iv) ΔAGF p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(AG) \times l(FG)$

$= \frac{1}{2} \times 50 \times 80$

$= 50 \times 40$

ΔAGFp {k=QG =2000pkeh

(v) $l(GJ) = l(GH) + l(HI) + l(IJ)$

$l(GJ) = 50 + 70 + 60 = 180$eh-

leycpkdkuGFEJ p {k=QG

$= \frac{1}{2} \times$ (lekrjckt phcjh t) $\times$ mph

$= \frac{1}{2} \times [[l(FG) + l(EJ)] \times l(GJ)]$

$= \frac{1}{2} \times [(80 + 100) \times 180]$

$= \frac{1}{2} \times [180 \times 180]$

$= 90 \times 180$

leycpkdkuGFEJ p {k=QG= 16200pkeh

(vi) ΔEJD p {k=QG $= \frac{1}{2} \times$ ik;k $\times$ mph

$= \frac{1}{2} \times l(JD) \times l(EJ)$

$= \frac{1}{2} \times 75 \times 100$

$= 75 \times 50$

ΔEJD p {k=QG = 3750 pkeh

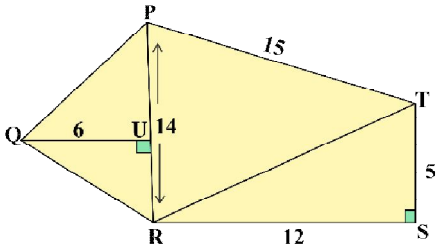
∴fnyY;kHk[kMkp {k=QG = ΔBAH p {k=QG + □BHIC p {k=QG + ΔCID p {k=QG +ΔAGF p {k=QG + □GFEJ p {k=QG + ΔEJD p {k=QG

= 4500 + 6475 + 6412.5 + 2000 + 16200 + 3750

= 39337.5 pkeh

∴fnyY;kHk[kMkp {k=QG39337.5 pkehvkg-

2- lkcrP;kvkÑrhe/;] PQRSTghcgHk tkÑrhvkg- vkÑrhrhy loekiehVje/; vkgr- ;k vkÑrhp {k=QG dk<k-



mdy % $l(QU) = 6eh]\ l(PR) = 14eh]\ \ l(PT) = 15eh]$
$l(TS) = 5eh]\ l(RS) = 12eh-$

;Fk ΔPQR pk lkk;kPRvkf.kmphQUfnyhvkg-ΔTSRgkdkVdku f=dk.kvkg- ΔPRTP;kckt PR, ckt RTvkf.kckt PT;k ckt vkgr- iR;dvkÑrhp {k=QG dk<-

ΔTSR ;kdkVdku f=dk.kkr]
ik;Fkkxkj lP;kie;kulkj]

$(RT)^2 = (RS)^2+(TS)^2$

$= (12)^2 + (5)^2$

$= 144+25$

$\therefore (RT)^2 = 169$

$\therefore RT = 13\ eh$

(i) ΔPQR p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times 14 \times 6$

$= 7 \times 6$

ΔPQR p {k=QG = 42pkeh

(ii) ΔPRTph v/kifjfer h=s $= \frac{a+b+c}{2}$

$= \frac{14+13+15}{2}$

$= \frac{42}{2}$

$= 21$

∴ ΔPRT p {k=QG $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{21(21-14)(21-13)(21-15)}$

$= \sqrt{21 \times 7 \times 8 \times 6}$

$= \sqrt{7 \times 3 \times 7 \times 4 \times 2 \times 3 \times 2}$

$= \sqrt{7 \times 7 \times 3 \times 3 \times 2 \times 2 \times 2 \times 2}$

= 7 ×3×2 ×2….(oxeG dk<u)

ΔPRT p {k=QG= 84

(iii) ΔTSR p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\text{RS}) \times l(\text{TS})$

$= \frac{1}{2} \times 12 \times 5$

ΔTSR p {k=QG = 30pkeh

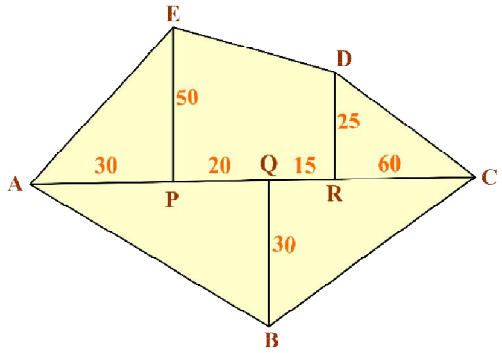
∴□PQRSTp{k=QG = ΔPQRp {k=QG + ΔPRTp

{k=QG + ΔTSR p {k=QG

∴PQRSTp {k=QG = 42 + 84 + 30 = 156pkeh

∴PQRSTp {k=QG156 pkeh vkg-

3- "k t kjh yvkÑrhe/;] ABCDEghcgHk t kÑrh vkg- vkÑrhe/kh y lo ekiehVje/; vkgr- ;kvkÑrhp {k=QG dk<k-



mdy % ΔEAP, ΔDRCvkf.kΔABCg f=dk.kvkgr vkf.k □EPRDgk leycpkdkuvkg- iR;dvkÑrhp {k=QG dk<-

(i) ΔEAPp {k=QG= $\frac{1}{2}$ × ik;k× mph

$= \frac{1}{2} \times l(AP) \times l(EP)$

$= \frac{1}{2} \times 30 \times 50$

$= 15 \times 50$

ΔEAPp {k=QG=750pkeh

(ii) $l(PR) = l(PQ) + l(QR) = 20 + 15 = 35$eh

□EPRDgk leycpkdkuvkg-

leycpkdkuEPRD p {k=QG= $\frac{1}{2}$ × lekrjck t phcjh t × mph

$= \frac{1}{2} \times [l(EP) + l(DR)] \times l(PR)$

$= \frac{1}{2} \times [50 + 25] \times 35$

$= \frac{1}{2} \times [75] \times 35$

$= \frac{2625}{2}$

leycpkdkuEPRD p {k=QG = 1312.5pkeh

(iii) ΔDRCp {k=QG= $\frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\text{RC}) \times l(\text{DR})$

$= \frac{1}{2} \times 60 \times 25$

$= 30 \times 25$

ΔDRCp {k=QG = 750 pkeh

(iv) $l(\text{AC}) = l(\text{AP}) + l(\text{PQ}) + l(\text{QR}) + l(\text{RC})$

$= 30 + 20 + 15 + 60$

= 125 eh

ΔABC p {k=QG = $\frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\text{AC}) \times l(\text{QB})$

$= \frac{1}{2} \times 125 \times 30$

$= 125 \times 15$

ΔABC p {k=QG = 1875pkeh

∴cgHk tkÑrhABCDEp {k=QG = ΔEAPp {k=QG + □EPRDp {k=QG + ΔDRCp {k=QG +ΔABC p {k=QG

= 750 + 1312.5 + 750 + 1875

= 4687.5pkeh

∴cgHk tkÑrh ABCDEp {k=QG 4687.5pkehvkg-

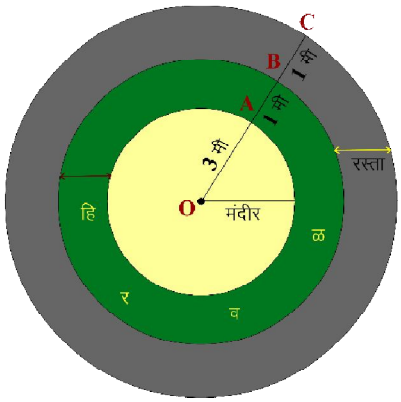
4- 3 eh f=T;PkorGkdkj tkxoj ,d enhjvkg o R;kHkkorh 1 eh- #nhphfgjoGvkgvkf.kfgjoGhP;kckgj 1 eh- #nhpkjLrkvkg- enhjk lkBhokijyyh tkxkvkf.kjLR;k lkBhokijyyh tkxk ;kidhdk.kR;k tkxp {k=QG tkLrvkg\

mdy % vkÑrho#u] orGkdkjenhjkph

f=T;k= 3 eh- enhjk lkBhokijyY;k tkxp {k=QG=πr^2

$=\frac{22}{7} \times 3 \times 3$

$=\frac{22}{7} \times 9$ .....(I)



jLR;kphckgjhy f=T;k= l(OC)

= l(OA) + l(AB) + l(BC)

= 3 + 1 + 1 = 5 eh

jLR;kphvkrhy f=T;k= l(OB) = l(OA) + l(AB)

= 3 + 1 = 4 eh

∴jLR;kp ,d.k {k=QG = jLR;kP;k ckgjh f=T;k & jLR;kP;k vkrh f=T;k

$= \pi \times (5)^2 - \pi(4)^2$

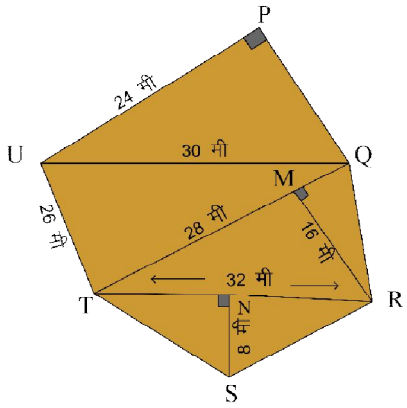
∴jLR;kp ,d.k {k=QG= $\pi \times [(5)^2 - (4)^2]$

