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Pages 1-852



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4) How to Understand the Session Identification Number

Dov	M	M		W	
Day	Monday	Tuesday		Wednesday	
Time	Α		Р		
Tille	AM		PM		
Caraian Ondan	1		2		
Session Order	First Sessi	on	Sec	ond Session	
Parallel	Α	E	3	С	
Session ID	Session A	Session B		Session C	

^{*}Example) MP2A: the Second Session in PM of Room A on Monday

2. Technical Sessions

Room A (B106)

Uguukqp"Vkrg"]Or3C_"Cpcmi "cpf"Okzgf"Uki pcn"Eqo o wpkeckqp" Ektevku'/'K Uguulqp'Ejckt" Ft'Uco 'Rengto q'*Vgzeu'C(O'Wpkxgtukx{.'Wpkxgf'Uvcvgu+ Fcvg" Cwi wuv!: ."4233"*O qpf c{+ Vko g" 36<22¢37<52 Or3C/3" 36-22¢363: "Rj cug/Dngpf gt/Dcugf "HKT"P qkug"Hknygtkpi """"3 Vgej pls wgu'hqt" 'Htcevlqpcn/P'RNN F qpi /Y qq"Igg."[wplcg"Uwj ."J qpi /Lwpg"Rctm"cpf"

Lcg/[qqp"Uko "*Rqj cpi "Wpkxgtukv{ "qh"Uekgpeg"cpf "

Vgej pqrqi {."Mqtgc+

Or3C/4" 363: ¢3658" Y ktgrkpg"cpf "Y ktgrguu'TH Kovgteqppgev"hqt"P gz v"*****7

I gptcvkqp"UqE"U{uvgo u

O O'Hrepm'Ej epi "*Wpkxgtukv{ "qh'Eenhqtpke."Nqu'Cpi grgu." Wpkgf "Ucvgu+:"UckY cpi "Vco "*Vci Cttc{."Kpe0"Wpkgf" Ucvgu+: cpf 'Iqpi uwp'Mo '*I qpi kn'Wpkxgtukv{.'Mqtgc+

O r 3C/5" 36-58¢36 $\ 76$ "F guki p "Eqpukf gt c vkqpu"hqt "C F E / Dcugf """":

Dcem ncpg'Tgegkxgtu

J c{wp"Ej wpi "*Mgkq"Wpkxgtukv{."Icr cp+"cpf "I w[gqp" Y gk*J ctxctf 'Wpkxgtukv{.'Wpkxgf 'Uvcvgu+

Or3C/6" 36\76\cangle37\34" C"42I d \text{lu"Vt kr ng/O qf g"*RCO/4."RCO/6."cpf """"34

Fwqdkpct{+"Vtcpuo kvgt

D{wpi j q"O kp"cpf "Uco wgn'Rcrgto q"*Vgzcu"C(O" Wpkxgtukv{."Wpkxgf"Uvcvgu+

Or3C/7" 37-34¢37-52" C"Y kf gdcpf "Dqf {/Gpcdrgf "O krrko gvgt/Y cxg"""38

Vtcpuegkxgt'hqt"Y ktgrguu'P gwy qtm/qp/Ej kr

Z kpo kp" w."Uwo cp"Rtcucf "Ucj."Uwlc { "F gd. "Rct vj c" Rtcvlo "Rcpf g. "Dgplco lp"Dgrl gt. "cpf "F gwnj {qwp"J gq"

*Y cuj kpi vqp'Ucvg'Wpkxgtukv{.'Wpkxgf 'Uvcvgu+

Uguulqp"Vkrg"]Or3D_"Koygi tcygf "Ugpuqtu'cpf "Tglgtgpegu"/"K Uguulqp'Ej clt" Ft'RqnltEj gp"*Pcvlqpcn'Vcky cp"Wpkxgtulx{ "qh'Uelgpeg"cpf" Vgej pqnqi {."Vcky cp+ Cwi wuv!: ."4233"*O qpf c{+ Fcyg" 36-22¢37-52 Vko g" O r 3D/3" 36-22¢36-3: "O wwwk/ Ukvg "Qp/ej kr "E wt t gp v" Ugp uq t "hq t """ 42 Grgevtqo ki tcvkqp'O qpkvqtkpi "Vkepj ep"Y epi .'F gi epi 'Ej gp.'epf 'Tepf enll gki gt"*Kqy e" Ucvg'Wpkxgtukv{.'Wpkvgf'Ucvgu+ Or3D/4" 363: ¢3658" C "208X"422mJ | "Uknkeqp"Queknncvqt"y kvj """"46 Vgo r gtcvvtg"Eqo r gpucvkqp"hqt"Y ktgnguu" Ugpukpi 'Crrrkeckqpu Ej kgp/[kpi "[w'cpf "Ej gp/[k'Ngg"*P cvkqpcn'Ej kcq"Vvpi " Wpkxgtukv{."Vcky cp+ O r 3D/5" 36-58¢36-76" J ki j 'Ur ggf 'EO QU'Xkukqp' Ej k
r u''''''''''4: $P \ cpllcp''Y \ w''Ej \ lpgug'Cecf \ go \ \{ ''qh'Uelgpegu.'Ej \ lpc+$ $O\,r\,3D/6"\,\,36\sqrt[3]{6} e^{37}\sqrt[3]{4}"\,F\,\,khlgt\,gp\,kch'E\,cr\,cekcpeg/\,vq/F\,\,ki\,\,kch'E\,qpxgt\,vgt''''''''54$ Wvknk| kpi "Vko g/F qo ckp"O cpkr wncvkqp"qh" Kovgto gf kcvg'Uki pcni J {wplqqpi "Ngg."Iqpi /My cp"Y qq."Uvj y cp"Mo "*Ugqwt" Pcvkqpcn"Wpkxgtukv{."Mqtgc+"cpf "Ocpj q"Mko "*Uco uwpi " Grgevtqpleu'Eq0'Nvf0'Mqtgc+Or3D/7" 37-\$4¢37-\$2" C"705" ÙY "Eqpvcev" Oqpkqtkpi "Ugpuqt" ykj """"58 DEE "Grgevtqf g"cpf "O KEU "Cpvgppc "hqt "Gpgti {" Ghlekgpv'Wpklkgf "Y DCP "Vtcpuegkxgt J { wpy qq"Ej q."Lqqpuwpi "Dcg."Mkugqm"Uqpi ."cpf" Vgej pqnqi {.'Mqtgc+ Tggo 'E'\395+ Uguukqp"Vkrg"]Or3E_"Xkfgq"Eqortguukqp"Ektewku"cpf"U{uvgou Uguulqp'Ej ckt" Ft'J {wn/Lcg'Ngg'*UgqwrlPcvlqpcrlWplxgtulx{.'Mqtgc+ Cwi wuv!: ."4233" *O qpf c{+ Fcvg" Vko g" 36<22¢37<52 O r 3E/3" 36-22¢36-3: "T gwug"qh"Hngz kd ng"J ct f y ct g"O qf wngu"hqt""""62 Rtcevlecri'Ko r ngo gpvcvlqp"qh"cp"Kpvtc"J 04861UXE" Xlf gq'Gpeqf gt Tqpcnfq"J wugo cpp."Cnvco ktq"Uwukp."Tkectfq" Mkpvuej pgt."cpf "Lqu2" "Xcnf gpk" Nko c"*Wpkxgtukf cf g" Hgf gtcrif q'Tkq'I tcpf g'f q'Uvn'Dtc| kn+ O r 3E/4" 363: ¢3658" Ngy "Dopf y lf vj "Hoevkapon"O gvkap "Gurko ovkap "kp"""66 J 0486'F guki p'hqt'O qdkrg'F gxlegu L'gqpi "J qqp"Mko "cpf "Lwp"Tko "Ej qk"*M{ wpi r qqn" Pcvkqpcn'Wpkxgtukv{.'Mqtgc+ O r 3E/5" 36-58¢36 $\sqrt[3]{6}$ "Rqy gt/T c vg/F kuvqt vkqp"O qf grkpi "hqt"Gpgti {""""6: O kpko k| cvkqp"qh"Rqt vcdng"Xkf gq"Gpeqf kpi " F gxlegu Icgo qqp"Mo "*Uco uwpi "Grgevtqpkeu"Eq0"Nvf0"Mqtgc+" Lwpi uqq"Mlo ."I ky qp"Mlo ."cpf "Ej qpi /O kp"M{ qwpi " *Mqtgc"Cfxcpegf "Kpurkwwg"qh"Uekgpeg"cpf "Vgej pqrqi {." Mqtgc+ Or3E/6" 36∕26¢37⁄34" Rtgf levlqp"Oqf g"Tgqtf gtlpi "cpf "IkF EV"F ltgevlqp"""74 Eqpvtqriliqt 'Hcuv'Kovtc': : 'Rtgf kevkqp "Vcg"Uvpi "Mo."Ej cg"Gvp"Tj gg."cpf "J { wm/Lcg'Ngg" *Ugqwrl" Pcvkqpcn'Wpkxgtukv{.'Mqtgc+ Or3E/7" 37-34¢37-52" Ghhkekgpv"Tcvg/Fkuvqtvkqp"Qrvkokqgf"Oqfg"""78 Ugngevkqp"qh"J 04861CXE"Kovtc"Eqfkpi O qj co o gf "I qrco "Ucty gt"cpf "S OO OIqpcy cp"Y w"

*Wpkxgtukv{ ''qh''Y kpf uqt.'Ecpcf c+

Uguulqp"Vkxrg" "|Or3F_'Godgffgf"Korrgogpvcvkqpu'cpf'Cfcrvcvkqp'kp" Y ktgrguu'Eqo o wpkecvkqp'U{uvgo u Uguukqp'Ejckt" Ft"Mgppgij "Lgpmkpu"*Rgppu{nxcpkc"Ucvg"Wpkxgtukx{."Wpkxgf" Ucveu+ Cwi wuv!: .'4233'*O qpf c{+ Fcvg" 36<22¢37<52 Vko g" Tggo 'F'*47; + Or3F/3" 36-22¢36-3: "Gs wenk| cvkqp"qh"Pqp/Nkpget"Ej cppgnu"Wukpi "c"""82 Xqngttc/Dcugf 'P qp/Nkpgct'Cf cr vkxg'Hkngt "Vqnwpdq"Qi wphwpo k"cpf "Vqff"Ftwnkpi gt"*Ucpvc"Enctc" Wpksgtukv{."Wpksgf"Ucvgu+ Or3F/4" 363: ¢3658" Vj g"Ghhgev'qh"J RC "P qp/Nkpgct kv{ "qp"vj g"""86 Tgr gcvgt "Uki pcrl'y kj "Hggf dcem'cpf "Eqo dkpgf" Eqo r gpucykqp O kp"Mko."Ej cpi uqq"Gwp"*Ej wpi pco "P cvkqpcn" Wpkxgtukv{."Mqtgc+"cpf "Vqmwpdq"Qi wphwpo k"*Ucpvc" Encte 'Wpkxgtukv{.'Wpkxgf'Uvcvgu+ Or3F/5" 36-58¢36-76" Eqorngz "Cfcrvkxg" Pqvej "Hkngt" hqt "Fgygevkqp" qhl"""8: Tgcrl'Ukpwuqkf Uj qvctq"P kuj ko wtc"*Uj ko cpg"Wpkxgtukv{."Icr cp+:"Cm{u" O xwo c"*Wpkxgtukv{ "qh'F qf qo c."Vcp| cpkc+"cpf "Vcmcq" $\label{eq:conditional} J \ \text{lpco} \ qvq'*J \ \text{ltquj lo c'Wplxgtulx}\{.'Icr\,cp+$ Or3F/6" 36\gamma6\cappa37\langle4" Nqy "Eqorngzkv{"Cfcrvcvkqp"hqt"Ejcppgn"""94 Uj qtvgpkpi 'Gs werkt gtu Cxkpcuj "O qj cp"cpf "MOXOU'J ctk"*Kpf kcp"Kpurkswg"qh" Uelgpeg.'Kpf kc+ Or3F/7" 37-34¢37-52" C"4F "KKT" Ur cvkcnn{/Dcpfrcuu" Cpvgppc"""98 Dgco hqto gt"qp"c"87"po "Cej tqpkz"URF 82" Cu{pej tqpqwu'HRI C Tko guj "O O'Lquj k"Ctlwpc"O cf cpc { cng"*Wpkxgtukv{ "qh" Cmtqp. "Wpksgf "Uvcvgu+: "cpf "Ngp" VO'Dt wqp" Wpksgtukv ["qh" Ecri ct {.'Ecpcf c+ Tqqo 'G'\\$594+ Uguukqp"Vkng"]Or3G_"Tgeqphki wtcdng'Ctej kgewtg Uguulqp'Ej clt" Ft'I lf gj ctw'Co cpq'*Mglq'Wplxgtulx{.'Lcrcp+ Cwi wuv!: ."4233"*O qpf c{+ Fcvg" 36<22¢37<52 Vko g" Or3G/3" 36-22¢36-3: "Go gti kpi 'P qp/Xqncxkng'O go qt {"Vgej pqnqi kgu'hqt""": 2 Tgeqphki wtcdrg'Ctej kgewtgu 'Grckpg''Qw'cpf 'Rj ktkr ''Ngqpi "*Vj g''Wpkxgtukv{ ''qh''U{ f pg{." Cwint crkc+ Or3G/4" 363: ¢3658" Vgej pks wgu"hqt"Ko rtqxkpi "Eqctug/I tckpgf""": 6 Tgeqphi wtcdrg'Ctej kgewtgu M wugwpi "J cp. "Ugqpi ukni'Rctm"Mk qwpi "Ej qk'*Ugqwri Pcvkqpcn'Wpkxgtukv{."Mqtgc+:"Iqpi "M{ wpi "Rcgm'**UCR" Mqtgc+"cpf "Iqpi gwp"Ngg"*Wncp"P cwqpcn"Kpurkwwg"qh" Uelgpeg'cpf 'Vgej pqnqi {.'Mqtgc+ O r 3G/5" 36:58¢36<76"Vko g"cpf "Ur ceg/O wmkr ngzgf "Eqo r knc vkqp""": : Ej cmgpi g"hqt"F { pco kecm{ "Tgeqphki wtcdng" Rtgeguugtu "Vcnrq" Vqk" Vqtw" Cy cuj lo c"*Tgpgucu' Grgevtqpleu "Eqtr 0" Ler cp+."O cucvq"O qvqo wtc"*J qmmckf q"Wpkxgtukv{." Lcr cp+."cpf "J kf gj ctw'Co cpq" Mgkq' Wpkxgtukv{."Lcr cp+ O r 3G/6" $36 \stackrel{?}{\sim} 6 \stackrel{?}{\sim} 37 \stackrel{?}{\sim} 4$ " P qxgrlF {pco le 'O qf wrg'O wrwt rg'T gf wpf cpe { 'hqt'''''}; 4 Or vlecm{ "Tgeqphki wtcdng"I cvg"Cttc{u Okpqtw"Y cvcpcdg" W k wqnc Wpkxg tuky . 'Icr cp+ Or3G/7" 37-34¢37-52" Rgthqto cpeg"Eqorctkuqp"qh'4F"cpf "5F"HRI Cu"""; 8 Wukpi "Vtwg/5F 'ECF "Vqqn

