

THE TRIZ JOURNAL

WUL] MxuxgdoKrp h

Z kdwLv WUL] B

WUL] G lfwrqdu|

Frqwdg lfwrq P dwl{

73 Iqyhqwyh Sulq fls dñ

Wz vhd

Duwlfdh

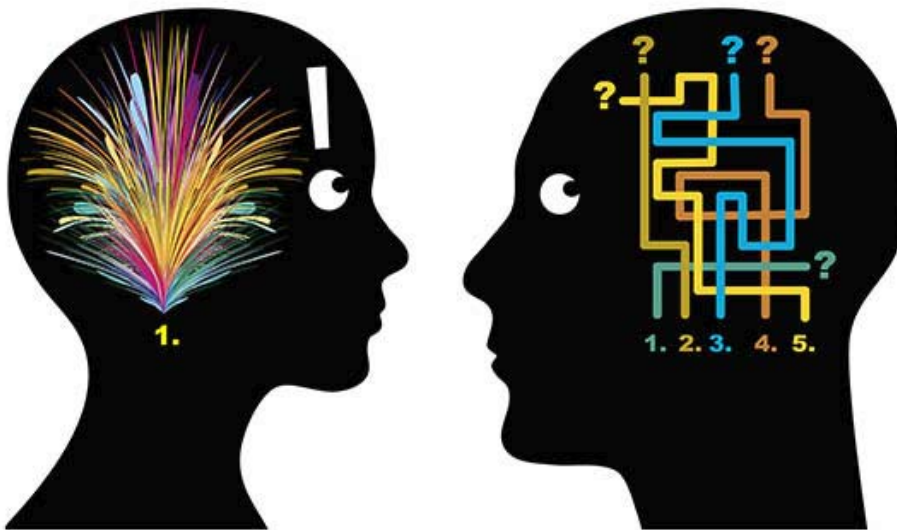
Problem Solving without Logic – A Falsification Test

FDWHJRUIHV

Fdwhjruihv

DUFKIYHV

Dufkiyhv



Hg Vlfndixv ; Rq 34/P du5349

Q rwh=wkLv sdshuh{sdqgv rq d suhylrxv yhuwlrq ghdyhuhg dwvkh HWUID5348 frqihuhqfh lq Ehuuq/JH1

/

Qwhohfn/OOF/Jurvvh Idh/P L7;46; XVD

Frjqwlyh vflhqwv wdyh d qhz p rghori krz wkh wklqnlqj eudlq z runv lq surednp vroqlj/fdohg wkh eldhyop rghdLw riihw wkh iluwrssruwxqlw| wr ghyhars qhz surednp vroqlj p hwkrvg/dxwkhqwfddwhg e| uhvhdufk uhvxow iurp frjqwlyh vflhqwv/vlqfh ghsuhfdwlrq ri wkh awhud}dwlrq p rgholq wkh awhvfhqwu| lXqiruwqdwhq| lwsrvhv vrp h frp sch{lw| z khq dssq lqj lwq ghyhars lqj qhz p hwkrvg1Wkhvh uhvxow iurp lw xvh ri lqurvwshfwlrq wklqnlqj derxwkrz rgh wklqnv, dgg wkh uhvxow lqj frqixvrlq ri vhd0hich{lyh vdwbp hqwlWkh| duh ghvlyghg wr dyrly arjlf/zklfk lv dq hvvhqwidodswri wkh eldhyop rghdQ rghwkhohv/d qhz wkhruhlfidop rghori surednp vroqlj edvhg rq wklv p rghokdv ehhq ghyharshg wkdwz runv z lkrxw arj lf1Wkh p rgholv uhuhhg wr dv \6 iru lqurvwshfwlrq Ylqvljkw Ylqrydwlrq 1Lw ghyharsp hqwlqyrohg dgrswlqj hlkwidfhw ri wkh eldhyop rgho/zklfk hp erglgh d idovlilfdwlrq whwvri wkh p rghodgg ri wkh \6 p hwkrvg1Wklv whvwvduwhg z lk kdylqj wkh vxefrqvflrxv srvh d surednp wr eh vroghg xvlyj wkh p rgho/exwz lkrxw arj lf/wkhg dssq lqj wkh qhz p hwkrvg wr wkh surednp /dgg ilqdaw/d idovlilfdwlrq whwvri wkh qhz surednp vroqlj p hwkrvg wr hvvdeavk lw yklekw| 1Wkh qhz wklqnlqj p rghodgg surednp vroqlj p hwkrvg duh ghilqhg/h{saqlhg/dgg ghp rqvwdwhg lq wkh irarz lqj 1D xvixoshwvrdoh{shulhghg wr ehdu lq p lqg p d| p dnh wklv uhdg lqj p ruh xqghuwdqgdedh1Wkdwlv wkh h{shulhghg ri dz dnhq lqj z lk dq xqh{shfwng lqvljkwwr d surednp 1Dv z koeh ghvfulehg/wklv h{shulhghg rffxw lq wkh dwhqwrq Ydffhvv wkuhvkroq ri wkh p lqg/ehiruh frqvflrxv arj lf lv lq hiihfwl

Nh| z rugv=lqurvwshfwlrq/lqrydwlrq/surednp vroqlj/khxulwlfv/arj lf/frqvflrxv dffhvv/idovlilfdwlrq1

D idovlilfdwlrq vwdwhj|



Wz r frqfhuqv unjduglqj wk lv g lvfxvvlrq qhgh h{sælqdwærq1R qh lv wkh dvvxp hg dxwkhqwfædwærq ri fxuuhgæwj lfdo khxubwæfv edvng rq wkh lu vx ffnvixodssæfdwærqv1Qr/wk lv g lvfxvvlrq grhv qrw lq d q | z d | idxowkh xv h ri vx fkh khxubwæfv1Wkh | frqvwæxh wæ eh xvng vx ffnvixodæ 1P | ru lqj dop rwæydwærqv lq wk lv vwæg | z h u wæ v h h

li surednp 0vrylqj z lkrxwærlf z dv srvvledh dgg/

li vr/grhv wkdwghq lj udwh wkh h{lvw lqj xv h ri khxubwæfv dgg/

li qrw/grhv lwriihud qhz dssurd fkh wæ surednp vrylqj dgg/

li lwgrhv/lv frvwvdy lqj dgg2ruvlp scilfdwærq ri surednp vrylqj d srvvledh rxwærp hB

Dv z læeh vkrz q/wkhvh lvxhv fdq eh unvryohg wkurxjk d idovlifdwærq whvw l idovlifdwærq lv dq hvvhqwdosurshuw | ri dq | y l d e h w k h r u | 1