$= \pi \times (25 - 16)$

$= \frac{22}{7} \times 9$ ..... (II)

(I) o (II) o#u efnjk lkBh okijyyh tkxk vkf.k jLR;k lkBhokijyyh tkxk ;kph {k=QG lekuvkgr-

5- "k tkjhyvkÑrhe/;cgHk tkÑrhvkg- R;kr lock tphekifnyyhvkgr- rj ;kvkÑrhp {k=QG dk<k-



mdy % $l(UP) = 24eh]\ l(UQ)=30eh]\ l(UT) = 26eh] l(TQ) = 28eh]\ l(TR) = 32eh-] l(RM) = 16eh-]\ l(SN) = 8eh-$

ΔPUQ, ΔQUT, ΔQTR vkf.kΔRTS ;k lof=dk.kkph {k=QG dk<]

(i) iFkeck tPQphykch dk<

ΔPUQ gkdkVdku f=dk.kvkg-

∴ ik;Fkkxkj lP;k ie;ku lkj]

$l(\text{UQ})^2 = l(\text{UP})^2 + l(\text{QP})^2$

$\therefore (30)^2 = (24)^2 + l(\text{QP})^2$

$\therefore\ l(\text{QP})^2 = (30)^2 - (24)^2$

$= 900 - 576$

$= 324$

$\therefore\ l(\text{QP}) = 18$ eh

(ii) ΔPUQ p{k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\text{UP}) \times l(\text{QP}) = \frac{1}{2} \times 24 \times 18$

$= 12 \times 18$

ΔPUQ p{k=QG $= 216$ pkeh

(iii) ΔQUT ph v/kifjferh $= s = \frac{a+b+c}{2}$

$= \frac{30+26+28}{2}$

$= \frac{84}{2}$

ΔQUT ph v/kifjferh $= 42$ pkeh

ΔQUT p{k=QG $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{42(42-30)(42-26)(42-28)}$

$= \sqrt{42 \times 12 \times 16 \times 14}$

$= \sqrt{14 \times 3 \times 3 \times 4 \times 16 \times 14}$

$= \sqrt{14 \times 14 \times 3 \times 3 \times 2 \times 2 \times 4 \times 4}$

$= 14 \times 3 \times 2 \times 4$ ……(oxeG dk<u)

ΔQUT p {k=QG $= 336$ pkeh

(iv) ΔQTR p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\text{TQ}) \times l(\text{RM})$

$= \frac{1}{2} \times 28 \times 16$

$= 14 \times 16$

ΔQTR p {k=QG $= 224$ pkeh

(v) ΔRTS p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\text{TR}) \times l(\text{SN})$

$= \frac{1}{2} \times 32 \times 8$

$= 16 \times 8$

ΔRTS p {k=QG $= 128$ pkeh

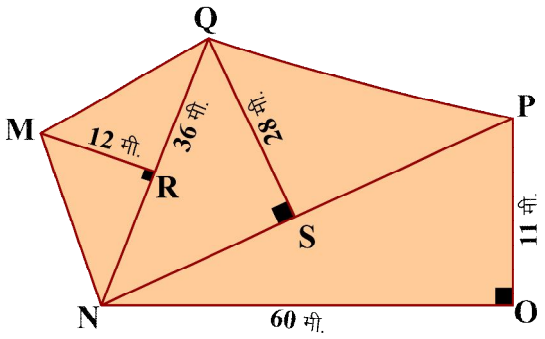
∴ckgHk tkÑ rhPQRSTUp {k=QG = ΔPUQp {k=QG + ΔQUTp {k=QG + ΔQTRp {k=QG +ΔRTS p {k=QG

∴ckgHk tkÑ rhPQRSTUp {k=QG $= 216 + 336 + 224 + 128$

$= 904$ pkeh

∴ckgHk tkÑ rhPQRSTUp {k=QG 904pkehvkg-

6- vkÑfr e/;MNOPQ gh cgHkt kÑfr vkg-MNOPQ e/;]
$l(NQ) = 36$ eh] $l(MR) = 12$ eh]
$l(QS) = 28$ eh]
$l(NO) = 60$ eh] $l(PO) = 11$ eh-
rjMNOPQ p {k=QG dk<k-



mdy % $l(NQ) = 36$ eh] $l(MR)$
$= 12$ eh] $l(QS) = 28$ eh]
$l(NO) = 60$ eh] $l(PO) = 11$ eh-
$\Delta QMN, \Delta QNP$ vkf.k ΔPNO p {k=QG dk<]

(i) ΔQMN p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(NQ) \times l(MR)$ =

$\frac{1}{2} \times 36 \times 12$

$= 18 \times 12$

ΔQMN p {k=QG = 216 pkeh

(ii) ΔPNO p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(NO) \times l(PO)$

$= \frac{1}{2} \times 60 \times 11$

$= 30 \times 11$

ΔPNO p {k=QG = 330 pkeh

(iii) ΔPNO e/;] $\angle PON = 90^0$

∴ ik;Fkkxkj lP;k ie;ku lkj]

$l(PN)^2 = l(NO)^2 + l(PO)^2$

$= l(60)^2 + l(11)^2$

$= 3600 + 121$

$= 3721$

∴ $l(PN) = 61$eh

(iv) ΔQNP p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(NP) \times l(QS)$

$= \frac{1}{2} \times 61 \times 28$

$= 61 \times 14$

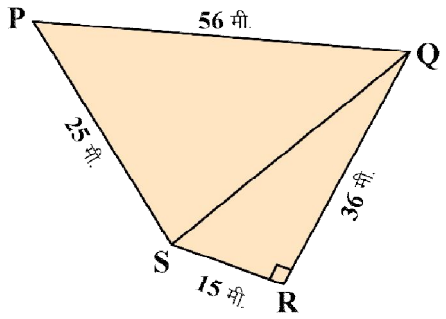
ΔQNP p {k=QG $= 854$ pkeh

∴ CkgHk t kÑ rh MNOPQp {k=QG = ΔQMNp {k=QG + ΔPNOp {k=QG + ΔQNPp {k=QG

∴ CkgHk t kÑ rh MNOPQp {k=QG = 216 + 330 + 854

= 1400pkeh

∴CkgHk t kÑ rh MNOPQp {k=QG 1400pkeh vkg-



7- lkcrP;kvkÑrhrloekiehVje/; fnyyhvkgr- R;ko#u□PQRSp {k=QG dk<k-

mdy %(i)ΔQRSgkdkVdku f=dk.kvkg-

ΔQRSe/;] m∠QRS = 90^0, l(QR) = 36 ehvkf.k

l(SR) = 15eh

∴ dkVdku f=dk.kQRSp {k=QG =

$\frac{1}{2}$ × (dkVdkudj.kkÚ;kckt P;kykchpkx.kkdkj)

$= \frac{1}{2} \times l(QR) \times l(SR)$

$= \frac{1}{2} \times 36 \times 15$

$= 18 \times 15$

= 270 pkeh

dkVdku f=dk.kQRSp {k=QG = 270pkeh

(ii) ΔQRS;kdkVdku f=dk.kkpkd.kj[k QS vkg-

∴ ik;Fkkxkj lP;k ie;kulkj]

$l(QS)^2 = l(QR)^2 + l(SR)^2$

$= (36)^2 + (15)^2$

$= 1296 + 225$

$= 1521$

$l(QS)^2 = (39)^2$

$\therefore l(QS) = 39$eh

(iii) ΔPSQP;krhuckt 56 eh]39 ehvkf.k25 ehvkgr·

$\therefore \Delta$PSQPkhv/kifjferh= $s = \frac{a+b+c}{2}$

$= \frac{56 + 39 + 25}{2}$

$= \frac{120}{2}$

$= 60$eh

$\therefore \Delta$PSQ p {k=QG $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{60(60-56)(60-39)(60-25)}$

$= \sqrt{60 \times 4 \times 21 \times 35}$

$= \sqrt{3 \times 5 \times 4 \times 4 \times 3 \times 7 \times 5 \times 7}$

$= \sqrt{3 \times 3 \times 5 \times 5 \times 4 \times 4 \times 7 \times 7}$

$= 3 \times 5 \times 2 \times 2 \times 7$ .....(oxeG dk<u)

ΔPSQ p {k=QG= 420pkeh

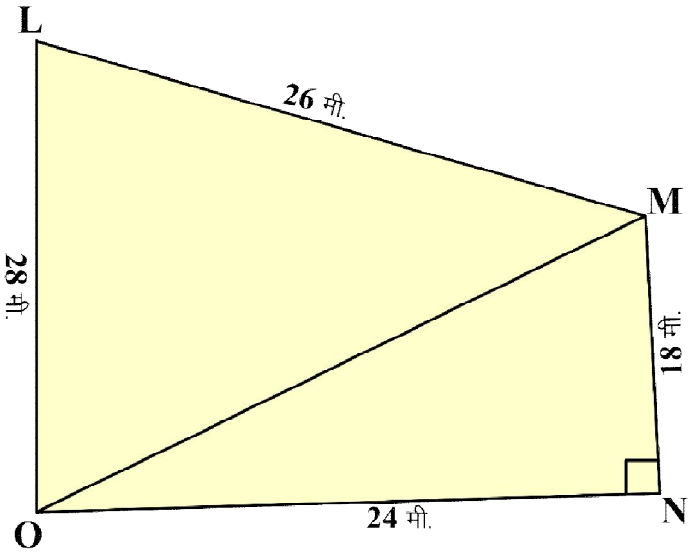
$\therefore \square$PQRS p {k=QG = ΔQRS p {k=QG +ΔPSQ p {k=QG