P cqvq"O k(co qvq"*Vqj qnwWpkxgtukv{ ."Icr cp+"J cpr gk' Mqkng"*Cf xcpegf "Kpf wntkn"Uekgpeg"cpf "Vgej pqrqi { ." Lcr cp+."[qj gk'O cvuwo qvq"*Vqm{ q"Wpkxgtukv{ "qh" Octkpg"Uekgpeg"cpf "Vgej pqmi {."Icr cp+:"Vcf c { wnk" O cvuwo wtc. 'Mgplej k'Qucf c.'[cqnq'P cnci cy c.'Mgkuwng" Vq{coc"*Cuuqekcvkqp"qh"Uwrgt/Cfxcpegf"Uekgpeg" cpf "Vgej pqrqi {."Icr cp+"cpf "Vcf cj ktq"Qj o k"*Vqj qrw" Wpkxgtukv{.'Lcrcp+

Uguulqp"Vkxrg" JOr3H_'Hrgswgpe{ 'I gpgtcxlqp'cpf 'U{pyj gului//'K Uguulqp'Ej ckt" F t'Y qqi gwp'Tj gg'*Vulpi j wc'Wplxgtulx{.'Ej lpc+ Cwi wuv!: ."4233"*O qpf c{+ Fcvg" 36<22¢37<52 Vko g" O r 3H/3" 36-22¢36-3: "Qr gp"Nqqr "O qf wxxlqp"Vgej pls wgu"hqt "Y kf g""""322 Dcpf y kf yj 'F ki kxcn'Htgs wgpe{ 'U{pyj guku Pkkp"Pkfjk":*Wpkxgtukv{"qh"Ecrkhqtpkc."Nqu"Cpi grgu." Wpkgf "Uvcvgu+: "Rkp/Gp"Uvl"*Dtqcf eqo "Eqtr 0"Wpkgf" Ucvgu+"cpf "Uwf j cnct"Rco ctvk"*Wpkxgtukv{ "qh'Ecnkhqtplc." Nqu'Cpi grgu.'Wpkgf 'Ucvgu+ Or3H/4" 363: ¢3658" F guki p"Vgej pks wgu'hqt"Whxtc"Nqy /Rqy gt"Rj cug/"""326 Naemof 'Naar u F qpi o lp"Rctm"cpf "Ugqpi J y cp"Ej q"*Mqtgc"Cf xcpegf" $\hbox{\tt Kpurkwwg'qh'Uelgpeg'cpf''Vgej\ pqrqi\ \{.'Mqtgc+$ Or3H/5" 36-58¢36 ₹6"O wnk/Ucpf ctf "EOQU'Htgs wgpe{"U{pyj gult gtu'''''32: hqt'Eqi pkkxg'Tcf kqu Mgplej k'Qncf c'*Vqm(q'Koukwyg'qh'Vgej pqmi {.'Icr cp+ Or3H/6" 36₹6¢37\$4" Cp"HFE/Dougf "Cwq/Eorldtokqp"Vgej pls wg"hqt"""334 'Htcevkqpcn/P'RNN Lcgy qqm'Uj kp"cpf "J { wpej qn'Uj kp"*My cpi y qqp" Wpkxgtukv{.'Mqtgc+ Or3H/7" 37-34¢37-52" Vgej pqnqi {/Htlgpf n| 'Rj cug/Nqengf 'Nqqr u''''338 P k"Z w."\ j qw"\ j cpi "*Vukpi j wc"Wpkxgtukv{."Ej kpc+." [wcphgpi "Uwp" Cpcnqi "F gxlegu. "Kpe0" Ej kpc+. "Y qqi gwp" Tj gg."cpf "\ j kj wc"Y cpi "*Vukpi j wc"Wpkxgtukv{."Ej kpc+ Tqqo 'I '\427+ Uguukqp'Vkrg"]Or3I _'Ctkij o gvke'Ektevksu Uguukqp'Ej ckt" F t'O cj gt"Itkf k'*Kpurkswv"Uwr 2 tkgwt"f g'npGrgevtqpks wg"gv"f w' P wo 2 tls wg'f g'Dtguv'Htcpeg+ Cwi wuv!: ."4233"*O qpf c{+ Fcvg" Vko g'' 36<22¢37<52 O r 3I /3" 36-22¢36-3: "C"O wnk/Hwperkqpcn'F qv'Rtqf wev'Wpkv'y kj "UKO F """342 Ctej kgewtg'hqt'Go dgf f gf '5F 'I tcr j keu'Gpi kpgu "kuqpi "Ej cpi ."Ik gpi "Y gk"Y gk"I wq. "cpf "Ik j qw"Uwp" *Vkcplkp'Wpkxgtukv{.'Ej kpc+ Or3I /4" 363: ¢3658" Cp"Ctej kgewtg"hqt"c"9"z"9/Dk/O wnkr ng/Tcf kz"""346 O wnkr rkgt 'Dwkrf kpi 'Drqem CO'Gf ktkwtk{c."CO'O cf cpc{cng"*Wpkxgtukv{"qh'Cntqp." Wpkgf "Uvcvgu+: "IO'Cf knctk" *Wpkxgtukv{ "qh"Y cvgtmqq." Ecpcf c+"cpf"X0'U0'F lo ktqx"*Wpkxgtukv{"qh"Ecn ct {." Ecpcf c+ O r 3I /5" 36<36<36"T gxgtukdrg"Cf f gt IUwdvtcevqt "y kij "Qxgthrqy """34: F gygevqt "Uc { ggf c"Uwrxcpc"cpf "Mcvct | { pc"Tcf genc"*O eI km" Wpkxgtukv{.'Ecpcf c+ Or 3I /6" 364663784" Retempt Vtcpur qug'qh Ocvtkz Ownkr nlecvkqp Deugf """"354 qp''yi g''Vknkpi 'Cni qtkyi o u 'O kpy qq''Mko "*[qpugk''Wpkxgtukv{."Mqtgc+:"[qpi "IOILcpi " *Uco uwpi "Grgevtqpleu"Eq0"Nvf0"Mqtgc+"cpf "Y qp"Y 0Tq" *[qpugk'Wpkxgtukv{.'Mqtgc+ Or3I /7" 37-\$4¢37-\$2" Hcuv"Eqpuvcpv"Y gki j v"Eqf gy qtf "vq" Kpf gz"""357 Eqpxgtvgt IOVODwrgt"™P cxcriRquvi tcf wcvg"Uej qqn"Wpkgf "Uvcvgu+"

cpf "VOUcucq" M{ wuj w'Koukwyg'qh'Vgej pqnqi {.'Lcr cp+

Uguulqp"Vkng" "JOr3J_"Godgffgf"Vwvqtkcn"Qr/Coru."Xqnvcig"

Tgi wrcvqtu'cpf 'Hrgs wgpe { 'Eqo r gpucvkqp

Uguukqp"Ej ckt" Ft "Rcwn"Hwt yj "*P gy "O gz keq"Uvcvg"Wpkxgtukv{."Wpkxgf"

Ucvgu+

Fcvg" Cwi wuv!: .'4233'*O qpf c{+

Vko g" 36-22¢37-52

Or 3J /3" 36-22¢36-3: "Rqrg/\ gtq"Cpcn{uku'qh'O wnk/Uci g"Co r nhhgtu-\"C"""35;

VwqtkcrlQxgtxkgy

" Rwpkj "T0Uwtnepuk"Cppclktcq"I ctko gmc."cpf "Rewrl'O 0"

Hwt yi "P gy 'O gzkeq'Uvcvg'Wpkxgtukv{.'Wpkxgf 'Uvcvgu+

Or3J /4" 363: ¢3658" U{uvgo cvke"F guki p"qh"Vj tgg/Uvci g"Qr/Co ru"""365

Wukpi 'Urrky/Ngpi vj 'Eqorgpucvkqp

" Xkij ch'Uczgpc."Ucmreter cpk'Derei qr cn''epf "T0'Leqd"

Dengt "Dqlug"Uvcvg"Wplxgtulx{."Wplxgf"Uvcvgu+

O r 3J /5" 36 \checkmark 58 \checkmark 36 \checkmark 6" Htgs wgpe{"Eqo r gpuc kqp" Vgej pks wgu''hqt "Qr /"""369

Coru'cpf 'NF Ouk'C''VwqtlcriOxgtxlgy

" Cppclktcq"I ctko gmc."cpf "Rcwn'O 0'Hwt vj "*P gy "O gz keq"

Ucvg"Wpkxgtukv{."Wpkxgf"Ucvgu+

Tqqo 'C'*D328+

Ugunkqp"Vksrg" j"Or4C_"Cpcrqi "cpf"Okzgf"Uki pcn"Eqoowpkecvkqp" Ektevkvst/"KK

Uguulqp'Ej ckt" Ft'Uco 'Rengto q'*Vgzeu'C(O'Wpkxgtuk\{.'Wpkxgf'Ucvgu+

Fevg" Cwi w.v.': .'4233'*O qpf c{+

Vko g" 37-67¢39-37

Or4C/3" 37-67¢38-25"C"Nqy/Uy kpi "CE/"cpf "FE/"Eqwr ngf "Xqnxci g/""373

Oqfg'Ftkxgt'ykyj'Rtg/Gorjcuku

" "Gwp'/Lk'Ej qk "Ugqm'Mko."[qwpi /M{ wp''Lgqpi."Mgg/ Y qp''My qp."cpf "Lwpi /J qqp''Ej wp''*Uwpi m{ wpmy cp''

Wpkxgtukv{.'Mqtgc+

 $O\,r\,4C/4"\,38 \not\sim 25 \not e 38 \not\sim 43"C"F\,E/Qhhug v'Ecpegmc vkqp"Ektewkv''hqt"RI\ C"kp"''''377$

Deugdepf 'Eqo o wpleevkqp

" " I wcp| j qpi "J wcpi ."[kpi lkg"Y w."Ej cqrk"\ j qpi ."cpf"

Rkpi hgp'Nkp'*Dgklkpi 'Wpkxgtukv(''qh'Vgej pqnqi {.'Ej kpc+

Or 4C/5" 3843¢385; "C"Hiceskqpcn" "Rj cug/vq/F ki kxnl'Eqpxgt vgt "hqt"""37;

F ki kkt kpi 'c'Rj cug/Nqengf 'Nqqr

" "Uj whgpi "\ j gpi ."Lwj c"Mquvco qxcctc"*Wpkxgtukv{ "qh" Qwnw."Hkpncpf +:"P qto "Hknlqn"cpf "Vj qo cu'Tkng{ "*Mcdgp"

Y kt grguu'Uktkeqp'Kpe0'Ecpcf c+

O r 4C/6" 38-5; ¢38-79" C"60 Y "5/Vcr "32" I d lu"F gekukqp "Hggf dcem" "385

Gs work gt

" Rgf tco "Rc{cpf gj pkc."Cnc| co "Cddcuhct."Uco cf"

Uj gknj cgk "Dgj lev"Hqtw| cpf gj ."Mco dk| "P cpdcmj uj "
*Wpkxgtukv{ "qhlVgj tcp."Kcp+"cpf "Co k"Gi j derk**Wpkxgtukv{ "

qh'Nlpn³⁄ar lpi .'Uy gf gp+

Or 4C/7" 38493937" C"P qxgrl'Htcevkqpcn/P "RNN"Dcugf "qp"c"Uko r rg"""389

Tghgtgpeg'O wnkr nkgt

" Zkq"Rw*Vgzcu'Kpurtwo gpw'Kpe0'Wpksgf 'Ucvgu+:'Iceqd'

Cdtcj co "*Wpksgtuk/"qh"Vgzcu."Wpksgf "Uvcygu+"Czgf" Vj qo ugp"*Ukrleqp"Ncdqtcvqtkgu"Kpe.."Wpksgf "Uvcygu+" cpf "Mtkuj pcucy co {"P ci ctcl"*Vgzcu'Kputwo gpw'Kpe0"