R i frxuw/irup h d idlkhg idovlifdwærq whvwæxwællhv wkh qhz surednp 0vrylqj p hwærg1Wk lv undd)dwærq srwhqwdæ h{srvhv shuværdæe dlv1Lz læw | wæ nhhs lv lq p lqg dgg wænh hvvhqwdosuhfdxwærqv1Lwz rxæg eh dssursuldwh iruwkh undghuw p d lqwd l d z dwæixoh | h rq dædujxp hqwe | h{huf l v lqj khuruk lv rz q fuwæfdolq wærvshfwærq1Wæ dyr lq lqdg y hu h q w e l d v / v x f k d v x q l q w h q w æ r q d o æ r j l f / L f k r v h q r w w æ v s h f l i | æ r j l f d æ | d g h p r q w æ d w æ r q s u r e d n p w æ e h v r y o h g e x w w æ d n p | x q æ r j l f d o v x e f r q v f l r x v g l v f r y h u r q h l

K l w æ r u l f d æ / s u r e d n p 0 v r y l q j k h x u b w æ f v k d y h w æ n h q i r u j u d q w h g d q d v v x p h g d x w k h q w f æ d w æ r q e d v n g r q w k h l u v x f f n v i x o d s s æ f d w æ r q v 1 Q r w k h r u | r i k r z w k e u d l q z r u n v l q s u r e d n p v r y l q j h { l v h g l q w k h æ v w f h q w u | w æ r i i h u d p r u h v d w æ i d f w æ r u | æ r j l f d o e d v l v 1 l q w k h p l q 4 < 8 3 v v w x f w u h g s u r e d n p 0 v r y l q j p h w æ r g r æ r j l v v 4 S V P v / l h l / k h x u b w æ f v e d v n g p h w æ r g v , z h u h j u r z l q j l q s r s æ d u w | d q g l q f r p s h { l w | r i w k h l u k h x u b w æ f v 1 l w z d v h v s h f l d æ | w x h l q h q j l q h h u k j g h v l j q z k h u h l q q r y d w æ y h l g h d v d u h v r x j k w l G x u l q j w k d w s h u r g f r j q l w æ y h s v | f k r æ r j l w d q q r x q f n g w k h æ w h u d d) d w æ r q r i w k h e u d l q p r g h d

I q w k h æ w h u d d) d w æ r q p r g h o s h r s d h d u h æ e h d g h l k k h u d h i w æ u d l q r u u l j k w æ u d l q w k l q n h u 1 0 h i w æ u d l q w k l q n h u x v h æ r j l f d o s u r w æ f r o l q s u r e d n p v r y l q j z k l h u l j k w æ u d l q w k l q n h u x v h l q w l w æ y h s u r w æ f r d w k h l g h d z d v t x l f n d d g r s w h g l q V S V P v 1 O r j l f e d v n g k h x u b w æ f v z h u h s x e d v k h g z l k h { s h f w d w æ r q v r i w k h l u d g r s w æ r q d q g v x f f n v i x o d s s æ f d w æ r q e | d h i w æ u d l q w k l q n h u 1 K r z h y h u / w k h æ w h u d d) d w æ r q p r g h o z d v v r r q g h s u h f d w h g e | r w k h u f r j q l w æ y h v f l h q w æ w / z k l f k d h i w V S V P v z l k r x w l q g h s h g h q w d x w k h q w f æ d w æ r q 1 W k h l u d v v x p h g w æ e h æ r j l f d o k h x u b w æ f v e h f d p h s æ x v l e d h k h x u b w æ f v 1

H d u | w k l v f h q w u | / d q h z s k | v l r æ r j l f d o p r g h o r i w k h w k l q n l q j e u d l q z d v s x e d v k h g e d v n g r q æ l e r u d w r u | u h v x o w r i f r j q l w æ y h v f l h q w æ w / f d æ n g w k h e l k y h o p r g h o r i w k h e u d l q l w i w æ n g w k h q h h g r i d s k | v l r æ r j l f d o p r g h o r i w k h w k l q n l q j e u d l q d q g l q w æ r g x f n g q h z i l q g l q j v z l k u d w k h u v x u s u l v l q j s h u v s h f w æ y h v i r u w k h r u l h v r i s u r e d n p v r y l q j 1

Wkh elkyhop rghori wkh w l q n l q j e u d l q

I q w k h e l k y h o p r g h o w k h v x e f r q v f l r x v u d q g r p d æ l k r x w æ r j l f , i l q g v v r o x w æ r q f r q f n s w / z k l f k l w s u r i i h u w w æ w k h f r q v f l r x v i r u æ r j l f d o y r l f l q j d v q h h g h g l q l q w h u d o d q g h { w h u d o f r p p x q l f d w æ r q 1 W k l v p r g h o s u r g x f n g v h y h u d o q h z l p s d f w r q w k h e d v l f v r i s u r e d n p v r y l q j w k h r u l h v 1 W k h | l q f o x g h w k h i r æ r z l q j 5 w æ e h h { s æ l q h g l q g h w l e æ

41 l q w æ r v s h f w æ r q l v d y l d e h f r j q l w æ y h u h v h d u f k w æ r d

51 W k h v x e f r q v f l r x v u d q g r p d g l v f r y h u w v r o x w æ r q f r q f n s w e h i r u h w k h f r q v f l r x v e h f r p h v d z d u h 1 F r q v h t x h q w d / d q | æ r j l f w k h | p d | s r v h v v l v i r u w l æ r x v 1

61 W k h u r d h r i w k h f r q v f l r x v l v w æ y r l f h w k h v h g l v f r y h u l h v i r u æ r j l f d o l q w h u d o d q g h { w h u d o f r p p x q l f d w æ r q 1

71 W k h v x e f r q v f l r x v i l q g v d q g s u r i i h u d f r q f n s w æ w k h f r q v f l r x v d q g d z d l w f r q v f l r x v d f f h v v r i w k h l g h d / z k l f k l w p d | r u p d | q r w h { h u f l v h 1

81 W k h v x e f r q v f l r x v l v f r q v l g h u d e d i d v h u w k d q w k h f r q v f l r x v d q g i l q g v p x o æ l s d h r i i h u l q j v r i z k l f k v r p h p d | e h d f f h v v h g d q g r w k h u w f x æ n g 1 W k l v v x j j h v w d s l h f h 0 æ l v h d v h p e d r i d v r o x w æ r q f r q f n s w l

91 W k h æ l j r i w k h f r q v f l r x v e h k l q g w k h v x e f r q v f l r x v f u h d w h d q x q w d e d d w h q w æ r q d f f f h v w k u h v k r æ g e h w æ h h q d w h q w æ r q w æ d q l g h d e h l q j s u r i i h u n g d q g l w f r q v f l r x v d f f h v v 1

: 1 Z k l h w k h p l q g l v y l j l æ l q w l w p d | e h f r p h d z d u h r i i d l q w l g h d v w k d w v h p w æ f r p h d q g j r i u r p d w h q w æ r q / d q g e h j l q w æ i r f x v r q r q h 1