= 270 + 420

= 690pkeh

∴ □PQRS p {k=QG 690 pkehvkg-

8- □LMNOe/;]*l*(LO) = 28eh]*l*(ON) = 24eh]
l(MN) = 18 eh]*l*(LM) = 26eh] rj□LMNOp {k=QG dk<k-



mdy % (i)ΔMNOe/;]

m∠MNO = 90^0, *l*(ON) = 24eh]vkf.k*l*(MN) = 18eh-

∴ ΔMNOp {k=QG =

$\frac{1}{2}$ × (dkVdkudj.kkÚ;kck t P;kykchpkx.kkdkj)

$= \frac{1}{2} \times l(MN) \times l(ON) = \frac{1}{2} \times 18 \times 24$

= 9 × 24 = 216

ΔMNOp {k=QG =216pkeh

(ii) ΔMNOpkj [kMO gk d.k vkg·

∴ ik;Fkkxkj lP;k ie;kus lkj]

$l(\text{MO})^2 = l(\text{MN})^2 + l(\text{ON})^2$

$= (18)^2 + (24)^2$

$= 324 + 576$

$= 900$

$l(\text{MO})^2 = (30)^2$

∴ $l(\text{MO}) = 30$eh

(iii) ΔLOM Pkh v/kifjfeh= $s = \frac{a+b+c}{2}$

$= \frac{28 + 26 + 30}{2}$

$= \frac{84}{2}$

$= 42$eh

∴ ΔLOMp{k=QG $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{42(42-28)(42-26)(42-30)}$

$= \sqrt{42 \times 14 \times 16 \times 12}$

$= \sqrt{3 \times 14 \times 14 \times 16 \times 4 \times 3}$

$= \sqrt{3 \times 3 \times 14 \times 14 \times 4 \times 16}$

= 3 ×14×2 ×4.....(oxeG dk<u)

∴ ΔLOMp {k=QG= 336pkeh

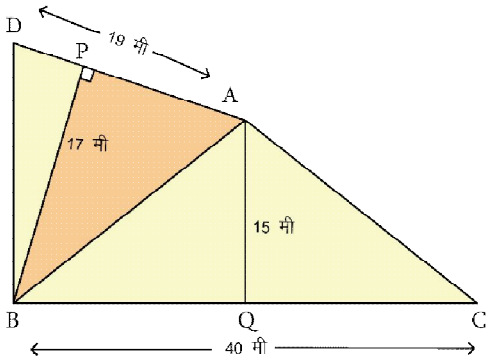
∴ □LMNOp {k=QG = ΔMNO p {k=QG +ΔLOM p {k=QG

= 216 + 336

= 552pkeh

∴ □LMNO p {k=QG 552pkehvkg-

9- lkcrP;kvkÑrhe/; loekiehVje/; fnyyhvkgr- rj□DBCAp {k=QG dk<k-



mdy % (i)ΔABCp {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\mathrm{BC}) \times l(\mathrm{AQ})$

$= \frac{1}{2} \times 40 \times 15$

= 20 × 15

ΔABCp {k=QG = 300 pkeh

(ii) ΔADB p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$$= \frac{1}{2} \times l(\text{DA}) \times l(\text{BP})$$

$$= \frac{1}{2} \times 19 \times 17$$

$$= \frac{323}{2}$$

ΔADB p {k=QG = 161.5pkeh

∴ □DBCA p {k=QG = ΔABC p {k=QG +ΔADB p {k=QG

= 300 + 161.5

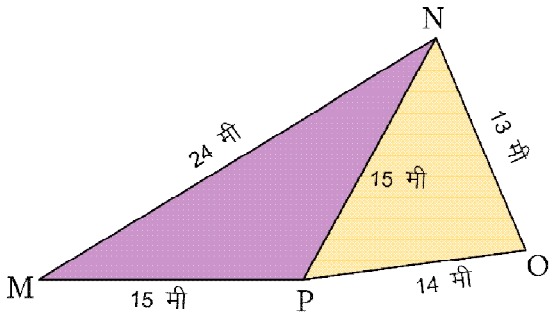
= 461.5 pkeh

∴ □DBCAp {k=QG 461.5pkehvkg-

10- lkcrP;kvkÑrhe/;]

$l(\text{MN}) = 24$eh] $l(\text{MP}) = 15$eh] $l(\text{NP}) = 15$eh]

$l(\text{PO}) = 14$eh] $l(\text{NO}) = 13$eh-vkg-rj□MNOPp {k=QG dk<k-



mdy %(i)ΔMNPe/;]

$l(\text{MN}) = 24$eh] $l(\text{MP}) = 15$eh] $l(\text{NP}) = 15$eh-

∴ ΔMNPphv/kifjferh= s = $\frac{a+b+c}{2}$

$= \frac{24 + 15 + 15}{2}$

$= \frac{54}{2}$

= 27eh

∴ ΔMNP {k=QG $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{27(27-24)(27-15)(27-15)}$

$= \sqrt{27 \times 3 \times 12 \times 12}$

$= \sqrt{9 \times 3 \times 3 \times 12 \times 12}$

= 3×3×12 ……. (oxeG dk<u)

ΔMNP {k=QG= 108pkeh

(ii) ΔNPOe/;]

$l(NP) = 15$eh] $l(NO) = 13$ehvkf.k$l(PO) = 14$eh-

∴ ΔNPOphv/kifjfeerh= s = $\frac{a + b + c}{2}$

$= \frac{14 + 15 + 13}{2}$

$= \frac{42}{2}$

= 21eh

∴ ΔNPOp{k=QG=$\sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{21(21-14)(21-15)(21-13)}$

$= \sqrt{21 \times 7 \times 6 \times 8}$

$= \sqrt{7 \times 3 \times 7 \times 2 \times 3 \times 2 \times 4}$

$= \sqrt{7 \times 7 \times 3 \times 3 \times 2 \times 2 \times 4}$

$= 7 \times 3 \times 2 \times 2$...(oxeG dk<u)

ΔNPOp {k=QG =84pkeh

∴ □MNOPp {k=QG = ΔMNP p {k=QG × ΔNPO p {k=QG

$= 108 + 84$

$= 192$pkeh

∴ □MNOPp {k=QG 192pkehvkg-

11. 40eh] 68eh] 84eh]ck tvlyY;k "krkrhy "kxk dk<.;k lkBh130 #i;irhPkkjlehVjiek.kfdrh [kp ;by\

mdy %;Fk]a = 40, b = 68vkf.k c = 84

∴v/kifjferh= $s = \frac{a+b+c}{2}$

∴v/kifjferh= $\frac{40+68+84}{2} = \frac{192}{2} =$ 96eh-

∴ f=dk.kh "krkp {k=QG $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{96(96-40)(96-68)(96-84)}$

$= \sqrt{96 \times 56 \times 28 \times 12}$

$= \sqrt{16 \times 6 \times 2 \times 28 \times 28 \times 2 \times 6}$

$= \sqrt{16 \times 6 \times 6 \times 2 \times 2 \times 28 \times 28}$

$= 4 \times 6 \times 2 \times 28$ ……(oxeG dk<u)

= 1344pkeh

“krkrhy “kxk dk<.;klkBhnjpkjlehVjyk ;.kkjk [kp 120 #- vkg-

∴ “krkp ,d.k {k=QG = 1344 pkeh

∴ “kxk dk<.;kpk ,d.k [kp = 1344 × 120 = 161280#-

∴ “kxk dk<.;klkBh1,16,280 #- [kp;by-

12. f=dk.kkP;kckt phykch 17 % 12 % 25iek.kkrvlu v/kifjferh 270 lehvkgrj f=dk.kkp {k=QG dk<k-

mdy %;Fk] a = 17x, b = 12$x$vkf.k c = 25$x$eku-

f=dk.kkphv/kifjferh= s = $\frac{a+b+c}{2}$

∴270 = $\frac{17x+12x+25x}{2}$

∴ 270 × 2 = 17x + 12x + 25x

540 = 54x

∴ x = $\frac{540}{54}$ = 10-

∴ a = 17x = 17 × 10 = 170

b = 12x = 12 × 10 = 120

c = 25x = 25 × 10 = 250

∴ f=dk.kkp {k=QG = $\sqrt{s(s-a)(s-b)(s-c)}$

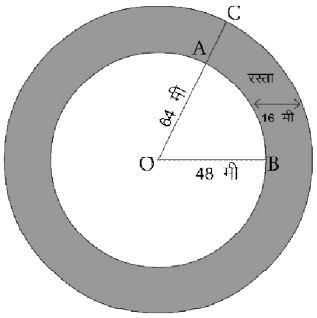
=$\sqrt{270(270-170)(270-120)(270-250)}$

