

कक्षा 9 के विद्यार्थियों के लिए पुस्तक



माध्यमिक शिक्षा परिषद, उत्तर प्रदेश
एन.ए.ए.सी.

y{kd e.My

funžku

Jh l at; vxoky] vkbz, -, l -
vij e[; l fpo ½ek/; fed f" k{k½
mÜkj insk] y[kuÅ

fo"lšk ijke"lž

Jherh l ž; k frokjh
l fpo ½ek/; fed f" k{k½
m-i ž] y[kuÅ

l ž{k.k

MkÜ vo/k ujsk "kekž
f" k{k funšk d ½ek/; fed ½
, oa l Hk i fr] ek/; fed
f" k{k i fj 'kn ½m- i ž] iz kxjkt

l a kst u

Jherh uhuk JhokLro
l fpo] ek/; fed f" k{k i fj 'kn
½m-i ž] iz kxjkt

l ello; d&

- 1- Jh izdk" k fl g] & ½mi l fpo&"kkk] ek-f" k-i- ½m- i ž] iz kxjkt
- 2- Jh ek; k]ke ½mi l fpo&i kB; i l rd ½ ek-f" k-i- ½m- i ž] iz kxjkt
- 3- MkÜ oškyh frokjh] "kkk l gk; d] ek-f" k-i- ½m- i ž] iz kxjkt

ijke"lžkrk

- 1- Jh l R; ukjk; .k plš fl ; k & l gk; d f" k{k funšk d] f" k{k funškky;] m- i ž] iz kxjkt
- 2- MkÜ xksoln ukjk; .k nos & , l " i k s j k t d h; Lukrdkkj egkfo- vksjk] l kulknz
- 3- Jh l jžnz ukFk oekž & ¼ sfu-½, l kš l , V i kš j] l h, e-i h- fmXh dkyst] iz k-
- 4- Jh ykythr f=i kBh & ¼ sfu-½ i oDrk] l h, -oh- b.Vj dkyst] iz kxjkt

fo"lšk l g; lš

- 1- Jh f"ko dškj & f" k{kfon} fnYYkh
- 2- Jh fnušk dškj fl g] & f" k{kfon} y[kuÅ

y{kd x.k

- 1- Jh l R; ukjk; .k plš fl ; k & l gk; d f" k{k funšk d] f" k{k funškky;] m- i ž] iz kxjkt
- 2- Jh "kšj "kj .k f=i kBh & ¼ sfu-½ foHkkxk/; {k] , l ks i ks bžl h-l h-] iz kxjkt
- 3- MkÜ v"kk d dškj i k.Mš & ofj' B i oDrk] bžl h-l h-] iz kxjkt
- 4- Jh mn; "kšj JhokLro & i ž] iz kxjkt; i dsi h- b.Vj dkyst] iz kxjkt
- 5- Jh jkeQj JhokLro & i ž] iz kxjkt; ¼ sfu-½ dšj Hk' d] vJe b.Vj dkY' t] iz k-
- 6- Jh nšnzjko nške[k & Ákpk; i l jLorh fo | k efnj] jk; i j
- 7- Jh ; kššk dškj xšrk & Á/kkukpk; ¼ sfu-½ eFkjk
- 8- Jh f"ko" kšj fl g] & i oDrk ½xf.kr ¼ Tokyk nšh l jLorh fo | k efnj
b.Vj dkyst iz kxjktA

ÖbeckciálEve

i kphu dky I sgh Hkkjr ea xf.kr dks i æ[k LFku fn; k tkrk jgk gÅ egf"K
yx/k us onkax T; kfr"K ¼kx0x 1000bDi 0½ ea dgk gSfd&

; Fkk f'k[k e; jk. ka ukxkuka e.k; ks ; FkA

rnøn~ onkax' kL=k. ka xf. kra emkZufLFkreAA

vFkkz~ftl izdkj ekj ds flj ij f'k[k rFkk ukx" a ds Qu ij ef.k
I qkshkr gS ml h izdkj I Hkh onkax 'kkL=ka ds 'kh"z ij xf.kr I qkshkr gÅ
xf.kr dh vko'; drk , oa egRo dks crkrs gq egku xf.krK egkohjpk; Z
¼850bD½ dgrs gÅfd&

cgqHfoZ yki % fda =SylD; s I pjkpjÅ

; fRdf_p}Lrq rRI oÅ xf. krs fcuk u fgAA

vFkkz~xf.kr dsckjseacgr D; k dguk] rhuka ykdkaea I pjkpj ¼pru vlg
tM½ txr ea tks Hkh oLrqfo | eku gS os I Hkh xf.kr ds fcuk I Etko ugha gÅ

Kku&foKku ds {ks= ea Hkkjr dh fo'o dks vf}rh; nsu gÅ bl ea xf.kr dh
vk/kkj Hkr I adYi uk; j rks cgr gh fo f'k"V gÅ 'kL; dh I adYi uk] I q; k ysq ku dh
nk'kfed ¼n'keyo½ izkkyh dk vkfo"dkj , oa vadka ds LFkkuh; eku dk Lo: i
i kphu Hkkjr dh , s h nsu gS ftl ds fcuk xf.kr ds {ks= ea dkbZ i xfr I Etko
ugha FkA

oñnddky I s Hkkjr ea xf.kr dh mTToy ijEijk pyh vk jgh gÅ bl
ijEijk dks vucl xf.kr Klaus vi us veW; ; kxnku I svkxsc<k; k gÅ Hkkjr ds bl h
ijEijkxr xf.kr Kku I svoxr djkus grq; g i qrd **d{k 9** ds fYk, rS kj dh
xbZ gÅ i qrd ea dYk rhu 0kx gÅ

iEke Hkx ea Hkkjr ea xf.kr dh mTToy ijEijk ds vlr xz xf.kr
ds {ks= ea Hkkjr ds fo f'k"V ; kxnku dh tkudkj nh xbZ gS bl 0kx ea xf.kr dh
Áedk 'kk[kkv" a dh , frgkl d i "B0fie& vad xf.kr] cht xf.kr] jsq kx xf.kr o
fekd". kfevr ds ckjs ea tkudkj nh x; h gÅ tks fo | kfkz; ka ds Kkuo/kZ ds
I kfk&I kfk vi us ns k ds i fr xqjo dk Hkko i nk djus okyh gÅ

f}rh; Hlx ea x.luk dh ijEijlxr fof/k; k nh xbz gđ tks izuka dks 'kh?krk vġ 'kq rk l sgy djuseami ; ksch gđ l kFk gh mŭkj dks tkpusdh fof/k mi yC/ k gksus l sfo | kFkz; ka dk vkRefo'okl c<kus ea l gk; d gđ bl ds vŭrxr chtkcd] xqkk] foĐktuh; rk rFkk Ōlx l fŌ; k dh fo'""k tkudkj nh x; h gđ

; sijEijlxr fof/k; k; tġk; orĒku xf.kr i kB; Ōe ds izuka dks gy djus ea l gk; d gđ ogha 'kh?kx.kuk gksus l s l e; dh cpr ds dkj.k i fr; ksch ijhf{kkvka ds fy, ojnu gđ ; s fof/k; k; ofnd xf.kr ds uke l s Hkh tkuh tkrh gđ

iġrd ds rrrh; Hlx ea Hkj ds iēk xf.krk; Z fclnq ds vŭrxr egku xf.krK vk; DV ,oa ojkgfegj ds thou ifjp; ,oa ; kxnku l s voxr dj; k x; k gđ

; g iġrd xlxj ea l xj gđ fo | kFkz; k f'k{kdk} vfhkHkkodka grqfuf'pr : i l s mi ; ksch gksch , s k fo'okl gđ iġrd l s l EcfU/kr l dkj kRed l q-koka dk l nb Lokxr gđ

bl l kexh ds l adyu eavud xBfka, oaxf.krKkarFkk fo}kuka dh l gk; rk ikr gđz gđ eđ mu l Hkh ds i fr drKrk 0; Dr djrk ġw l kFk gh eđ ekuuh; mi eġ; eakh M,0 fnusk 'kekz th ds bl l mŌZ ea vŌuo l adyi ds fyk, vR; Ur four Ōko l s vuxghr ġw rFkk bl iġrd d" bl Lo: i rd Ákr ġusea vij eġ; l fpo ½ek/; fed f'k{k½ Jh l at; vxdkYk , oal fpo ½ek/; fed f'k{k½ Jherh l d; k frokj ds l rr~ekxh'kŭ ds Áfr eđ ġkfnđ ĪrKrk 0; ä djrk ġw

eđ l fpo ek/; fed f'k{k i fj"kn Jherh uhuk JhokLro , oamudsl g; "fx; "a dk vkŌkj Ádv djrk ġw ftlg"us vYi kof/k ea bl iġrd ds Y" [ku , oaeġ.k ea viuk l g; "x Ánku fd; k gđ

pšk 'kŲk Áfrink

'kd l Ōr~1940

18 ekpZ2018

M,0 vo/k ujšk 'kekz

f'k{k funskd ½ek/; fed½

, oal Ōki fr] ek/; fed f'k{k i fj"kn~

½mŌÁ0½ iz kxjkt

iB; Øe

Hkx&1

Hkjr ea xf.kr dh mTToy ijEijk

- 1- xf.kr dh iæ[k 'kk[kkvka dh , srgkfl d i"BHkfe&
 - vdx.f.kr
 - chtxf.kr
 - js[kkxf.kr
 - f=dkskfefr

Hkx&2

x.kuk dh ijEijkr fof/k; k

- 1- chtkæd , oachtkæd dh mi ; f'xrk ¼t"Mt ?kVkuk] xqkk] Ækx dsmükj dh tkp½
- 2- xqkk
 - 1- foYk'due}
 - 2- , dU; wsu i wðk]
 - 3- , dkf/kdsu i wðk] vUR; ; "nz kdsfi]
 - 4- fuf[kYke-& vk/kkj] mi k/kkj]
 - 5- Å/oïr; XH; ke-
- 3- Hkx & /otkæd fof/k
- 4- foHkktuh; rk

Hkx&3

Hkj ds iæ[k xf.krpk; Z

- 1- vk; BkV
- 2- ojkgefegj

vuøef.kdk

v/;k;	v/;k; dk uke	i-l a
1-	xf.kr dh Áe[^k 'kk[^{kkv} ª dh , frgkfl d i "BØne ¼vødx.kr] chtxf.kr] j[^{kkxf} .kr] f«kd".kfevr½	7
2-	chtkað	12
3-	xqkk	16
	1- foYk'due~ 2- , dU; wsw i wðk 3- , dkf/kdsu i wðk] vUR; ; "nz kds fi 4- fuf[kYke-& vk/kkj] mi k/kkj 5- Å/oŕr; XH; ke~	
4-	Økx ¼otkað fof/k½	35
5-	foØktuh; rk	38
6-	Økjr ds Áe[^k xf.kr kpk; Z	44
	1- vk; ØV	
	2- ojkgfefgj	

Òkx&1

Hkkjr ea xf.kr dh mTToy ijEijk

v/; k; &1

xf.kr dh iæqk 'kk[kkvka dh ,srgkl d i"BMfe

xf.kr] foKku , oarduhdh dk es#n. M gA onka T; ksr" k ea_ f" k yx/k usfy [kk g&

; Fkk f'k[kk e; jk. ke~ ukxkuke~ e. k; ks ; FkA

rnon~ onka 'kkL=k. ke~ xf. kreekkzuffkreAA

vFkkz~l Hkh onka 'kkL=ka ds 'kh"z ij xf.kr ml h idkj l qkksHkr gStS sekj ds fl j ij f'k[kk rFkk ukx"adsQu ij ef. k l qkksHkr gA

xf.kr dsbfrgkl ij nf"V Mkyusij ge n[ksrgsfd xf.kr eaHkkjr dk ; kxнку vR; Ur fof'k"V , oaf'o' o ifl) gA l exzfo' o dh ; g vo/kkj. kk gSfd vf/kdkk xf. krh; Kku dk mnHko Hkkjr eagh gqk gA

ikphu dky l sgh Hkkjr ea xf.kr dh fofHku 'kk[kkvka ij dk; Zfd; k x; k gA

vaxf.kr

vaxf.kr] xf.kr dh iæqk 'kk[kk gA nsud 0; ogkj eabl dk l okZ/kd mi ; kx gA vaxf.kr dk vk/kkj vad izkkyh gS ftl ea 'kk; dk egROIwzLFkku gA

'kk; dk vfo"dkj& 'kk; dh l adYi uk onka eafufgr gA ; tqrn eaB[kk 'kCn dk iz kx gqk gA B[kk 'kCn dk rRi ; Zvkd'k vkSj 'kk; Hkh gkrk gA T; ksr"kkfn xBFkka eaB[kk dks 'kk; ds vFkz ea iz qr fd; k x; k gA

yhykorh eaHkkLdjpk; Zus 'kk; dsfy, B[kk dk iz kx fd; k g&

; kx[kk l e; oxkzk[kk [kkftrks jk'ka

[kj% L; kr} [kxqk% [kk [kxqk'upR; 'p 'kka fo/kkA

'kk; eafdl h l a; k dks tkM; usij ; kxQy ml l a; k dsrY; gh gkrk gA 'kk; ds oxkzn 'kk; gh gkrsgA fdl h jk'k dks 'kk; l sHkkx nusij ml jk'k dh l k [kj ftl dk gj [k gkz; gkrh gA 'kk; l sfdl h jk'k dks xqkk djusij xqkuQy 'kk; gkrk gA

bZkkokL; mifu"kn-ea dgk x; k gSfd&

iwkēn% iwklēna iwklē~ iwklēpP; rAA

iwkL; iwklēknk; iwklēkof'k"; rAA

bl dk vk'k; gSfd og iwklēg; g iwklēgA iwklēI siwkZ dh mRi fūk gksrh gA iwklē
ea l siwkZ fudkyk 1/2vk; k1/2 tk; rks vo'kSk Hkh iwklēgh jgskA

xf.kr dh nf"V l sbl ea'kū; , oavullr dh l dYiuk l ekfgr gA

'kū; dh l dYiuk dk Js egku l d'r **0; kdj.kpk; Zi k.kuh** 1/500bDi 01/2 rFkk
fi xy 1/200bDi 01/2 d" Hkh fn; k tkrk gS'kū; dk vkfo"dkj ošnd __f"k **xRI en** usfd; k
Fkk bl idkj dk Hkh mYyēk feyrk gA