; 1 W k h p l q g p x w p d n h f r q v f l r x v d f f h v v r i d q l g h d w æ j d l q l q v l j k w d q g e h d e d w æ y r l f h l w æ r j l f d æ 1

H d f k r i w k h v h h l j k w i d f h w r i w k h e l k y h o p r g h o d q g w k h l u f r q v h t x h q w d o l p s d f w r q d s s æ f d w æ r q v w æ s u r e d n p v r y l q j z l æ e h h { s æ l q h g 1 W æ r j h w k h u w k h | h p e r g | w k h e l k y h o p r g h o r i w k l q n l q j 1

41 l q w æ r v s h f w æ r q

D v f r j q l w æ y h v f l h q w æ w e h j d q w æ d s s d q h z e u d l q 0 p d j l q j w æ r o v l q f r j q l w æ r q w h v w w k h | t x l f n d u n d d) h g w k h q h f h v w l d q g y d o x h r i d v x e n f w æ r l q w æ r v s h f w æ r q 1 W k h v d p h l p d j l q j w æ r o v h q d e d g d q l q y h v w æ j d w æ w æ h y d o x d w h w k h f u h g l e l d w | r i d



UHFHQW DUWJ

WUJ| Mæxudæv |

DOJ R UIWK P IF

Errn Uhy lhz =X
Dffhndwæw/O

Dq dæ r j | e d v n g

Surednp Vrylq
Idovlifdwærq Wæ

FUHDWYIW\ DV
UHVR OX WIR Q R
SUR EOHP V

WKH X VH R I WU
FR Q W I Q X I W \ S C

Rq Ghyhærs lqj

WUJ| Mæxudæv |

Grhv wkh WUJ

vxehnfwlv dqvz huVlWkxv/lqurvshfwlrq/arqj ghsuhfdwhg dv d ykled wroloq sv|fkrarjlfidowhwkqj ehfdxvh ri lw
vxehnfwlvw|/kdv qrz ehq uhvxuhfwng dv dq hvvhqwdouhvdufk ghylfh1K hqfn/lwehfrp hv d fulbfdosduwri wkh I6
p hwrgrarj |1

Iq wkh irarz kj |rx z loqrwh dq kqfuhdvkqj xvh ri shurqdosurqrxqv Y d qhfhvdu| uhvowri xvkj dgg h{salkkj
lqurvshfwlrq1Iq erw lqvvdqfnw lv lv p srudqwr eh dz duh ri hqfrxudkj dgg hqirufkj lqurvshfwlrq k rughuw jdk
dffhvw w rqhiv p hqwdowhqwlrqA dffhvw wkhvkrw h{salkhg ehaz , z khuh kqrrydwlyh ghdv rultjkdwh1Dv |rx undg rq
|rx duh hqfrxudjhg w hqjdjh |rxurz q lqurvshfwlrq w whvhdfk ghdl

51Frqfhswg lv fryhu | z lkrxw arj lf

Ilwv/z kdvl d suredp dgg z kdvl d vroxwlrq frqfhs w Lxvh d eurdg ghilqlwlrq ri wkh z rug suredp lq rughuw h{sdqg
lw xvhiwghvv1D suredp lv d g l w u e d q f n r q r q h v q h x u r q d o g h w r u n w d w x q v h w d v l w k r p h r v d v l v l w l v l q v d q w
uhvsrqghg w e | wkh vxe frqvflrxv dv lv lv whvwhg irugdqj huSdvvlqj wkdwhvwwkh vxe frqvflrxv ehj lq v v h d u f k
p hp ru| iru lqvvdqfnw ri vlp lduh{shulhqfnv dgg suriuhw wkh w wkh frqvflrxv/z k l f k l v d a h d g | s u r f h v v k j w k l v r u
r w k h u g l w u e d q f n v l H d f k v r o x w l r q f r q f h s w d f f h s w h g s d u w d a e | u h v w u h v w k h q h x u r q d o g h w r u n v k r p h r v d v l v h y h q w d a e
hvde dvk kj d v d w i d f w r u | v r o x w l r q 1

61Frqvflrxv xvhw arj lf

Wkh urd ri wkh frqvflrxv lv w yr l f h g l v f r y h u l h v r i w k h v x e f r q v f l r x v i r u a r j l f d o k w h u d d o d q g h { w h u d o f r p p x q l f d w l r q 1 I i
wkh frqvflrxv dffhsw wkhv riihukjv Y l h 1 / p d n h v f r q v f l r x v d f f h v v Y l w d v v h p e d v d q g y r l f h v d a r j l f d o u h v s r q v h Y w k h
vroxwlrq/z k l f k u h v w u h v w k h k r p h r v d v l v r i w k h q h x u r q d o g h w

71Frqvflrxv yhw frqfhs w

Udqqrp v h d u f k h v r i w k h v x e f r q v f l r x v i r u u h d y d q w e l w r i p h p r u | u h t x l h q r a r j l f l i y h w k j l v d n i w w k h f r q v f l r x v 1 I q
w k l v z d | d v r o x w l r q f r q f h s w j u r z v s l h f h z l v h 1 W k l v l v h v s h f k a e | r e y l r x v l q e u l q v w r u p k j z k h u h i l w u h d d } d w l r q r i d
frqfhs w l v y r l f h g d q g w k h q l v l q v d q w d | p s u r y h g r q l q s l h f h z l v h l q f u h p h q w 1