Wpkgf 'Ucvgu+

```
Uguulqp"Vkrg" ||Or4D_"Kpvgi tcvgf "Ugpuqtu"cpf "Tghgtgpegu"/"KK
   Uguulqp"Ej clt" Ft 'Rqnk'Ej gp"*P cvlqpcn'Vcly cp"Wpkxgtulx{ "qh'Uelgpeg"cpf "
                    Vgej pqnqi {."Vcky cp+
                   Cwi wuv!: ."4233"*O qpf c{+
   Fcvg"
                   37-67¢39-37
   Vko g"
   Or 4D/3" 37-67¢38-25"O wnk/Vj tguj qrf "Vtcpukuvqtu'Egnrlhqt'Nqy "Xqnxci g"""393
                              Vgo r gtcwtg'Ugpukpi 'Crrnkecvkqpu
                              Uj gpi /J wcpi 'Ngg.'Ej gp'\ j cq.'[ gp/Vkpi "Y cpi .'F gi cpi "
                              Ej gp. "cpf "Tcpf cm'I gki gt"*Kqy c"Uvcvg"Wpkxgtukv{."
                              Wpkgf 'Ucvgu+
  Or4D/4" 3825¢3843"O kpko wo "F gygevcdrg"Ecr cekscpeg"kp"Ecr cekskxg"""397
                              Tgcf qw/Ektevku
                              P clo g"Gdtcj ko k"Ugtclk"cpf "O qj co o cf "[ cxctk"
                              *Co ktnrcdkt'Wpkxgtukv{'qh'Vgej pqmi {.'Kcp+
   Or 4D/5" 3843¢385; "C"32708f D"F T"cpf "87f D"Rgcn"UP T"Ugth/T gugv"""39;
                              EO QU'Ko ci g''Ugpuqt''Wukpi "c''Uej o kw''Vtki i gt''
                              Ucpvquj 'Mqrrc'*Vj g'Wpkxgtukv{ ''qh'Vgzc''cv'Ucp'Cpvqpkq."
                              Wpksgf "Uvcvgu+: "Fqpiyqp"Rctm"*NI "Fkurnc{."Mqtgc+:"
                              [ qwpi lqqpi "Lqq"*Vj g"Wpkxgtukv{ "qh"Vgzc"cv'Ucp"
                              Cpvqpkq."Wpkygf "Uvcvgu+:"cpf "Uvpi { qpi "Lvpi "*Vj g"
                              Wpksgtukv{ "qh"Vgzcu"cv'Ctrkpi vqp."Wpksgf "Uvcvgu+
   Or 4D/6" 38-5; ¢38-79" C"Uy kej gf/Ecr cekqt" Fkhlgtgpskcn/Ecr cekcpeg/""3: 5
                              vq/Vko g'Eqpxgtvgt'hqt'Ecrcekkxg'Ugpuqtu
                              Ucvqo k'Qi cy c'*Wpkxgtukv{ 'qh'[ co cpcuj k'Icr cp+
   Or 4D/7" 38 49 39 37" P qprkpgct "Ewttgpv'Okttqtu'hqt "Cpcrqi "cpf "Okzgf"""3: 9
                              Uki pcn/Rtqeguukpi
                              Ej wp{cp"Y cpi "*Eqpeqtf kc"Wpkxgtukv{. 'Ecpcf c+
                                                               Tqqo 'E'*395+
Uguulqp"Vkrg" ]Or4E_'Heeg'cpf 'Hkpi gtrtkpv'Tgeqpi pkkqp
Uguulqp'Ej ckt" F t'J {wn/Icg'Ngg'\"UgqwrlP cvlqpcr\Wpkxgtuk\{.'Mqtgc+
                Cwi wuv!: ."4233"%O qpf c{+
Fcvg"
Vko g"
                37-67¢39-37
O r 4E/3" 37-67¢38-25"Xkt wcrl'Uqt { vgngt "Wukpi "O ctngt "Deugf "CT"cpf """3; 3
                           HRI C
                           J { wpi "O kp"Mko ."Vcg"J qwp"Uqpi ."Uqqp"O qqntLwpi ."
                           Mg{"Jq"Myqp."cpf 'Lcg"Yqqm'Lgqp"*Uwpi m(wpmycp"
                           Wpkxgtukv{.'Mqtgc+
Or4E/4" 38-25¢38-43"I' gpgtcvkpi "Tgxqecdng"Hkpi gtrtkpv"Vgorncvg"""3; 7
                           Wukpi "Rqrct" I tkf "dcugf "5/Vwr rg" S wcp kk cykqp"
                           Vgej pls wg
                           " j g"Llp."Vj kcp"Uqpi "Qpi ."Eqppkg"Vgg"*O wnko gf kc"
                           Wpkxgtukv{."O cnc{ukc+:"Cpftgy "Dgpi "Ikp"Vgqj "*{ qpugk"
                           Wpkxgtukv{.'Mqtgc+
Or4E/5" 3843¢385; "C"P qxgrl'Ctej kgewtg"hqt"Nqy "Dcpf y kf yj "cpf"""3; ;
                          J ki j "Wkrkt cykap"kp"Hoeg"F gygevkap"y kyj "J cot/rkmg"
                           Hgcwtgu
                           "Ikp/Uwpi "Mko "*Uwpo qqp"Wpkxgtukv{."Mqtgc+"cpf "J {qLwp"
                           Ngg'*UgqwrlPcvkqpcrlWpkxgtukv{.'Mqtgc+
Or4E/6"38-5; $\phi 38=79"C"S wcpulq gf 1Vt wpecvgf "Vtcpulqto "F qo clp"""425
                           Vgej pls vg'*S VF +'hqt'Hcuv'Hcelcn'T geqi plskqp
                           "Y crggf "Crtcuj ggf "cpf "Y cuh{ "D0'O knj cgrl" *Wpkxgtukv{"
                           qhi Egpvtcni H qt k f c.' W pksg f' Uvcvgu +
O r 4E/7" 38\stackrel{7}{\sim}9639\stackrel{7}{\sim}7" P gy "J cpf "I guwtg"T geqi pkkqp"O gyj qf "hqt"""428
                           O qwug'Qr gtcvkqpu
                           'Gj ucp"wrl'J cs."U{gf "Icj cp| gd"J wuuckp"Rkt| cf c."O kt | c"
```

Ycsct"Dcki."cpf"J{wpejwn"Ujkp"*Jcp{cpi"Wpkxgtukv{."

Mqtgc+

Uguulqp"Vkng"]Or4F_'Crrnlecvlqp'Urgelthe'FUR'Ctej kgewtgu'/'K Uguulqp'Ej ckt" F t'I kcp'Ectrq'Ectf ctkrrk" *Wpkxgtukv{ ''qh'Tqo g''Vqt''Xgti cwc.'Kıcn(+ Cwi wuv!: ."4233"*O qpf c{+ Fcyg" 37-67¢39-37 Vko g" O r 4F/3" 37-67¢38-25" Kppgt "Rt qf we vu" Eqo r weckqp "Wukpi "Hqnf gf """"432 Y cxglato u'cpf 'F kırtkılwgf 'Ctkıj o gvle'Rtkpek rgu F we/O kpj "Rj co ."C0D0'Rtgo mvo ct."cpf "C0'U0'O cf j w' Mwo ct"*Pcp{cpi "Vgej pqmi lecnWplxgtulx/."Ulpi crqtg+ Or4F/4" 38-25¢38-43" "/F ktgev'Hqto "Vtcpur qugf "cpf 'T gulf wg"P wo dgt"""436 U{uvgo u'hqt'Hknygt'Korngo gpvcvkqpu IgcpaErcwf g"Dclctf."Ncwtgp√U√r j cpg"F kf gt."cpf" Vj kdcwn/'J krcktg"*Wpkxgtukv2 "Rkgttg"gv"Octkg"Ewtkg." Htcpeg+ O r 4F /5" 38-43¢38-5; " Qp"Wukpi "yj g"Nqi ctkij o ke"P wo dgt"U{ uvgo "hqt"""43: Hlokg"Y qtf rgpi yj "O cvtkz"Koxgtukqp "Ectn' Kpi go ctuuqp" cpf "Quect" I wuxchuuqp" *Nkpn 3/4 kpi " Wpkxgtukv{.'Uy gf gp+ O r 4F / 6" 38-5; ¢38 $\sqrt{2}$ 9" F gi tcf kpi "Rtgekuk
qp" Ctksj o gskeu 'hqt "Nqy / r qy gt """ 444 HKT'Korngo gpycykgp Rkgvtq"Cndkeqeeq."I kcp"Ectnq"Ectf ctknk"*Wpkxgtukv{ "qh" Tqo g'Vqt'Xgti cvc.'Kcn(+:'Cntlgtvq'Pco o ctgnk'*Vgej plecn' Wpkxgtukv{ "qh'F gpo ctm'F gpo ctm+."O cuulo q"Rgntleec" *Wpkxgtukv{ "qh'Tqo g"Vqt"Xgti cvc. "Kicn{ +"cpf "O cteq'Tg" *Wpkxgtukv{ ''qh'Tqo g''Vqt''Xgti cvc.''Kcn{ + O r 4F/7" 38 $\sqrt{39}$ 37" Tcpf qo "P wo dgt" I gpgtc
lqp" Dcugf "qp" F ki kxc
n''''448 FkhgtgpvkchEj cqu O O'Chhep"\ kf cp."CO'I O'T cf y cp."cpf "MO'P O'Ucreo c" *Mkpi "Cdf wncj "Wpkxgtukv{"qh"Uekgpeg"cpf "Vgej pqnqi {." Mlpifqo 'qh'Ucwfk'Ctcdkc+ Tqqo 'G'*594+ Uguukqp"Vkrg"]Or4G_'Nqi ke'Ektevku'cpf'HRI Cu Uguulqp'Ej ckt" Ft'Mk{qwpi 'Ej qk%UgqwrlPcvkqpcrlWpkxgtulx{.'Mqtgc+ Fcyg" Cwi wuv!: ."4233"*O qpf c{+ 37-67¢39-37 Vko g" Or 4G/3" 37-67¢38-25"C"Ugrgevkxg"T gr rcego gpv"O gvj qf "hqt"Vko kpi /"""452 Gttqt/Rtgfkevkpi 'Hrkr/Hrqru " wlk'Mwpkcng"*M{ wuj w'Wpkxgtukv{."Lcrcp+."Vquj kpqtk' Ucvq"*Hwmvqmc"Wpkxgtukv{."Lcrcp+:"Jktqvq"[cuwwtc" *M{ wij w'Wpkxgtukv{."Icr cp+"cpf "Venepqtk'J c{ cuj kf c" *Hwnwqnc'Wpkxgtukv{.'Lcrcp+ Or4G/4" 38-25¢38-43" I' gpgtc·kpi "Eqorcev" Cuugt·kqpu "hqt "Eqpvtqn'" "456 Dougf 'Ngi ke'Uki ponu "Lcuqp" I O'Vqpi ."Fcpp{"Uctth"*OeI km'Wpkxgtukv{." Ecpcfc+: 'Octe' Downg' eqng'fg' Vgejpqnqikg' Uwr²tkgwtg." Ecfcpc+"cpf"\ grlnq"\ kde"*O eI kn'Wpkxgtukv{."Ecpcfc+ Or4G/5" 38436385; "Ytcrrgt"F guki p"qh'Go dgffgf "Eqtgu'hqt"Vj tgg"""45: F ko gpukqpcn"U{ uvgo /qp/Ej kr u"*UqE+"wukpi " Cxckrcdre''VUXu "Uwtclk/'Mwo ct"Tq{."Ej cpf cp"I ktk"Uqwtcx"I j quj ."cpf" J chk wt "Tcj co cp"*Dgpi cn'Gpi kpggtkpi "("Uekgpeg" Wpkxgtukv{.'Kpfkc+ Or4G/6" 385; ¢3879"Cp"Cu{pej tqpqwu"Cttc{"Ctej kgewtg"lqt"38z3""""464 FEV/61FUV/6"qp"c"87po "Cej tqpkz"URF82" Ctlwpc"O cf cpc { cng. "F cng"O wi ngt. "cpf "P krcpnc" Teler emij e'*Wpksgtukv{ ''qh'Cntqp. 'Wpksg'Uvevgu+ Or 4G/7" 38479439-37" C"Rgthqto cpeg/Rqy gt"Gxcnvcvlqp"qh"HlpHGV"Hlkr/"""468

Har u'wof gt 'Rtaeguu'Xctkckapu

Rjkrkr"O0'Owpuqp"cpf"Lqu2"I0'Fgnicfq/Htkcu" *Ycujkpivqp"Uvcvg"Wpkxgtukv{."Wpksgf"Uvcvgu+

Uguulqp"Vkng"]Or4H_'Htgswgpe{"I gpgtcvkqp"cpf"U{pyj gulxi"/"KK Uguulap'Ej ckt" F t'Mgplej k'Qnrcf c"*Vqn(q"Kpurkwyg"qh"Vgej pqnqi {.'Icr cp+ Fcyg" Cwi wuv!: ."4233" *O qpf c{+ Vko g'' 37-67¢39-37 Or4H3" 37-67¢38-25"C"; @"o Y "2055"Ùo "EO QU"RNN"hqt"Wug"kp""""472 Y ktgrguu'Ugpuqt'P qf gu O grcpkg"Lwpi ."Crdcp"Hgtk k"Vj qo cu"Wuuo wgngt." I gqti "Hkuej gt."cpf "Tqdgtv"Y gki grl™Htkgftkej /Crgzcpfgt" Wpkxgtukv{ 'Gtrcpi gp/P wgtpdgti .'I gto cp{+ Or4H4" 38-25¢38-43" C"67po "UQKEO QURNN'y ký "c"Y kf gdcpf "NE/XEQ"""476 Mwp/Ugqm"Ngg."Uwpi j q"Dgem"J co j gg"Lgqp." [qwpi ej cpi "[qqp."Lcgj {qwn'Ej qk"Ej cpi /J q"Ngg."cpf " IO'Uvgxgpuqp"Mgpp{"*I gqtilc"Kpurkwwg"qh"Vgejpqnqi{." Wpkgf 'Ucvgu+ O r 4H/5" 38-43¢38-5; "C"3/X"EO QU"87po "Htgs wgpe{ "U{ pvj gul\(extra gt = \frac{1}{2} \) g F guki p'y kij 'Rtqi tco o cdrg'Ces wkukkqp'Ur ggf "Ugp/Y gp'J ukcq"cpf 'F cxkf 'C0'[gj "*I gqti kc"Kpurkwwg"qh" Vgej pqrqi {."Wpkgf"Ucvgu+ O r 4H/6" 38-5; ¢38-79" Qr vlo kļ kpi "Rj cug" P q
kug"qh''4" I J | "TH'Quekmevqt"""484 y ky 'O kpko wo 'Htgs wgpe{ 'F gxkc kqp "Ick"P ctc{cp"Vtkr cvj k"Ic{cpvc'O wnj gtlgg."cpf "Rtcmcuj" TO'Cr vg'\f\text\'Dqo dc \.'\f\of kc+ Or4H7" 3849¢3947" C"404I J | "J ki j /Uy kpi "Encun/E"XEQ"y kij "Y kf g"""488 Vwpkpi 'Tcpi g "Hcvgo gj "Cvcgk"cpf "O qj co o cf "[cxctk"*Co ktmcdkt"

Wpkxgtukv{ ''qh''Vgej pqnqi {.'Kcp+

```
Tqqo 'I '*427+
Uguukqp"Vkng" ]Or4I _'Fki kxcrlCtej kgewtgu'cpf'U{uvgo u
Uguukqp'Ej ckt" Ft'O cj gt'Itkf k'*Kpurkswv'Uwr2tkgwt'fg'npGrgevtqpks wg'gv'fw'
                 P wo 2 tls wg'f g'Dtguv.'Htcpeg+
Fcg"
                Cwi wuv!: ."4233"*O qpf c{+
                37-67e39-37
Vko g"
Or4I /3" 37-67¢38-25"J' ctf y ctg'Ko r rgo gpvc\kqp"qh'Eqp\gzv'Uy kej kpi """"492
                           hqt'J ctf 'Tgcn/Vko g'Qr gtcvkpi 'U{uvgo u
                           Pcfgt"KOTchrc"*Dqkug"Uvcvg"Wpkxgtukv{."Wpkxgf"Uvcvgu+"
                           cpf 'F ggr cm' cwdc'*Dtqcf eqo 'Eqtr 0'Wpkgf 'Uvcvgu+
Or 4I /4" 38-25¢38-43" Kor ngo gpvcvkqp"qh" Wpkhkgf "Uki pcvxt gu"hqt"""496
                           VtcpucevkqpcrlO go qt { 'U{ uvgo u
                           Y qqlkp"Ej qk"cpf "Ighh"Ftcr gt"*Wpkxgtukv{ "qh"Uqwj gtp"
                           Ecrlhqtplc."Wplxgf 'trvcvgu+
O r 4I /5" 38-43¢38-5; " Us wgg| kpi "O czko k| kpi "Rgthqto cpeg"qwi'qhi'5F "****49:
                           Ecej g/Ucengf 'O wnkegtg'Ctej kgewtgu
                           Cuko "Mj cp."M{ wpi uw'Mcpi ."cpf "Ej qpi /O kp"M{ wpi "
                           \label{eq:continuous} $$ Mqtgc"Cfxcpegf" Fourkwag"qh" Uelgpeg"cpf" Vgej pqmi {."} 
                           Mqtgc+
Or4I /6"38-5; ¢38-79" Gpgti {"O kpko k| cvkqp"qh"5F "Ecej g/Uvcengf"""4: 4
                           Rtqeguuqt"Dcugf "qp"Vj kp/Hkro "Vj gto qgrgevtke"
                           Eqqrgtu
                           "Uqqlwpi "Tj q."M{ wpi uw'Mcpi ."cpf "Ej qpi /o kp"M{ wpi "
                           *Mqtgc"Cf xcpegf "Koukwyg"qh"Uelgpeg"cpf "Vgej pqmi {."
                           Mqtgc+
Or 4I /7" 38 49 $239 $37" Qp"c" Rtghgvej kpi "J gvgtqi gpgqwd" OFF "O cej kpg" "4: 8
                           J ktqnk'P emej etc."Vuwqo w''Ucucq."epf "O wpgj ktq"
```