'kū; dsfy, fp"u fuf'pr djusdk l oī Eke l k; **c{kmyh iklēfyfi** 1/300&400bD1/2
ea ik; k tkrk gA ikphu Hkjr dh vāh; i) fr ea'kū; rFkk bl dsfp"u dk ; ksnku
l okZ/kd egRo iwklēgA e/; inš k ds **xokfy; j eafLFkr fdysdsvlhj prkē eflhj**
ea Hh 'kū; dk l d'r gks ds iek.k idr gA

ikQj tūchū gkyLVMI us dgk g&

βci) vlg 'kDr ds fodkl dsfy, xf.kr dh dūz Hh l dYiuk 'kū;
l segRo iwklē fl) ugha ghZ gA

vā i) fr%fo'o dsfofHkū nš kkaei kphu dky l sl ē; k ysēku dh vyx&vyx
i) fr; k ipfyr jgh gā tš & **noulxjh jleu** rFkk **fgln&vjfcd** l ē; k izkkyh vkfnA

ikū fxUI cxZ dgrsgā yxHkx 770bD l nh eamTtū ds, d **fglnwfo}ku dā**
d" cxnkn dsifl) njckj ea **vūkl bh [kyhQk vyeUl j** usvkef=r fd; k FkkA bl
idkj fglnwvādu i) fr vjc igphA **dā** usfglnwT; kfr" k foKku rFkk xf.kr tš sfo" k;
d" vjc ds fo}kuka dks i<k; kA **dā** dh l gk; rk l s mlgkaus **xf.krK cāxlr ds**
cāLQY fl) klr dk vjch ea vupkn fd; kA

chūchū nūk dsvuē kj&vjc l sfej rFkk mlkjh vjc gksrsgq vā /khj&/khjs
; jkī igpsrFkk X; kjgohal nh ea iwklē: i l s; jkī igp x, A ; jkī okfl ; kausmlgavjch
vā dgk D; kād osmlgavjckal sfeyē fdlūqLo; avjckaus, der l smlgavfghwvā dgk
1/2vy&vjcdku vy&fglnwbu nl vāka dks vjcokl h **βfglnwū k** dgrsgA

Hkjr; vā i) fr ij egku oKkud vycVZ vkbVhu us dgk gSfd&

**We owe a lot to the Indians who taught us how to count without
which no worth while scientific discovery could has been made.**

LFkkuh; eku %fdl h Hkh l ē; k dks 'kū; l fgr nl vāka ea 0; Dr djuk vlg
iR; d vā dks , d fujiēkeku vlg , d **LFkkuh; eku** nus ds dkj.k ; g vā i) fr

oKkfud vđ i) fr gA LFKuh; eku vk/kfud l 4; k izkkyh %gln&vjfcd izkkyh% dh fo' kskrk gA

Ykd ds egku xf.krK **ih;jsykykl** us fy [kk g% **Hkkjr usgh gea iR; d l 4; k dls nl vala }kjk 0; Dr djus %t l ea iR; d vđ dk ,d fuji%k v% ,d LFKuh; eku g% dh vR; Ur mUke izkkyh nh gAB n'keyo i) fr dk vk/kj nl gA bl h dkj.k bl snk'kfed ; k n'keyo izkkyh dgrsgA**

Hkkjrh; valadk bfrgkl ,oacMh l 4; k; a% Hkkjrh; valadk fodkl Øe fuEufyf [kr vuq kj g&

- [kjksBh izkkyh %pk%kh 'krkCnh bDi 0%]
- ctāh izkkyh %rhl jh 'krkCnh bDi 0%]
- Xokfy; j izkkyh %ooha 'krkCnh%]
- nōukxjh izkkyh %ltoha 'krkCnh%]
- vk/kfud izkkyh%

bDi 0 pk%kh 'krkCnh l sydj bā k i' pkr~nl jh 'krkCnh rd ds vfhky% [kka ea [kjksBh vđ ik; s tkrs gA **ck'eh vala** ea nl ds vfrfj Dr] l kSrd bl ds xqkd rFkk ukS l kSrd ds l kSxqkd ik; sx; sgA

; tφñ l āgrkl jkek; .k rFkk ml ds ckn ds/kkfedl xbfkka ea l l sydj 10⁵³ rd dh l 4; kvka dks vyx&vyx uke fn; sx; sg%

- fu; qe 10¹¹
- mRl x 10²¹
- grghye 10³¹
- fu=ok | e-10⁴¹
- rYy{k.ke-10⁵³

vđxf.kr ij e[; : i l s dk; Z djus okys Hkkjrh; xf.krK **vk; [KV] ojkgfefgj] cāxlr] Jh/kjkpk; } eglohjkpk; ? HMLdjpk; Z bR; kfn gA**

cht xf.kr

chtxf.kr rFkk vđ xf.kr ea l jpuk vk% fl) kUr dsfopkj l svud l ekurk, a gA bu nksuka ea e[; varj ; g gSfd vđ xf.kr ea 0; Dr %Kkr% jkf'k dh ckr dh tkrh gS tcfđ chtxf.kr ea v0; Dr %Kkr% jkf'k dh ckr dh tkrh gA v0; Dr jkf'k l srkRi ; Zml jkf'k l sgSft l dk eku i kjEHk ea Kkr u gA bl **scht jk'k** Hkh dgrsg] bl fy, **v0; Dr xf.kr dks chtxf.kr dgrs gA**

chtxf.kr dk mi ; kx 'kŷo l #ka ds dky l sgh i kjEHk gŷk i rhr gkrk gŷ fofHkUu
 i zlkj dh ; Kofn ; ka ds fuekZk ea , ŷ h l eL ; k ; j mRi Uu dj nh gŷ ft l ds fy , jŷkh ;
 ½Linear½ vkŷ vi ffer l ehdj .kka dk l ek/kku <#euk i Mka vk ; BKV dk vadxf.kr ds
 l kFk&l kFk chtxf.kr ea Hkh mYyŷkuh ; ; kxnku gŷ chtxf.kr cãxŷr ds dky l sgh
 xf.kr dh , d vyx 'kk[kk ds : i ea fodfl r gŷA bl s **dŷVd xf.kr rFk v0; Dr
 xf.kr** Hkh dgk tkrk FkA

xf.krK **iFlnd Lokh 1869b0½us dŷVd xf.kr dk uke chtxf.kr j[kA**

jŷHkxf.kr ¼ ; kfevr½

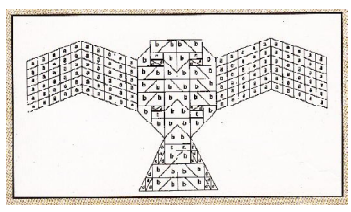
Hkkjrh; xf.kr ds bfrgkl ij nŷV Mkyusij ; g Kkr gkrk gŷfd viusnk ea
 ofnd dky eagh jŷkkxf.kr dh uhd i M+xbz FkA

bl s [**s-xf.kr**] **_tŷf.kr**] **jTtŷf.kr**] **Hfevr** bR; kfn ukeal sHkh tkuk tkrk gŷ

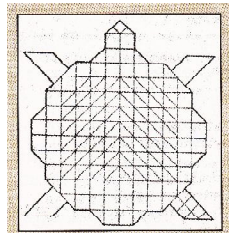
Hkfevr nks 'kCnkaHkŷfevr l sfeydj cuk gŷ Hkwdk vFkZHkŷie rFk fevr dk vFkZ
 eki u gkrk gŷ vFkZr-Hkŷievr dk vFkZHkŷievr dseki u l sgŷ bl h Adkj T; kfevr 'kCn Ōh n"
 'kCn" aT; **kŷfevr** l sfeykdj cuk gŷ T; k dk vFkZgŷ **iFoh** vFkZr-T; kfevr dk vFkZ iFoh
 dk eki u gŷA

ofnd dky ea xf.kr dh tkudkjh **dŷi uked onkx** ea 'kŷo l #ka ds : i ea
 feyrh gŷ

'**kŷo l #** adsjpf; rk& ckŷkk; u] vki LrHk] dkr; k; u] ekuo] eŷ=k; .k ck/ky
 vkfn tkus tkrsgŷ 'kŷo l #ka ea fofHkUu T; kfevr vkdkjka dh ofn; k; tŷ s **x# .k onh
 dŷzonh** vkfn cukus dk o.ku gŷ



1- x: .k onh



2- dŷzonh

'kŷo l # T; kfevr ds dŷn mnkgj .k fuEufyf[kr gŷ

f=Hkŷk] oxk] vk; rkarFk vU; tŷVy T; kfevr vkdkjka dh jpuk] , ŷ h T; kferh;
 vkdkjka dh jpuk dscjkj djuk ftudk {k=Qy fn; sx; svkdjka ds {k= ds tkm+; k vUj
 dscjkj gŷA oŷk ds { «kQYk dscjkj oxZvFkok oxZ ds { «kQYk dscjkj oŷk cukukA

T; kfevr ds {ks= ea vk; BKV ¼476&550bD¼ HkkLDj i Fke ¼629 bD¼ cãxqr ¼600bD¼ egkohj ¼850bD¼ dk fo'ksk mYy[kuh; ; ksnku gA

T; kfevr dk eglo crkrs gq **tSxSk** ea mYY[k fd; k x; k gSfd **BT; kfevr xf.kr dk deYk gS "'k l c rñN gA**

f=dskfevr

f=dskfevr xf.kr dh og 'kk[kk gSftl eaf=Hkqt dh Hkqt kvka vkSj dkskka ds chp l Ecl/k dk v/; ; u fd; k tkrk gA

; g xf.kr dh i kphu , oaegUoi wkZ'kk[kk gA Hkkjrh; T; ksr"kkL= , oa[kxky'kkL= ea bl dk mi ; kx xgka ds LFku dh x.kuk eagrk Fkka

i kphu Hkkjrh; xf.krKkavk; BKV ojkgefegj rFkk cãxqr vkfn dk f=dskfevr ds {ks= ea egRo i wkZ; ksnku gA

f=dskfevr dh l dYi ukvlp l =karFkk l kjf.k; kadk o.kZ Bl w Zfl) kUr ¼400bD¼ ojkgefegj ds i k p fl) kUr rFkk cãxqr ds cãLQw fl) kUr ¼630bD¼ ea feyrk gA

Mko cteksu }kjk fyf[kr i krd Bxf.kr dk bfrgk l ¼B 314¼ eamYy[k gSfd bl ea l Ung ughagSfd f=dskfevr Oyuka ea l srhu dh Li"V : i l si fHk"kk l cl sigys fglu yka usgh nh Fkka

l cl sigys T; k dk iz kx vk; BKV us ¼yxHkx 510bD¼ fd; k Fkka vk; BKV us T; k vkSj mRøe T; k ¼mTT; k½ dh l kj.kh; k; Hkh nh gA

Hkkjr l sBT; k; kCn vj c x; k tgk; Bthckp ds: i ea i p f y r g k s x; kA dñ l e; i 'pkr-thck BtE; k g k s x; kA vjch ea BtE; k dk vFkZ Bo{k; gS y x Hkx 1150bD ea vjch dh i krd kadk ySVu ea vuokn fd; k x; k rks tE; ds LFku ij l kbul ¼sinus½ dk iz kx fd; k x; k gSftl dk ySVu ea , d vFkZ Bo{k; Hkh gA

cãxqr us T; k ds vFkZ ea gh **BøeT; k** dk iz kx fd; k gA bl dk ; g uke bl fy, j[kk fd BmRøe T; k; l sbl dk v r j Li"V fn [kkbz i MA vjch ea; gh 'kCn Bdj tE; ds: i ea i p f y r g k s x; kA vy [okfjteh us Hkh **Bdj tE; k** dk gh iz kx fd; k gA

Hkkjrh; T; k vkSj dksVT; k gh ; jkSi ; u Hk"kvka ea ¼sine½ vkSj dks l kbu ¼co-sine½ cu x; A

f=dskfevr dk T; ksr"kk [kxky'kkL=] vfhk; kã=dh rFkk Åpkb; njh vkfn ds v/; ; u ea mi ; kx gA



Hkkx&2

x.kuk dh ijEijkxr fof/k; k

v/; k; &2

chtkað

fdl h l ð; k ds vöðkaðk tkM+, d vöð i klr gksurð djrs gð; gh vöð ml dk
chtkað dgjkrk gð mngkj .kkFk&

10 dk chtkað → 1 \$ 0 ¾ 1

11 dk chtkað → 1 \$ 1 ¾ 2

321 dk chtkað → 3 \$ 2 \$ 1 ¾ 6

78 dk chtkað → 7 \$ 8 ¾ 15 ; gk; 15 i klr gvk gð

; g chtkað ugha gð vr% bl ds vöðkaðks i q% tkMæks 1\$5¾6

bl h Áðkj 78 dk chtkað 6 gð

mngkj .k&1 8756904 dk chtkað Kkr dhft, A

gy& 8756904 dk chtkað ge fuEufyf[kr rhu izdkj l sKkr dj
l drsg&

izdkj 1- 8756904 ds l Hkh vöðkaðk ; kxQy Kkr djæA
8\$7\$5\$6\$9\$0\$4¾ 39] bl ds vöðkaðks i q% tkMæus ij 3\$9¾12
bl ds vöðkaðks i q% tkMæus ij 1\$2¾3 chtkað gð

izdkj 2- 8756904 ds vöðkaðks Æe' k% tkMærs pys t\$ sgh ; kxQy nks
vöðkaðh l ð; k i klr gksrjUr ; kxdj , d vöð i klr dj yæA
8\$7¾ 15 ¾ 1\$5¾ 6\$5 ¾ 11¾ 1\$1 ¾ 2\$6¾ 8\$9¾ 17
1\$7¾ 8\$0 ¾ 8\$4¾ 12¾ 1\$2¾ 3 chtkað gð

izdkj 3- 8756904 ds vöðkaðks/; ku l snf[k, 'kð; ukSrFkk ftu nks vöðkað
ðks tkMæus ij ukSvkrk gð mlga NkMælj 'kðk vöðkaðk ; kxQy
l schtkað Kkr djæA l ð; k 8756904 ea0] 9 rFkk 4\$5 ¾ 9
NkMæus ij cpsvöð 8] 7 , oa6 dk ; kx 8\$7\$6¾21 dk chtkað
2\$1¾3] vr%chtkað gð

chtkað Kkr djus ea /; ku nsis ; kð; ckr&

¼½ chtkað Kkr djrs l e; t\$ sgh ; kx nksvöð dh l ð; k i klr gksogk; rjUr tkMælj
, d vöð i klr dj yuk pkfg, A