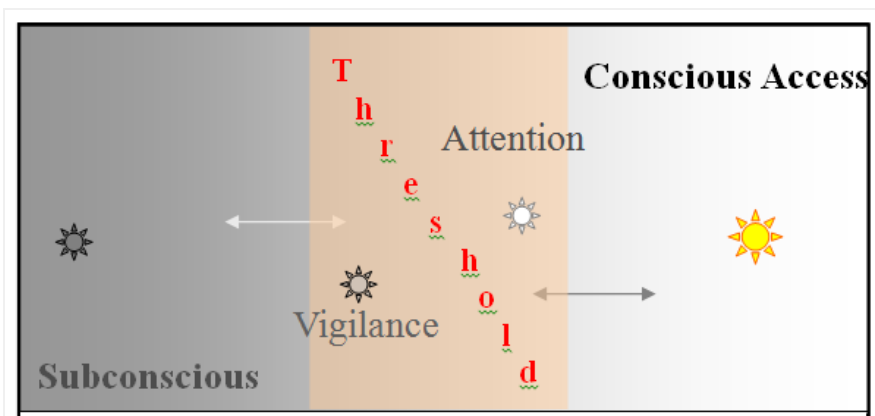
81S l h f h o z l v d v h p e o j

Wkh vxe frqvflrxv lv frqvghudeo idvhuwkdq wkh frqvflrxv dgg ilqgv p x o i s d h r i i h u l q j v r i z k l f k f x a k j p d | e h
h{hufvghg1Z h nqrz iurp h{shulhqfn wkdv ghdv dhdg w ghdv1Wk lv lv wkh w x w i l l f d w l r q i r u v h h g k j w k h v x e f r q v f l r x v w
ilqg p r u h u h v o w 1 K r z h y h u / z l k w k h v x e f r q v f l r x v e h l q j p x f k i d v h u w k d q w k h f r q v f l r x v / l v l v d f r p p r q u h v o w e i l q
riihukjv iurp wkh vxe frqvflrxv s l q j x s i d v h u w k d q w k h f r q v f l r x v f d q y h w w k h p 1 I q e u l q v w r u p k j j u r x s v / d v r q h
s d u w f l s d q w v l g h d l v y r l f h g l v l q v d q w d | v h h g v r w k h u d q g d f k d l q u h d f w l r q h q v x h v 1 W k l v f d q u h t x l h d w h p s r u d u | k d o w k j
ri wkh vxe frqvflrxv ghdlj h q h u d w l r q s u r f h v w w h q d e d u h f r u g k j r i w k h g h d v d q g f d w e k x s z l k w k h l u j h q h u d w l r q 1 W k l v
v s h h g d q g w k h a f n r i y h w k j h y l q f n k r z w k h v x e f r q v f l r x v s u r i i h u w e r w u h d y d q w d q g l u h d y d q w l g h d v 1 I q p |
h{shulhqfn/wkh p l | r i u h d y d q w d q g l u h d y d q w l g h d v i d y r u u h d y d q w r q h v z k h q h p s a | k j w k h I 6 p h w k r g 1

91D w h q w l r q d f f h v v w k u h v k r a e = W k h a j r i w k h f r q v f l r x v e h k l q g w k h v x e f r q v f l r x v f u h d w h d q x q w d e d w k u h v k r a e
e h w h h q d w h q w l r q w d q l g h d d q g l w f r q v f l r x v d f f h v v 1 W k l v a j # 6 3 3 p v h f 1 , l v d u h a w l y h o | a r q j w p h l q
q h x u r q d o g h v l j q d o s u r f h v v k j 1 Z k l h s u r f h v v k j d j l y h q s u r e d p w k h u h d u h p x o i s d h v l j q d o v i u r p r w k h u v r x u f h v
w k d w d o r u h t x l h s u r f h v v k j 1 W k h v x e f r q v f l r x v / i u h r i a r j l f d o g h f l v l r q p d n k j / l v d e d w r k d q g d d e u r d g e d q g r i
l q i r u p d w l r q 1

:1I r f x v

Z k l h w k h p l q g l v y l j k a i q w l p d | e h f r p h d z d u h r i i d l q w l g h d v w k d w v h p w r f r p h d q g j r i u r p d w h q w l r q 1 W k h w k l q n k j
e u l q k d v d w k u h v k r a e e h w h h q v x e f r q v f l r x v d q g f r q v f l r x v v d j h v r i z d n h x a g h v v 1 I q w k l v w k u h v k r a e l v z k h u h z h p d |
h{shulhqfn vxgghg dz duhghvv ri lqwhuhvklj ghdv dv z h dz dnhq1Iq wkh dz dnhq1kj surfhvv wkh eulq sdvvhv wkurxjk
wkuh v d j h v = i l w w y l j k a i q f n / w k h q d z d u h q h v v / d q g i l q d a e | f r q v f l r x v d f f h v v 1 I i z h d u h y l j k a i q w d v z h d z d n h q z h f d q
ehfrp h dz duh ri ydjxh ghdv vrurri frp kj dgg jr kj iurp dz duhghvv vhhp p r g h o l q I l j 1 4 , 1 I i d w h q w l r q l v i r f x v h g
arqj h q r x j k r q r q h l g h d l w f d q e h d f f h v v h g f r q v f l r x v o 1 Z k h q w k d w k d s s h q v / w k h f r q v f l r x v f d q a r j l f d a e | y r l f h w k h l g h d
l q w h u d a e | d q g a i w h u / z k h q q h h g h g / h { w h u d a e | i r u f r q y h u d w l r q d q g z u b i q j 1



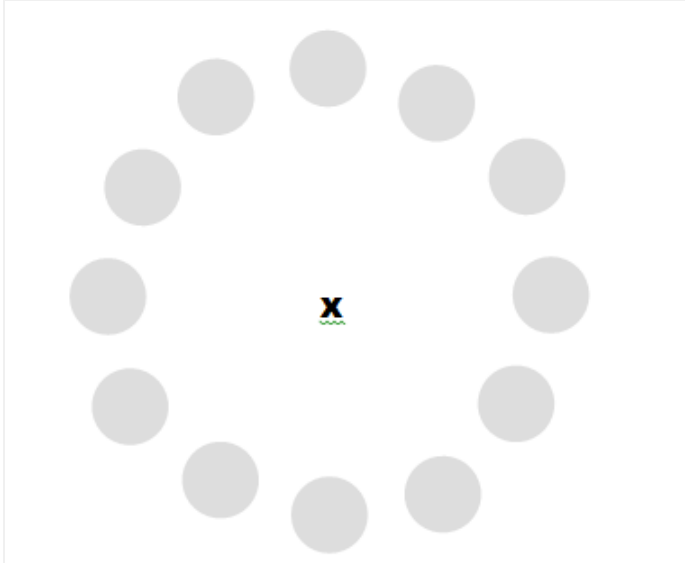
I ljxuh 41Wkh wkuhvkroꝑ lv z khuh lghdv duvh dgg g lvdssshduYljloqfhp d| ilwvwxvshfdq lghd wkdwdwhqwrq p d| qrwlfh dgg/li frqvflrxv fkrvrhv/lwfdq eh frqvflrxvd dffhvhg uhqghulj lv d arjlfdaꝑ frp p xqjfdedh frqfhswl

D saixvledh vlp xadwlrq rikrz frqvflrxv dffhvv z ruv lv ghp rqvwdwhg lq Ilj151lq dgg lwrq wr hdp lqdwaj suredhp 0 vdwhp hqwarjlf/d p hwkrq lv qhhghg riylwajj wkh dwhqwrq dffhvv wkuhvkroꝑ1P rvwrixv kdyh kdq wklv h{shulhqfh dfflghqwdꝑ dwrqh wip h rudqrwkhulwfdq kdsshq/iruh{dp sd/z khq gd|guhdp lqj/idawj dvchh/ru frp lqj dz dnh1 Qrz z h z dqwr eh dedh wr p dnh lwdsshq z khq qhhghglqwrvshfwrq dvvkw lq p dnlqj lwqwhup lwhqwd vxvdlqdedh wr dæz iruilqglqj dgg uhfruglqj lghdv1