$= \sqrt{270 \times 100 \times 150 \times 20}$

$= \sqrt{81000000}$

= 9000pkl eh……(oxeG dk<u)

∴ f=dk.kkp {k=QG 9000 pkl ehvkg-



13- ,dkorGkdkjenkukpk0;kl 96 eh vkg- ;k enkukHkkorh 16 eh #nhpkjLrkr;kjdjk;pkvkg- rj

(i) R;kjLR;kp {k=QG fdrh\

(ii) jLrkr;kjdj.;kpk [kpirhpkjlehVjlkBh 20 #- ;rvlyrjrkjLrkr;kjdj.;kpk [kpfdrh\

mdy %vkÑrhe/; vkrhy orGkpk Hkkx enkuvkgvkf.kNk;kfdrHkkxjLrkvkg- ;Fkvkrhyorgkpk0;kl = 96 eh-

∴vkrhyorGkph f=T;k= r = $\frac{96}{2}$ = 48eh

ckgjhyorGkph f=T;k= R = vkrhyorGkph f=T;k+ jLR;kph #nh

= 48 + 16

ckgjhyorGkph f=T;k= R = 64 eh

(i) jLR;kp {k=QG=ckgjhyorGkp {k=QG&vkrhyorGkp {k=QG

$= \pi R^2 - \pi r^2$

$= \frac{22}{7}(64)^2 - \frac{22}{7}(48)^2$

$= \frac{22}{7}[(64)^2 - (48)^2]$

$= \frac{22}{7}[4096 - 2304]$

$= \frac{22}{7}[1792]$

$= 22 \times 256$

$= 5632$

∴jLR;kp {k=QG 5632 pkehvkg-

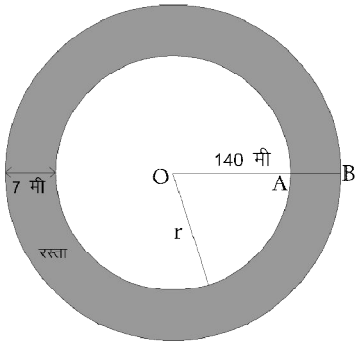
(ii) jLrkr;kjdj.;kpkirhpkj lehVjpk [kp 20 #- vkg-

∴ 5632 pkehjLR;k lkBh [kp= 5632 × 20

= 112640 #-

∴jLrkr;kjdj.;kpk [kp1,12,640 #- vkg-

14- ,dkorGkdkjckxpk0;k l 280 eh vkg- ckxP;kvkrhyckt u 7 eh #nhpkjLrkr;kjdyk- jLrkr;kjdj.;k lkBh [kpirhpkehyk 25 #- njku ,d.kfdrhvkyk\



mdy

%vkÑrhe/;ckgjhyorGkpkHkkxckxvkgvkf.kNk;kfdrHkkxgkjLrkvkg-

ckxpk0;k l = OB =280 eh-

∴ckxph f=T;k= $R = \frac{280}{2}$ = 140eh

vkrhyorGkph f=T;k= OA = r = ckxph f=T;k&jLR;kph #nh

= 140 - 7

= 133eh

∴ jLR;kp {k=QG= ckgjhyorGkp {k=QG–vkrhyorGkp {k=QG

$= \pi R^2 - \pi r^2$

$= \frac{22}{7}(140)^2 - \frac{22}{7}(133)^2$

$= \frac{22}{7}[(140)^2 - (133)^2]$

$= \frac{22}{7}[(140 + 133)(140 - 133)]$

$\ldots[a^2 - b^2 = (a + b)(a - b)]$

$= \frac{22}{7}[273 \times 7]$

$= 22 \times 273$

= 6006 pkeh

jLrkr;kjdj.;kpk [kpirhpkeh 25 #- vkg-

∴ 6006 pkehjLR;klkBh [kp= 6006 × 25 = 150150 #-

∴jLrkr;kjdj.;kpk [kp1,50,150#- vkg-

15- ,dkorGkdkjenkukHkkorhrkjp 4 injhdi.k ?kky.;klkBh 30800 #- fderhphrkjykxyh- rkjphfdernjehVjyk 5 #- vlY;klR;korGkdkjenkukp {k=QG fdrh\

mdy %1 ehVj rkjyk 5 #- njku 30800 #i;krfodr

?kryY;krkjphykch= $\frac{30800}{5}$ = 6160 eh

∴ 4 injh di.kklkBh ykxyyh rkj= 6160 eh

∴ ,d injh di.k ?kkYk.;kl lkBh ykx.kkjh rkj=$\frac{6160}{4}$ = 1540eh

orGkdkjenkukpkijh?k =orGkdkjenkukHkkorhpk 1 Qjk

∴ orGkdkjenkukpkijh?k= 1540eh

orGkpkijh?k= π ×0;kl ----------¼1½

1540 = $\frac{22}{7}$ ×0;kl

∴ 0;kl = $\frac{1540 \times 7}{22}$

= 70 × 7

∴ 0;kl =490 eh

∴ orGkph f=T;k(r) = $\frac{0;kl}{2}$ ----------¼1½

=$\frac{490}{2}$

orGkph f=T;k(r)= 245eh

∴ orGkp {k=QG =πr^2

= $\frac{22}{7}$ × $(245)^2$

= $\frac{22}{7}$ × 245 × 245

= 22 × 35 × 245

= 188650pkeh

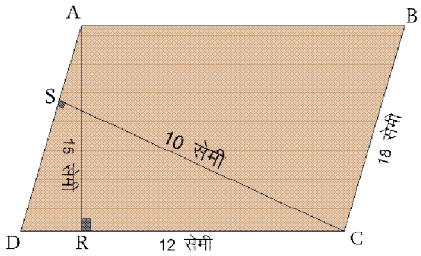
∴orGkdkjenkukp {k=QG188650pkehvkg-

16- lkcrP;kvkÑrhe/;]□ABCDgklekarjHkkt pkdkuvkg- R;ko#u [kkyhyi"ukphmRrjfygk\

(i) lkk;kDCekuu□ABCDp{k=QG dk<k-

(ii) lkk;kADekuu□ABCDp {k=QG dk<k-

(iii) nkUgh {k=QGkpfujh{k.kuknok-



mdy%(i) □ABCDgklekarjHkkt pkdkuvkg-

ik;k(DC) = 12 leh] mph(AR) = 15 leh

lekarjHkkt pkdkukp {k=QG= ik;k× mph

= 12× 15

= 180

∴ ik;kDCekuu□ABCDp {k=QG180pkl ehvkg-

(ii) ∵ *l*(BC) = *l* (AD) = 18 leh

∴ ik;k(AD) = 18 leh]mph(CS) = 10 leh

lekarjHkkt pkdkukp {k=QG = ik;k× mph

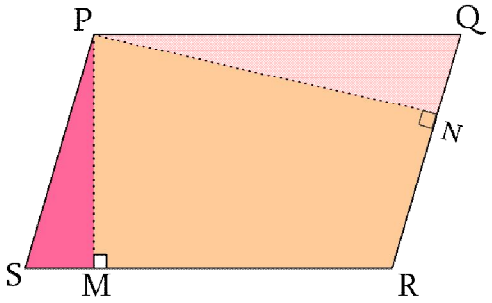
= 18× 10

= 180

∴ ik;kADekuu□ABCDp {k=QG 180 pkl ehvkg-

(iii)fujh{k.k %ik;kDCekuu□ABCDp dk<yy {k=QG gik;k AD ekuu□ABCD P;k dk<yY;k {k=QGk,o< vkg- r180 pkl ehvkg-

17- lkcrP;kvkÑrhe/;] □PQRSgk lekarjHkqt pkdkuvkg- j[k PM⊥ cktu SR vkf.kj[kPN⊥ cktu QR. *l*(PQ) = 16 leh] *l*(PM) = 7 lehvkf.k*l*(PS) = 14 lehv lyrj*l*(PN) dk<k-



mdy% lekarjHkqt pkdkukP;k lekjk lekjhyckt ,d#i v lrkr-

∴ckt PQ≅ckt SR

ckt PS≅ckt QR

l(PQ) = 16 leh] *l*(PM) = 7 lehvkf.k*l*(PS) = 14 leh

lekarjHkqt pkdkukp {k=QG = ik;k× mph

= 16× 7

= 112pkl eh

$$\therefore l(PN) = \frac{\text{lekarjHkqt pkdkukp {k=QG}}}{\text{lkk;k (PS)}}$$