- 1/2½ 'kñ; vk\$ ukStkMëus; k NkMëusI schtkad eadkòZ vUrj ughavkrkA
- 1/3½ fdl h I ã; k dk chtkad ml I ã; k ea9 I sHkkx nus ij cpusokys 'kSkQy ds cjkcy gkrk g\$ vFkkZ-cktkad Kkr djusdk vFkZgSmI I ã; k ea9 I sHkkx nus ij cpusokyk 'kSkQy Kkr djukA
- 1/4½ fdl h I ã; k dk chtkad 9 gSvr%og I ã; k 9 I sijh&ijh foHkkftr gkschA
- 1/5½ 3 dh foHkkT; rk dh tqp chtkad I sHkh dh tk I drh g& ftI I ã; k dk chtkad 3] 6 ; k 9 gksog I ã; k 3 I sijh&ijh foHkkftr gkschA
- 1/6½ chtkad I sl gh mùkj dh tqp dh tk I drh gA

vH; kI

- 1- chtkad fdl sdgrsgA
- 2- fuEufyf[kr I ã; kvka ds chtkad Kkr dhft, & 15] 38] 88] 99] 412] 867] 4852] 9875] 24601] 48956701
- 3- fuEufyf[kr I ã; kvka ea D; k tkM+fn; k tk, fd fuEufYkf[kr I ã; k, j 9 I s foHkkftr gks tk; & 241] 861] 4441] 83504

mùkjekYk

2- 6] 2] 7] 9] 7] 3] 1] 2] 4] 4 3- 2] 3] 5] 7

cktkad dh mi; k\$xrk

cktkad I st "M?kvkuk] xqkk] Òkx vkfn I ã; kv"adh mùkj dh tqp dh tkrh gA

tkMuk

tkM+dh tqp& ; fn I ã; kvka ds chtkadka ds ; k\$Qy dk chtkad] I ã; kv"a ds ; "xQYk ds: i eaÁkr I ã; k dk chtkad cjkcy gSr" Ákr mùkj I gh gkschA

mngj.k&1 3469] 2220 ,oa1239 dk ; k\$Qy Kkr dj mùkj dh tqp chtkad I s dhft, %&

gy & I ã; k chtkad

3 4 6 9	4	1/4½	nh x; h I ã; kvka ds chtkad Øe'k%4] 6 , oa6 gA
\$ 2 2 2 0	6	1/2½	I ã; kvka ds chtkadka ds ; k\$Qy dk chtkad
1 2 3 9	6		4\$6\$6 ¾ 16 dk chtkad 7 gA
6 9 2 8	7	1/3½	mùkj 6928 dk chtkad 7 gA
			vr%mùkj I gh gA

?kVuk

?kVus dh tlp& ; fn ?kVusokyh %uhs% I d; k dk chtkøl v% mÙkj dschtkøl ds; kxQy
 dk chtkøl] Åij dh I d; k dschtkøl dscjkj gsr" mÙkj I gh g&

mngkj.k&1 7816 & 3054 gy dj mÙkj dh tlp chtkøl I schft, A

gy & I d; k chtkøl

7 8 1 6	4	¼½ ?kVusokyh %uhsdh½ I d; k dk chtkøl 3 g&
& 3 0 5 4	3	mÙkj 4762 dk chtkøl 1 g&
4 7 6 2	1	½½ nksuka chtkøka dk ; kx 3\$1 ¾ 4 g&
		½½ Åij dh I d; k 7816 dk chtkøl ¾ 4 g&
		¼½ Øekøl ½½ , oa½½ I schtkøl 4 g&
		vr% mÙkj I gh g&

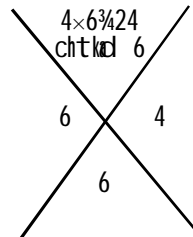
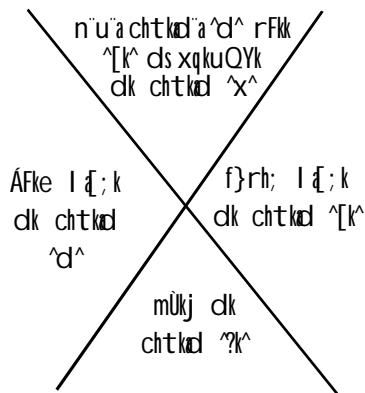
xqkk

xqkk dh tlp&

; fn % Fke I d; k dk chtkøl × f}rh; I d; k dk chtkøl½ I siklr xqkuQy dk
 chtkøl] mRrj dschtkøl dscjkj gsr" mÙkj I gh g&

mngkj.k&1 456×814 gy dj mÙkj dh tlp chtkøl I schft, A

gy %	4 5 6	1- 456 dk chtkøl ¾ 6
×	8 1 4	2- 814 dk chtkøl ¾ 4
	<u>1 8 2 4</u>	3- 6×4 ¾ 24 dk chtkøl 6
×	4 5 6 0	4- mÙkj 371184 dk chtkøl 6
	<u>3 6 4 8 0 0</u>	5- Øekøl ½½ , oa¼½ I snksuka chtkøl 6 g&
	3 7 1 1 8 4	vr% mÙkj I gh g&



/; ku n&

; fn bxp , oaB?kP vl eku gSrkSmÜkj xyr gA ; fn osl eku gSrkSmÜkj I gh gA

Hkkx

0kx dh tlp&

; fn 0kT; dk chtkd ¾ 0kxQYk dk chtkd × 0ktd dk chtkd½ \$ '""kQYk dk chtkd r" mÜkj I gh gA

mnkgj.k&1- 7481 ÷ 31 gy dj mÜkj dh tlp chtkd I schft, A

$$\begin{array}{r}
 31 \overline{) 7481} \\
 \underline{62} \\
 128 \\
 \underline{124} \\
 41 \\
 \underline{31} \\
 10 \text{ 'kSkQy}
 \end{array}$$

- 1- 0kT; 7481 dk chtkd ¾ 2
- 2- 0kxQYk 241 dk chtkd ¾ 7
- 3- 0ktd 31 dk chtkd ¾ 4
- 4- '""kQYk 10 dk chtkd ¾ 1
- 5- HkkT; dk chtkd ¾ ¼ HkkxQy dk chtkd × Hkktd dk chtkd½ \$ 'kSkQy dk chtkd

$$\begin{array}{r}
 2 \quad \frac{3}{4} \quad \frac{1}{7} \times 4 \frac{1}{2} \$ 1 \\
 \quad \quad \frac{3}{4} \quad 28 \$ 1 \frac{3}{4} 29 \text{ dk chtkd } 2 \\
 2 \quad \frac{3}{4} \quad 2
 \end{array}$$

vFkkZr-mÜkj I gh gA

vH; kl

fuEufYk[kr Á'u"adk eku Kkr djds mÜkj dh tlp chtkd I schft, A

- 1- 3804 \$ 5891
- 2- 5874&4107
- 3- 538 × 94
- 4- 57001 ÷ 48



v/; k; &3

xqkk

xqkk dh ipfyr fof/k l sge Hkyh&Hkkfr ifjfr gA xqkk dh l Ø; k 'kh?krk l sdjusds fYk, fuEufyf[kr fof/k; ka l s xqkk djuk ge l h[kaA

xf.kr eaxqkk djusdh cgr gh jkpd fof/k; k; gA xf.kr dsl #kadsiz; kx l svud iz ukadksek [kd gy fd; k tk l drk gSrFkk l h/ks, d i dDr eamUkj Áklr fd; k tk l drk gA

xqkk djus dh fof/k; k&

- 1- foykdue-
- 2- , dl; wu i wdk
- 3- , dkf/kdu i wdk] vUR; ; knzkdsfi
- 4- fuf[kye-& vk/kkj] mi k/kkj
- 5- Á/oTr; XH; keA

1- foykdue~

; g cgr egloi wdzfof/k gA vud iz ukadk gy] ek= n[kdj gh cryk; k tk l drk gA tS &

mngj .k&1 fdl h l [; k ea10] 100] 1000 ----- vkfn dk xqkk djuk gsrkse= l [; k eank; havkj mrusgh 'k; j [k n] ftrus10 ; k 100 bR; kfn eagA
 $37 \times 10 \frac{3}{4} 370] \quad 454 \times 100 \frac{3}{4} 45400$ vkfnA

mngj .k&2 fdl h l [; k ea5 dk xqkk djuk gSrc l [; k dsnk; a, d 'k; j [kdj ml dk vk/kk dj dsmUkj Áklr g" tkrk gA

$$86 \times 5 = \frac{860}{2} = 430$$

mngj .k&3 50 dk xqkk djuk gSrks l [; k dsnk, anks'k; j [kdj ml dk vk/kk djus l smUkj Áklr g" tkrk gA tS &

$$248 \times 50 = \frac{24800}{2} = 12400$$

2- ,dU;wsu i wðk

nks I ð; k, jfn, g'usij fdl h , d I ð; k dsI Hkh vð 9 gkarc bl I w dsiz kx
I sizu dksI jyrk I sgy dj I h/ks, d i ðr eamÜkj fy[kk tk I drk gA

bl earhu fLFkr; k; g' I drh g&

fLFkr&1 xq; vj xqkd ea vðla dh I ð; k I eku gA

mngkj.k&1 xqkk dja 54 × 99

gy %54 × 99 ¼ 53@46 ¼ 5346

; gk; mÜkj nks [k.Mkaevk; k gA nkgus [k.M ea46 gð bl dk LFkkuh; eku Hkh 46
gA ck, j [k.M ea53 gð ftI dk LFkkuh; eku

¼ 53 × vk/kkj ¼ 53 × 100 ¼ 5300

vr%vflre mÜkj ¼ 5300 \$ 46 ¼ 5346

; fn fplg ¼@½ dksGVk fn; k tk; srksHkh 5346 gks tkrk gA bl v/; k; ea
rFkk vkxsds v/; k; ka ea Hkh ge bl h rjg fØ; k dj&A

• I w & ,dU;wsu i wðk I s54 dk ,dU;wsu 53

• I w & fuf[kye-uor%pjee-n'kr%I s&

10 & 4 ¼ 6

9 & 5 ¼ 4

bl iðkj 53@46 ¼ 5346 mÜkj iklr gq/kA

bl rjg dsizu eanksl w-ka dsiz kx dsLFkku ij , d gh I w dk iz kx fuEuor-
djd sÁ'u gYk fd; k tk I drk gA

¼ dU;wsu i wðk½

vr% ¼ 54 × 99 ; gk; oke i {k 54&1 ¼ 53

¼ 53 @ 46 nkguk i {k 9&5} 9&3 I sÁklr I ð; k 46

¼ 5346 ¼vFkk-53 dh ij d I ð; k 99 ds I ki {k¼46½

mngkj.k&2 xqkk dja 2148 × 9999

gy& 2148 × 9999 ¼ 2147@7852

ck; k; i {k ¼ I w & ,dU;wsu i wðk I s2148 dk ,dU;wsu ¼ 2147

nk; k; i {k ¼ 9999 ds I ki {k 2147 dh ij d I ð; k ¼ 7852

vr%mÜkj ¼ 2147@7852

¼ 21477852

fLFkr 2& ;fn 9 dsval vf/kd g"&

mngkj.k&1 37 × 999 d" gYk dhft, A

gy % 37 × 999

foykdue~l sLi"V gsfed 9 , d ckj vf/kd gA vr%37 dscka s, d 'kU; j [kdj
vodka dh I ā; k nkska vkj cjkj djuk g"xkA

037 × 999 • , d U; wsw i wzk l sck; k; i {k ¾ 037&1 ¾ 36

¾ 036@963 • 999 dsl ki {k 36 dh ijd I ā; k ¾ nk; k; i {k ¾ 963

mUkj ¾ 36963

½ck; a'kU; fy [kuk vko'; d ughA ; g vkjEHk ea l e>kusdsfy; sfy [kk tk

I drk gA½

fLFkr&3 ;fn 9 dsval de gl&

mngkj.k&1- xqkk dja 13 × 9

gy % 13 × 9 ¾ 12@9

129 & 12 ¾ 117

I # , dU; wsw i wzk l s13 dk , dU; wsw 12 dsckn 9 d" ; Fkkor-fYk ["aA i klr I ā; k 129
ea l sck; ha vkj ds [k.M dh I ā; k ?kVk; aA