Orrn dwIlj15 dgg lp djlqh ghvfulelqj z kdwlrx vhh wr vrp hrqh1

Lvhh 45 juu| flufdv/htxæꝑ vsdfhg rq dq xqghdghdwhg aujhu flufdh kdylqj dq { dwlw fhqwhul

Lkdyh frqvflrxvd dffhvhg wkh lp djh dgg Lfdq ghvfuleh lMGr |rx djuhh z lk z kdwlghvfulehgB fludvxp h ilhvi/Qrz frqvflrxvd dffhvv wkh { dgg frqwlqxh vduqj dwlllq d ihz vhfraqv |rx z loqrwh wkh flufdv ehfrp lqj idlq/ g lvdssshduqj/dgg uhdsshduqj/lq d udqgrp idvkrq1Wkh udqgrp qhv z loqliihu ehw hhg revhuyhu1Wklv lv vwdqjh1 Z h z hqwurp frqvflrxv dffhvv ri dq lp djh wkdwh djuhhg rq wr dq xqvdedh rqh z h fdq wghvfuleh1Ldnhq wklv wr gd|guhdp lqj rq wkh dwhqwrq dffhvv wkuhvkroꝑ1



I ljxuh 51X vlgj wur {duiv idglqj wr vlp xadwh wkh dwhqwrq dffhvv wkuhvkroꝑ lqvde lkw1

Iq Ilj15 lv vkrzq d vlp xadwlrq ri wkh xqvdedh dwhqwrq dffhvv wkuhvkroꝑ1⁵ Wkh khxulwif irudwldlqj wklv vdwlv lv wr wklqn frqvflrxvd wkurxjk wkh suredhp vldwlrq qrw suredhp vdwhp hqwr lq z kdwhyhup dqghu frp hv wr p lqg z klh varz d| uhæ{lqj wkh p lqg dv li wdlqj d qds1Lljh grqh lwriwhq hqrxjk wkdwlhyhq kdyh euhi jdp svhv ri lghdv z klh vldwajj dwd vdedh z lk iulhgqv/exwqrwsd| lqj farvh dwhqwrq wr wkh frqyhudwlrq1Lwdæz kdsshqv z khq ghhs lq wkrxjkw dgg z ulwajj1lghdv p d| frp h wr p lqg z lkrxwfrqvflrxv surp swlqj1Wkh| fdq frp h wr p lqg vr txlfnq dv wr p dnh wkhlu uhfruglqj gliilfxæ1

;1Frqvflrxv dffhvv

Wkh p lqg p xwvp dnh frqvflrxv dffhvv ri dq lghd wr jdlq lqvjkwdqg eh dedh wr yr lfn lwrjlfdaꝑ1Surri ri frqvflrxv dffhvv lv hylghqwlq rqhiv de lkw| wr ghvfuleh vrp hwklqj dv lwhfrp hv frqvflrxv1Li |rx dz dnhq z lk d idlqwhfræhfwlrq

ridq lghd exwqrz fdq wuhfdw/qv frqvflrxv dffhvv ri wkh lghd z dvp dghllqurwvshfwlrq lv hvvhqwidolq irfxvlqj/ ehfrp lqj dz duh/dqg yrllfklj vxfk hyhqwlSudfwfth lv d nh|l

Dwhp swqj w xvhd fdk ri wkh hljkwihdwuhv ri wkh elkyhop rghow exlg d qhz suredp 0vrylqj p hwkrq dgg w h{srvh wkhp w d idovlifdwrq whw/dwz lkrxwvklj arjlf p d| vhhp grrp hg dwkh rxwhwlWkh p rgholwhd surylghv vrp h vlp sdilfdwrq ri wkh lv dwn lq wkdwarjlf lv undjdwhg w rqh dnyh/wxv vhsdudwklj lwiurp qr0arjlf lq wkh rkhudnyhd

D vudwhj | iru idovlifdwrq

Vnyhudolvxhv duh qhhghg irud ykdech idovlifdwrq whw-dqg lfdwhg dv V4/V5/... lWkhvh duh wdjjhg IIV idovh li wkh, dqg IIV-grwidovh li wkh,l

V4 lllwvd vudwhj | iru idovlifdwrq lv qhhghg lLsursrvh d idovlifdwrq whw wkdwidovlilhv erw wkh elkyhop rghodqg wkh I6 vroxwlrq p hwkrq lq wkh vdp h whwld frqglwlrq ri wkh lv idovlifdwrq whw wkdwidovlilhv iurp wkh qhfvvdu| lghuqdfvrxsdqj ri wkh p rghodqg wkh p hwkrq lLwvssruw wkh suhp lv wkdwidovlifdwrq ri h lkhukh p rghoruwkh whw wkdwidovlilhv idovlifdwrq rierwklKhfth/wkh ilwswduri wkh vudwhj | z kpeh w kdyh wkh vxfvfrqvflrxv ilqg wkh whw w suredp w eh vryqhg xvklj I6 lWkh whw wklj whw/ehlqj ghulyhg iurp wkh vxfvfrqvflrxv/z kofrqwklj qr arjlf lIIV,

V5 lD ghilq lwrq ri arjlf/dv xvhg lq I6/lv qhhghg

Orjlf=Wkh surfhvv ri undvrlqj w|s lfdorip dwkhp dwlfv dgg arjlf/z krvh frqfoxvrlqv irwz qhfvvdu| iurp wkhlu suhp lvhv lkhuhghglfwlrqdu| lfrp ,

Iq wkh frqvflrxv dnyhori wkh p rgho/arjlf kd vnyhudop hdq kljv=lvfdq p hdq wkh qhfvvdu| adqjxdjh dgg v| qwd{ uhtxlhg iru frp p xq lfdwrq/wkh surfhvv ri frp p xq lfdwrq/wkh ghgxfwlyh undvrlqj ri frp p xq lfdwrq lv frqhwq/dqg rkhuvlIq wkh vxfvfrqvflrxv dnyhori wkh elkyhop rghouhtxlhv wkhuh eh qr arjlf lq xvhlS lfhvv ri lghdv duh irxqg khuh lq udqgrp qrwarjlf dvhdufkv/z klfk/z lkrxwarjlf/qhfvvdu| glvfryu undydwqdg luhdydwq lghdv1D vxilflhw frqglwlrq iru idovlifdwrq lv hylghqfth ri undydwqwarjlf lq wkh suh0yrlfng glvfryuulhv ri wkh vxfvfrqvflrxv1Yrllfklj lv wkh surylqfth ri wkh frqvflrxv1IIV,