O cvurwtc'*M{ wij w'Kpurkwyg'qh'Vgej pqrqi {.'Lcr cp+

```
Uguukqp"Vkmg" "Or4J_"Urgekcn"Uguukqp"qp"Eqfkpi "cpf"Gttqt"
                Eqttgevkqp"Vgej pls wgu'hqt"P qp/xqrcvkrg'O go qtkgu
Uguulqp"Ej ckt" Ft"Y qp{qpi "Uwpi "*UgqwdP cvlqpcdWplxgtulx\{. 'Mqtgc+
               Cwi wuv!: ."4233"*O qpf c{+
Fcvg"
                37-67¢39-37
Vko g"
O r 4J /3" 37-67¢38-25" Kp vgt hgt gpeg "E qo r gpuc vkqp "Vgej pks wg "hqt """4; 2
                          OwnskingxgrlHircuj 'Ogoqt{
                          O { gqpi y qqp"Lgqp."M{ wpi ej wrl'Mlo "*Ugqwrl'P cylqpcrl'
                          Wpksgtukv{.'Mqtgc+'Dgqo lw'uj kp*J {pkz'Ugo keqpf wevqtu.''
                          Mqtgc+"cpf "Lwpi y qq"Ngg"*UgqwrlP cvkqpcrl'Wpkxgtukv{."
                          Mqtgc+
Or4J/4" 38-25¢38-43" Ghhlekgpv" Qpg/Rcuu" Ej cug" Uqhv/F gekukqp" DEJ """ 4; 6
                          F geqf gt "hqt"O wn/k/ Ngxgn"E gm"P CP F "Hrcuj "
                          O go qt {
                          Zkpo kcq"\ j cpi ."Ikcpi rk"\ j w"*Ecug"Y guvgtp"Tgugtxg"
                          Wpksgtukv{."Wpksgf"Uvcvgu+"cpf"[ kpi s vcp"Y w'*Nkpm/C/
                          Ogfkc. 'Wpkgf' 'Uvcvgu+
O r 4J /5" 3843¢385; "J' ki j /Vj tqwi j r w!Xctlcdrg/Ngpi vj "T ggf /Uqrqo qp"""4; : "
                          F geqf gt'hqt'J ki j /Tcvg'Y RCP 'Crrnlecvlqpu
                          Wpkxgtukv{.'Mqtgc+
O r 4J /6" 38-5; ¢38-79" Kp/Rci g"O cpci go gpv"qh<br/>l'Gttqt "Eqttgevkqp"
Eqf g"""524
                          hqt'O NE'Hrcuj 'Uvqtci gu
                          "Ucpi j { wm'Lwpi ."Ucpi { qpi "Ngg."J qgugwpi "Lwpi ."cpf "
                          [ qpi 'j q'Uqpi '*J cp{cpi 'Wpkxgtukv{.'Mqtgc+
Or 4J /7" 384963947" C"J ki j /Ur ggf "Nc{gtgf "O kp/Uwo "NF RE"F geqf gt"""528
                          hqt'Gttqt'Eqttgevkqp'qh'PCPF'Hrcuj 'O go qtkgu
                          I'qpi j qpi 'Mo .'Lwpj gg'Ej q.'cpf 'Y qp{qpi 'Uwpi '*Ugqwt'
                          P cykapen Wpkxgtuky {. 'Mqtgc+
                                                           Tqqo 'C'*D328+
Ugudqp"Vkrg" ]Vc3C_'P {s wkrv'Tcvg'Fcvc'Eqpxgtvgtu'/'K
Uguulap'Ej ckt" Ft"Tcpfcmil gki gt"*Kgy c"Uccy"Wplxgtukv{."Wplxgf"Uccyu+
               Cwi wuv'; .'4233'**Vwguf c{+
Fcvg"
Vko g"
                2: 467¢32437
Vc3C/3" 2: 67¢2; ≥5" Qhhugv"Xqnxci g"Cpcn{uku"qh"F {pco ke"Ncvej gf """532
                          Ego retevat
                          J gwpi Lwp"Lgqp." [ qpi/Dkp"Mko "*Pqt vj gcuvgtp"
                          Wpkxgtukv{."Wpkxgf "Uvcvgu+:"cpf "O kpuw'Ej qk'*O kuuqwtk'
                          Wpkxgtukv{ "qhl'Uekgpeg"cpf "Vgej pqnqi { . "Wpkxgf "Uvcvgu+
Vc3C/4" 2; 25¢2; 43" C"Ulpi ng"FCE"EV"Uli o c/F gnc"O qf wrcyt"y ky """"536
                          Dwwgty qtvj 'UVHEj ctcevgtkurke
                          Vko qp"Dt wgempgt "*Wpkx gt ukv{ "qh"Wno ."I gt o cp { +."
                          Ej tkuvqr j "\ qtp."Y qnhi cpi "O cvj ku"*Wpkx gtukv{"
                          qh"J cppqxgt."I gto cp{+."cpf "O cwtku"Qt wo cppu"
                          *Wpkxgtukv{'qh'Wno.'I gtocp{+
\label{lem:condition} $$Vc3C/5"\ 2;\ 43$$\ 2;\ 5;$$"C"Nqy/equv"FFGO"CFE"Uvtwewtg"hqt"vj\ g"""53:
                          Vgukpi 'qh'J ki j /r gthqto cpeg'FCEu
                          "Legy qp"Lepi ."Koej gqrl"Mo ."J {gqpwrl"Uqp."cpf "Uwpi j q"
                          Mcpi "*{ qpugk'Wpkxgtukv{."Mqtgc+
Vc3C/6" 2; 5; ¢2; ₹9" C"P gy "Uvcvke"Vguv'qh"c"F CE"y knj "c"Dvknv/kp"""544
                          Kpej gqrl'Mo."Icgy qp'Icpi."J {gqpwn'Uqp."cpf "Uwpijq"
                          Mcpi "*[ qpugk"Wpkxgtukv{."Mqtgc+
Vc3C/7" 2; 49¢32&7" C"P qxgn": "Dk/"Qr gp"Nqqr "T gukf wg"C o r nkhkgt"""548
                          Dougf "Rkr gnkpg" CFE "wukpi "c" Ukpi ng "Hwnn{"
                          Fkhhgtgpvkcn'Ewttgpv'Eqpxg{qt"cpf "Hqtgi tqwpf"
                          Ecrldtclap
                          J ctkuj "Dereuwdteo epkeo "epf "Mrewu"J qho epp "*VW"
```

Fcto uvcf v.'I gto cp{+

```
Uguulqp"Vkrg" ]Vc3D_'Rqy gt'O cpci go gpv'Ektewku'\" 'KK
Uguulqp'Ej clt" F t'Nkgt'Ukgn'i
                 *P cp{cpi 'Vgej pqnqi kecn'Wpkxgtukx{.'Ukpi cr qtg+
Fcvg"
                Cwi wuv!; .'4233'**Vwguf c{+
Vko g"
                2: 67¢32$7
Vc3D/3" 2: 67¢2; 25" Cpcn(uku"cpf "O qf gmkpi "qh"Dwent'Eqpxgt vgt u"""552
                           Qwr w'Ur gevtwo 'lp'EEO 'y kj 'RY O 'Eqpvtqn
                           Ej gpi y w'Vcq."C{o cp"Hc{gf"*Kqy c"Uvcvg"Wpkxgtukv{."
                           Wpkgf 'Ucvgu+
Vc3D/4" 2; 25¢2; 43" C'P qxgrl4/Vgto kpcrl\ gpgt"Xqnci g'Tghgtgpeg"""556
                           Ej kcpi / Nkcpi "Mqm"cpf "Nkvgt "Ukgm"*P cp { cpi "
                           Vgej pqrqi lecriWpkxgtukv{."Uspi cr qtg+
Vc3D/5" 2; 43¢2; 5; " Ghhelgpe{"Gpj cpego gpv'cpf "GO KUwrrtguulqp"""55:
                           xkc"F {pco kecnn{"Cflwuvcdng"I cvg"Ftkxkpi"
                           "Y ck"Vwpi "Pi"cpf"Cpftgy "Ujqtvgp"*Wpkxgtukv{ "qh"
                           Vqtqpvq.'Ecpcfc+
Vc3D/6" 2; 5; ¢2; ₹9" Cp"Qwr w/Ecr cekqtrguu"Nkpgct"T gi wrcyt"hqt"****564
                           Kovgi tcvgf 'Rqtvcdrg'Rqy gt'Uqnwkqpu
                           "Iceqd"Fc{"cpf"Fqpcrf"[0E0Nkg"*Vgzcu"Vgej"Wpkxgtukv{."
                           Wpkgf 'Uvcvgu+
\label{eq:control_vc3D} $$Vc3D/7"\ 2; \ensuremath{\mathchar} 29c32\ensuremath{\mathchar} 37"$$ Gpgti\ {$"F$ kuukr\ cvkqp"F\ getgcug"F\ wtkpi\ "Cf\ kcdcvke"""568}
                           Ej cti kpi "qh"c"Ecr ceksqt"d{"Ej cpi kpi "yj g"F wx{"
                           "Uj wplk"P cncvc"*P krrqp"Vgrgi tcrj "cpf "Vgrgrj qpg"Eqtr0"
                           Lcr cp+'J ktquj kO cnkpq'\Qucnc'Kpurkswg'qh'Vgej pqrqi {."
                           Lcr cp+."Uj kpøkej ktq"O wqj "*P krrqp"Vgngi tcrj "cpf"
                           Vgngr j qpg"Eqtr 0"Icr cp+."O cuc { wnk'O k{ co c."cpf"
                           [ quj kq'O cuwf c'*Mcpc| cy c'Wpkxgtukv{.'I.cr cp+
                                                                Tqqo 'E'*395+
 Uguukqp"Vkrg" ]Vc3E_'Ko ci g'r tqeguukpi 'Ektewku'cpf 'U{ uvgo u'/'KK
 Uguulqp"Ej ckt" Ft'Ilpuwpi 'Mo "*UgqwfP cvlqpcrfWplxgtulx{.'Mqtgc+
                 Cwi wuy; .'4233'*Vwguf c{+
                 2: 67¢32$7
  Vko g''
 Vc3E/3" 2: 67¢2; 25" 4F 'Ko ci g'Rtqeguukpi 'hqt'Cwq/i wkf kpi 'U{uvgo ''''572
                            Tqdgt \forall Uwu | \{punk''Mt | \{u | vqh''Y cy t \{p."cpf''Tqdgt \forall u | vqh''Y cy t \}\}\}
                            Y ktunk'*Mqu| crkp"Wpkxgtukv{ "qh"Vgej pqnqi { . 'Rqncpf +
 Vc3E/4" 2; 25¢2; 43" F gr yj /Ko ci g/Dcugf "5F "T gpf gtkpi "y ksj "Gf i g"""576"
                            F gr gpf gpvRtgr tqeguukpi
                            J {wp/Y qqpi "Ej q"*Rqj cpi "Wpkxgtukv{ "qh"Uekgpeg"cpf "
                            Vgej pqrqi {."Mqtgc+."Uqqp/Y qqni'Ej wpi "*J { wpf ck'
                            O QDKU."Mqtgc+:"O qqp/M{ w"Uqpi ."cpf "Y qq/Llp"Uqpi "
                            *Rqj cpi "Wpkxgtukv{ "qh"Uekgpeg"cpf "Vgej pqmi { ."Mqtgc+
 Vc3E/5" 2; ∢3¢2; ₺; " Tgcn/vko g"Uo qqvj kpi "Hknvgt"hqt"Vj tgg"****57:
                            F ko gpukqpen"F kur et kv{ "O cr "C ni qt kvj o "cpf"
                            J ctfy ctg'Korngo gpvcvkqp
                            Ľwgpi "j wp"mlo ."Iqpi "J cm"Mlo ."J co "J wp"J q."cpf "Lwp"
                            Fqpi 'Ejq' "Uwpi m{wpmy cp' Wpkxgtukv{. 'Mqtgc+
 Vc3E/6" 2; 5; ¢2; ₹9" O go qt { "ghhkekgpv"j ctf y ctg"f guki p"hqt"c"""584
                            5/ur cvkcnhc{gt'UXE'Gpeqf gt
                            M(wlqqpi "Ngg."Ej cg/Gwp"Tj gg."J { wm/Lcg"Ngg"*Ugqwrl
                            P cvkqpcn"Wpkxgtukv{."Mqtgc+."cpf "Lwpi y qp"Mcpi "
                            *Grgevtqpkeu"cpf "Vgrgeqo o wpkecvkqpu"Tgugctej "
                            Kourkwg. 'Mqtgc+
 Vc3E/7" 2; ₹9¢32∢37" Tqdwuv"Kocig"Jcujkpi"wukpi"Kocig"''''588
                            P qto crk crkqp"cpf "UXF"F geqo r qukkqp
                            Tkectf q"Cpvqkq"Retteq"J gtpcpf g| ."O ctknq"P cncpq"
                            Ok{cvcng"*Pcvkqpcn'Rqn{vgejpke"Kpuvkvg."Ogzkeq+:"
                            cpf "Dt kcp"O 0'Mwt mqunk"*Wpkx gt ukv{ "qh"Gnge vt q/
```