129&12¾117

mUkj ¾ 117

mngkj.k&2- xqkk dja 438 × 99

gy&

438×99

¾ 437@99

¾ 43799

¾ 43799&437

¾ 43362

vFkk~¾ 438×99 ¾ 43362 mUkj

I # % , dU; wsw i wzk l s438 dk , dU; wsw

437 fd; k 437 dsckn 99 ; Fkkor~

fy [k nA vr% i klr I ā; k ¾ 43799] bl ea l s437

?kVk; aA

vH; kl

¼½57 × 99

¼½17897 × 99999

¼½87 × 999

¼½48 × 9

¼½ 4378 × 9999

¼½ 999 × 999

¼½ 345 × 999999

¼½ 9457 × 999

mùkjekyk

¼½5643	½½ 43775622
⅓½1789682103	¼½ 998001
⅕½86913	⅙½ 344999655
⅗½432	⅛½ 9447543

3- , dlf/kdsu i wžk rFk vUR; ; kžkdsfi

xqkk djuseabl l w dk iz kx rc djrs gđ te xqkd vkš xq; dh bdkbž k
 i je fe= gka vFkkž~bdkbž ka dk tkm+nl gks rFk ngkbž l dMk vkfn vl; vd l eku
 gkA bl fof/k dk vkxs folrkj bl i djk gšfd xqkd vkš xq; dsnk; a l e gka dk ; kx
 vk/kkj 10] 100] 1000 & & & vkfn gks rFk 'kšk ck; ka l e g l eku gkA

fØ; k fof/k fuEuor~dh tkrh g&

1- ck; k; Økx ¾ ngkbž × ngkbž dk , dlf/kd

2- nk; k; Økx ¾ bdkb; ; a dk xqkuQYk

3- vk/kkj eaftrus 'k; gšrs gāmùkj dsnk; a Økx eam l sn xqsval g usplfg, A

fuEufYk [kr mnkgj .k l sfØ; kfof/k l e>h tk l drh gA

mnkgj .k&1- xqkk dja 12 × 18

gy % ; gk; 2\$8 ¾ 10 vFkkž~bdkb; k; i je fe k gA

12 × 18 ¾ 2@16 ¾ 216

1- mùkj dk ck; ka Hkkx ¾ ngkbž × ngkbž dk , dlf/kd

¾ 1 × 2 ¾ 2

2- mùkj dk nk; ka Hkkx ¾ bdkb; ka dk xqkuQy

¾ 2 × 8 ¾ 16

vr% 12 × 18 ¾ 2@16 ¾ 216

mnkgj .k&2- xqkk dja 31 × 39

gy& ; gk; bdkb; ; a dk ; ; x 1\$9 ¾ 10 g\$vr% , dlf/kdsu i wžk l wk Ykxw g xkA

mùkj dk ck; ka Hkkx ¾ ¼ngkbž × ngkbž dk , dlf/kd½

¾ 3 × 4 ¾ 12

mùkj dk nk; ka Hkkx ¾ ½bdkbž × bdkbž½

¾ 1 × 9 ¾ 09

vr% 31 × 39 ¾ 12@09 ¾ 1209

; gk; 9 ds vkxs 'k; j [kuk gšk D; kfd bdkbž ka dk tkm+10 g\$ vFkkž~vk/kkj 10

gA nl ea , d 'k; g\$ vr% mùkj ds nk; a Hkkx eamks val g xA

mnikj.k&3- xqkk dja 193 × 197

gy %

; gkj bdkbz; ka dk ; kx nl gSrfkk 'kSk l em 19 l eku gSvr%l # , dkf/kds i wzk
 , oa vLR; ; knZkd9fi ykxwgkskA

mUkj dk ck; kaHkkx $\frac{3}{4}$ 19 dk , dkf/kd × 19

$\frac{3}{4}$ 20 × 19 $\frac{3}{4}$ 380

mUkj dk nk; kaHkkx $\frac{3}{4}$ bdkbz × bdkbz

$\frac{3}{4}$ 3 × 7 $\frac{3}{4}$ 21

vr% 193 × 197 $\frac{3}{4}$ 380@21 $\frac{3}{4}$ 38021

mnikj.k&4- xqkk dja 304 × 306

gy %

mUkj dk ck; kaHkkx $\frac{3}{4}$ 180 dk , dkf/kd × 30 $\frac{1}{2}$

$\frac{3}{4}$ 31 × 30 $\frac{3}{4}$ 930

mUkj dk nk; kaHkkx $\frac{3}{4}$ bdkbz × bdkbz

$\frac{3}{4}$ 4 × 6 $\frac{3}{4}$ 24

vr% 304 × 306 $\frac{3}{4}$ 930@24 $\frac{3}{4}$ 93024

mnikj.k&5- xqkk dja 198 × 102

gy& bl izu eabdkb; kadk tkM+nl gSfdUrq'kSk 1/2cp% l em 19 vLj 10 cjkj ugha
 gA , d h fLFkr ea 98\$02 $\frac{3}{4}$ 100 dks vk/kkj ydJ gy dja sD; kfd cpk l dM+ds
 LFku dk vad 1 nksuka vLj l eku gA

mUkj dk ck; kaHkkx $\frac{3}{4}$ $\frac{1}{4}$ d dk , dkf/kd × , d $\frac{1}{2}$

$\frac{3}{4}$ 2 × 1 $\frac{3}{4}$ 2

mUkj dk nk; kaHkkx $\frac{3}{4}$ 98 × 02 $\frac{3}{4}$ 0196

vr% 198 × 102 $\frac{3}{4}$ 2@0196 $\frac{3}{4}$ 20196

ck; ha vLj pj vad gks sD; kfd vk/kkj 100 ea nks 'k; gA

vH; kl

xqkuQy , dkf/kds i wzk l sKkr dj&

$\frac{1}{4}$ $\frac{1}{2}$ 34 × 36 $\frac{1}{2}$ $\frac{1}{2}$ 42 × 48 $\frac{1}{8}$ $\frac{1}{2}$ 55 × 55

$\frac{1}{4}$ $\frac{1}{2}$ 102 × 108 $\frac{1}{5}$ $\frac{1}{2}$ 117 × 113 $\frac{1}{6}$ $\frac{1}{2}$ 81 × 89

$\frac{1}{7}$ $\frac{1}{2}$ 204 × 206 $\frac{1}{8}$ $\frac{1}{2}$ 292 × 298 $\frac{1}{9}$ $\frac{1}{2}$ 295 × 205

$\frac{1}{4}$ $\frac{1}{0}$ $\frac{1}{2}$ 197 × 103 $\frac{1}{4}$ $\frac{1}{1}$ $\frac{1}{2}$ 194 × 106 $\frac{1}{4}$ $\frac{1}{2}$ $\frac{1}{2}$ 199 × 101

mũkjekyk

¼½ 1224	½½ 2016	¾½ 3025
¼¾ 11016	½¾ 13221	¼¾ 7209
¾¾ 42024	¾¾ 87016	¾¾ 60475
¾10½ 20291	¾11½ 20564	¾12½ 20099

4- fuf[kye~

¾½ fuf[kye&vk/kkj

bl l ¼ dsiz kx l sge rc xqkk d j r s g a t c x q ; v ¾ x q k d d h l ¼ ; k , i v k / k k j ; k m i k / k k j d s f u d v g k a ; g k v k / k k j m i k / k k j r f k k l ¼ ; k d k b u l s f o p y u d s l e c l / k e a t k u d k j h i k l r d j u k v k o ' ; d g a

vk/kkj & n l ; k n l d h f d l h h k h ? k k r l s i k l r l ¼ ; k d k s v k / k k j d g r s g a t s s 10] 100] 1000] & & & & v k f n A

mik/kkj & v k / k k j d s x q k t m i k / k k j d g y k r s g a t s s 20] 30] 200] 300 & & & & & & v k f n A

fopyu & d k b z l ¼ ; k v k / k k j ; k m i k / k k j l s f d r u h d e ; k v f / k d g s ; g h m l d k m l v k / k k j @ m i k / k k j l s f o p y u d g y k r k g a

l ¼ ; k	vk/kkj	mik/kkj	fopyu
9	10	&	& 1
12	10	&	\$ 2
23	10	20	\$ 3
98	100	&	& 02
104	100	&	\$ 04
307	100	300	\$ 07
989	1000	&	& 011

fd l h l ¼ ; k d k s f o p y u d s l k f k , s s f y [k r s g a

l ¼ ; k	fopyu
12	\$ 2
14	\$ 4
8	& 2 v k f n A

/; **ku n&** ; fn I ð; k vk/kkj@mi k/kkj I sde gSrc **fopyu** __. ~~Red~~ vlg ; fn
vf/kd gS rks **fopyu** /~~ku~~**Red** gkrk gA

xqkk dh fØ; kfof/k fuEuor-dh tkrh g&

1- I oÁFke vk/kkj Kkr fd; k tkrk gA

2- mÜkj dk nk; kaØkx ¾ fopyku`adk xqkuQYk

3- mÜkj dk ck; kaØkx ¾ , d I ð; k \$ nñ jh dk fopyku

4- vk/kkj eaftrus`kñ; gñ mÜkj dsnk; aØkx eamrusvæl g`aA

mñkj.k&1- xqkk dj&12 × 14

gy& 12 \$2 ¼½ vk/kkj 10 ¼nksuka I ð; k, j 10 dsfudV
× 14 \$4 ½ I ð; kvka dk vk/kkj I sfopyu Kkr dj fpñg I fgr fy[kk
16@ 8 ¼½ vk/kkj eaftrus`kñ; gñ mÜkj dsnk; aHkkx eamrusvæl jg`aA

mÜkj dk nk; kaHkkx ¾ fopyuka dk xqkk

¾ 2 × 4 ¾ 8

mÜkj dk ck; kaHkkx ¾ , d I ð; k \$ nñ jh dk fopyu

¾ 12 \$ 4 ¾ 16

; k 14 \$ 2 ¾ 16

mÜkj ¾ 168

mÜkj dh tlp& 12 o 14 dschtka Øe`k%3 o 5 gA

vr% 3 × 5 ¾ 15 dk chtka 6

mÜkj 168 dk chtka Hkh 6 gA vr%mÜkj I gh gA

mñkj.k&2- xqkk dj& 15 × 17

gy& 15 \$5 ¼ I oÁ Fke ; g n[krs gñfd I ð; k fdl vk/kkj ds
× 17 \$7 fudV gA vk/kkj fuf`pr gks tkus ij fopyu Kkr
22 @₃5 dj izu I jyrk I sgy gks tkrk gA ; gñ vk/kkj¾10

¾ 22\$3@5 ¼½ mÜkj dk nk; kaHkkx¾ fopyuka dk xqkk

¾ 5 × 7 ¾ 35

clø 5 nk; aHkkx eajgskj 3 vfrfjDr væl gA

¼½ mÜkj dk ck; kaHkkx ¾ , d I ð; k \$ nñ jh dk

fopyu \$vfrfj ä væl

¾ 15 \$ 7 \$ 3¾ 25

; k 17 \$ 5 \$ 3¾ 25

mÜkj ¾ 255

- /; **ku na %**• mÜkj eank; havkj fopyukadsxqkk eavk/kkj ds'kÜ; ka dh I ð; k ds cjkj vð j [ks tkrsgA 'kSk vð ck; havkj dh i ktr I ð; k ea tkrsgA tkrsgA
- ; fn fopyukadsxqkk ds vð vk/kkj ds'kÜ; ka dh I ð; k I sde gka rks bl xqkuQy ds ck; havkj vko'; drkuq kj 'kÜ; yxkrsgA

mnkgj.k&3- xqkk dja 8 × 13

gy& 8 &2 ¼½ vk/kkj ¾ 10
 × 13 \$3 ½½ vk/kkj I sfopyu Kkrdj izu dks gy
 11@ 8 djæA fopyu fplg I fgr fy [kuk pkfg, A
 ¾ 104

mÜkj dk nk; ka Hkkx ¾ fopyuka dk xqkk
 ¾ & 2×3 ¾ & 6 ¾ 8
 mÜkj dk ck; ka Hkkx ¾ , d I ð; k \$ nÜ jh dk fopyu
 ¾ 8 \$ 3¾ 11
 ; k ¾ 13 & 2 ¾ 11
 mÜkj ¾ 11@ 8 ¾ 118 ¾ 104

mnkgj.k&4- xqkk dja 104 × 107

gy& 104 \$04 ¼½ foykdue-I sLi"V gSfd I ð; kvka dk
 × 107 \$07 vk/kkj ¾ 100 ysk pkfg, A
 111@28 ½½ fplg I fgr fopyu fy [ka
 ¾ 11128 ½½ mÜkj ds nk; a Hkkx eamrus vð jgæA

¾½ mÜkj dk nk; ka Hkkx ¾ fopyuka dk xqkk
 ¾ 4 × 7 ¾ 28
 ½½ mÜkj dk ck; ka Hkkx ¾ , d I ð; k \$ nÜ jh dk fopyu
 ¾ 104 \$ 07 ¾ 111
 ; k 107 \$ 04 ¾ 111

mnkgj.k&5- xqkk dja 101×187

$$\begin{array}{r} \text{gy\&} \quad 101 \ \$01 \\ \times \quad 187 \ \$87 \\ \hline 188@87 \end{array}$$

¼½ nksuka l ǂ; kvka dk vk/kkj 100 yA
 ½½ fpǂg l fgr fopyu Kkr dj gy dj&A
 , d fopyu Nks/k rFkk , d fopyu cgr cMk
 gksus ij Hkh l jyrk l sizu gy gkstkrk gA

¼½ mÙkj dk nk; kaHkkx ¾ fopyuka dk xqkk
 ¾ 87 × 1 ¾ 87

½½ mÙkj dk ck; kaHkkx ¾ , d l ǂ; k \$ nñ jh dk fopyu
 ¾ 101 \$ 87 ¾ 188
 ¾ 187 \$ 01 ¾ 188
 mÙkj ¾ 188@87 ¾ 18887

mnkgj.k&6- xqkk dja 97 × 88

$$\begin{array}{r} \text{gy\&} \quad 97 \ \&03 \\ \times \quad 88 \ \&12 \\ \hline 85 \ @ \ 36 \end{array}$$

¼½ vk/kkj 100
 ½½ fopyu __.kkRed gA
 ¾ 8536

mÙkj dk nk; kaHkkx ¾ fopyuka dk xqkk
 ¾ ½&3½ × ½&12½ ¾ 36

mÙkj dk ck; kaHkkx ¾ , d l ǂ; k \$ nñ jh dk fopyu
 ¾ 97 \$ ½&12½ ¾ 85
 ¾ 88 \$ ½&3½ ¾ 85
 mÙkj ¾ 85@36 ¾ 8536

mnkgj.k&7- xqkk dja 98 × 123

$$\begin{array}{r} \text{gy\&} \quad 98 \ \&02 \\ \times \quad 123 \ \$23 \\ \hline 121@46 \end{array}$$