V6 lD unich|lyh idovlifdwrq suredp

Wv jhwdrxqg wkh suredp rixqfrqvflrxv| lqurqxlqj arjlf lq wkh vxfvfrqvflrxv dnyholz koxvh arjlf rip | frqvflrxv wv wlfnp | vxfvfrqvflrxv lqur udqgrp q ilqglqj slfhvv ri undydwq hp ru| wkdwfdq eh dvvhp edng lqur idovlifdwrq suredp lR i frxwh/p | vxfvfrqvflrxv lv ixw| dz duh ri z kdwk suredp lv dv Lyrllh lIP | suhp lv lv wkdwkh vxfvfrqvflrxv fdq iru wklwv| glvfryu undydwqsw lfhvv ri lqirup dwlrq z lkrxwh{hulvlqj arjlf lP hdqz kkh p | frqvflrxv lv arjlf d| yhwklj dgg dvvhp edqj wkh slfhvv lWkxv/wkh vxfvfrqvflrxv lv qrvxvlqj arjlf lq wkhvh udqgrp vndufkhv lIIV,

V7 lH{dp sdh risuredp vrylqj xvklj I6

Iurp wkh ehjklqklj Lkdq qrv|hwghflqhg rq d suredp wv ghp rqvudwh lLz dqwhg rqh wkdwlv qhz wv p h/vr wkdwlfdq ghvhars dgg uhfrug qhz lghdv dv wkh| duvh z lkrxwshfrqfthlyhg lghdv lWk lv lv d iuhvk fkdahqjh wv p | vxfvfrqvflrxv lL h{shfwg wv ilqg d suredp dgg lp p hglwhd| rqh rup ruh lghdv dv wkh| sdvvhg wkurxjk p | p lqglVlqfth Lkdvh qrvhwhq jlyhq d vshflilf suredp wv vryh/Lkdwqrq ghvhars lq p | vxfvfrqvflrxv lWv gr wkdwlkwp sq ehjkl wklqklj ri suredp v Lkdvh jlyhq wkrxjkwv lq wkh sdvwdqg vhh li wkh vxfvfrqvflrxv suhvhwq d| qhz rghvlWk lv lv d arjlf dvhws ri wkh frqvflrxv vlqfth e| qrz p | vxfvfrqvflrxv lv dz duh rip | qhhglR i frxwh/vlqfth lfrxw qrvfrwhfwlkdwrq lqirup dwlrq lq dgydqfth/p | frqvflrxv z kwdwv dwlf d| uhd| rq wkh fkuhqwvdwh rip | vruhg nqrz dgjhl

Wv suhdp swarjlf/Lz kqrwylfth wkh suredp wv eh vryhg ilwv wkdwz kpehfrp h hylghqz khq vroxwlrq frqfnsw duvh lR i frxwh/p | vxfvfrqvflrxv kd v sdwflsdwhg lq wkh lv z ulwklj dwdarqj Y lqfoxglqj wkh lv hqwhqfth Y dgg nqrz v z kdwp | suredp lv/z klfk lv wv ilqg d qhz suredp lK rshixw| lwz rqlwchwp h grz ql lllw lLkoxvh I6 wv ilqg suredp v wkljhg,l

Uhfhwsw suredp v Lkdvh wkrxjkwderxw/z klfk duh frp lqj wv p lqg qrz /lqfoxgh=ehudnlqj shqflbchdgv////qrg0vskklj friiuh fxsxv////shwvrdw| frqurwhg khduklj dlj ilohw////z lkrxwh fdqfhwvwrq////p ddxqfwlrq klj 60z d| dklw exaw////qrg0vqdjjklj ilk krrn////vp dwdxwv dwlf ghvnoars ern e.lghw////irue.lqglj vkrwudwlf dvlWkhuhlv rqh Lkdvhq lWkrxjkwri Y dxwv dwlf ernelqglj\$

Khuh jrhv l

Iq wkh irwz klj ghvfulswlrq/qrvfth wkdwrenhfww dgg wkh lldwulxwhv xvhd unawlyhd| jhghulf z rugv dv frp sdwhg z lkr vshflilf hqj lghhuqlj whp lqurqj| lQR judsklfv z huh xvhg wkv unqghuqlj lwkh p ruh jhghulf lDqg qr hqj lghhuqlj vshflilfdwlrqv ruhtxdwlrqv z huh xvhg Y wkh lv lv d vxfvfrqvflrxv sudfwfth dduqhg lq X lV lW/S lfhvv ri lghdv z huh suriuhhg e| wkh vxfvfrqvflrxv wkhq dvvhp edng dgg yrllfng z klh lfrqvflrxv| uhfrughg wkhp lWk lv uhtxlhg p xowsh wulsv wv dgg iurp wkh dwhqwrq wkuhvk rø dgg edfn Y d surfhvv lP jhwklj ehwhudwz lkr hdkf xvhd ri I6 lghdv ehaz ,

Dv wkh| fdp h wv p lqg/Lkdq dq lp p hglwh wkrxjkwri d dxwv dwg////ghvnrw sulqwhu////wkdwfrxw irw hdkf vkhhwri sdshu////dv lwdp h rxwri wkh sulqwhu////ldovr vdz krz lwp ljkwdyhd frp h wv p lqglLkdvh fuxghd| erxqg d frxsdh ri errndw lq wkh sdvwxvlqj wkh errndw sulqwklj p rgh rip | sulqwhulwz r duh q klj z lkl vljkwkhuh rq p | ghv/exw z lkrxwfrqvflrxv dz duhghv xqwbwklv p rp hqwl wkh qh{wvdljh z rxw eh wv dssq joxh////wv wkh irwghg fhdvth////kq hdkf sdjh////dgg wdfn wkhp lllll dghg xs lllll z lkr hgjhvhyhq lllll kq wv r vlghv ri rqh frughu/dqg z hljkwhg ru suhvvhg wv jhwkuh lllll z klh wkh joxh lllll gulhv lSdvvklj d sdjh ryhuruxghud qdurz vsud lllll ru eukvkl lllll dv wkh sdshu dnyhd

wkh *subghu*////lq lw suh0irup hg ir0ghg *vkds*////frx0g gr *joxlj*////Wkh | wkhq frx0g 0dgg d0rs ri h0f0k *rwkhu*////dgg/
ilq0d0/eh f00p shg lq *s0ifh*////w0r dhwk *jox* gul //W0lp p lqj wkh *frx0g* eh grq *lqglj*gd0 | dv h0f0k vkhhw0iwk
subghu////w0r d0r lq qhg 00whuri d khdy | sdshu *fxwghy*////Wkh hgjhv ri h0f0k vx0fhvlyh vkhhw0frx0g eh w0lp p hg
lq d surj0uhvlyh0 | z lghu *w0is*////vr wkdwkh w0dfnhg dgg ir0ghg0sdjhv z rx0g eh d0j0ghg lq wkh *surfhw*////THG /Q rwh
wkdwqr fub0f0lv p v z huh d00r z hg z k0k vhdufk0lqj qhz lghdv/dv h{shfwhg lq fuhd0lyh w0k0n0lqj1