Eqo o wpleckqpu.'Icr cp+

```
Uguulqp"Vkrg" ]Vc3F_'Crrrlecvlqp'Urgelthle'FUR'Ctej kgewtgu'/''KK
   Uguulqp'Ej ckt" Ft'I kcp'Ectnq'Ectfctknk"
                    *Wpkxgtukv{ ''qh'Tqo g''Vqt''Xgti cwc.''Kicn{+
                   Cwi wuv'; .'4233'**Vwguf c{+
  Fcvg"
                   2: 467¢32437
   Vko g"
   Vc3F/3" 2: €7¢2; ≥5" F guki p"cpf "HRI C/Ko r rgo gpvcvkqp"qh"3uv/Qtf gt""592"
                             6F "KKT" Hrgs wgpe{J \{r \ gtr \ rcpct' F \ ki \ kcrl Hangtu}
                              Ctlwpc"O cf cpc { cng. "Tcpf ggn"Y ko cmi wpctcvpg"
                              *Wpkxgtukv{ "qh"Cntqp."Wpkvgf "Uvcvgu+."F qpcnf "I 0"
                              Fcpugtgcw\*Wpkxgtukv{''qh'U{fpg{.'Cwuxtcrlc+''cpf'Ngp''V0'
                              Dtwqp'*Wpkxgtukv{ ''qh'Ecn ct { .''Ecpcf c+
   Vc3F/4" 2; ≥5¢2; ←43" Kpvgmki kdkrkv{ "Gpj cpego gpv"qh"Dqpg"Eqpf wevgf """"596
                             Ur ggej 'd{ 'cp'Cpcn{ uku/U{ pyj guku'O gyj qf
                              O OUj cj kf wt'Tcj o cp'cpf "Vgww{c'Uj ko co wtc'*Uckco c"
                              Wpkxgtukv{.'Lcrcp+
   Vc3F/5" 2; ◀3¢2; ⋖5; " F {pco ke"Y qtf ngpi vj "Ecnkdtcvkqp"hqt"Gpgti {"""59:
                              Tgf wevkqp'HHV'r tqeguuqtu'kp'Y ktgrguu'NCP
                              Legugqpi "Mko ."Uj kpi q"[ quj kļ cy c."cpf "[ quj knc| w'
                              Ok{cpcic'*Jqmmckfq'Wpkxgtukx{.'Lcrcp+
   Vc3F/6" 2; 5; ¢2; ₹9" Cp"NFRE"F geqf gt"Ctej ksgewtg"hqt"O wnk/tcvg"""5: 4
                              SE/NFRE'Egf gu
                              "Uwpi /Y qq"Ej qk"I { wpi /R{q"Mko ."cpf "Lkp/M{gqpi "
                              Mko "*Grgevtqpleu"cpf "Vgrgeqo o wplecvkqpu"Tgugctej "
                              Kourkwag. 'Mqtgc+
   Vc3F/7"2; <a>39c32-37" Qp"vjg"Eqttgevkqp"qh"Nkpgct"Vkog/xct{kpi"""5:8</a>
                              U{uvgo u'd{'O gcpu'qh'Vko g/xct{kpi 'HKT'Hkngtu
                              O kej cgn'Uqwf cp"*I tc| "Wpkxgtukv{ "qh"Vgej pqmqi {."
                              Cwwtkc+"cpf "Ej tkwkcp"Xqi gn"*Vgngeqo o wpkecvkqpu"
                             Tgugctej 'Egpvgt'Xkgppc.'Cwwtkc+
                                                                Tggo 'G'*594+
Uguukqp"Vkxrg" ]Vc3G_'Go gti kpi 'Ektevkk'Eqo r qpgpvu'cpf 'Crrrkecvkqpu
Uguulqp'Ej ckt" F t"[ qwpi uqq"Uj kp"*Mqtgc"Cf xcpegf "Kpurkwwg"qh"Uekgpeg"
                 cpf 'Vgej pqnqi {.'Mqtgc+
                Cwi wuv'; .'4233'*Vwguf c{+
Fcvg"
Vko g"
                2: 67¢3237
Vc3G/3" 2: 67¢2; ≥5" Ncti g/Ctgc"Hrgzkdrg"Grgevtqpkeu"y kyj "Qti cpke"***5; 2
                           Vtcpukuvqtu
                            \begin{tabular}{ll} Mqlej k'Kij kf.c. ''Vuwpi / Ej kpi ''J wcpi .''Vuw{ quj k'Ugnkscpk''} \end{tabular} \label{tabular}
                           O cmqvq"Venco k{ c."Vencq"Uqo g{ c."cpf "Venc{ cuw"
                           Ucnwtck'*Vj g'Wpkxgtukv{ ''qhl'Vqm{ q.'Icr cp+
Vc3G/4" 2; 25¢2; 43" Gzrnqtkpi "vjg"Qrrqtvvpkv{ "qh"Qrvkok| kpi"""5; 6"
                           Ugs wgpekpi 'Grgo gpvu'kp'CUKE'F guki pu
                           Ugwpi y j wp"Rckm"Lcgj c"Mwpi ."cpf"[ qwpi uqq"Uj kp"
                           *Mqtgc'Cfxcpegf'Koukwwg'qh'Uekgpeg'cpf'Vgejpqnqi {."
                           Mqtgc+
Vc3G/5" 2; 43¢2; 5; " C"J ki j óNgxgn"Fguki p"Gzrnqtcvkqp"qh"""5; :
                           J gvgtqi gpgqwu"Cffgtu"Dcugf"qp"Okzgf"Kpvgigt"
                           Nkpgct'Rtqi tco o kpi
                           "LO'Uquc." LO'C O'O qp vkgn/P gnuqp. "LO'E O'I cte¶c/
                           O qpvguf gqec"*Wpkxgtukv{ "qh"Ncu"Rcm cu"f g"I tcp"
                           Ecpctkc."Urckp+."cpf "Ucgkf"Pqqujcdcfk"*Okejkicp"
                           Vgej pqrqi lecriWpkxgtukv{."Wpkxgf "Uvcvgu+
Vc3G/6" 2; 5; ¢2; ₹9" Cf cr \kxg"Rgthqto cpeg"Eqo r gpuc\kqp"y kij "Qp/"""624
                           Ej kr 'Xctkcvkqp'O qpkxqtkpi
                           O cucpqtk'J cuj ko qvq"*Quene"Wpkxgtukv{."Ler cp+"cpf"
                          J ktquj k'Hvngvc'*Wpkxgtukv{ ''qh'Vqm{ q.'Icr cp+
Vc3G/7" 2; <a href="mailto:decoration-wind-red">decoration-wind-red</a> Tgf welpi "Tgcf "Ncvgpe{ "lp"Rj cug/Ej cpi g"TCO /"""628
                           dcugf 'O ckp'O go qt {
```

Uwpi "My cpi "Ngg."Uwpi lqq"[qq."cpf "Uwpi i w'Ngg"

Uguukqp"Vkrg"]Vc3H_'Cf xcpegf "TH'Tgegkxgtu Uguulqp'Ej ckt" F t'Ej kgppcp'Mvq" *P cylapenEj kcq"Vypi "Wpkxgtuky{."Vcky cp+ Fcvg" Cwi wuvi; .'4233''*Vwguf c{+ 2: **6**7¢32**3**7 Vko g'' Vc3H/3" 2: 67¢2; ≥5" Wntc/Nqy "Xqnci g"Kpvgi tcvgf "T gegkxgtu"kp""""632 P cpquecrg'EO QU Clc{'Derepmww{'*KovgriEqtr0'Wpkgf'Uvevgu+'epf'Rgvgt'T0' Mkpi gv*Eqnvo dkc'\pkxgtuk\{.'\pkxgf'\Ucvgu+ Vc3H/4" 2; 25¢2; 43" F ki kxcn/Kpvgpukxg"Cpcmi "Ektewku"hqt"J ki j n{/"""636 Fkikk gf THT gegkxgtu Lcgy qqm'Mko "*Mqtgc"Cf xcpegf "Koukwwg"qh'Uekgpeg" cpf "Vgej pqmi {."Mqtgc+."Lqqpj gg"Ngg"*Uco uwpi " Grgevtqpkeu"Eq0"Nvf0"Mqtgc+."cpf "Ugqpi J y cp"Ej q" *Mqtgc'Cf xcpegf "Koukwyg'qh'Uekgpeg'cpf "Vgej pqmi {." Mqtgc+ Vc3H/5" 2; 43¢2; 5; " Cevkxg"Ektewkv"Crrtqcej gu"hqt"UCY /nguu'''''63: Hwnf wr ngzgt "T gegkxgt "U{ uvgo u P co uga "Mo "S wcrego o e. "Woksef "Uvcygu+ Vc3H/6" 2; 5; ¢2; ₹9" Nqy "Rqy gt"406/I J | "T gegkxgt"Hqp√Gpf "Wukpi """644 Tguqcpvqt'Eqwrrkpi 'Vgej pks wg Ej wp/J ukpi "Nk"Ej kc/[w'J uw."cpf "Ej kgp/P cp"Mwq" *P cvkqpcn'Ej kcq/Vvpi "Wpkxgtukv{."Vcky cp+ Vc3H/7" 2; 49¢3247" C"O wnk/Dcpf "Y EF O C"UCY / Nguu"T gegkxgt u"""648" y kij 'Higs wgpe{ 'Ugrgevkxg'Hggf dcemiNqqr "Uwpi j q"Dgem"Uvgr j gp"V0'Mko ."M{ wcg"Nko ."O cpqu" O O'Vgpv| gtku."cpf "Iq{"Ncumct"*I gqtikc"Kpunkwwg"qh" Vgej pqrqi {."Wpkgf "Ucvgu+ Tqqo 'I '*427+ Uguukqp"Vksrg"]Vc3I _'F UR'J ctf y ctg'F guki p Uguukqp'Ej ckt" Ft'O cj gt'Itkf k'*Kpurkswv'Uwr2tkgwt'f g'nyGrgevtqpks wg'gv'f w' P wo 2 tks wg'f g'Dtguv'Htcpeg+ Cwi wuv'; .'4233'*Vwguf c{+ Fcvg" Vko g" 2: **6**7¢32**3**7 Vc3I /3" 2: 67¢2; 25" HRI C"dcugf "Qr vko k| cvkqp"hqt"O cungf "CGU""652 Korngo gpvcvkqp '\ j gpi '[wcp." [k'Y cpi .'Llpi 'Nk'Tgphc'Nk'cpf 'Y gk'\ j cq" *J wpcp'Wpkxgtukv{.'Ej kpc+ Vc3I /4" 2; ≥5¢2; 43" Tgf wegf /o go qt {"Hqty ctf /dcemy ctf "Ej gem"****656 P qf g"Rtqeguukpi "Ctej kgewtg"hqt"P qp/dkpct {" NF RE'F geqf kpi Zlpo kcq"\ j cpi "cpf "Hcpi "Eck"*Ecug"Y guvgtp"Tgugtxg" Wpkxgtukv{."Wpkxgf"Uvcvgu+ Vc3I /5"2; 43¢2; 5; " Ko r ngo gpvcvkqp"Vgej pks wgu"qh"J ki j /qtf gt"HHV"""65: kpvq'Nqy/equv'HRIC " qwatk'Qwgtj cpk"O cj gt"Itkf k"cpf "C{o cp"Crhcmw" *KUGP/Dtguv.'Htcpeg+ Vc3I /6"2; 5; ¢2; ₹9" Cp"Crrnkecvkqp"Urgekhke"Kpuvt wevkqp"Ugv"""664 Rtqeguuqt'Qr vlo k gf 'hqt'HHV "Y gpzkepi "Y epi ."Nkpi "Nk"I wepi hgk"\ j epi ."F qpi "Nkw." cpf 'Ik'S kw'*Ej kpgug'Cecf go { 'qh'Uekgpegu 'Ej kpc+ Vc3I /7"2; <a>9¢32<a>37" Eqo r ctkuqp"qh"Dkpct {"cpf"NHUT"Eqwpvgtu"cpf """668 Ghhlekgpv'NHUT'F geqf kpi 'Cni qtkij o Cxlpcuj 'Clcpg.'RcwrlHwt yj .'Gtle'G0Lqj puqp.'cpf 'Tcuj o k' Nommat "Uvdtoo cp{co "*Pgy "Ogzleq"Uvcvg"Wpkxgtukv{."

Wpkgf 'Ucvgu+

```
Uguulqp"Vkrg" "JVc3J _'Ur gelcriUguulqp"qp"CUKE"Ugpuqtu'hqt"Dkqo gf lecri"
                           cpf 'Gpxktqpo gpvcn'Crrnkecvkqpu'/''K
Uguukqp'Ej cktu'Ft'J wc"Y cpi "*Um{ y qtmu"Uqnwkqpu."Wpksgf "Uvcvgu#
                            Ft'Cpftgy 'Ej qg' NI 'Koqvgm'Mqtgc+
                         'Cwi wuy'; .'4233'*Vwguf c{+
Fcvg"
                          '2: 67¢32$7
Vko g"
Vc3J /3" 2: 67¢2; 25" C"Hqwt/Ej cppgn"Kpvgi tcvgf "Rcvej /Enco r"""672
                                          Cornkhlgt'y kaj 'Ewttgp√Encor'Ecrcdknk√{
                                          "Dtkcp" I qrf uvgkp. "MwpkrlEj qg. "Htgf gtkem"Uki y qt yj. "cpf"
                                          Gwigplq'Ewnwtelgmq'*{ cng'Wplxgtulx{.'Wplxgf'Uvcvgu+
Vc3J /4" 2; 25¢2; 43" O qf gn/dcugf "Kygtcvkxg"Rqukvkqp"Guvko cvkqp""""676
                                          Cri qtkrj o 'hqt"THKF "Vci 'Hrqqt'Nqecrk cvkqp
                                          "Ucpi /y qq"Mko ."F cgj { wp"Mko ."Ig"Y qp"Ngg."cpf"
                                          [ qwpi uw'Rctm'*Rqj cpi "Wpkxgtukv{ "qh''Uekgpeg"cpf "
                                          Vgej pqnqi {.'Mqtgc+
Vc3J /5" 2; ∢3¢2; ₺; " Cej tqo cvke"O ketqr qrctki kpi "Hknygtu"hqt"Xkukdrg"""67:
                                         Ektewret 'Rqretk evkqp'Dkq/ko ei kpi
                                          Z kcqlkp"\ j cq."Co kpg"Dgto cm'*Vj g"J qpi "Mqpi"
                                          Wpksgtuk { "qh'Uekgpeg"cpf "Vgej pqnqi { ."J qpi "Mqpi +"cpf"
                                          Hctlf "Dqwuclf" *Vj g"Wpkxgtukv{ "qh"Y guvgtp" Cwurterke."
                                          Cwixtcrkc+
Vc3J /6"2; ≤5; ¢2; ₹9" Kpvgi tcvgf "cpf "Cwqpqo qwu"Eqpf wevkxkv{/"""684
                                          Vgorgtcvwtg/Fgrvj "*EVF+"Ugpuqtu"hqt"
                                          Gpxktqpo gpvcrlO qpkqtkpi
                                          Octeq"Etguegpvkpk"Octeq"Dgppcvk"cpf "Octeq"
                                          Vctvci pk Wpkxgtukv{ 'qh'Dqnqi pc. 'Krcn{+
Vc3J /7" 2; 49¢32&7" Y ktgrguu'cpf 'Dewgt { rguu'Drqqf 'Rtguuwtg'Ugpuqt '"""688
                                          LO'Uquc.''UOI cte\(\frac{1}{12}\)/Cmpuq.''LO'O O'O qp\\ \pi/Xgtqpc.''LO'
                                          COO qpvkgn/Pgnuqp"*Wpkxgtukx{"fg"Ncu'Rcm cu'fg'Itcp"
                                          Ecpctkc."Ur ckp+:"C0'Dgtkckp."G0'Hgtpa pf g| ."J 0'Uqrct."C0'
                                          I cte\( cte\( cte\) Crapuq."cpf "KOI wkgttg| "\Egpvtq"f g"Guwf kqu"g"
                                          Koxgurki celqpgu'Vepkecu'f g'I kr w nqc.'Ur ckp+
                                                                                                 Tqqo 'K*C664+
\label{thm:linear_loss} \begin{tabular}{ll} $\tt Uguulqp"Vkng" & \label{linear_loss} & \
                           Grgevtle'Rqy gt'U{uvgo u
 Uguulqp"Ej ckt" Ft"J ktq{ wnk'O qtk"O gklk'Wpkxgtukv{."Icr cp+
                          Cwi wuv!; .'4233'*Vvguf c{+
Fcvg"
                          2: 67632.37
 Vko g"
Vc3K3" 2: 67¢2; 25" C"Y kpf "Rqy gt "Hqt gecuvkpi "O gvj qf "y kvj """692"
                                          Eqphf gpeg'Kpvgtxcn
                                           "Vouw{c"Kk|cmc."Vqtw"Lkpuwicyc."Jkfg{wnk"Mqpfq."
                                          [ qwwng'P cncpkuj k"[ quj knc| w'Hwnw{co c"*Hwlk'Grgevtle"
                                          Eq0'Icr cp+."cpf 'J ktq{ wnk'O qtk'*O gklk'Wpkxgtukv{.'Icr cp+
Vc3K4" 2; ≥5¢2; 43" C"Uwf {"qp"Y kpf "Ur ggf "Rt gf ke vkqp"Wukpi """696
                                          Ct vkhelcriP gwtcriP gw qtnicviLglwiKircpf 'kp' Mqtgc' KK
                                          Hgpi o kpi "∖ j cpi ."M{ gqpi j gg"Ej q."LcgugqnfEj qk"
                                           *I {gqpi ucpi 'P cvkqpcn'Wpkxgtukx{."Mqtgc+:"[ qwpi o k'Ngg"
                                          *Geqdtckp.'Mqtgc+"cpf 'My cpi '[ 0Ngg'*Dc{ mt'Wpkxgtukv{."
                                          Wpkgf 'Ucvgu+
Vc3K5" 2; 43¢2; 5; " C"Uwf {"qp"I mdcn"Uqnct"Tcf kcvkqp"Hqtgecuvkpi """"69:
                                          Wukpi "Y gcyj gt"Hqtgecuv'F cvc
                                          Hwo kquj k'P qo k{ co c"*M{ wij w'Grgevtke"Rqy gt"Eq0"
                                          Kpe0"Icr cp+"Iqlk"Cuck"Venwo c"O wtenco k"cpf "Ixplej k"
                                          O wteve" M{ wuj w'Wpkxgtukv{.'Ler ep+
Vc3K6" 2; 5; ¢2; ₹9" F gxgnqr o gpv"qh"Cni qtkji o "hqt"F c{"Cj gcf "RX"""6: 4
                                          I gpgtcvkqp"Hqtgecuvkpi "Wukpi "F cvc"O kpkpi"
                                          Ogyj qf
                                          O kp/Ej gqrl'Mcpi "*Ugqwrl'P cvkqpcrl'Wpkxgtukv{."Mqtgc+."
                                          Llp/O cp'Uqj p.'Lqpi /{qwpi 'Rctm'*NU'kpf wwtkcm'U{uvgo u'
                                          Eq0"Nvf0"Mqtgc+:"Uqpi/Mgwp"Ngg"*Lgqplw'Wplxgtulx{.}"
                                          Mqtgc+:"cpf" | qpi /Vcg" | qqp"*UgqwiP cvkqpcn'Wpkxgtukv{."
                                          Mqtgc+
Vc3K7" 2; ₹9¢32$7" C"Hw| | {"Kohgtgpeg"P gv"Crrtqcej "vq"Grgevtkekv{""""6: 8
```