¼½ vk/kkj 100 gA
 ½½ fpǂg l fgr fopyu Kkr dj itu gy
 dj&A

½½ mÙkj dk nk; kaHkkx ¾ fopyuka dk xqkk
 ¾ & 2 × 23 ¾ & 46 ¾ &&

¼½ mÙkj dk ck; kaHkkx ¾ , d l ǂ; k \$ nñ jh dk fopyu
 ¾ 98\$23 ¾ 121
 ¾ 123&2 ¾ 121
 mÙkj ¾ 121@46 ¾ 12146
 ¾ 12100 & 46 ¾ 12054

/; ku n&¼¼¼ .kkka dks gVkus ds fy, fuf[kya l = , oa, dU; us i d&k l = dk iz ks
djrsgA

½¼ bl rjg Hkh dg l drsg&fd &
12146 &¼ 12100&46 ¼ 12054

mnkgj.k&8- xqkk dja 998 × 989

gy& 998 &002 ¼¼¼ vk/kkj 1000 gA mÙkj eank; havkj rhu rhu
× 989 &011 v&d jg&A 'k&k fØ; kfof/k l eku gA
987@022
¼ 987022

vH; kl

fuf[kye-l = dk iz ks dj fuEufYkf[kr izu gy dhft, &
l h/ksmÙkj fyf[k, &

- | | | |
|---------------|-----------------|----------------|
| 1- 11 × 13 | 2- 12 × 13 | 3- 8 × 12 |
| 4- 104 × 105 | 5- 122 × 102 | 6- 101 × 167 |
| 7- 97 × 98 | 8- 98 × 78 | 9- 103 × 87 |
| 10- 997 × 986 | 11- 1004 × 1112 | 12- 998 × 1231 |

mÙkjekyk

¼¼¼ 143	½¼¼ 156	¾¼¼ 96	¼¼¼ 10920
½¼¼ 12444	¼¼¼ 16867	¼¼¼ 9506	¾¼¼ 7644
¼¼¼ 8961	¼¼¼ 983042	¼¼¼ 116448	¼¼¼ 228538

¼¼¼ fuf[kye~ mi k/kj

fuf[kye-l = l smi k/kkj ds fudV dh l ð; kvka dk Hkh xqkuQy Kkr fd; k tkrk
gA bl ea l ð; k dk mi k/kkj l sfopyu Kkr djrsgA

mnkgj.k&1- xqkk dj& 22×23

22 \$2 ¼¼¼ l ð; kvka dk vk/kkj 10 gA mi k/kkj 20 gA
× 23 \$3 vr%ck; aHkkx dks20@10¼2 l sxqkk dj&A
50 @6 ¼¼¼ mi k/kkj l sfopyu fplg l fgr fy[kdj izu
gy dj&A
¾¼¼ mÙkj dk nk; kaHkkx¼fopyuka dk xqkk
¼ 2 × 3 ¼ 6

¼½ mÜkj dk ck; kaHkkx Kkr djusdsfy, &

$$\frac{1}{4} d l \text{ [}; k \$ n\text{ j h dk fopyu} \frac{1}{2} \times \frac{mi\ k/kkj}{vk/kkj}$$

$$\begin{aligned} \frac{3}{4} & \quad \frac{1}{2} 2 \quad \$ 3\frac{1}{2} \times 2 \\ ; k & \quad \frac{1}{2} 3 \quad \$ 2\frac{1}{2} \times 2 \\ \frac{3}{4} & \quad 25 \times 2 \quad \frac{3}{4} 50 \end{aligned}$$

vr% mÜkj ¾ 50@6 ¾ 506

mnlkj.k&2- xqkk dj& 52 × 47

gYk& 52 \$2

$$\times \frac{47 \ \&3}{5 \times 49@8}$$

¾ 245@8

¾ 2444 mÜkj

¼½ l [; kvka dk vk/kkj 10 gA

½½ mik/kkj 50 gA

⅓½ mik/kkj@vk/kkj ¾ 50@10 ¾ 5

¼½ fopyu Kkr dj gy dj&A

⅕½ mÜkj dk nk; kaHkkx 2 × ⅙ 3½ ¾ 8

⅙½ mÜkj dk ck; kaHkkx ¾ ¼ 7 \$ 2½ × 5¾ 245

¼½ 245@8 ¾ 2458

¾ 2450&6

¾ 2444

mnlkj.k&3- xqkk dj& 63 × 68

gYk& 63 \$3

$$\times \frac{68 \ \$8}{426@2,4}$$

¾ 4284

¼½ mÜkj dk nk; kaHkkx ¾ 3 × 8 ¾ 24

nk; aHkkx ea, d vad jgsxk D; kfid vk/kkj ea, d 'kk; gA

½½ mÜkj dk ck; kaHkkx

¾ [¼ d l [; k \$ n\text{ j h dk fopyu} \frac{1}{2} \times \frac{mi\ k/kkj}{vk/kkj} \frac{1}{2} \\$ vfrfjä vad

¾ [⅙ 3 \$ 8½ × 6] \$ 2

¾ ⅙ 1 × 6½ \$ 2

¾ 426 \$ 2 ¾ 428

mÜkj ¾ 4284

mnlkj.k&4- xqkk dja 504 × 512

gy& 504 \$04

$$\times 512 \quad \$12$$

¼½ vk/kkj ¾ 100 g\$ mik/kkj ¾ 500

½½ vuq kr ¾ 500@100 ¾ 5

$\frac{3}{4}$ 5 1504\$12 $\frac{1}{2}$ @04 \times 12 $\frac{1}{8}$ $\frac{1}{2}$ mÜkj dk nk; ka Hkkx $\frac{3}{4}$ 04 \times 12 $\frac{3}{4}$ 48
 $\frac{3}{4}$ 2580@48 nk; a Hkkx eanksvad jgæSD; kfid vk/kkj
 $\frac{3}{4}$ 258048 eanksvad; gA
 $\frac{1}{4}$ $\frac{1}{2}$ mÜkj dk ck; ka Hkkx

$\frac{3}{4}$ $\frac{1}{4}$ d I f; k\$ni jh dk fopyu $\frac{1}{2}$ $\frac{mi\ k/kkj}{vk/kkj}$

$\frac{3}{4}$ 1504 \$ 12 $\frac{1}{2}$ \times 5

$\frac{3}{4}$ 516 \times 5

$\frac{3}{4}$ 2580

504 \times 512 $\frac{3}{4}$ 2580@48 $\frac{3}{4}$ 258048

rhu I f; kvka dk xqk&fuf[kye~ fof/k I s

fuf[kye~I = ds iz kx I svk/kkj dsfudV dh rhu I f; kvka dk xqk& fØ; kfof/k&

- 1- I oÅFke vk/kkj Kkr djdsfopYku fpgu I fgr Kkr djrsgA
- 2- mÜkj ds **rhu ðlx g`rsgA** ck; k@e/; @nk; k; ðlx
nk; k; ðlx $\frac{3}{4}$ rhu`afopYku`a dk xqkuQYk
e/; ðlx $\frac{3}{4}$ n`&n` fopYku`a ds xqkuQYk dk ; `xQYk
ck; k; ðlx $\frac{3}{4}$, d I f; k \$ n` vU; fopYku`a dk ; `xQYk\$vrfrj`akad
- 3- ck; k; ðlx@e/; ðlx@nk; k; ðlx fYk[kdj mÜkj Åkr djrsgA
- 4- **nk; a ðlx , oae/; ðlx eamrus vad g`rsgA ftirus vk/kkj ea`kt; g`rs gA**

mngj.k&1- xqkk dj& 11 \times 12 \times 13

11 \$1	$\frac{1}{4}$ $\frac{1}{2}$; gk; ij vk/kkj 10 gA
12 \$2	$\frac{1}{2}$ $\frac{1}{2}$	fopyu fplg I fgr fy[kæA
\times 13 \$3	$\frac{1}{8}$ $\frac{1}{2}$	mÜkj ds rhu Hkkx gkæA
11\$2\$3@ ₁ @6		$\frac{1}{d}$ $\frac{1}{2}$ nk; ka $\frac{1}{4}$ [k $\frac{1}{2}$ e/; $\frac{1}{x}$ $\frac{1}{2}$ ck; ka ðlx
$\frac{3}{4}$ 16@ ₁ @6	$\frac{1}{4}$ $\frac{1}{2}$	nk; a ðlx rFk e/; Hkkx eamrusgh vad jgæS
$\frac{3}{4}$ 17@1@6		ftirusvk/kkj ea`kt; gA
$\frac{3}{4}$ 1716		

$\frac{1}{5}$ $\frac{1}{2}$ mÜkj dk nk; ka Hkkx $\frac{3}{4}$ rhuka fopyuka dk xqkuQy
 $\frac{3}{4}$ 1 \times 2 \times 3 $\frac{3}{4}$ 6

$\frac{1}{6}$ $\frac{1}{2}$ mÜkj dk e/; Hkkx $\frac{3}{4}$ nk&nks fopyuka dk xqkuQy dj
 mu xqkuQyka dk ; kxA

$\frac{3}{4}$ $\frac{1}{4} \times 2\frac{1}{2} \$ \frac{1}{2} \times 3\frac{1}{2} \$ \frac{1}{4} \times 3\frac{1}{2}$
 $\frac{3}{4}$ $2\$6\3
 $\frac{3}{4}$ 11

mùkj ds e/; Hkkx ea vk/kkj 10 gksus ds dkj.k , d vad jgskj 1 gkfl y
 vfrfjDr vad gS tks mùkj ds ck; a Hkkx ea tMskA

$\frac{1}{7}\frac{1}{2}$ mùkj dk ck; ka Hkkx $\frac{3}{4}$ $\frac{1}{4}$ d I ð; k\$ nks vU; I ð; kvka ds
 fopyuka dk ; kx $\frac{1}{2} \$$ vfr0 vad
 $\frac{3}{4}$ $\frac{1}{4} 1\$2\$3\frac{1}{2} \$1 \frac{3}{4} 17$
 mùkj $\frac{3}{4}$ 1716

mnkgj.k&2- xqkk dj& 102×103×105

gy %

102 \$02 $\frac{1}{4}\frac{1}{2}$ vk/kkj 100
 103 \$03 $\frac{1}{2}\frac{1}{2}$ mùkj nk; a , oae/; Hkkx eank&nks vad g'axA
 × 105 \$05
 110@31@30 $\frac{3}{4}$ 1103130
 $\frac{1}{8}\frac{1}{2}$ nk; ka Hkkx $\frac{3}{4}$ fopyuka dk xqkk $\frac{3}{4}$ 2×3×5 $\frac{3}{4}$ 30
 $\frac{1}{4}\frac{1}{2}$ e/; Hkkx $\frac{3}{4}$ n"&n" fopYku"ads xqkuQy dk ; kx
 $\frac{3}{4}$ $\frac{1}{2} \times 3\frac{1}{2} \$ \frac{1}{8} \times 5\frac{1}{2} \$ \frac{1}{2} \times 5\frac{1}{2} \frac{3}{4}$ 31
 $\frac{1}{5}\frac{1}{2}$ ck; ka Hkkx $\frac{3}{4}$, d I ð; k\$ vU; nks I ð; kvka ds fopyu"adk ; "x
 $\frac{3}{4}$ 102\$03\$05 $\frac{3}{4}$ 110

vH; kl

fuf[kye-I wk dk iz kx dj gy dhft , &

- 1- 11×11×11
- 2- 12×11×12
- 3- 11×13×13
- 4- 9×12×11
- 5- 101×102×102
- 6- 102×102×102
- 7- 97×98×99
- 8- 105×102×102
- 9- 95×105×101

mùkjekyk

$\frac{1}{4}\frac{1}{2}$ 1331 $\frac{1}{2}\frac{1}{2}$ 1584 $\frac{1}{8}\frac{1}{2}$ 1859
 $\frac{1}{4}\frac{1}{2}$ 1188 $\frac{1}{5}\frac{1}{2}$ 1050804 $\frac{1}{6}\frac{1}{2}$ 1061208
 $\frac{1}{7}\frac{1}{2}$ 941094 $\frac{1}{8}\frac{1}{2}$ 1092420 $\frac{1}{9}\frac{1}{2}$ 1007475

5- Å/oïr ; ÆH; ke~

bl I w ds iz kx I sfdUghanksl ð; kvka dk vki I ea xqkk fd; k tk I drk gSrFkk
 I h/ks mùkj , d gh iDr ea iTr dj I drsgA

I # & Å/oI; ;XH; ke-

vFkZ & Å/oI; [kMk ; Åij&uhp; ;
fr; d ; frjNk ;

mngj.k&1- 2×1] 3×2] 4×5 dk eku Å/oI; ;XH; ke-I # I s Kkr dhft, A gYk&

$$\begin{array}{r}
 2 \times 1 \quad \frac{2}{\times 1} \uparrow \\
 \hline
 2
 \end{array}
 \qquad
 \begin{array}{r}
 3 \times 2 \quad \frac{3}{\times 2} \uparrow \\
 \hline
 6
 \end{array}
 \qquad
 \begin{array}{r}
 4 \times 5 \quad \frac{4}{\times 5} \uparrow \\
 \hline
 20
 \end{array}
 \quad \text{Å/oI; xqk}$$

mngj.k&2- 21×13 dk eku Å/oI; ;XH; ke-I wk I s Kkr dhft, A gYk&

$$\begin{array}{r}
 21 \\
 \times 13 \\
 \hline
 2@7@3
 \end{array}$$

I eq jpuk rFkk I dr

	III	II	I
	$\begin{bmatrix} 2 \\ \uparrow \\ 1 \end{bmatrix}$	$\begin{bmatrix} 2 & 1 \\ \times & \times \\ 1 & 3 \end{bmatrix}$	$\begin{bmatrix} 1 \\ \uparrow \\ 3 \end{bmatrix}$
xqkQy	2×1 ; 2	3×2\$1×1 ; 6 \$1 ; 7	1×3 ; 3