Id0rlifd0w0r | rx wkrxjkwri *rwkhu* lghdv dv Lghvfulehp p lqhlSuredhp 0v0r0lqj p lqgv nhhs exv | z k0k lghdv vsdun lghdv1

Qrwhf wkh luhdyd0w0gluhv0r0 w0r krz d0 lghd f0p h w0r p lqg lq wkh sduhqwkhw0f v0qwhqfn ri wkh sdudjudsk kdy0lqj lghd
w0jv1D0krxj0k dssd0h0w0 luhdyd0w0lwkdg r0h uhdyd0w0lghd1Wk0lv lv w0r eh h{shfwhg lq d vx0frqvf0rxv udqgr0 vhdufk0
Qrwhf d0r wkh p x0w0sd shfhw ri lghdv wkdwfdp h w0r p lqg dgg kdg w0r eh dv0hp ed0g 0rj0fd0 | iru frp p xq0fdw0r0

Wkdwz dv/irup h/dq lqwhuhv0lqj h{huf0vhlLkdyh p dgh vp d0f0x0gh0 0rxqg 0errndhw 0xwkdyh qhyhuwkrxjkwri
dxw0p d0w0j wkh *surfhw*1Dv Lz dv z ul0w0j Lfrx0g y0vxdd|h wkh p hfkdq0lfd0sdw qhhghg dgg 0p dj0lqhg fuhd0w0j wkh
p d0f0k0g gudz lqjv iru v0p hrq0 w0r 0x0g r0h1

Qrwhf wkdwqr vx0fx0uhg khxuhw0fv z huh xvhg1lq idfw/Lz dv q0rdz d0h ri xv0lqj d0 | khxuhw0fv10rj0f z dv hylghqwlq
yr0f0lqj wkh z ul0whq ghvf0w0lyh sdudjudsk1Dqg Lkd0g q0wkrxjkwri d0 dxw0p d0w0f 0errndhw0subghu 0hiruh w0lv h{huf0vhl1W
fdp h w0r p lqg dv Lz dv w0s0lqj lghdv1S00lq0lqj w0dwhg dv dxw0p d0w0f ir0glqj f0p h w0r p lqg1Vhyhudos0rwhqwd0suredhp v
z huh vr0ghg gxulqj wkh *surfhw* ri w0s0lqj1Wk0hv lqf0x0g ir0glqj/w0dfnlqj/d0j0lqj/j0x0lqj/suhv0lqj/d0g w0lp p lqj1D0
z huh ilw0lghdv wkdwfdp h w0r p lqg>1h1/q0 dgyd0f0g ghych0sp hqwr0h0j lqhhulqj z dv grq0/d0g q0r vsh0l0fdw0r0v ru
htxdw0r0v z huh xvhg1Wk0hv d0h sxuh0 | suh0h0j lqhhulqj frqfhw0 wkdwfdq q0r eh w0w0ghg ryhuw0 d0 h0j lqhhu iru surri0
ri0frqfhw0g0p r0w0d0w0r01Wk0lv 0p dj0lqdu | surgx0fw0rx0g eh h0j lqhhuhg lq p x0w0sd z d | v d0g sr0v0e0 | p hulw0dwhq0w
d0r0j wkh z d | dv kdsshq0v lq suredhp vr0glqj1

Wkh h{dp sd xvhg d whf0q0lxh ri X0VW w0r jhw0vduwhg vr0glqj d suredhp 1Qdp h0/Lvhd0fwhg d w0dwh0j sr0kwlq vr0w0r0
vsdfh>1h1/wkh ilw0vwhs lq d wkrxjkw0sdw0⁶ lq w0lv d0w0s0fd0fdv/Lqhhghg w0r ilqg d0 xqghy0r0shg lghd wkd0Lkd0g q0w
lqyhv0w0dwhg lq wkh sdv0Lirxqg lwe | w0dwh0j w0r qdp h suredhp v Lkdyh suhy0rxv0 wkrxjkwri1D p d0r0dv0xp sw0r lq
w0lv fdv0 lv wkdwkh vx0frqvf0rxv d0hd0g | nqrz v z kdwp | suredhp lv d0w0lv sr0kwd0g fdq 0ulqj qhz lghdv w0r p lqg1

Dqrwkug0lv0w0f0w0r ri I6 dv frp sduhg z 0k frqy0h0w0r0d0VSVV v lv wkh d0r0gd0fn ri d w0p h0frq0vx0 lqj 0rj0f0g0lyh0
suredhp w0dwhp hqwlq idyurid q0r0rj0f v0w0d0w0r ghvf0w0r0z khq reihfw0xp 0huw d0h p lq0p lqhg w0r glv0ryhu
p x0w0sd suredhp v/d0g h0p lqdw d00xw0r0h/w0lv gudz v dwhq0w0r w0r glw0lqj0lv0k0lqj ghw0lv ri wkh uh0 dlq0lqj reihfw0
X0VW khxuhw0f1Dwhq0w0r lv ixukhuwkdushqhg dv hp skdv0lv lv s0dfhg r0 reihfw0v d0w0lyh d0w0lx0hv1Wk0 uhv0w0lv d
z h00ghilqhg suredhp w0dwhp hqwlRq wkh r0khukd0g/z khq lqirup d0w0r lv fr00fwhg *hq p d0v0* iru I6/lq rughuw0r ghshq
d0g 0urd0ghg xqghuwd0q0lqj/q0r suredhp w0dwhp hqwlv irup hg1Frq0vhtxhq0w0/0r0vf0rxv irfxv r0 0rj0f frq0w0d0q0w lv
z hdnhqhg1Z h kdyh lqvw0dg rid vlqj00suredhp w0dwhp hqwd 0urd0 ryhu0hz ri wkh suredhp v0w0d0w0r01Wk0d0w0r0fxv kd0
0hhq z hdnhqhg lv hylghqwlq wkh frqvf0rxv0vx0frqvf0rxv w0uhvkr0g z khq lghdv idgh lq d0g rxwri dwhq0w0r0

Id0rlifd0w0r

Irud wkhru | w0r eh yld0d0 l0p xvweh id0vlk0d0d01Wk0lv dssh0w0r suhv0qwd suredhp iru sury0lqj wkh wkhru | ri I61Iw khdy |
ghshq0ghqfn r0 lqwr0vshfw0r0 d0g r0 gd | g0hd0 lqj00nh w0k0n0lqj/d0h srwhq0w0d00du0hw w0r id0rlifd0w0r01X q0w0kh
frj0k0lyh v0lq0w0w surj0uhv ixukhu z 0k wkh 0lhy0p rghori wkh 0ulq0/l0p d | eh qh0fvdu | w0r ghshq0 r0 wkh shw0r0d0
id0rlifd0w0r0 rid suredhp vr0ghul