$$= \frac{112}{14}$$

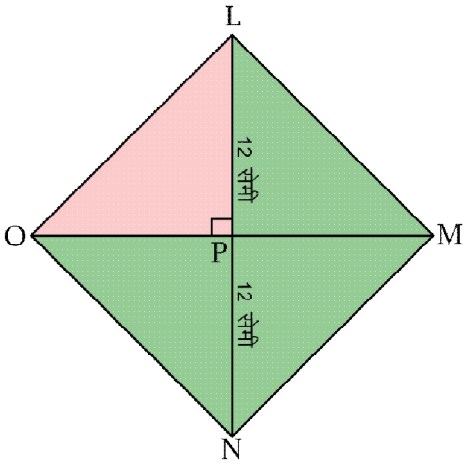
$$= 8$$

∴ *l*(PN) = 8 leh vkg-

18- ,dk leHkt pkdkukphifjferh 52 lehvkg- R;kP;k ,dk d.kkphykch 24 lehvkgrjR;k leHkt pkdkukp {k=QG dk<k-

mdy %□LMNO gk leHkt pkdku vkg

vkf.kl(LN) = 24 leh



leHkt pkdkukphifjferh= ckt × 4

$$\therefore 52 = l(LO) \times 4$$

$$\therefore l(LO) = \frac{52}{4}$$

$$\therefore l(LO) = 13 \text{ leh}$$

leHkt pkdkukpd.kijLijkuknHkkxrkr-

$$\therefore l(LP) = \frac{1}{2} l(LN)$$

$$\therefore l(LP) = \frac{1}{2} \times 24$$

$$l(LP) = 12$$

leHkt pkdkukpd.kijLijkukycvlrkr-

$\therefore$ d.kLN$\perp$d.kOM

$\therefore m\angle LPO = 90^0$

ΔLPO;k dkVdku f=dk.kkr]

lkk;Fkkxkj lP;kie;kulkj]

$l(LO)^2 = l(LP)^2 + l(PO)^2$

$(13)^2 = (12)^2 + l\,(PO)^2$

$\therefore l(PO)^2 = (13)^2 - (12)^2$

$= 169 - 144$

$= 25$

$\therefore l(PO)^2 = (5)^2$

$\therefore l(PO) = 5$ lseh

lseHkt pkdkukpd.kijLijkuknHkkxrkr-

$\therefore l(PO) = \frac{1}{2} l(MO)$

$5 = \frac{1}{2} l(MO)$

$\therefore l(MO) = 10$ lseh

∴ lseHkt pkdkukP;kd.kkphykchvuØe 24 lehvkf.k 10 lehvkg-

lseHkt pkdkukp {k=QG= $\frac{1}{2}$ × d.kkpkx.kkdkj

$= \frac{1}{2} \times 24 \times 10$

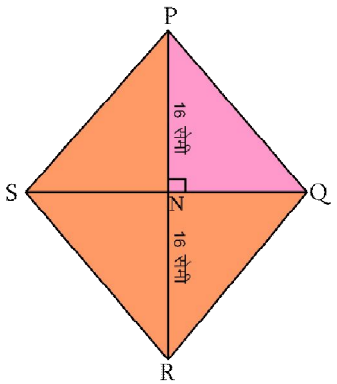
$= 12 \times 10$

$= 120$

∴ lseHkt pkdkukp {k=QG 120pk lehvkg-

19- ,dk lseHkt pkdkukpkd.k32 lehvkg- R;kp {k=QG 384 pk lehvkg rjR;kpkdkukphifjferh dk<k-

mdy %□PQRS gk lseHkt pkdku vkg-



lemHk tpkdkukp {k=QG = 384pkleh

d.k= l(PR) = 32 leh

lemHk tpkdkukp {k=QG = $\frac{1}{2}$ × d.kkpkx.kkdkj

∴ A(□PQRS) = $\frac{1}{2}$ × l(PR) × l(SQ)

384 = $\frac{1}{2}$ ×32× l(SQ)

∴l(SQ) = $\frac{384 \times 2}{32}$

= $\frac{384}{16}$ = 24

∴ l(SQ) = 24 leh

lemHk tpkdkukpd.kijLijkuknHkkxrkr·

∴ l(NQ) = $\frac{1}{2}$ × l(SQ) = $\frac{1}{2}$ × 24 = 12 lehvkf.k

l(PN) = $\frac{1}{2}$ × l(PR) = $\frac{1}{2}$ × 32 = 16 leh

lemHk tpkdkukpd.kijLijkukycvlrkr·

d.kPR ⊥d.kSQ

∴ m∠PNQ = 90^0

ΔPNQ;k dkVdku f=dk.kke/;]

lkk;Fkkxkj lP;kie;kulkj]

l(PQ)^2 = l(PN)^2 + l (NQ)^2

= (16)^2 + (12)^2

= 256+144

$= 400$

$\therefore l(PQ)^2 = (20)^2$

$\therefore l(PQ) = 20$ lseh

∴ leHkkt pkdkukP;kckt phykch 20 lehvkg-

∴ leHkkt pkdkukph ifjferh = ckt × 4

$= 20 \times 4$

$= 80$ lseh

∴ leHkkt pkdkukph ifjferh 80 lehvkg-

20- ,dk leHkkt pkdkukphckt 15 lehv luR;kP;k ,dk d.kkphykch 24 lehvkgrjR;kpkdkukp {k=QG fdrh ;by\

mdy ∥□ABCD gk leHkkt pkdku vkg-

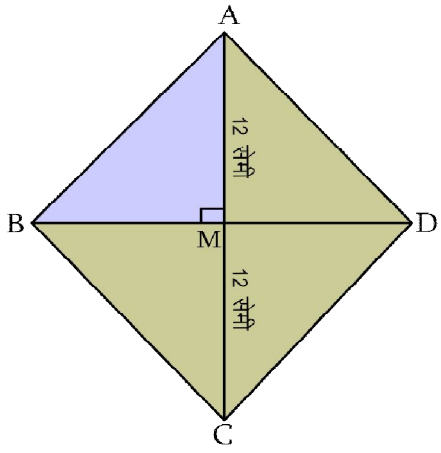
leHkkt pkdkukP;k lockt phykch lekuv lr-

$\therefore l(AB) = l(BC) = l(CD)$

$= l(DA) = 15$ lseh

$l(AC) = 24$ lseh

leHkkt pkdkukpd.kkijLijkuknHkkxrkr-



$$\therefore l(AM) = \frac{1}{2} \times l(AC) = \frac{1}{2} \times 24$$

$\therefore l(AM) = 12$ lseh

leHkkt pkdkukpd.kkijLijkukycvlrkr-

d.kAC⊥d.kBD

$\therefore m\angle AMB = 90^0$

ΔAMB ;k dkVdku f=dk.kkeq/;]

lkl ;Fkkxkj lP;k ie ;kus lkj]

$l(AB)^2 = l(AM)^2 + l(BM)^2$

$(15)^2 = (12)^2 + l(BM)^2$

$\therefore l(BM)^2 = (15)^2 - (12)^2$

$= 225 - 144$

$= 81$

$\therefore l(BM)^2 = (9)^2$

$\therefore l(BM) = 9$ lseh

lseHk tpk dkuk pd.k ijLij jkukn Hkkxr kr.

$\therefore l(BM) = \frac{1}{2} \times l(BD)$

$9 = \frac{1}{2} \times l(BD)$

$\therefore l(BD) = 9 \times 2$

$\therefore l(BD) = 18$ lseh

lseHk tpk dkuk p {k=QG $= \frac{1}{2} \times$ d.kkpk x.kk dkj

$= \frac{1}{2} \times l(AC) \times l(BD)$

$= \frac{1}{2} \times 24 \times 18$

$= 12 \times 18$

= 216pkleh

∴ leHkt pkdkukp {k=QG216pklehvkg-

21- ,dk[kkyhrleHktpkdkukÑrh 3000Qj";k clfoY;kvkgr-
R;kP;kd.kkphykchvuØe 45 lehvkf.k 30 lehvkg-
tjiR;dQj"khikyh"kdj.;kpk [kpirhpkehVj 12 #- njkuvlyrjloQj";k
ikyh"kdj.;klkBh ,d.k [kpfdrh ;by\

mdy %leHktpkdkukÑrhQj";kph ,d.k l[;k = 3000

iR;dQj"khP;kd.kkphykchvuØe 45 lehvkf.k 30 lehvkg-

,dkleHktpkdkukÑrhQj"khp {k=QG= $\frac{1}{2}$ ×d.kkpkx.kkdkj

= $\frac{1}{2}$ × 45 × 30

= 45 × 15

= 675 pkleh

∴leHkt pkdkukÑrhtfeuhp {k=QG = Qj";kph ,d.k l[;k× ,dk
leHkt pkdkukÑrh Qj"khp {k=QG

= 3000 × 675 = 2,025,000pkleh

Qj"khikyh"kdj.;kpknjirhpkehVje/; vkgEg.ku 2025000 pklehp
#ikrjpkehVje/; d#-

∴ 2025000 pkleh = 2025000 × $\frac{1}{100}$ eh × $\frac{1}{100}$ eh = 202.5
pkehiR;dQj"khikyh"kdj.;kpk [kpirhpkehVj 12 # njkuvkg-