¼¼ bdkbZ LFkku ¼ Fke LrEHk½

$$\begin{array}{r}
 1 \uparrow \\
 \times 3 \\
 \hline
 3
 \end{array}$$

1/2 1/2 bdkbz , oangkbz 1/4 Eke rFkk f}rh; LrEHk1/2

$$\begin{array}{r} 2\ 1 \\ \times 1\ 3 \\ \hline \end{array}$$

fr; d xqkk] i klr xqkuQyka dk ; kx

$$1/2 \times 3 1/2 \$ 1/4 \times 1 1/2 3/4 6 \$ 1 3/4 7$$

1/8 1/2 ngkbzLFkku 1/4 }rh; LrEHk1/2

$$\begin{array}{r} 2 \\ \times 1 \\ \hline 2 \end{array}$$

Å/oZ xqkk

$$vr\% 21 \times 13 \ 3/4 \ 2 @ 7 @ 3 \ 3/4 \ 273 \ m\ddot{u}kj$$

mnkgj .k&3- xqkk dja 23 x 54

gy&

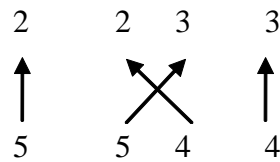
$$\begin{array}{r} 2\ 3 \\ \times 5\ 4 \\ \hline 10 @ 3 @ 2 \\ 0 @ 2 @ 12 \\ \hline 1242 \end{array}$$

1/4 1/2 i Fke Lrthk dk Å/oZ xqkk

$$\begin{array}{r} 3 \\ \times \quad 4 \\ \hline 12 \end{array}$$

1/2 1/2 i Fke , oaf}rh; Lrthk fr; d xqkk] xqkuQy'adk ; kx

$$\begin{array}{r} 2\ 3 \\ \times 5\ 4 \\ \hline 3/4 \ 12 \times 4 1/2 \$ 1/8 \times 5 1/2 \\ 3/4 \ 8 \$ 15 \ 3/4 \ 23 \\ 23 \$ \ vfr0 \ v\ddot{a}d \\ 23 \$ \ 1 \ 3/4 \ 24 \end{array}$$



1/4 1/2 bdkbzLFkku dks i Fke Lrthk ngkbzLFkku d' f}rh; Lrthk l sLMk LFkku d' r}rh; Lrthk vkfn Øe' k% dgakA

1/2 1/2 Lrthkka dh l d; k dsngkus l s, d de pj. kka ea i z u gy gksckA

1/8 1/2 i R; d pj. k ea i klr l d; k ea l s , d [k. M ea, d v\ddot{a}d j [kacs 'kSk v\ddot{a}d vkxs tkMakA vfure ck; a pj. k 1/4 [kM1/2 ea, d l svf/kd v\ddot{a}d gks l drsgA

1/4 1/2 i R; d pj. k dsckn m\ddot{u}kj fy [krs l e; fr; d j s [kk [khp rsgg fyk [krs g\ddot{a} , d&, d Lrthk c<krsgg rFkk vr rd i gpus dsckn , d&, d Lrthk NkM rsgg l eng vkrs gA

$\frac{1}{8} \frac{1}{2}$ f}rh; LrEhk&Å/oZxqkk

$$\begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$$

10 \$ vfr0 vad 2 $\frac{3}{4}$ 12

vfire ck; a [k.M ea12 i j k fy [kxkA

mÜkj $\frac{3}{4}$ 1242

vr%23 \times 54 $\frac{3}{4}$ 10@23@12

$\frac{3}{4}$ 10@₂3@₁2

$\frac{3}{4}$ 12@4@2

$\frac{3}{4}$ 1242 mÜkj

mnkgj . k&4- 123 \times 211 dk eku Å/oZr; XH; ke- l wk l s Kkr dhft, A

gYk&

1	1	2	1	2	3	2	3	3
↑	↘	↗	↘	↗	↘	↗	↘	↑
2	2	1	2	1	1	1	1	1

$$\begin{array}{r} 123 \\ \times 211 \\ \hline 2@5@9@5@3 \end{array}$$

$\frac{1}{4} \frac{1}{2}$ i Fke LrÜk 3

$$\begin{array}{r} \times 1 \\ \hline 3 \end{array}$$

$\frac{1}{2} \frac{1}{2}$ i Fke , oaf}rh; LrÜk

$$\begin{array}{r} 23 \\ \times 11 \\ \hline \end{array}$$

fr; d-xqkk dj} i klr xqkuQyka dk ; kx

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

$\frac{3}{4}$ 2 \$ 3 $\frac{3}{4}$ 5

$\frac{1}{8} \frac{1}{2}$ i Fke] f}rh; , oar}rh; LrÜk

$$\begin{array}{r} 123 \\ \times 211 \\ \hline \end{array}$$

ckgj & ckgj dk fr; d] e/; dsLrÜk dk Å/oZxqkk]

i klr xqkuQyka dk ; kx

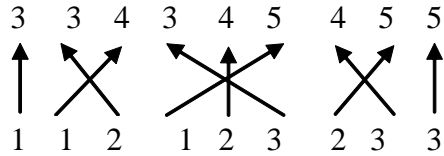
$\frac{1}{4} \times \frac{1}{2}$ \$ $\frac{1}{2} \times \frac{1}{2}$ \$ $\frac{1}{2} \times \frac{3}{2}$ $\frac{3}{4}$ 1 \$ 2 \$ 6 $\frac{3}{4}$ 9

¼½ f}rh; \$ r}rh; Lr}lk ¼ Fke Lr}lk NkM}k&
 1 2 fr; d-xqkk] i klr xqkuQyka dk ; kx
 × 2 1
 ¼ × 1½ \$ ½ × 2½ ¾ 1 \$ 4 ¾ 5

½½ r}rh; Lr}lk ¼ Fke \$ f}rh; Lr}lk NkM}k&
 1 Å/ol xqkk
 × 2
 2 m}lkj ¾ 25953
 vr%123×211 ¾ 2@5@9@5@3 ¾ 25953 m}lkj

mnkgj.k&5- 345×123 dk eku Å/o}r; XH; ke-I wk ds Á; "x I s Kkr dhft , A gYk&

$$\begin{array}{r} 345 \\ \times 123 \\ \hline 3@_1 0@_2 2@_2 2@_1 5 \text{ } \frac{3}{4} 42435 \end{array}$$



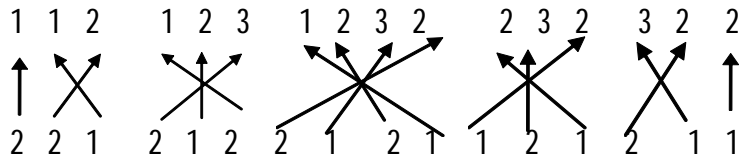
$$\begin{array}{r} ¼½ 5 \\ \times 3 \\ \hline 15 \\ ½½ 45 \\ \times 23 \\ \hline ¼ \times 3½ \$ ½ \times 5½ \\ ¾ 12 \$ 10 ¾ 22 \\ 22 \$ vfr0 v}d 1 ¾ 23 \\ ½½ 345 \\ \times 123 \\ \hline ½ \times 3½ \$ ¼ \times 5½ \$ ¼ \times 2½ \\ ¾ 9 \$ 5 \$ 8¾ 22 \\ 22 \$ vfr0 v}d 2 ¾ 24 \end{array}$$

$$\begin{array}{r} \frac{1}{4}\frac{1}{2} \quad 3 \ 4 \\ \times \quad 1 \ 2 \\ \hline \frac{1}{8} \times 2\frac{1}{2} \$ \frac{1}{4} \times 4\frac{1}{2} \frac{3}{4} \ 6 \$ 4 \ \frac{3}{4} \ 10 \\ \frac{3}{4} \ 10 \$ \text{vfr0 v} \frac{1}{4} \ 2 \ \frac{3}{4} \ 12 \end{array}$$

$$\begin{array}{r} \frac{1}{5}\frac{1}{2} \quad 3 \\ \times \quad 1 \\ \hline \frac{3}{4} \ 3 \$ \text{vfr0 v} \frac{1}{4} \ 1 \ \frac{3}{4} \ 4 \\ \text{m} \frac{1}{4} \text{kj} \ \frac{3}{4} \ 42435 \end{array}$$

mnkj.k&6- 1 2 3 2 × 2 1 2 1 | ≠ Å/oFr; XH; ke-ds iz; kx l sgy dhft, A
 gy&xqkk djrs l e; bl fl) klr dks/; ku eaj [kuk gsfed , d&, d LrHk c<rsØe
 l svr eai gpusij , d&, d LrHk NkMfsgq Å/o&fr; D-xqkk djus l s, d i fDr eamÜkj
 fy[k l drsgA l f; k eafdrusHkh vöd D; ka u gkA

$$\begin{array}{r} 1 \ 2 \ 3 \ 2 \\ \times \quad 2 \ 1 \ 2 \ 1 \\ \hline 2@5@_1 0@_1 2@_1 0@7@2 \\ \frac{3}{4} \ 2613072 \end{array}$$



Øe'k%bdkbz dh vkj l s & l ≠ Å/oFr; XH; ke-l &

$$\begin{array}{r} \frac{1}{4}\frac{1}{2} \quad 2 \\ \times \quad 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} \frac{1}{2}\frac{1}{2} \quad 3 \ 2 \\ \times \quad 2 \ 1 \\ \hline \frac{1}{8} \times 1\frac{1}{2} \$ \frac{1}{2} \times 2\frac{1}{2} \frac{3}{4} \ 7 \end{array}$$

$$\begin{array}{r} \frac{1}{8}\frac{1}{2} \quad 2 \ 3 \ 2 \\ \times \quad 1 \ 2 \ 1 \\ \hline \frac{1}{2} \times 1\frac{1}{2} \$ \frac{1}{4} \times 2\frac{1}{2} \$ \frac{1}{8} \times 2\frac{1}{2} \ \frac{3}{4} \ 10 \end{array}$$

$$\begin{array}{r} \frac{1}{4}\frac{1}{2} \quad 1 \ 2 \ 3 \ 2 \\ \times \quad 2 \ 1 \ 2 \ 1 \\ \hline \frac{1}{4} \times 1\frac{1}{2} \$ \frac{1}{2} \times 2\frac{1}{2} \$ \frac{1}{2} \times 2\frac{1}{2} \$ \frac{1}{4} \times 3\frac{1}{2} \ \frac{3}{4} \ 12 \end{array}$$

$$\begin{array}{r} \sqrt{5}\frac{1}{2} \quad 1 \ 2 \ 3 \\ \times \quad 2 \ 1 \ 2 \\ \hline \sqrt{4} \times 2\frac{1}{2} \$ \sqrt{2} \times 3\frac{1}{2} \$ \sqrt{2} \times 1\frac{1}{2} \\ \frac{3}{4} \ 10 \end{array}$$

$$\begin{array}{r} \sqrt{6}\frac{1}{2} \quad 1 \ 2 \\ \times \quad 2 \ 1 \\ \hline \sqrt{4} \times 1\frac{1}{2} \$ \sqrt{2} \times 2\frac{1}{2} \\ \frac{3}{4} \ 5 \end{array}$$

$$\begin{array}{r} \sqrt{7}\frac{1}{2} \quad 1 \\ \times \quad 2 \\ \hline 2 \end{array}$$

vr% 1232×2121 $\frac{3}{4}$ 2@5@10@12@10@7@2

$\frac{3}{4}$ 2@5@₁0@₁2@₁0@7@2

$\frac{3}{4}$ 2613072 $\frac{1}{2}$ mÜkj $\frac{1}{2}$

vH; kl

Å/oír; XH; ke-fof/k I sfuEufYkf[kr Á'u'adk eku Kkr dhft, A

1- 14×23

2- 31×46

3- 234×531

4- 201×437

5- 1423×1215

6- 2301×4526

mÜkjeYkk

1- 322

2- 1426

3- 124254

4- 87837

5- 1728945

6- 10414326



v/; k; &4

Hkkx

/otk d fof/k ¼ #&Å/oīr; ÅH; ke½

Hkkx I ÅØ; k dk i R; d i zu bl fof/k ds }kjk I jyrk I sgy fd; k tk I drk gÅ Hkkx I ÅØ; k i kjEHk djust i s i w z i zu fy [krs l e; fuEuor-I ko/kkfu; k j [kuh pkfg; Å