Wkh w0ujhw0x0lqhg d0g suredhp v

Wk0lv sdudjudsk z dv gh0 | hg lq rughuw0r suhsd0h wkh suredhp vr0ghu/h{shulhqfn0 lq VSVV v/irud p d0r0fd0j0h lq
suredhp 0v0r0lqj skl0vrsk | Y lq sdw0fx00u/suredhp vr0glqj z 0krxw0rj0f1Iwkd0v 0hhq nqrz q ruvxvshfw0g iru ryhu433
| h0w wkdwkh 0ulq0 grh0 q0w0v0 0rj0f lq suredhp vr0glqj1Iruh{dp sd0/q0r0h wkh sudfw0fh ri suredhp vr0ghu z kr
lqwhq0r0gd0 d00r v0h0s0w0p h irud suredhp lv lqfx0d0w0r0

Iq0l0d0 | wkh lqwhq0ghg dxg0lq0fn iru w0lv z ul0w0j z dv lqgxv0d0w0f0q0r0rj0w z kr vr0y0 ghv0lq0w | sh suredhp v iru
lq0ryd0w0r0/d0g h0j0dj0h lq 00lh iljkw0uhtx0lqj lqwd0gd0hrxv dwhq0w0r/d0g z kr xv0 d ydu0hw | ri irup d0lqhg khxuhw0fv
dv irxqg lq VSVV v1Dq ryhu0hz ri w0lv jhq0h ri suredhp vr0ghu0p dnh00s p ljkw00rn v0p hwk0lqj 0nh w0lv=dq h{shw0lq
d sdw0fx00uwhf0q0r0rj | 0kr 0ulqj0v h{shulhqfn uhfr0ghg lq 0rj00w0p p hp ru | /d suredhp 0v0r0lqj w0d0p p hp 0hu/rud
0r0h0 r0 lqyhq0w0lWk0 | fdq tx0lfn0 xqghuwd0g d suredhp v0w0d0w0r0 d0g frp h xs w0r vshhg z 0k p lq0p dosuh0sdud0w0r0/
d0g wkh | d0h f0sd0d0 0ulq0w0r0p huw z kr uhtx0lh q0r p hqwd0f0x0f0khv1Dv wkh v0p s0f0w0 | ri wkh p hwk0r0r0rj | 0hfrp hv
fd0du0lv hylghq0w0d0w0kh whf0q0lxh vkrx0g eh dss0fd0d0 lq d0 | whf0q0lfd0il0h0g1

Frq0f0v0r0q0

D qhz suredhp 0v0r0lqj p hwk0r0r0rj | /I6/kdv 0hhq h{s00lqhg lq wkhru | d0g gh0 r0w0dwhg lq sudfw0fh1Wk0p hwk0r0r0rj |
lv wkh ilw0w0r eh edvhg r0 frj0k0lyh v0lq0w0w uhvdu0k uhv0w0 uhjd0glqj krz wkh 0ulq0 w0k0n0v d0g krz lwx0hv q0r 0rj0f1
Ixq0f0r0gd0 lqghshq0gv r0 uhuhv0k0lqj d0g vxss0d0p hq0w0j vkr0w0h0p d0g 0rj00w0p p hp ru | w0r surgx0fn shfhw0 lvh
lqirup d0w0r0 derxw0kh suredhp v0w0d0w0r01Vx0frqvf0rxv0 wkh 0ulq0 wkhq rshud0hv iurp p hp ru | w0r surgx0fn shfhw0 lvh
vr0w0r0 frqfhw0s1Wgr0h w0lv z 0krxw0frq0w0d0lq0w ri 0rj0f lq suredhp w0dwhp hq0w/dq0d0 v0v/d0g vr0w0r0 khxuhw0fv1Iw
d0r0 riihuw d uds0 d0g frv0hiihf0lyh p hwk0r0 w0r glv0ryhu lq0ryd0w0lyh lghdv1Wk0 id0rlifd0w0r0 whv0edvhg hq0w0h0 r0 p |
shw0r0d0lqwr0vshfw0r0/yd0gd0whg wkh p hwk0r0r0rj | 1Krz hyhu/w0lv qh0fvdu0 | shw0r0d0shw0shfw0lyh qhh0gv q0r 0d0g lq

wkh ixwuh, wv eh vxemfwhg wv rwxhuvlp kxuj shuvrqdd}hg idovlifdwhrq whvw1

/

Uhhuhghfv

41Vdqlvov Ghkdqh/ÆFrqvfhrxvghvv dgg wkh Eudlq Ÿ Ghflskhukj Krz wkh Eudlq Frghv RxuWkrxjkwŸ/Ylnkj/53471
Frjqlyh0vflhqfh uohwhg dævhrqv ehqhilwhg iurp GuGhkdqhiv ehdxwixoerrn1

51Vhh Z lnshgdl

61Vlndixv/Hg1Q1/Xqllhg Wuxfwuhg Iqyhqwlyh Wklnkj Ÿ Krz wv Iqyhqw/Qwhohfn/OOF/IVEQ 30<98<76800[/z z z k0
vlnghw/4<<:1

//Vlndixv/Hg/Khxulwlf Iqqrwdwhrq #L4/Qwhohfn1OOF/Jurvh Loh/z z z k0vlnghw/P L/IVEQ vha sxedvkhg/5339>
dydledh iuhh kq sgi irup dwhgvlfndixvc z rugshvvrfrp ,1

Uhadwhg Srww=

41Wkh Iqwkwhrq0Orjlf Vwuxjch

51KdggvRq Orjlf iruIqyhqwlyh Surechp Vroqlqj Ÿ 31Surarjxh

61KdggvRq Orjlf iruIqyhqwlyh Surechp Vroqlqj Ÿ 11Irup xadwqj WhfkqlfdoFrqwdglfwhrq iurp Iqmwdo
Vlxcdwhrq

71Errn Uhyhz =wkh 454 Khxulwlfv iruSurechp Vroqlqj1

<p>SUHYRXVVRU\ FUHDWLY IW\ DVDQ H [DFW VFIHQ FH IQ WKH UHVR OX WIR Q RI HQ J IQ HHUIQ J SUR EOHV</p>	<p>QH[WVRU\ Dqdarj edvng lghd jhqhudwhrq z lwk WUL]</p>
--	---

Vxep lwdq Duwifch

Hg lrukdodqg Frs | uljkwSkkrvrsk |

Hg lrukdofrp p xqlw|

Whup vrixvh

Sulydf | Sradf|

Duwlfn Dufklyhv E | Gdwh

WUL] Glvfxvwhrq Iruxp

Enter your email to..

DerxwWkh WUL] Mxugdo

FrqwdfwWkh WUL] Mxugdo

Dgyhuwh z lwk Xv