Rtleg'Hqtgeculpi

J ktq { wnk'O qtk'*O gklk'Wpkxgtukv{."Lcr cp+"cpf "Vcf cj ktq"

Kci cnk'*Vqm(q'Grgevtle'Rqy gt'Eq0'Lcr cp+

```
Uguulqp"Vkrg" ]Vc4C_'P {s wkrv'Tcvg'Fcvc'Eqpxgtvgtu'/'KK
Uguukqp"Ej ckt" F t'D{ wpi /i gwp'Ngg"
                            *I y cpi lw'Koukweg'qh'Uekgpeg'cpf "Vgej pqnqi {.'Mqtgc+
                           Cwi wuv'; .'4233'**Vwguf c{+
Fcvg"
Vko g"
                           32<52¢34<22
\label{eq:convergence} Vc4C/3"~32\- 52\+ c32\- c32\-
                                           c'8/dkv'3/I Ulu'Kpvgtr qrevkpi 'Hreuj 'CFE
                                            Mgxkp"D0I gqi j gi cp"*P cxcn'Rquvi tcf wcvg"Uej qqn"
                                            Wpkgf 'Ucvgu+'Rgtt { 'J ggf rg{."Vj qo cu'O cwj gy u'*Vj g"
                                            Ecrkhytpk: "Uvcyg" Wpkxgtukv{." Wpkxgf "Uvcygu+: "cpf "Uj gtkh"
                                            O lej cgrl*P cxcrlRquvi tcf wcvg'Uej qqn'Wplxgf 'Uvcvgu+
Vc4C/4" 32-6: ¢33-28" C"Ej cti g"Rwo r "Dcugf "Vlo kpi /Ungy "Ecrkdtcvkqp""""6; 6
                                            hqt"Vko g/Kpvgtrgcxgf"CFE
                                            Rgpi "\ j cpi ."\ j klkg"Ej gp"*Vukpi j vc"Wpkxgtukv{."Ej kpc+"
                                            J g/I qpi "Y gk"Uck/Y gpi "Ukp."Ugpi /Rcp"W'*O cecw"
                                            Wpksgtukv{."Ej kpc+"\ j kj wc"Y cpi "*Vukpi j wc"Wpksgtukv{."
                                            Ej kpc+"Twk'O ct kpu"*O cecw'Wpkxgtukv{. 'Rqt wi cn+
Vc4C/5"33\28\psi33\46" C"Nqy /I rkej "cpf "Uo cm/Nqi ke/Ctgc"Hkdqpceek"""6;:
                                            Ugtkgu'FCE
                                            Rqnj ctgn''Cdj kij gn''Vqo ct."J ctwlej k'Mcpc{c."cpf "Mollk"
                                            [ quj kfc'*M{ wuj w'Wpkxgtukv{.'Icrcp+
Vc4C/6"3346¢3364" C"J ki j /Ur ggf "cpf "Nqy /Rqy gt"Rkr grkpgf "Dkpct {"""724
                                            Ugctej 'Cpcnqi 'vq'F ki kxnlEqpxgt vgt
                                            Crk'O gui ctcpk'*Wpkxgtukv{ "qh'Kf cj q."Wpkxgf "Uvcvgu+."
                                            Cj o gv"Vgnhp"*Kucpdwrl"Ugj kt"Wpkxgtukv{."Vwtng{+."cpf"
                                            Uvcv'WOC { "*Wpkxgtukv { "qh" Kf cj q. "Wpkxgf "Uvcvgu+
Vc4C/7"33-64¢34-22" C"Ukpi ng"Ej cppgn'8/Dkv"; 22O Ulu"4/Dkvu"Rgt"""728
                                            Uci g'Cu{pej tqpqwu'Dkpct{'Ugctej 'CFE
                                            'Cık'O gui ctcpk'cpf 'Uwcv'C { "*Wpkxgtukv{ "qh'Ktcj q. "Wpkxgf"
                                            Ucvgu+
                                                                                                         Tqqo 'D'*392G+
     Uguukqp"Vkrg" |Vc4D_'Rqy gt'O cpci go gpv'Ektewku"/'KK
     Uguukqp'Ej ckt" F t'Nkgt'Ukgm'
                                 *P cp{cpi "Vgej pqnqi lecrlWpkxgtukv{."Ukpi cr qtg+
                                Cwi wuv'; .'4233'**Vwguf c{+
     Fcyg"
     Vko g"
                                32<52¢34<22
     Vc4D/3" 32-52¢32-6: "Vtcpulgpv'Ewttgpv'Tgi wrcvlqp"Wulpi "c"Ulpi rg'FE/""732
                                                FE'Eqpxgtvgt'hqt"J ki j /Ghhlekgpe{"TI D'NGFu
                                                 Lceqd"Fc{."Fqpcrf"[0'E0'Nkg"*Vgzcu"Vgej "Wpkxgtukv{."
                                                 Wpkgf "Ucvgu+"cpf 'Iqug'X0'Ucpvqu'*Vgzcu'Ipuvtwo gpvu"
                                                 Kpeqtrqtcvgf. 'Wpkygf' Uvcvgu+
     Vc4D/4" 32-6: ¢33-28" C'pcn{uku"qhi"\ XU"P qp/Kuqrcvgf "Dhf ktgevkqpcni"F E/"""736
                                                FE'Eqpxgtvgt
                                                 O wj co o cf "Cco kt "cpf "J gg/Lwp"Mko "*J cp{cpi"
                                                 wpkxgtukv{. 'Mqtgc+
     Vc4D/5" 33-28¢33-46" C" Uwd/ 205 X" EO QU"T ge vkhkgt "hqt "Gp gti {"""73:
                                                J ctxgukpi 'Crrnleckqpu
                                                 F cp'P kw'*Y cugf c''Wpkxgtukv{.''Lcr cp+:'\ j cpi eck'J wcpi "
                                                 *Hwnwqnc''Kpf wuxt {."Uekgpeg"( "Vgej pqrqi {"Hqwpf cvkqp."
                                                 Ler ep+."O kpi nw'Llepi ."epf "[ cuwenk'Kpqwg"*Y eugf e'
                                                 Wpkxgtukv{.'Icr cp+
     Vc4D/6" 33-46¢33-64" C"Y j ksg"NGF "Dqquv"RE "hqt "Dcemki j v"qh"VHVNEF """744
                                                Dcugf "qp"c"Ewttgpv/Nko kvgf "Rwnug/Y kf vj"
                                                 O of washap
                                                 I wq/O kpi "Uwpi "cpf "[ qw/J ukcpi "Nw"*P cwlqpcn"Vckr gk"
                                                 Wpkxgtukv{."Vcky cp+
    \label{eq:c4D/7} Vc4D/7"33-64¢34-22" \quad P~gy~"P~qp/I~~\{tcvqt"V\{r~g"Cevkxg"Kpf~wevqtu"y~ksj~"""748 \\
                                                Crrrleckqpu
                                                 K qt "O O'Hkrcpqxum{."O O'T glc"*Wpkxgtukv{ "qh"C rdgt vc."
```

Ecpcf c+:"Nwku"Qrkxgktc"*Wpkxgtukf cf g"P qxc"f g"Nkudqc"

O qpvg'f c'Ecr ctlec.'Rqt wi cn+

```
Uguulqp"Vkrg" ]Vc4E_'Ko ci g'Rtqeguulpi 'Ektevkru'cpf 'U{urgo u'/'KK
Uguulqp'Ej ckt" F t'Llpuwpi 'Mo "*UgqwdP cvlqpcn'Wpkxgtukv{.'Mqtgc+
               Cwi wuv'; .'4233'*Vwguf c{+
Fcvg"
Vko g"
               32<52¢34<22
Vc4E/3" 32-52¢32-6: " Cp"Ko ci g"Hwukqp"O gyj qf "Dcugf "qp"S wqxkgpv"""752"
                          Ukpi wrct'Xcnwg'F geqo r qukkqp
                          " w'S kw''Uwp''*[ cpi v| g''Wpkx gtukv{."Ej kpc+:"O kp/uwpi "
                          Mqj ."Guvgdcp"Tqftki vg| /O ctgn" Gcuvgtp"Y cuj kpi vqp"
                          Wpkxgtukv{."Wpkgf"Ucvgu+
Vc4E/4" 32-6: ¢33-28" Cp"Ko ci g"Y cvgto ctmkpi "Uej go g"Dcugf "qp"""756
                          Ownktguqnwkqp'Cpcn{uku
                          Oct { "Oqpkt" Ucckf "*Hc { qwo "Wpkxgtukv{. "Gi { r v+: "\ cnk"
                          Dcuu{qwpk'Pquuckt"*Jgnycp"Wpkxgtukv{."Gi{rv+:"cpf"
                          Oci f {'I cppc'*Hc{qwo 'Wpkxgtukv{.'Gi {r v+
Vc4E/5" 33-28¢33-46" Eqo dkpgf "nwo kpcpeg"Eqo r tguukqp"cpf "Eqnqt"""75:
                         Eqputckpv'hqt'Eqnqt'Eqttgevkqp'kp''Vqpg'O crrkpi
                          IkY qp'Ngg."Tcg/J qpi 'Rctm'*Uqi cpi 'Wpkxgtukv{."Mqtgc+"
                          cpf "UqqpMgwp"Ej cpi "*Uco uwpi "Grgevtqpkeu"Eq0"Nvf0"
                          Eq0'Nvf0'Mqtgc+
Vc4E/6" 33-46¢33-64" Eqpvtcuv'Gpj cpego gpv'd { "Cf cr vkxg"O cr r kpi """764
                          Hwpeylgp"y ky "Ngecn"Kohgto cylap
                          "qj ckd"J co ggf "cpf "Ej wp{cp"Y cpi "*Eqpeqtf kc"
                          Wpkxgtukv{.'Ecpcfc+
Vc4E/7" 33-64¢34-22" Cp"J S X/Crrtqxgf "Gf i g"F ktgevgf "Køvgtrqncvkqp"""768
                         Cri qtkij o 'hqt'F g/kpvgtrcekpi
                          Uj gpi sk'[ cpi "*Uj cpi j ck'Wpkxgtukv{."Ej kpc+"Y gk\ j cpi "
                          *Pcp{cpi "Vgej pqnqi kecn"Wpkxgtukv{."Ukpi crqtg+:"cpf"
                          Lwm{"\qw\"UjcpijckN{| KE"Kpe0"Ejkpc+:
                                                             Tqqo 'F'*47; +
Uguulqp"Vkrg" ]Vc4F_'Crrrlecvlqp'Urgelthle'FUR'Ctej kgewtgu'/"KKK
Uguukqp'Ej ckt" F t'I kcp'Ectrq'Ectf ctkrrk"
                 *Wpkxgtukv{ ''qh'Tqo g''Vqt''Xgti cwc.'Krcn(+
                Cwi wuvi; .'4233'*Vwguf c{+
Fcvg"
                32<52¢34<22
Vko g"
Vc4F/3" 32-52¢32-6: " F guki p"cpf "Ko r rgo gpvcvkqp"qh"O KO Q"Y NCP """772
                          F glovgtrgcxgt'y kj 'Dk/Tgxgtugf 'Kor w
                           Cpf lcu"Y 0'Ctf kcpu{cj."[wj gk'P ci cq."cpf "J ktquj k'Qej k'
                           *M{ wuj w'Kpurkwwg'qh'Vgej pqnqi {.'Lcrcp+
Vc4F/4" 32-6: ¢33-28" Pqp/eqj gtgpv"Kor wng"Tcfkq"WYD"Tgegkxgt"hqt"""776
                          Y ktgrguu'Dqf { 'Ctgc'P gw qtm'U{uvgo
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Vc4F/5"33-28¢33-46" Hqty ctf "Gttqt"Eqttgevlqp"y kij "Tcr vqtS "Eqf g"qp"""77:
                          Go deffef "Uluveo u
                           "Vqfqt"O rcfgpqx."Mkugqp"Mko "*I y cpi lw'Koukwwg"qh"
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Vc4F/6"33-46¢33-64" Wmtc"J ki j/yj tqwi j r w''Ctej kgewtgu"hqt"J ctf/"""784
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                           O qlwdc"O cj f cxk"cpf "O cj f k"Uj cdcp { "*Uj ctkh"
                           Wpkxgtukv{ 'qh'Vgej pqnqi {.'Kcp+
Vc4F/7"33-64¢34-22" Nqy "Rqy gt"Y cng/Wr "T gegkxgt"Y kij "Wpks wg"""788
                          P qf g'Cf f tguukoi
                           "Vtcxku"Eqej tcp."Lgqpi "Mk"Mko ."cpf "Fqpi "Ucp"J c"
                           *Xktikpkc"Rqn{vgejpke"Kpuvkvwg"cpf"Uvcvg"Wpkxgtukv{."
```