- 1- I oī Eke Hkktd dks bPNkuq kj nks Hkkxka ½parts½ eafHkkftr djrsgÅ Hkktd ds I cl s ck, a vad dks eġ; kad dgrs gÅ vkj bdkbz; Ør Hkkx dls/otk dgrs gÅ eġ; kad I ÅK&/kr Hkktd gkrk gÅ
- 2- bl fof/k eaHkkx I ÅØ; k dsfu/kkZjr LFkku dks rhu [k. Mka eafHkkftr djrsgÅ i Eke [k. M eaHkktd dsnkHkkx fy [krs gÅ I ÅK&/kr Hkktd vFkkZr-eġ; kad dksuhps vFkkZr-vk/kkj LFkku ij rFkk /otk dks ml ds Åij vFkkZr-?kkr vad ds LFkku ij Å
- 3- /otk d eaftrus vad gÅ HkkT; ds mrusgh vāre vad ½bdkbz I sy d j ½ rhl js [k. M ea rFkk HkkT; ds 'kSk vad e/; [k. M ea fy [krs gÅ
- 4- eġ; kad }kjk gh Hkkx dh eġ; fØ; k i jh gkrh gÅ

fuEufYkf [kr mnkgj. ka I sbl fof/k dks l e>k tk I drk gÅ

mnkgj. k&1- % 4922 ÷ 23 dk eku Kkr dhft, A

Hkktd 23 ds nks Hkkx] eġ; kad ¾ 2] /otk d ¾ 3 A

2^3	4	0^9	1^2	1^2
	2	1	4	0
HkkxQy			'kSkQy	

- 1- Hkktd 23 ds nks Hkkx% eġ; kad ¾ 2] /otk d ¾ 3
bl si Eke [k. M ea fy [kacA rrh; [k. M ea /otk d , d gh vad gS bl fy; s 4922 dk , d vāre vad 2 fy [kacA
e/; [k. M ea HkkT; dk 'kSk Hkkx 492 fy [kacA
- 2- e/; [k. M ck; ha vkj I s HkkT; ds igys vad 4 dks eġ; kad 2 I s Hkkx naxA 4 ÷ 2
¾ 2 ½ HkkxQy dk i Eke vad ½ rFkk i Eke 'kSkQy ¾ 0
{@rt jġkk dsuhps HkkxQy vad 2 dks fy [kacsvkj e/; [k. M dsck; ha vkj I snl js

vad 9 l sigysvkš uhps'kđ; fyk[“æA u; k HkkT; ¾ 09] vc l ákkš/kr HkkT; Kkr djuk gA

l ákkš/kr HkkT; ¾ u; k HkkT; & iklr HkkxQy dk vad × /otkđ
¾ 09 & 2 × 3 ¾ 3

3- 3 ÷ 2 ½e[; kđ½ l sHkkxQy dk nū jk vad ¾ 1
rFkk 'kškQy ¾ 1

{kšrt jškk dsuhps2 dsvkxsHkkxQy dk nū jk vad 1 fy[kæksrFkk 'kškQy 1 e/; [k.M ea2 dsigysvkš uhpsfy[“æA vr%u; k ÒkT; ¾ 12
l ákkš/kr HkkT; ¾ 12 & 1×3 ¾ 9

4- 9÷2 ½e[; kđ½ l s iklr HkkxQy dk rhl jk vad ¾ 4

{šrt jškk dsuhpsHkkxQy 21 dsvkxs4 fyk[“æA iqr%rrh; [k.M ea2 l sigysvkš uhps'kškQy 1 fy[“æA

5- HkkxQy dh fØ; kfof/k ijh g“ pph gA e[; kđ l s vc vkxs Hkkx ughansuk gA ijUrq'kškQy fudkyuk gA ; g 'kškQy Hkh l ákkš/kr HkkT; dh rjg Kkr djæA 'kškQy ¾ 12 & 4×3 ¾ 0 bl 'kđ; d“ 'kškQy ds [k.M ea{šrt jškk dsuhps fyk[“æA

vr%HkkxQy ¾ 214 rFkk 'kškQy ¾ 0 mŭkj

mnkgj.k&2- %208488 ÷ 34 dk eku Kkr dhft, A

gYk %

3 ⁴	2	0	2 ⁸	4	1 ⁸	0 ⁸
		6	1	3	2	0
	HkkxQy					'kškQy

mnkgj.k&3- %21112 ÷ 812 d“ gYk dhft, A

gYk %

8 ¹²	2	1	5 ¹	1	1 ²
		2	6		0
	HkkxQy				'kškQy

fØ; k&1- ; gk e[; kđ ¾ 8 rFkk /otkđ ¾ 12] vr%rrh; [k.M eaHkkT; dsnksvad g“æS

2- 21÷8] HkkxQy¾2] 'kškQy ¾ 5] u; k HkkT; ¾ 51 gYkA

3- I ákk&/kr HkkT; ¾ 51&2×1 ¼ /otk& dk igyk v&½ ¾ 49
 49÷8] HkkxQy ¾ 6 'k&kQy ¾ 1] u; k HkkT; ¾ 11

I ákk&/kr HkkT; ¾ u; k HkkT; & $\begin{vmatrix} 2 & 6 \\ 1 & 2 \end{vmatrix}$ ¼ 6 o 12 dk fr; ð-xqkk½
 ¾ 11 & 10 ¾ 1

4- 12 & 6×2 ¾ 0 ¾ 'k&kQy
 vr% HkkxQy ¾ 26] 'k&kQy ¾ 0

- /; ku n&
- fØ; k in ¼½ ea 2 v&½ 1 dk Å/olxqku ?kV; k x; k g& fØ; k in ¼½ ea u; sHkkT; ea l s 26 o 12 dk fr; ð-xqku ?kV; k x; k g& v&½ fØ; k in ¼½ ea u; sHkkT; ea l s 6 o 2 dk Å/olxqku ?kV; k x; k g&
 - tc /otk& ea n&s v&½ g&rc bl Ádkj of.k& fØ; k; j djuh g&rc h g&

vH; kl

/otk& fof/k l s ÒkxQYk , oa '""kQYk Kkr dhft, A

- 1- 4897 ÷ 42 2- 13257 ÷ 73 3- 58163 ÷ 91
 4- 44532 ÷ 1112 5- 4868 ÷ 42 6- 78046 ÷ 69

mùkjekYkk

Á'u Ø-	1	2	3	4	5	6
ÒkxQYk	116	181	639	40	115	1131
'""kQYk	25	44	14	52	37	7



v/; k; &5 foHkt uh; rk

I 4; k 2] 3] 4] 5] 6] 8] 9] 10] 11 ,oa12 rd dh foHktuh; rk dsfu; e
ge tkurs gA

I 4; k 7] 11 rFk 13 dh foHktuh; rk dh fof/k ; gk ij ge I h[as

1- I 4; k dh nkfguh vkj I s½dkbz vad I ½ rhu&rhu vadkads I ey cuk; A nks I s
vf/kd I ey cuarksmlgal e LFkku ds I ey "ad" , d I kFk ; "x dj Y'arFkk fo"ke
LFkku ds I ey "ad" , d I kFk t "M+Y" A

2- bu ; kska dk vUrj ; fn

½d½ 7 I sfoHkT; gks rks ij h I 4; k 7 I sfoHkT; gks chA

¼k½ 11 I sfoHkT; gks rks ij h I 4; k 11 I sfoHkT; gks chA

¾k½ 13 I sfoHkT; gks rks ij h I 4; k 13 I sfoHkT; gks chA

mnkgj.k&1- 325724683 dh 7] 11] 13 I sfoHktuh; rk dh tkp djA

; gk ij rhu&rhu vad"adsdYk rhu I ey 325] 724] 683 cu jgsgA

vr% fo"ke LFkku"ads I ey "ad" ; "xQYk ¾ 683 \$ 325 ¾ 1008

bl h Adkj I e LFkku"ads I ey "ad" ; "xQYk ¾ 724

¼ gk ij I e LFkku ij , d gh I ey g%

bu I ey "ad" vUrj ¾ 1008 & 724 ¾ 284

vr%; ks dk vUrj 284 gSt" fdl h Hkh I 4; k 7 ; k 11 ; k 13 I sfoHkT; ughagSvr%nh

x; h I 4; k Hkh bu I 4; k ; kv" a I sfoHkT; ugha g" xhA

mnkgj.k&2- 325728683 dh foHktuh; rk dh tkp 7 I s djA

6 8 3	728	; kska dk vUrj ¾	1 0 0 8
\$ 3 2 5			& 7 2 8
1 0 0 8	728		2 8 0

pfid I 4; k 280] I 4; k 7 I sfoHkT"tr gA vr% ij h I 4; k Hkh 7 I sfoHkT"tr g" xhA

foHktuh; rk ijh{k.k dh l oD; kid fof/k ¼/k'ySkd fof/k/¼

bl fof/k l sfoÐktuh; rk dk ijh{k.k djrs l e; ÁÐkoh Ðkt d] 'kú; kr l ¼; k , oa vk'Y''kd dh vko'; drk iMfh gA vr% l oÁFke bl sl e>uk g'xkA

ÁÐkoh Ðkt d&bl fof/k eaHkkt d dk bdkbz vð 1 vFkok 9 gkuk pkfg, A ft l Hkkt d ea bdkbz vð 1 vFkok 9 gkuk gS ml s iHkoh Hkkt d dgrs gA

; fn Hkkt d dk bdkbz vð 1 vFkok 9 ughagksrks ml s, d h l ¼; k l sxqkk djafd xqkuQy iHkoh Hkkt d cu tk, A

tS s7 × 3 ¾ 21 vFkok 17 × 3 ¾ 51

tS s7 × 7 ¾ 49 vFkok 13 × 3 ¾ 39

'kú; kr l ¼; k , oavk'Y''kd&iHkoh Hkkt d dks l = , dU; uuu iDðk vFkok l =

, dlf/kdsu iDðk dsiz kx l s'kú; kUr l ¼; k eacny fn; k tkrk gA 'kú; kUr l ¼; k dk 'kú; gVkus ij tks vð vFkok l ¼; k 'kSk cprh gS ml s vk'ySkd dgrs gA iHkoh Hkkt d ea bdkbz l i s ikr vk'ySkd __.kkRed vkS bdkbz 9 l i s ikr vk'ySkd /kukRed g'rs gA ; g vk'ySkd gh foHktuh; rk ijh{k.k dsiz kx ea vkrk gA

mngj.k& iHkoh Hkkt d ¾ 21] 'kú; kUr l ¼; k¾20] __.kkRed vk'ySkd ¾ 2

i Hkoh Hkkt d ¾ 41] 'kú; kUr l ¼; k¾40] __.kkRed vk'ySkd ¾ 4

i Hkoh Hkkt d ¾ 39] 'kú; kUr l ¼; k¾40] /kukRed vk'ySkd ¾ 4

i Hkoh Hkkt d ¾ 49] 'kú; kUr l ¼; k¾50] /kukRed vk'ySkd ¾ 5

ft l l ¼; k dsfy, foHktuh; rk dk ijh{k.k gks jgk gS ml ds bdkbz vð dks vk'ySkd l sxqkk dj xqkuQy dks l ¼; k dsngkbz vð ea tkMk; k ?kVk; k tkrk gA bdkbz dk vð Ðe'k% N'Mfs tkrsgA

• ; fn vk'ySkd __.kkRed gS rks ?kVkuk gA

• ; fn vk'ySkd /kukRed gS rks; kx djuk gA

l Ei wkZ fof/k] fuEufYkf [kr mngj.k& l s Li"V dh tk jgh gA

__ .kkRed vk'Y''kd

mngj.k&1- l ¼; k 1295 dk 7 l s foHktuh; rk dk ijh{k.k dhft; A

gYk %	1 2 9 5 ½ bdkbz 5 N'Mes i j ½	fØ; kfof/k
	& 1 0	¼ ½ Hkkt d 7 dsfy; si Hkoh Hkkt d ¾ 21] 'kú; kr
	1 1 9 ½ bdkbz 9 N'Mes i j ½	l ¼; k 20
	<u>& 1 8</u>	½ ½ vr% vk'ySkd ¾ & 2
	<u>& 7</u>	½ ½ bdkbz vð 5×-2 ¾ & 10 d" 129 ea l s ?kVk; k

129&10 ¾ 119

¼½ 9×-2¾&18 d" 11 ea l s?kVk; k

11&18 ¾ &7

½½ 'kSkQy¾&7 t" 7 l sfoÒkT; gA vr%nh x; h
l ð; k 1295 l ð; k 7 l sfoÒkT; g"xA

vFkok

fØ; kfof/k

1 2 9 5	¼bdkbz5 N'Mus i j½	¼½	Hkktd 7 dsfy; s i Hkkoh Hkktd 7×7¾ 49]
+ 2 5			'kñ; k" l ð; k ¾ 50
1 5 4	¼bdkbz4 N'Mus i j½	½½	/kukRed vk'ySkd ¾ 5
+ 2 0		½½	bdkbz vad 5×5 ¾ 25] tkM/k 129 ea
3 5			

¼½ ; ksQy¾154] 4×5¾20] tkM/k 15 ea

½½ ; ksQy¾35 tks 7 l sfoHkkT; g\$

vr% i jh l ð; k Hkh 7 l sfoHkkT; gA

/; ku n& ¼½ /kukRed vk'ySkd \$ __.kkRed vk'ySkd ¾ Hkktd

mngj.kkFz%; fn Òktd 7 gsr" ÁÒkoh Òktd ¾ 7×3 ¾ 21 rFkk 7×7 ¾ 49 g"xA 21

dsfYk, vk'Y"kd ¾ 2 ¼ __.kkRed¼ 49 dsfYk, vk'Y"kd ¾ 5 ½/kukRed½

vr%/kukRed vk'Y"kd \$ __.kkRed vk'ySkd ¾ 5\$2 ¾ 7 ; gh Òktd gA

½½ fi Nysmngj.k eadñ x.kuk; j ek\$[kd dj yas l si zu dk gy FkkM/k l k

vk\$ Nks/k gks l drk gA __.kkRed l ð; k __.kkad : i eafy[kacA __.kkRed
vk'ySkd ¾ 2

vr%vk'ySkd ¾ 2

mä Á'u d" fuEuor-Òh gYk fd; k tk l drk g\$

1 2 9 5

4 4

¼½ 5 × 2 ¾ 4] 4 \$ 9 ¾ 4

½½ 4 × 2 ¾ 2] 2 \$ 2 ¾ 4

½½ 4 × 2 ¾ 8] 8 \$ 1 ¾ 4

¼½ vflre 'kSkQy ¾ 7] vr% i jh l ð; k 7 l sfoHkkftr gA

/kukRed vk'y\$kd

I Ei wkZ fof/k fuEu mnkgj.kka l sLi "V dh tk jgh gA

mnkgj.k&1- I d; k 1295 dk 7 l sfokktuh; rk dk ijh{k.k dhft; A

gYk %

fØ; kfof/k

<p>1 2 9 5 28 25 34</p>	<p>¼½ Òktd 7 dsfYk, ÁÒkoh Òktd 7×7 ¾ 49] vr%'kÙ; kr I d; k ¾ 50] vr% /kukRed vk'y\$kd ¾ 5</p> <p>½½ bdkbZ vad 5×5¾25] 25\$9 ¼ngkbZ vad½¾ 34 bl s 9 dsuhpsfYk["xÅ</p> <p>⅓½ ⅓4 ea bdkbZ dk vad¾4½ 4×5¾20] 20\$3 ¼FkkZ-¼ngkbZ dk vad½¾ 23] 23\$2 ¾ 25 bl s2 dsuhpsfYk["xÅ</p> <p>¼4½ ½25 dh bdkbZ¾ 5½ 5×5¾ 25] 25\$2¾27] 27\$1¾28 bl s2 dsuhps fYk["xs</p> <p>⅓½ vflre ; "xQy¾28 tks7 l sfokkt; gA vr%ijh I d; k 7 l sfokkt; g"xhA</p>
-----------------------------	--