∴Qj";k ikyh"k dj.;kpk ,d.k [kp = 202.5 × 12 = 2430 #-

∴lo Qj";k ikyh"k dj.;klkBh 2430 #- [kp ;by-

22- ,dk lEkHkt pkdkukP;knkud.kkphykchvuØe 48 lehvkf.k 20 lehvkg- rj

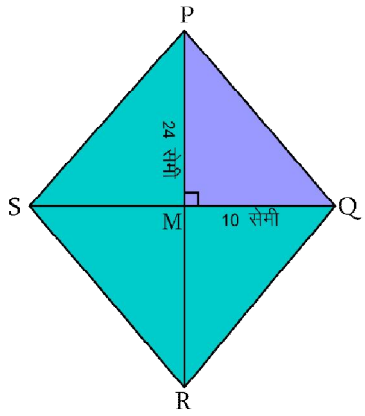
(i) R;kpkdkukPk {k=QG dk<k-

(ii) R;kpkdkukP;kckt phykch dk<k-

(iii) R;kpkdkukphifjferh dk<k-

mdy %(i) lEkHkt pkdkukP;knkud.kkphykchvuØe 48 lehvkf.k 20 lehvkg-

lEkHkt pkdkukp {k=QG = $\frac{1}{2}$ × d.kkP;kykchpkx.kkdkj



$$= \frac{1}{2} \times 48 \times 20$$

$$= 24 \times 20$$

= 480 pkleh

∴ lEkHkt pkdkukp {k=QG 480 pkleh vkg-

(ii) lEkHkt pkdkukpd.kijLijkuknHkkxrkr-

$$\therefore l(PM) = \frac{1}{2} \times l(PR)$$

$$= \frac{1}{2} \times 48$$

$$\therefore l(PM) = 24 \text{ lehvkf.k}$$

$$\therefore l(MQ) = \frac{1}{2} \times l(SQ)$$

$$= \frac{1}{2} \times 20$$

$\therefore$ l(MQ) = 10 lseh

lemHk tpkdkukpd.kijLijkukycvlrkr·

d.kPR $\perp$ d.kSQ

$\therefore$ $m\angle PMQ = 90^0$

ΔPMQ;k dkVdku f=dk.kke/;]

Ikk;Fkkxkj lP;kie;kulkj]

$l(PQ)^2 = l(PM)^2 + l(MQ)^2$

$= (24)^2 + (10)^2$

$= 576 + 100$

$\therefore l(PQ)^2 = 676$

$l(PQ)^2 = (26)^2$

$\therefore l(PQ) = 26$ lseh

$\therefore$ lemHk tpkdkukP;kck tphykch 26 lehvkg·

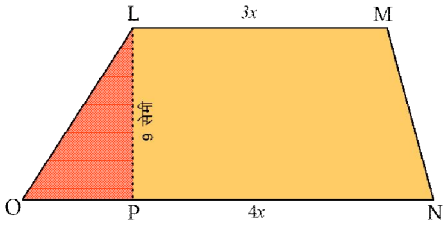
(iii) lemHk tpkdkukphifjfeerh = ck t × 4

= 26 × 4

= 104 lseh

$\therefore$ lemHk tpkdkukphifjfeerh 104 lehvkg·

23- ,dk leycpkdkukP;k lekrjck tphykch 3 % 4 iek.kkrvkg- lekrjck te/kh yvrj 9 lehvkf.k {k=QG126pk lehvkg- rjR;kpkdkukP;k lekrjck tphykch dk<k-



mdy %

leycpkdkukP;k lekrj

ck tphykchvuØe3$x$vkf.k4x eku

lekrjck te/kh yvrj= LP = 9 leh]

A(□LMNO) = 126pk leh

leycpkdkukp {k=QG = $\frac{1}{2}$ × ¼Lkekrj ck tP;k ykchph cjh t½× mph

$$126 = \frac{1}{2} \times [l(\text{LM}) + l(\text{ON})] \times l(\text{LP})$$

$$126 = \frac{1}{2} \times (3x + 4x) \times 9$$

$126 \times 2 = 7x \times 9$

$\therefore 7x = \frac{126 \times 2}{9} = 14 \times 2$

$$\therefore x = \frac{28}{7}$$

$$\therefore x = 4$$

$\therefore 3x = 3 \times 4 = 12$ leh

$4x = 4 \times 4 = 16$ lseh

∴ leycpkdkukP;k lekrjckt phykchvuØe12 lseh vkf.k16 lseh vkg-

24- ,dk leycpkdkukP;knu lekrjckt phykchvkf.k lekrjckt e/khyvrj 3 % 4 % 2 ;k iek.kkrv luR;kp {k=QG 175pk lehvkg- rjR;kpkdkukphmph dk<k-

mdy

% leycpkdkukP;knu lekrjckt phykchvkf.k lekrjckt e/khyvrjvuØe $3x, 4x, 2x$ eku

leycpkdkukp {k=QG = 175pk leh

leycpkdkukp {k=QG $= \frac{1}{2} \times$ ¼Lkekrj ckt P;kykchph cjht½ × mph

$$175 = \frac{1}{2} \times (3x + 4x) \times 2x$$

$$\therefore 175 = \frac{1}{2} \times 7x \times 2x$$

$$\therefore 175 = \frac{1}{2} \times 14x^2$$

$$\therefore 7x^2 = 175$$

$$\therefore x^2 = \frac{175}{7}$$

$$\therefore x^2 = 25$$

$$\therefore x^2 = (5)^2$$

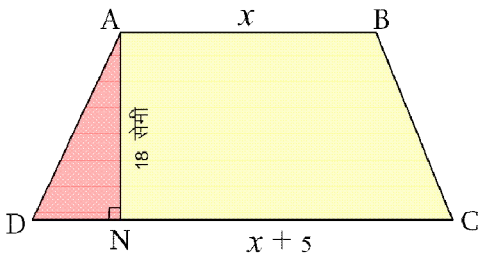
$$\therefore x = 5$$

∴ lekrjckte/khyvrjEg.k tpleycpkdkukphmphh vlr-

∴ $2x$ = 2 × 5 = 10 leh

∴ leyc pkdkukph mph10 lehvkg-

25- ,dk leycpkdkukPk {k=QG 279 pkleh vluR;kP;k lekrjckte/khyvrj 18 lehvkg- tj ,dk lekrjck tphykchnlÚ;kckt i{kk 5 leh u tkLrvlyrjR;knku lekrjck tphykch fdrh \ R;kP;k lekrjck tphcjh tfdrh\



mdy %

leycpkdkukp {k=QG = 279 pkleh

lekrjckte/khyvrj(h) = 18 leh

leycpkdkukp {k=QG

= $\frac{1}{2}$ × ¼Lkekrj ckt P;k ykchph cjh t½ × mph

∴ 279 = $\frac{1}{2}$ × ¼ Lkekrj ckt P;k ykchph cjh t ½ × 18

∴ lekrj ckt P;k ykchph cjh t = $\frac{279 \times 2}{18} = \frac{279}{9} = 31$

leycpkdkukphygkuckt (AB) =
$x$vkf.k leycpkdkukphekBhckt (DC) = x + 5

∴ $x + x + 5 = 31$

∴ $2x + 5 = 31$

$$\therefore 2x = 31 - 5$$

$$\therefore 2x = 26$$

$$\therefore x = \frac{26}{2}$$

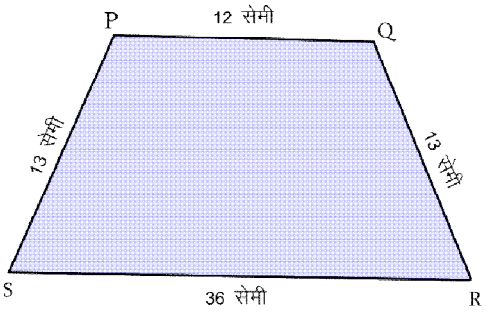
$$\therefore x = 13$$

∴ leyc pkdkukph ygku ckt (AB) = x = 13 leh

leycpkdkukphekBhckt (DC) = x + 5

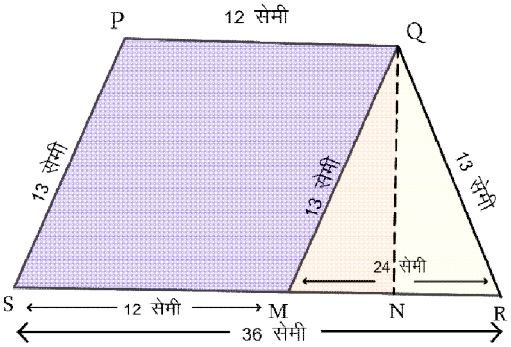
= 13 + 5 = 18 leh

∴ leyc pkdkukP;knku lekrjckt phykchvuØe 13 lehvkf.k18 lehvkg-



leycpkdkukP;k lekrjckt phcjh t 31 l ehvkg

27-□PQRSgk leycpkdkuvkg- l(PQ) = 12 leh] l(QR) = 13 leh] l(SR) = 36 lehvkf.kl(PS) = 13 leh] rj□PQRSp {k=QG dk<k-



mdy %

□PQRSgk leycpkdkuvkg-

ckt PQ ||ckt SR

ckt PS ||ckt QM dk<k-

$l(SR) = 36$ lseh] $l(PQ) = 12$ lseh] $l(SM) = 12$ lsevkf.k

$l(PS) = l(QM) = 13$ lseh

$l(SR) = l(SM) + l(MR)$

$\therefore l(MR) = l(SR) - l(SM) = 36 - 12 = 24$ lseh

$\triangle$ QMRe/;]