Wpkgf 'Ucvgu+

Uguukqp"Vkng"]Vc4G_'5F"Uvcenkpi Uguukqp"Ej ckt" Ft"Uwpi "M(w'No" *I gqti kc"Kpuvkwwg"qh"Vgej pqnqi {."Wpksgf"Uvcvgu+ Cwi wuv"; ."4233"*Vwguf c{+ Fcvg" Vko g" 32 52¢ 34 22 Vc4G/3" 32-52¢ 32-6: " EnqentiP gvy qtmtF guki p''Vgej pks wgu''hqt"5 F''KE u''''792 "Vemi[wpi "Mo "cpf "Vegy j cp"Mo "*UgqwrlPevlqperi" Wolksgtuky{.'Mutgc+ Vc4G/4" 32-6: ¢ 33-28" J gvgtqi gpgqwu"F kg"Uvcemkpi "qh"UTCO "Tqy """796 Ecej g"cpf "5F"FTCO <"Cp"Go r kt kecn"F guki p" Gxcnwcvlqp Fqpi "J {vn'iY qq" "Kvgn'iNcdqtcvqtkgu." Wokkgf "Uccvgu+" Pcn"J gg"Ugqpi ."cpf "J ulgp/J ulp"UJNgg"*I gqti lc" Knukweg'qh'Vgej panai {.'Vvjkkgf'Ucvgu+ Vc4G/5" 3328¢ 3346" Tgrkcdkkv{"cpf"Rgthqto cpeg/cy ctg"5F"UTCO""79: " F guki p Oqj ks'Revj enlepf "Uvpi "Mw'Nto "I gqti ke "Kourksweg 'qh' Vgej papaji {.'Woksaf'Uscvgu+ Vc4G/6" 3346¢ 33464" Eqo r tguugf "Ugpulpi "Dcugf "Cpcn(vlecn'O qf gnlpi """7: 4 hqt"Vj tqwi j /Ukdeqp/Xkc"Rcktu "Vcq"Ycpi."Llpiqqm"Mo."Lwp"Hcp."cpf"[k{w'Ujk' *OkuuqwtkWpkxgtukv{'qhtUelgpeg'cpf''Vgejpqnqi{.'Wpkxgf'' Ngxgtci kpi "Qp/ej kr "FTCO "Uvcemkpi "kp"cp"""7:8 Vc4G/7" 33-64¢ 34-22" Go dgffgf"5F"Ownk/Eqtg"FUR"U{uvgo Vcq"∖jcpi "*Vjg"Rgppu{nxcpkc"Uvcvg"Wpkxgtukv{." Ej kpc+''Rq/[cpi "J uw''Y gk/J gpi "Nq"*Pcvkqpcn''Vukpi " J vc"Wpksgtuks{."Vcky cp+"Uj cw[kp"Vugpi ."[kVc"Y w" Ej wcp/Pcp''Nkw''Lgp/Ej kgj "[gj "*Kpf wuntlen''Vgej pqnqi {" Tgugctej "Kjarkwyg." Vcky cp+" Vkpi vkpi "I y cpi ""Pcvkqpcn" Vulpi "J wc"Woksgtukv{."Vcky cp+"cpf"[wcp"Zkg"*Vj g" Rgppu{nxcplc'Uvcvg'Wplxgtulx{.'Wplxgf'Uvcvgu+ Tqqo 'H*533+ Uguukqp"Vkng"]Vc4H_"Nqy"Pqkug"Cornkhkgtu Uguukqp"Ej ckt" Ft"Vcg"Y qqmiMo "*{ qpugk'Wpksgtukv{."Mqtgc+ Cwi wuv'; ."4233"*Vwguf c {+ Fcvg" Vko g" 32 52¢ 34 22 Vc4H3" 32 52¢ 32 6: " C"Htgs wgpe{"Ci kg"NP C"hqt"Eqi pkvkxg"Tcf kq"""7; 2 Crrnlecvkqpu"kp"vjg"WJH"Dcpf Ugłcp'Megj ngtv.'Fltn'Dqto cpp.''Vqdlcu'F0Y gtyj.'Ovj/ Fg{"Ygk"NgtNcq."cpf"Uvghcp"Jglpgp"*TY VJ "Ccej gp" Woksgtukv{.'I gto cp{+ Vc4H/4" 32-6: ¢ 33-28" Kpf we vq t ng uu" Y kf gdc pf "EO QU" NP Cu" y kvj """7; 6 Paprkpgctkv{ "Ecpegnicvkqp J go cumpfet 'OOI gffcfc.' Lqug' 'Unxc/Oct lpg | "*Vgzcu" C(O'Woksgtuks{."Woksgf'Ucvgu+'cpf'Ugy ctv'UV&{injt" *KnyghEqtr0'Wokgf'Uvcvgu+ Vc4H/5" 33 ≥8¢ 33 ≥46" C"406"I J | "Whyte"Nqy /r qy gt"J ki j "I ckp"NP C"""7;: Wktk kpi "/o cvej "cpf "Ecrcekskxg"Hggf dcem'Kprw" Vj k'Vj w'Pi c''Vtcp.'Ej ktp'Ej {g''Dqqp.'Fq'Ocpj ''Cpj ." cpf"[gq"Mcv"Ugpi "Pcp{cpi "Vgej pqnqi lecn"Wplxgtulx/{." Upi cratg+ Vc4H/6" 33 46¢ 33 64" C"Eqo r ctcvkxg"Uvwf {"qh"Dkculpi "Elte wkvu"hqt"cp"""824 Kof we vqtrguu"Y kf gdcpf "Nqy "Pqkug"Cornkhkgt Lqu2 "Fqtgu" "RP QUE/KF. "Rqt wi cn+" "G y kp" Cnxctg | " *Wolksgtukv{"qh1I wcf cnclctc."Ogzleq+"Oki vgn'Octvkpu" *#RCLE/JE. 'Ratwi cn+'Lqu2' 'OOf g'nc' Tquc' *#OUGEPO." Ur clp+'cpf 'Lqti g'Hgtpcpf gu'*RPCLE/IE.'Rqt wi cn+ Vc4H/7" 33-64¢ 34-22" C"5 03/32 08" I J | "White/Y lf g"Depf "EO QU"Nqy """828 Pqkug"Cornkhkgt"y kvj "Dcpf"Tglgevkqp I' vq/Okpi "Uxpi "cpf"Ej kw/Nxpi "U gp"*Pcxkqpcn"Vckr gk"

Woksgtuks/"qh'Vgej pqnqi {."Vcky cp+

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Oqjcoocf"Pcuct"Cjogf."Moke"Mctkokcp."cpf"Ectne" Rwtf{"*Wpkxgtukx{"qh!Ekpegpcvk"Wpkxgf"Uxcvgu+

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    Uguukqp'Ej ckt" F t'Lcgugqm'Ej qk'
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    Fcvg"
                   32<52¢34<22
    Vko g"
    Vc4K3" 32-52¢32-6: " I' gpgtcvqtu"O ckpvgpcpeg"Uej gf wrkpi "Wukpi """872
                              Eqo dkpgf 'Hw\ | { 'Ugv'Vj gqt { 'cpf 'I C
                              "Vcgi qp"Qj ."Lkpvcgm"Nko ."Lcgugqm"Ej qk"*I {gqpi ucpi "
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    Vc4K4" 32-6: ¢33-28" C"Uvcvg"Guvko cvkqp"O gyj qf "hqt"Rj qvqxqnvcke"""876
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                              C vuwuj k'Kuj ki co g. "O cucpqtk'O cvuwf c"*Queme"
                              Rt ghge wit g"Wpkx gt ukv{."Lcr cp+."cpf "Vcnco w'I gplk'
                              *Mcpuck'Grgevtle'Rqy gt'Eq0'Kpe0'Lcrcp+
    Vc4K5" 33-28¢33-46" C"Uwtxg{"qh"Uki pcn'Rtqeguukpi "Cni qtkij o u"hqt"""87:
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                             M{gqp'J wt'}{qpugk'Wpkxgtukv{.'Mqtgc+}}
   Vc4K6" 33-46¢33-64" ."22X"Wntc/J ki j /Xqnci g"UctvWr "O gej cpkno """884
                             hqt"Rtg/Tgi~wnc vqt"lp"Rqy~gt"Hcevqt"Eqttge vlqp"
                              *RHE+Egpytamet
                              Ej k/Nkp'Ej gp."Igp/Ej kgj "Vuck"[ k/Vkpi 'Ej gp.'Ej kc/Nwpi "
                              Pk"Ej wp/[gp"Ej gp."cpf "Mg/J qtpi "Ej gp"*Pcwqpcn"
                              Ej kcq"Vwpi "Wpkxgtukv{."Vcky cp+
    Vc4K7" 33-64¢34-22" C"O ctmqx/Ej clp"O qpvg/Ectmq"Vgej pls wg"hqt"""888
                              Rtqdcdkrkirke'Nqcf 'Hrqy 'Ecrewickqp
                              J ktq{wnk'Oqtk'*Ogklk'Wpkxgtukv{."Icrcp+."cpf"Ygplwp"
                              Llepi '*Vquj kde'Eqtr 0'Ler ep+
                                                           Tqqo 'C'*D328+
Uguulqp"Vkrg" ]Vr3C_P {swkuv'Tevg'Fevc'Eqpxgtvgtu'/'KKK
Uguukqp'Ej ckt" Ft'C{o cp'Hc{gf "*Kqy c'Ucvg'Wpkxgtukv{.'Wpkxgf 'Ucvgu+
               Cwi wuy; ."4233"*Vvvguf c{+
Fcg"
Vko g"
                36<22¢37<52
Vr3C/3" 36-22¢36-3: " C"Nqy "Rqy gt"Nqy "Xqnci g"Ewttgp√O qf g"C IF """892
                          cpf 'F IC'Eqpxgtvgtu'hqt'F UR'U{ uvgo
                          Mt | {u| vqh"Y cy t {p."cpf "Tqdgtv"Uwu| {punk"*Mqu| cnlp"
                          Wpkxgtukv{ 'qhl'Vgej pqnqi { .'Rqncpf +
Vr3C/4" 363: ¢3658" C"; /Dk/"72"O Ulu"EDUE"Rkr grkpgf "CFE"Wukpi """896
                          Vkog/Ujkhngf 'Eqttgrengf' Fqwdrg' Ucornkpi
                          Rq/Ej wp"J ukcq."KIgp"Ej cq."Ej wpi /Nwp"J uw."Dkp/F c"
                          Nkw"*P cykqpen'Ej gpi "Mypi "Wpkxgtuky{."Vcky cp+:"Ej wp/
                          [ wgj "J wcpi "*P cykqpcn"Wpkxgtukv{ "qhi"Vckpcp. "Vcky cp+."
                          cpf "Uqqp/L{j 'Ej cpi '*P cvkqpcn'Ej gpi 'Mwpi 'Wpkxgtukv{."
                          Vcky cp+
Vr3C/5" 36-58¢36-76" O wnk/O gti gf/Uy kej gf "T gf wpf cpv"Ecr ekkxg"""89:
                          FCEu'hgt"4dle{erg'UCT'CFE
                          "Llcp{w'\ j qpi ."[ cp'\ j w."Uck/Y gpi "Ulp."Ugpi /Rcp"W."
                          cpf "Twk'Rcwrq"Oct \pu'\*Wpkxgtukx{ "qh'Ocecw'Ej kpc+
Vr3C/6"36∕26¢37⁄34" Uki pen/F gr gpf gpv'Cpenqi /vq/F ki ken/Eqpxgtukqp"""8: 4
                          Dcugf 'qp'O KP KO CZ'Uco r nkpi
                          K qtu"J qo lenqxu."O cuepqtk"J cuj ko qvq. "Vencq"Qpq{g"
                          *Quene"Wpkxgtukv{."Ierep+"cpf "Vgvuv(e"J ktqug"*Mqdg"
                          Wpkxgtukv{.'Lcrcp+
Vr3C/7"373443752" C"P qxgn"S wcpvk| cvkqp"P qkug/Ecpegmcvkqp"""8: 8
                          Uej go g'kp"Y kf gdcpf 'F 1C"Eqpxgtygtu
                          Cdj kuj gmlI j quj ."cpf "Uwf j cmct "Rco ct vk" "Wpkxgt ukv{ "qh"
```

Ecnliqtplc."Nqu'Cpi grgu."Wpkgf "Uvcvgu+