mnkgj.k&2- 14833 dk I d; k 13 l sfokktuh; rk dk ijh{k.k dhft; A

gy&

ÁFke fof/k % 13×3¾ 39] vr% Hkkt d 13 dk /kukRed
vk'y\$kd¾ 4

1 4 8 3 3 ¼dbkbZ3 d" N"Mus ij½

\$ 1 2

1 4 9 5¼dbkbZ5 d" N"Mus ij½

\$ 2 0

1 6 9 ¼dbkbZ9 d" N"Mus ij½

\$ 3 6

5 2 ¼dbkbZ2 d" N"Mus ij½

\$ 8

13

pfid vfire I [; k 13 g\$ t" 13 I sfo0kT; gA
vr%nh x; h I [; k 14833 0h 13 I sfo0kT; g"xtA

gy&

f}rh; fof/k %

1 4 8 3 3
13 42 29 15

f0; kfof/k %

nk; a l sck; adh rjQ f0; k dh tkrh gA

- 1- bdkbZ x vk' Y"kd 3/4 3 x 4 3/4 12
12 \$ 3 1/2 ngkbZ 3/4 15
15 d" ngkbZ ds uhps fYk [krs gA
- 2- 15 dh bdkbZ 1/5 1/2 x vk' Y"kd 1/4 1/2 3/4 20
20 \$ 1 1/4 5 dh ngkbZ \$ I sMk 1/8 1/2
3/4 29 bl s vad 8 ds uhps fYk [aks
- 3- 29 dh bdkbZ 1/9 1/2 x vk' Y"kd 1/4 1/2 3/4 36
36 \$ 2 1/2 9 dh ngkbZ \$ 4 3/4 42
bl s 4 ds uhps fYk [akA
- 4- 42 dh bdkbZ 1/2 1/2 x vk' Y"kd 1/4 1/2 3/4 8
8 \$ 4 1/4 2 dh ngkbZ \$ 1 3/4 13
bl s 1 ds uhps fYk [akA

pfid Aktr I [; k 3/4 13] t" 13 I sfo0kT; gA

bl fYk, nh xbz I [; k 3/4 14833] I [; k 13 I sfo0kT; g"xtA

/; ku n& uhpsfy [kh tkusokyh I [; k ; fn Hkkt d I scMh gSrks Hkkt d vFkok ml dk
xqkt ?kvk; a vksj 'kSkQy I svkxs f0; k djA

vH; kl

foHkktuh; rk tlp&

1/4 1/2	632514 dh 7 I s	1/2 1/2	536427 dh 31 I s
1/8 1/2	635826 dh 19 I s	1/4 1/2	324736 dh 13 I s

¼½	142842 dh 7 l s	¼½	679433 dh 13 l s
¼¾	527826 dh 13 l s	¼¾	63768256 dh 19 l s
¼¾	7999 dh 19 l s	¼10½	191023 dh 29 l s
¼11½	65547 dh 39 l s	¼12½	1681 dh 41 l s
¼13½	223934 dh 71 l s		

mÜkjekyk

¼½	ugha	¼¾	ugha	¼¾	ugha
¼1½	ugha	¼¾	gk	¼¾	ugha
¼7½	gk	¼8½	gk	¼9½	gk
¼10½	gk	¼11½	ugha	¼12½	gk
¼13½	gk				



0kx&3
0kjr ds Áedk xf.krkpk;Z
v/; k; &6
vk; ÆV i Eke

vk; ÆV dk tle 476 bD eafcgkj dsdq pi j eapvk FkA dq pi j dksckn ea iKVfyie dgk x; k gSVkš oržeku ea; g fcgkj dh jkt/kkuh iVuk gA iVuk dsiki gh [kxkšy vks rjksuk uked LFkku gA eku; rk gSfd ; gk vk; ÆV dh osk'kkyk Fkh tgi os [kxkšy dk fujh{k.k djrsFkA ; g l e; Hkkjr dk Lo.kz ; q FkA bl l e; l Ei wkZ Hkkjr ex/k 'kkl d dsfunžku eapged[kh ixfr dj jgk FkA bl h dky eavk; ÆV us23 o"lz dh vk; qea l u-599 bD ea vk; ÆVh; uked xFk dh jpuk dhA

bl xBFk dspkj iedk Hkkx g&&

1- xhfrdk ikn 2- xf.kr ikn 3- dkyfØ; k ikn 4- xkšy iknA

xhfrdk ikn ea13 'ykd] xf.kr ikn ea33 'ykd] dkyfØ; k ikn ea25 'ykd rFk xkšy ikn ea50 'ykd gA bl izdkj vk; ÆVh; xBFk ea121 'ykd gA

vk; ÆVh; dsxf.kr ikn ea'tksfo" k; fn; sgasobl izdkj gAl [; k LFkku fu: i .k] oxzvkš ?ku] i fjde] oxžy] ?kuery] f=Hkt] oUk vks l eyEc prHkt ds{ks=Oy rFk xkšy vks fijkfem dk vk; ru rFk π dk eku] R× sin l kj.kh] Js h xf.kre] =škf'kd] 0; Lr =škf'kd] i pjkf'kd] l Irjkf'kd] foi jhr de] ; qir l ehdj.k] dV/VdA

vk; ÆVh; ij HkkLdj i Eke %629 bD½ usHk"; fy [kk gA ; g Hk"; cgr ifl) gA vk; ÆV dk ; kxnu vryuh; gA egroi wkZ fclnq/kaea l sdN fclnq/ka dk mYys[k ; gk; fd; k tk jgk gA

- 1- l [; kvka dks 0; Dr djus dh o.kkd izkkyh vk; ÆV dh eksyd [kkst gA
- 2- =škf'kd] i pjkf'kd] l Irjkf'kd dsfu; e vk; ÆV usfn; sgA bl izdkj dsfu; e nusokysos i Eke xf.krK gA
- 3- π dk eku %vk; ÆV dsvuq kj

prjif/kde- 'kre"Vxqke- }k'k"VLrFkk I gl k.kkA

v; r}; fo"dEHL; kl Uuls oRrijj.kkg% AA 10AA

vFKZ % l kSeapkj tkMej 104 dks 8 l sxqkk djavk; bl ea 62000 tkMMA
; g ; ksQy 20000 0; kl dsouk dh ifjf/k dk yxHkx eki gkskA
vFkZr~20000 0; kl dsouk dh ifjf/k yxHkx 62832 gkskA

$$i kbZ \frac{1}{4} \frac{ifjf/k}{0}; kl$$

$$\frac{3}{4} \frac{62832}{20000} \frac{3}{4} 3-1416 yxHkx$$

vk; BKV igysxf.krK gdf tlgk us ifjf/k vk; 0; kl ds vuq kr vFkZr~ $\frac{1}{4}$ i kbZ dk
; g yxHkx eku 3-1416 Kkr fd; kA

4- $dy/dx \frac{1}{2} ax+by = \pm c \frac{1}{2} t gk; I Hkh I \frac{1}{2}; k, a i wkkZ gA I ehdj.k gy djus dh$
fof/k nusokys vk; BKV i Fke xf.krK gA

5- $R \times \sin \theta$ I kj.kh 0° I 90° rd mlgk us nh gA vi uh I kj.kh ea $R \times \sin \theta$ dsekuka

dk vrj fy[kdj $\frac{y-y_1}{x-x_1}$ pyu dyu $\frac{1}{2}$ calculus dh vk; vi uk dne $c < k$; k

gA bl i dkj dh I kj.kh nusokys osi Fke xf.krK gA bl I kj.kh eafn; sx; sekuka
dh 'kq' rk mYy[kuh; gA osf=dks kfe r ds vkfo"drkZ gA

6- T; kfe r eaf=Hkqt dk {ks=Qy rFkk thok vk; 0; kl I s I EcfU/kr vud fl) kUr
mlgk us fn; sgA

7- i Foh xky gS, d k dgus okys osi Fke [kxky'kkL=h gA

8- xg Lo; ai dkf'kr ughagA mudk tksHkx I wZds I keusvkrk gSml h ea i dk'k jgrk
g; ; g tkudkjh vk; BKV usnhA

9- I wZLFkj gS rFkk i Foh vkfn xg I wZdh i fjØek dj rsg; ; g ckr vk; BKV uscrkbZ
gA

10- vk; BKV us I wZg.k vk; plnkg.k ds dkj.k dks Li"V fd;k gA

Nln; fr 'k'lh I wZ 'k'kua egrh p HkNk; k AA37AA

vFkZ plnek I wZdks <drk gS" I wZxg.k rFkk plnek dks i Foh dh Nk; k <drh
r" plæxg.k g"rk gA

vk; **IKV** dk dk; Zi jorhZxf.krKkadsfy, ekxh'kd fl) gqkA vk; **IKV** dh i fl f)
 Hkkjr eagh ugha vfi rpfons'kka ea Hkh gA egku [kxksy'kkL=h , oaxf.krK gkaus ds
 dkj.k vjc okl h blga **svjt Hjt** uke l s i qkjrs FkA
 Hkkjr us **19 visy 1975** dks vlrj{ k ea vi uk **igyk mixg** NkMk ml dk uke
vk; IKV j [kdj **vk; IKV** ds ; ksnku ds ifr l Eeku idV fd; k gA



ojkgfefgj

ojkgfefgj dk tledky i kpon 'krkCh ds vflre pj.k esekuk tkrk gA foDe I 0
556 rneq kj 499bD dsyxHkx budk tledky gA mTtSu e/; insk I s20 fdykehVj
nyh ij fLFkr dk; Fkk %dkf; RFkd1/2 uked LFkku budk tle LFkku gA

ojkgfefgj dsfi rk dk uke vkfnR; nkl FkA budsekrk&fi rk I w Zdsmi kl d FkA
ojkgfefgj usdkf; RFkd ea, d x#dly dh LFkki uk dh FkA ojkgefegj dsN%i eDk xBFk
g&

1- ip fl) kflrdk

2- cgTtkrd

3- cgn; k=k

4- ; kx; k=k

5- fookg iVy

6- cgr~l fgrkA

bu xBFkka ea ip fl) kfrdk , oacgr~l fgrk fo'kSk ifl) gA ip fl) kfrdk ea
ojkgfefgj usi kp fl) karkadk I Eiknu fd; k gA ; sfl) kr 1- ikSy'k 2- jked 3- of'k'B
4- I kS 5- firkeg uke I s gA

ojkgfefgj T; ksr" k ds I kFk&I kFk [kxky foKku dsHkh Kkrk FkA ip fl) kfrdk
dsi Fke [k.M ea [kxky foKku ij 0; ki d fopkj feyrk gA prfjz v/; k; eaf=dkskfefr
I s I EcfU/kr fuEufyf[kr I w feyrsgA blgaorZeku i) fr eabl idkj inf'kr dj
I drsg&

$$1. \quad R \sin 30^\circ = \frac{R}{2}$$

$$2. \quad R \sin 60^\circ = \frac{\sqrt{3}}{2} R$$

$$3. \quad R \sin 90^\circ = R$$

$$4. \quad (R \sin A)^2 = \frac{R}{2} (R - R \cos 2A)$$

$$5. \quad (R \sin A)^2 + (R \cos A)^2 = R^2$$

$$6. \quad R \sin \left(\frac{\pi}{2} - A \right) = \sqrt{R^2 - (R \sin A)^2}$$

$$7. \quad \sin^2 A = \frac{1}{2} (1 - \cos 2A)$$

bl h i d kj o j k g f e g j u s 24 T ; k e k u $\frac{1}{R} \sin A$ value $\frac{1}{2}$ o k y h T ; k l k j . k h $\frac{1}{2}$ Sine Table $\frac{1}{2}$ n h g a

o g r - l f g r k x i f k d s i k p [k . M g a b u e a x f . k r d k i p j i z k x f o | e k u g a o j k g f e g j f o ' o d s i f k e x f . k r k g f t u g k u s l p ; v k j f o d y i k r d j u s d s f y , , d i) f r f o d f l r d h g s f t l s h k v v k k i y u k e d v h d k d k j u s ' y k s B d & i L r k j * ; g u k e f n ; k A ; g j p u k i k l d y f = d k s l s l o f k k f h k l u g a b l d s v u i z k x l s n C r f k k n p r d s e k u i k l r g k r s g a x u / k ; q D r u k e d i d j . k e a b l h v k / k j i j 48000 l s h k h v f / k d l q f u / k r n o ;] / k i] r s y v k f n d h l d y i u k f o | e k u g a

bl h i d j . k e a d p n i y * ' k h ' k d d s v l r x r 16 i n k f k d d k s 4 x 4 H k n p r h k j t ' y e k ; k o x l z $\frac{1}{2}$ Magic Square $\frac{1}{2}$ e a l f k k f i r d j m u d s i w z u f ' p r i e k . k a d k ; k x h k n k d $\frac{1}{2}$ Magic Constant $\frac{1}{2}$ 18 g k u s o k y s l h k h l p ; l q f u / k r n o ; f u e k z k g r q l q k k ; e k u s x ; s g a

bu x i f k a l s g e a i k p h u H k j r h ; k a d h o s k k f u d n f " V , o a v u d a k k u o f u k d k k k u i k l r g k r k g a

o j k g f e g j d h c g e q k h i f r h k k d s d k j . k m u d k f o f ' k " V l f k k u g a b u d k f u / k u y x h k x 644 f o 0 l o v f k k r - 587 b d d s v k l & i k l g y / k A