$l(MR) = a = 24$ lseh] $l(QR) = b = 13$ lseh]vkf.k

$l(QM) = c = 13$ lseh

$\triangle$ QMRph v/kifjfeerh(s) $= \frac{a + b + c}{2}$

$= \frac{24 + 13 + 13}{2}$

$= \frac{50}{2}$

$= 25$ lseh

$\triangle$ QMRp {k=QG=$\sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{25(25-24)(25-13)(25-13)}$

$= \sqrt{25 \times 1 \times 12 \times 12}$

$= 5 \times 12$---------- ¼oxeG dk<u½

= 60 pkl eh

vkrkj [k QN ⊥ckt SR dk<k-

ΔQMR p {k=QG $= \frac{1}{2} \times$ ik;k× mph

$= \frac{1}{2} \times l(\mathrm{MR}) \times l(\mathrm{QN})$

$\therefore 60 = \frac{1}{2} \times 24 \times l(\mathrm{QN})$

$\therefore 60 = 12 \times l(\mathrm{QN})$

$\therefore l(\mathrm{QN}) = \frac{60}{12} = 5$

$\therefore l(\mathrm{QN}) =$ h = 5 l eh

leycpkdkukp {k=QG $= \frac{1}{2} \times$ ¼Lkekrj ckt P;k ykchph cjht½ × mph

$= \frac{1}{2} \times [l(\mathrm{SR}) + l(\mathrm{PQ})] \times l(\mathrm{QN})$

$= \frac{1}{2} \times (36 + 12) \times 5$

$= \frac{1}{2} \times 48 \times 5$

$= 24 \times 5$

= 120 pkl eh

∴ □PQRSp {k=QG 120 pk lseh vkg-

28. □EFGHgk lekarj Hkt pkdkuvkg-

$l(EF) = 20$ lseh] $l(EH) = 13$ lehvkf.k $l(FH) = 21$ lehvkg-

rj□EFGHp {k=QG dk<.;k lkBh [kkyhyÑrhi.kdjk-

---------- gk lekarj Hkt pkdkuvkg-

□EFGHp {k=QG= □ × △ EFH p {k=QG

△ EFH e/;]

$l(EF) = a =$ □ lseh] $l(EH) = b =$ □ lehvkf.k

$l(HF) = c =$ □ lseh

△ EFH phv/kifjferh(s)= $\frac{\square + \square + \square}{2}$ ……..(l=)

$= \frac{\square + \square + \square}{2}$

$= \frac{\square}{2}$

= □ lseh

△ EFH p{k=QG = $\sqrt{s(s-\square)(s-\square)(s-\square)}$---------

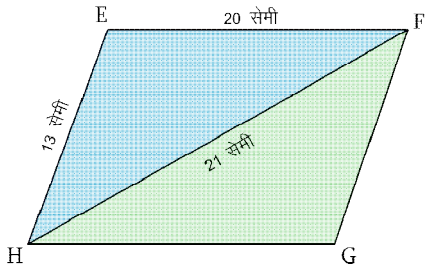
¼l=½

$= \sqrt{27(27-\square)(27-\square)(25-\square)}$

$= \sqrt{27 \times \square \times \square \times \square}$

$= \sqrt{3 \times 3 \times 3 \times \square \times \square \times \square}$-------- ¼vo;o ikMu½

= 3 × □ × □ × □---------- ¼oxeG dk<u½



△ EFH p {k=QG = ____ pk lseh

lekrjHkt pkdkukp {k=QG= □ × ΔEFH p {k=QG

= □ × ____

= ____ pk lseh

∴ lekrjHkt □EFGH p {k=QG ____ pk lehvkg-

mdy % □EFGH gk lekrjHkt pkdku vkg-

□EFGHp {k=QG = 2 × △ EFHp {k=QG

△ EFHe/;]

$l(EF) = a$ = 20 lseh] $l(EH)$ = b = 13 lehvkf.k

$l(HF)$ =c = 21 lseh

△ EFH ph v/kifjferh (s)= $\frac{a + b + c}{2}$ .....(l=)

$= \frac{20 + 13 + 21}{2}$

$= \frac{54}{2}$

= 27 lseh

△ EFH p {k=QG = $\sqrt{s(s-a)(s-b)(s-c)}$.....(l=)

= $\sqrt{27(27-20)(27-13)(27-21)}$

= $\sqrt{27 \times 7 \times 14 \times 6}$

$= \sqrt{3 \times 3 \times 3 \times \boxed{7} \times \boxed{2 \times 7} \times \boxed{2 \times 3}}$ ----- ¼vo;o ikMu½

$=3 \times \boxed{3} \times \boxed{7} \times \boxed{2}$ ---------- ¼oxeG dk<u½

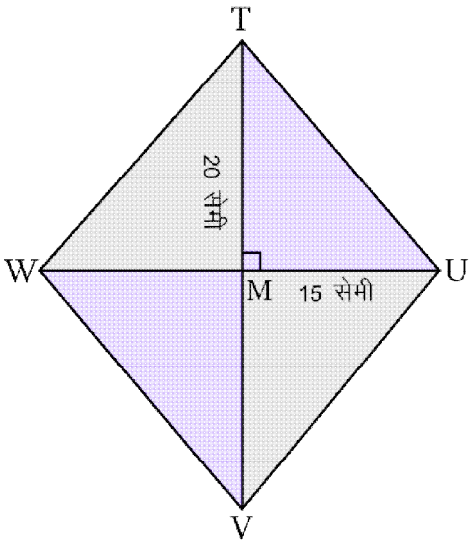
Δ EFH p {k=QG $= \boxed{126}$ pk l eh

lekrjHk t pkdkukp {k=QG $= \boxed{2} \times \Delta$EFH p {k=QG

$= \boxed{2} \times \boxed{126}$

$= \boxed{252}$ pk l eh

∴ lekrjHk t □EFGH p {k=QG $\boxed{252}$ pk l ehvkg-



29. ,dk lekHk t pkdkukP;knkud.kkp hykch 4 ¼ 3 iek.kkrvkgr- R;kp {k=QG 600 pk lehv lyrjR;kpkdkukP;kck t phy kch dk<.;k lkBh [kkyhyÑrhi.kdjk-

lekHk t pkdkukP;knkud.kkphykchvuØe4x, $\square$ eku

∴ lekHk t pkdkukp {k=QG= $\frac{1}{2} \times$ ----¼ $\square$

$\therefore 600 = \frac{1}{2} \times (\square \times \square)$

$\therefore 600 = \frac{1}{2} \times \square\, x^2$

$\therefore \square\, x^2 = 600$

$\therefore x^2 = \frac{600}{\square}$

$\therefore x^2 = \square$

$\therefore x = \square$

∴ lemHkt pkdkukpd.k= $4x = 4 \times$ ☐ = ☐ lehvkf.k

$3x = 3 \times$ ☐ = ☐ leh

vkÑrho#u]

$l(TM) =$ ☐ leh] $l(MU) =$ ☐ leh

d.kTV ⊥d.kWU

∴ m∠TMU = ☐

△ TMU ;k dkVdku f=dk.kkr]

lkk;Fkkxkj lP;kie;ku lkj]

$l(TU)^2 =$ l☐ + l☐

∴ $l(TU)^2 =$ ☐ + ☐

= ☐ + ☐

∴$l(TU)^2 =$ ☐

∴$l(TU) =$ ☐ leh

∴ lemHkt □TUVWP;kckt phykch ☐ lehvkg-

mdy % lemHkt pkdkukP;knkud.kkphykchvuØe$4x$, $3x$ eku

∴ lemHkt pkdkukp {k=QG $= \frac{1}{2} \times$ d.kkP;k ykchPkk x.kkdkj

----------¼ l =½

$\therefore 600 = \frac{1}{2} \times (4x \times 3x)$

$\therefore 600 = \frac{1}{2} \times 12x^2$

$\therefore 6x^2 = 600$

$\therefore x^2 = \frac{600}{6}$

$\therefore x^2 = 100$

$\therefore x = 10$

$\therefore$ lenHk tpkdkukpd.k=$4x$= 4 × 10=40 lehvkf.k

$3x$= 3 × 10=30 leh

vkÑrhoo#u]

$l(TM)$ =20 leh] $l(MU)$ =15 leh

d.kTV⊥d.kWU

$\therefore m\angle TMU = 90^0$

△ TMU ;k dkVdku f=dk.kkr]

lkk;Fkkxkj lP;kie;kulkj]

$l(TU)^2 = l(TM)^2 + l(MU)^2$

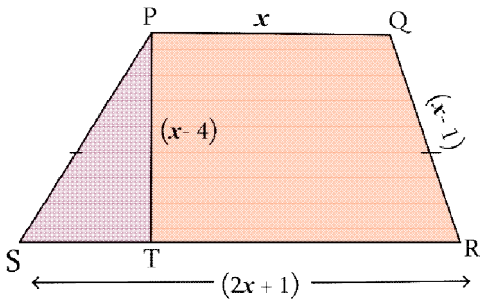
$\therefore l(TU)^2 = (20)^2 + (15)^2$

= 400 + 225

$\therefore l(TU)^2 = 625$

$\therefore l(TU) =$ 25 lseh

∴ lseHkt □TUVW P;kkckt phykch 25 lehvkg-



30. Lkkcr P;kvkÑrhe/;] □PQRSgk leycpkdkuvkg-

Ckkt PQ ||Ckkt SR vlu R;kp {k=QG 33 pk lehvkg-

rj leycpkdkuk P;k lockt phykch dk<.;k lkBh [kkyhfnyyhÑrhi.kdjk-

☐ gk leyc pkdku vkg-

Ckkt PQ ||Ckkt SR

Lkeyc □PQRS p {k=QG

$= \frac{1}{2}$ × lekrj ckt P;k ykch Pkh cjht × ☐ -----¼ l=½

$= \frac{1}{2} \times [l(PQ) + l(SR)] \times l$☐

$\therefore 33 = \frac{1}{2} \times (x + 2x + 1) \times$ ☐

$\therefore 33 \times \square = (3x + 1) \times \square$

$\therefore \square = 3x^2 - \square x + \square x - \square$

$\therefore 3x^2 - \square x - \square - \square = 0$

$\therefore 3x^2 - \square x - 70 = 0$

$\therefore 3x - \square x + \square - 70 = 0$

$\therefore 3x\ (\square) + 10\ (\square) = 0$

$\therefore (3x + 10)\ (\square) = 0$

$\therefore 3x + 10 = 0$fdok$(\square) = 0$

$\therefore 3x = -10$fdok$\therefore x = \square$

$$x = \frac{-10}{3}$$

lkjrykch_.kuh lr-

$\therefore x \neq \frac{-10}{3} \therefore x = \square$ leh

$\therefore\ l(\text{PQ}) = x = \square$ leh

$\therefore l(\text{SR}) = 2x + 1 = 2 \times \square + 1 = \square$ leh

$\therefore l(\text{PS}) = l(\text{QR}) = x - 1 = \square - 1 = \square$ leh

mdy % $\square$PQRS gk leyc pkdku vkg-

Ckkt PQ ||Ckkt SR

Lkeyc□PQRS p {k=QG

$= \frac{1}{2}$ × lekrj ckt P;k ykchPkh cjht × mph -----¼l=½

$= \frac{1}{2} \times [l(PQ) + l(SR)] \times \boxed{l(PT)}$

$\therefore 33 = \frac{1}{2} \times (x + 2x + 1) \times \boxed{(x - 4)}$

$\therefore 33 \times \boxed{2} = (3x + 1) \times \boxed{(x - 4)}$

$\therefore \boxed{66} = 3x^2 - \boxed{12}x + \boxed{1}x - \boxed{4}$

$\therefore 3x^2 - \boxed{11}x - \boxed{4} - \boxed{66} = 0$

$\therefore 3x^2 - \boxed{11}x - 70 = 0$

$\therefore 3x^2 - \boxed{21}x + \boxed{10x} - 70 = 0$

$\therefore 3x\left(\boxed{(x - 7)}\right) + 10\left(\boxed{(x - 7)}\right) = 0$

$\therefore (3x + 10)\left(\boxed{(x - 7)}\right) = 0$

$\therefore 3x + 10 = 0$fdok$\left(\boxed{(x - 7)}\right) = 0$

$\therefore 3x = -10$fdok$\therefore x = \boxed{7}$

$$x = \frac{-10}{3}$$

lkjrykch_ .kul r-

$\therefore x \neq \frac{-10}{3} \therefore x = \boxed{7}$ leh

$\therefore l(PQ) = x = \boxed{7}$ leh

$l(SR) = 2x + 1 = 2 \times \boxed{7} + 1 = \boxed{15}$ leh

$l(\text{PS}) = l(\text{QR}) = x - 1 = \boxed{7} - 1 = \boxed{6}$ le

31. [kkyhyfo/kkupd dh cjkcjrfygk-

1- lekrjHk tpkdkukikiupgkvk;rr;kj>kykvkg- Eg.kunkUghp {k=QG lekuvlrkr-
mRrj %cjkcj

2- lekrjHk tpkdkukpkik;kEg.k tvk;rkph #nh o R;kphmphEg.k tvk;rkphykchvlr-
mRrj %pd %lekrjHk tpkdkukpkik;kEg.k tvk;rkphykch o R;kphmphEg.k tvk;rkph#nhvlr-

3- leHk tpkdkukpnkUghd.kijLijkukNnY;keGr;kjgk.kkj f=dk.kleHk t f=dk.kvlrkr-
mRrj %pd %leHk tpkdkukpnkUghd.kijLijkukNnY;keGr;kjgk.kkj f=dk.kdkVdku f=dk.kvlrkr-

4- leHk tpkdkukpd.kijLijkpycnHkk tdvlrkr-
mRrj %cjkcj

5- leHk tpkdkukpnkUghd.kijLijkukNnY;keGnkudkVdku f=dk.kr;kjgkrkr-
mRrj %pd %leHk tpkdkukpnkUghd.kijLijkukNnY;keGpkjdkVdku f=dk.kr;kjgkrkr-

6- leHk tpkdkukpnkUghd.kijLijkukNnY;keGr;kjgk.kkÚ;kpkjgh f=dk.kkph {k=QG lekuvlrkr-
mRrj %cjkcj

7- pkjlkphck tnliVdY;klR;kp {k=QG nliVgkr-

mRrj %pd %pkjlkphckt nliVdY;klR;kp {k=QG pkiVgkr-

8- leycpkdkukphmphEg.kt plekrjj'kke/khyvrjvlr-
mRrj %cjkcj

9- fnyY;kvk;rkphykchvkf.k #nhnliVdY;klvk;rkp {k=QG nliVgkr-
mRrj %pd %fnyY;kvk;rkphykchvkf.k #nhnliVdY;klvk;rkp {k=QG pkiVgkr-

10- leycpkdkukP;kle[k Hktkp;knkUgh tkMÓkijLijkuklekrjvlrkr-
mRrj %pd %leycpkdkukP;kle[k Hktkpkh,dptkMhlekrjvlr-

11- f=dk.kkP;krhuckt phykchfnyhvlrkR;kp {k=QG dk<.;kpl= ^vk;HkVV* ;k xf.krKku "kk/ku dk<yvkg-
mRrj %pd %f=dk.kkP;krhuckt phykchfnyhvlrkR;kp {k=QG dk<.;kpl=fgjk(Heron);k xf.krKku "kk/ku dk<yvkg-

12- fnyY;kvk;rkphykchnliVdyh o #nhfueiVdyhrjR;kvk;rkP;k {k=QGkrQjdiMrukgh-
mRrj %cjkcj

13- Hk[kM] "krtfeuh ;kpvkdkjlekU;i.kvfu;fervkdkjkpcgHktvlrkr-
mRrj %cjkcj

14- orGkP;klekuHkkxkph l[;k t0k<h tkLrvlyro<h vkÑrhvf/kdkf/kdvk;rkdkjgkby-
mRrj %cjkcj

15- orGkph f=T;knliVdY;kl {k=QG pkiVgkr-
mRrj %cjkcj

16- lekrjHk tpkdkukphdoGifjferhfnyhvlrkR;kp {k=QG dk<rk ;r-
mRrj %pd %pkjlkphdoGifjferhfnyhvlrkR;kp {k=QG dk<rk ;r-

32. [kkyhy tkMÓk tGok-

1- ^v* xV½uko½^c^ xV½l=½

(i) leHk tpkdkukp {k=QG(a) $\sqrt{s(s-a)(s-b)(s-c)}$

(ii) Lkeycpkdkukp {k=QG (b) $\frac{1}{2}$ ×d.kkP;kykchPkkx.kkdkj

(iii) LkekrjHk tpkdkukp {k=QG(c) $s = \frac{a+b+c}{2}$

(iv) f=dk.kkph v/kifjferh(d) $\frac{1}{2}$ ×lekrjck tP;kykchph cjht × mph

(v) fgjkpl=(e) ik;k× mph

mRrj %

(i) leHk tpkdkukp {k=QG %(b) $\frac{1}{2}$ ×d.kkP;kykchPkkx.kkdkj

(ii) Lkeycpkdkukp {k=QG %(d) $\frac{1}{2}$ ×lekrjck tP;kykchph

cjh t × mph

(iii) Lkekarj Hkt pkdkukp {k=QG % (e) ik;k× mph

(iv) f=dk.kkph v/kifjfeh% (c) $s = \frac{a+b+c}{2}$

(v) fgjkp l= % (a) $\sqrt{s(s-a)(s-b)(s-c)}$

2- ^v* xV^c^ xV

(i) 100 pkeh (*a*) lekj100 pkeh

(ii) 1 gDVj (b) lekj 0-4 gDVj

(iii) 1 xBk (c) 10000pkeh

(iv) 1 ,dj (d) 1 vkj

mRrj %

(i) 100 pkeh & (d) 1 vkj

(ii) 1 gDVj & (c) 10000pkeh

(iii) 1 xBk & (*a*) lekj100 pkeh

(iv) 1 ,dj & (b) lekj 0-4 gDVj