```
Uguulqp"Vkrg" ]Vr3D_'Cpcrqi "cpf 'O kzgf/Uki pcrlDkqo gf lecrlEktevkut/"K
Uguukqp'Ej ckt" F t'[ qpi /Dkp'Mko "
                 *P qt vj gcuvgtp'Wpkxgtukv{.'Wpkxgf 'Uvcvgu+
                Cwi wuv'; .'4233'**Vvvguf c{+
Fcvg"
                36<22¢37<52
Vko g"
\label{lem:condition} $$Vr 3D/3" 36 \le 22 \not \in 363: "C"Nqy "Rqy gt"87po "EO QU'Grgevtqpke"P gwtqp"""8; 2"
                          cpf "U{ pcr ug"F guki p"hqt"C"Dkqo ko gvke"O ketq/
                          "Lipi 'Nw'[ qpi/Dlp'Mlo."cpf 'Lqugrj 'C{gtu'*Pqtyj gcurgtp"
                          wpkxgtukv{."Wpkxgf"Uvcvgu+
Rqy gt 'O gf lecn'F gxlegu
                          Tqdgt v"Ej gdnk"cpf "O qj co cf "Ucy cp"* eqng"
                          Rqn( vgej pls vg. 'Ecpcf c+
Vr 3D/5" 36-58¢36-76" Rqy gt"Ucxkpi 'F guki p"Vgej pks wgu'hqt"Ko r rcpvcdrg"""8; :
                          P gwtq/Ulko wrcvqtu
                          "Vqtuvgp"Ngj o cpp."J quwpi "Ej wp."cpf "[ wcp{wcp"[ cpi "
                          *Vj g'Wpkxgtukv{ ''qh'P gy ''Uqwj ''Y cnug. 'Cwurtcnkc+
Vr 3D/6" 3646¢3734" Ugpuqt "Kpygthceg 'Ektevkv'hqt 'Ct vkhkelcriUmkp 'Ugpuqt """924
                          Wikni 'EPHGV
                          J q'Iqqp'Ngg.''Mgp'Ej qk'*Kalpqku'Koukwwg''qh'Vgej pqmi {.''
                          Wpksgf "Uvcvgu+:"cpf "M{ wpi "Mk"Mko "*F cgi w"Wpksgtukv{."
                          Mqtgc+
Vr3D/7" 37-34¢37-52" C'Ucpf óCmpg'Htcewtg'O qpkqtkpi "U{urgo """"928
                          T0'O qtcrgu/Tco qu"*Ukgo gpu"Cwf kqrqi kuej g"Vgej pkn"
                          I o dJ ."I gto cp{+."L0"Uquc."L0"C 0"O qp\sqrt{P} gnuqp"
                          *Wpkxgtukv{ "qhi"Ncu"Rcro cu"f g"I tcp"Ecpctkc."Ur ckp+."
                          UOP qquj cdcf k'*O kej ki cp"Vgej pqnqi kecn"Wpkxgtukv{."
                          Wpkgf "Uvcvgu+: "C0"\ y keni'*O cppj gko "Wpkxgtukv{"
                          qh"Crrkgf "Uekgpegu."I gto cp\{+"cpf "Z 0'R0'P i w\{gp\}"
                          *Wpkxgtukv{ "qh'J gkf gndgti ."I gto cp{+
                                                              Tqqo 'E'\395+
Uguulqp"Vkng" ]Vr3E_'O wnko gf lc'Ektewku'cpf 'U{uvgo u
Uguulqp'Ej ckt" F t'O clkf 'Cj o cf k"*Wpkxgtukv( 'qh'Y kpf uqt. 'Ecpcf c+
                Cwi wuv'; .'4233''*Vvguf c{+
Fcvg"
                36<22¢37<52
Vko g"
Vr 3E/3" 36-22¢363: " Qr vko cn'Ko ci g"Vtcpuo kuukqp"hqt"Xkuvcn'Ugpuqt"""932
                          P gw atm
                           "Uwpi lkp"Ngg"cpf "Ucpi j qqp"Ngg"*[ qpugk"Wpkxgtukv{."
                          Mqtgc+
Vr 3E/4" 363: ¢3658" Ceqwuke "Hkgnf "Gpj cpego gpv'hqt" c"Uvgt gq"" 936"
                          J gcfrj qpg
                           Ogpi/[wEjwpi.'Ejkj/Ejcpi'Ejgp.'Ogpi/Nkp'Jukc'cpf"
                          Quech'V0E0Ej gp"*P cvkqpch'Ej wpi "Ej gpi "Wpkxgtukv{."
                          Vcky cp+
Vr3E/5" 36\58\\\delta36\76" I' gpf gt/vq/Ci g"J kgtctej kecn"T geqi pkkqp"hqt""93: "
                          Ur ggei
                          Ej kj /Ej cpi 'Ej gp. 'Rkpi /Vuwpi 'Nw.'O gpi /Nkp''J ukc. 'Ikc/
                          [ qw'Mg."cpf "Quecn'V0'E0'Ej gp"*P cvkqpcn'Ej wpi "Ej gpi "
                          Wpkxgtukv{."Vcky cp+
Vr 3E/6" 36 $\frac{7}{6}$e37 $\frac{3}{4}$" Vj tgg/Rqqn"O qf gn"xu0'P qppgi cvkxg"Ngcuv""" 944
                          Us wctgu"C ni qtkvj o "hqt"O {gnkp"Y cvgt"
                          S wcp\lhec\lqp
                          {\tt J} { wplkp"Ej wpi ."[ qqpj q"P co ."F qpi j { wp"Mko ."cpf"
                          FqukmUycpi "*{qpugkWpkxgtukv{."Mqtgc+
\label{lem:condition} Vr3E/7"37\$4$\!\!/\!\!/37\$52" \quad \mbox{Wintcuppqi tcr j {"Kpvgi tcvkqp"Uvtwevwtg"hqt"\ldots 948}}
                          Vgngo gf kekpg
                           Rgk/[ w'J wcpi ."Y gk/Vg"Y w"[ w/Cp"Nkp."O gk/Lxpi "Ej gp."
                          Y gp/Nk'Ngg."Mq{kp"Ej cpi "*O kpi "Ej wcp"Wpkxgtukv{."
                          Vcky cp+"Ikvp/J vpi "Nkp"*Mvp"Uj cp"Wpkxgtukv{."Vcky cp+"
```

Ej kc/J wpi "J ukcq"*V| w'Ej k'Wpkxgtukv{."Vcky cp+"cpf" Uj kj /Vucpi "Vcpi "*O kpi 'Ej wcp"Wpkxgtukv{."Vcky cp+

```
Cf cr \kxg'F UR'/'K
Uguukqp'Ej ckt" Ft"Igqpi ugqm'J c"*Mqtgc"Cf xcpegf "Koukwwg"qh'Uekgpeg"
                 cpf "Vgej pqnqi {.'Mqtgc+
Fcvg"
                Cwi wuy!: .'4233'*Vwguf c{+
Vko g''
                36-22¢37-52
Vr3F/3" 36-22¢36-3: " F kuvt kd wvgf "C pvgppc"P gvy qt m'hqt "I ki cdkv"""94;
                          Y ktgrguu'Ceeguu
                           "Hwo k wnk"Cfcej k"Y gk"Rgpi ."Vcvuwpqtk"Qdctc."Vgvuw c"
                          [ co co qvq."T { wwwng"O cwwncy c."cpf "O cuc { wnk"
                          P cncf c'*Vqj qmw'Wpkxgtukv{.'Lcr cp+
\label{lem:condition} $$V$ 3F/4" 363: $\emptyset 3658"$ Ej cppgrl'O qf grlpi "cpf "O qf wrcvlqp" Uej go gu'llqt """955
                          Xkukdng'Nki j v'Eqo o wpkecvkqpu
                           My qpj {wpi "Ngg"cpf "J {wpej gqn"Rctm" Mqtgc"Cf xcpegf"
                           Koukwag'qh'Uekgpeg'cpf 'Vgej pqmi {.'Mqtgc+
Vr3F/5"36-58¢36-76" O O UG/dcugf "F kuvt kd wygf "Dgco hqto kpi "kp""959"
                          Eqqr gtcvkxg'Tgrc{'Pgw qtmu
                          Lloj q'Ej qk'*Uy cpugc''Wpkxgtukv{.''Wpkxgf''Mloj f qo +''cpf''
                          Lgqpi ugqm'J c"*Mqtgc"Cf xcpegf "Kourkwwg"qh"Uelgpeg"
                          cpf "Vgej pqnqi {."Mqtgc+
Vr3F/6"3646¢3734" Eqqr gtcvkxg'Ugewtg'Vtcpuo kukqp'hqt'Fkntkdwgf'''''963
                           F gygeykgp'kp''Y ktgrguu'Ugpugt'P gw qtmu
                           J {qwpi uwm'Lgqp."Uvgxgp"Y 0'O eNcwi j nkp"*I gqti kc"
                           Kpunkweg"qh"Vgej pqnqi {."Wpkegf "Uvcvgu+:"cpf "Igqpi ugqni"
                          J c"*Mqtgc"Cfxcpegf"Kpuvkwvg"qh"Uekgpeg"cpf"
                           Vgej pqnqi {.'Mqtgc+
Vr3F/7"37-34¢37-52" Rgthqto cpeg'Gxcnvcvlqp"qh'Cf crvkxg'Rtqi tguulxg"""967
                          P gw qtmEqf kpi
                           F gqni q"Mlo "* [ qpugk"Wpkxgtukv{."Mqtgc+."Mctco "Rctni"
                           *Uco uwpi 'Grgevtqpleu'Eq0'Nvf0'Mqtgc+'cpf 'Y qp'Y0Tq'
                           *[ qpugk'Wpkxgtukv{.'Mqtgc+
                                                                Tqqo 'G'*594+
  Uguulqp"Vkng" | Vr3G_'U{uvgo 'cpf 'O go qt { 'I kgtctej { 'F guki p
  Uguukqp'Ej ckt" F t'Uxpi lqq'[ qq"
                   *Rqj cpi "Wpkxgtukv{ "qh'Uekgpeg"cpf "Vgej pqrqi {. 'Mqtgc+
 Fcvg"
                  Cwi wuv'; .'4233'*Vwguf c{+
  Vko g"
                  36<22¢37<52
 Vr3G/3" 36-22¢36-3: " Kpvgi tcvkqp"qh"Ecej g"Fcvc"Cmqecvkqp"cpf"""96;
                            Xqnxci glHtgs wgpe{"Uecnkpi "hqt"Vgo r gtcwtg/
                            Eqputckpgf "O wnk/Eqtg"U{ uvgo u"y kyj "5/F"
                            Ucengf 'Ecej g'O go qt {
                            M{ wpi uw\Mcpi .'Iqpi r \kil\xpi \\Mqtgc\Cf xcpegf \'Koukwwg\'
                            qh"Uelgpeg"cpf "Vgej pqmi { ."Mqtgc+."Uwpi lqq"[ qq"
                            *Rqj cpi "Wpkxgtukv{ "qhtUekgpeg"cpf "Vgej pqrqi { ."Mqtgc+"
                            cpf "Ej qpi /O kp"M{ wpi "*Mqtgc"Cf xcpegf "Kpurkwwg"qh"
                            Uelgpeg'cpf 'Vgej pqmi {.'Mqtgc+
 \label{eq:control_problem} $$Vr3G/4" 363: $\&236.58" $$f''' Ko r ngo gpvgf''UTCO IFTCO"J $$\{dtkf'' Ecej g''''''975 \}$$
                            Ctej kgewtg"hqt"J ki j /Rgthqto cpeg"cpf "Nqy"
                            Rqy gt'Eqpuwo r skqp
                            Mqlk"Kpqwg."Uj kp{c"J cuj ki wej k"Uj kp{c"Wgpq."Pcqvq"
                            Hwnwo qvq."cpf "Mc| wcnk"O wtcnco k"*M{ wuj w"Wpkxgtukv{."
                            Lcr cp+
 Vr3G/5" 36-58¢36-76" C"O go qt {"J kgtctej {/Cy ctg"O gvcf cvc""979"
                            O cpci go gpv'Vgej pls wg'hqt 'Uqrld 'Uvcvg'F kumu
                            My cpj w'Dcpi .''Ucpi /J qqp''Rctm''O kplg'Lwp.''cpf ''Gwk'
                            [ qwpi 'Ej wpi '* qpugk'Wpkxgtukv{."Mqtgc+
 Vr3G/6" 36₹6¢37$4" Gzr mtkpi "Gpgti {/Ghhkekgpv"FTCO "Cttc{"""983
                            Ugqpi kt'Q."Uwpi y qq"Ej qq."cpf "Lwpi "J q"Cj p"*Ugqwt'
                            Pcvkqpcn'Wpkxgtukv{.'Mqtgc+
 Vr3G/7" 37-34¢37-52" UgvDcugf "O cpci go gpv"Uej go g"hqt"O NE"Hrcuj """"987
                            Ogo qt { "Uvqtci g"U{ uvgo
                            Igp/Y gk'J ukgj "cpf" [ wEj gpi "\ j gpi "*P cvkqpcn" Vcky cp"
```

Wpkxgtukv{ "qh"Uekgpeg"cpf "Vgej pqnqi { . "Vcky cp+

Uguukqp"Vkxrg" JVr3F_'Go gti kpi "Vgej pqrqi kgu'kp'Eqo o wpkecvkqpu'cpf'

```
Uguukqp"Vkrg" ]Vr3H_"TH'cpf 'O letqy cxg'Ektevku'/"K
Uguukqp'Ej ckt" Ft'Pkpi 'Nw'*O qvqtqrc.'Wpksgf 'Uvcvgu+
               Cwi wuv'; .'4233'*Vwguf c{+
Fcvg"
Vko g"
               36<22¢37<52
Vr3H3" 36-22¢36-3: " F guki p"cpf "Eqpytqn"qh"Nquunguu"O wnwl/Y c{"""98;
                          Rqy gt'Eqo dkpkpi 'cpf 'Qwr j cukpi 'U{uvgo u
                          Cngzcpf gt "U0'Lwt mqx"cpf "F cxkf "L0'Rgttgcwnv"
                          *O cuucej wugvu"Kpuvkwvg"qh"Vgej pqmi {."Wpkvgf"
                          Uvcvgu+
Vr3H/4" 363: ¢3658" Cf xcpegu"kp"Cevkxg"O ketqy cxg"Htgs wgpe{"""995
                          O wnkr rketu
                          Mgrxkp"[ wn'cpf "I 0T0'Dtcppgt"*Wpkxgtukv{ "qh'Ecrkhqtpkc."
                          Fcxku.'Wpkgf''Uvcvgu+
Vr3H/5" 36√58¢36√26" Nqy/Rqy gt"NE/Vcpm/Tgwugf "Kplgevkqp/Nqengf"""999
                         Higs wgpe { 'O wnkr rkgt
                          Ej ktp"Ej {g"Dqqp."Mkcv"Ugpi "[ gq."O cpj "C pj "F q."cpf "
                          [ cppcp"O kcq"*P cp{ cpi "Vgej pqmi kecn"Wpkxgtukv{."
                          Upi crqtg+
Vr3H'6" 36-76¢37-34" C"442'O J | 'Nqy 'Rj cug'P qkug'Eqnr kwu'Queknovqt''''''9: 3
                          P kpi "Nw'cpf "O ctm'J cpg{"*O qvqtqrc"Uqnwkqpu"Kpe0"
                          Wpkgf 'Ucvgu+
Vr3H/7" 37-34¢37-52" C"P gy "Crrtqcej "vq"Vj gto qo gvgt/vq/Dkpct{""""9: 7"
                          Gpeqf gt"qh"Hrcuj "CF Euó"Dwddrg"Gttqt"F gygevkqp"
                          Ektevky
                          Dwk'Xcp"J kgw."Ugwpi j y cp"Ej qk'*O { qpi lk'Wpkxgtukv{."
                          Mqtgc+:"Lqpi mwi "Ugqp"*NU"Kpf wuxtkcn"U{ uvgo ."Mqtgc+:"
                          [ qwpi ej gqn'Qj ."Ej qpi f cg"Rctm"J {wpy qqm'lMo ."cpf"
                          Vckm(gqpi 'Lgqpi '*O {qpi lk'Wpkxgtukv{.'Mqtgc+
                                                             Tggo 'I '*427+
'Uguulqp"Vkvng" ]Vr3I _'Gogtilpi"Fkikcn"Vgejpqnqilgu
Uguukqp'Ej ckt" F t'[ qpi / Dkp'Mko "
                \parbox{$^*$P qtyj gcurgtp'Wpkxgtuk-{.}$'Wpkgf'Ucvgu+}\\
                Cwi wuv'; .'4233'*Vwguf c{+
Fcvg"
Vko g"
                36<22¢37<52
Vr3I /3"3622¢363: " Rgthqto cpeg/Rqy gt"Vtcf gqhhu"qh": V"HkpHGV"""9:;
                          UTCO 'Egmu
                          O lej cgrlC0Vwtkicpf "Iqu² "I 0F gri cf q/Htkcu'*Y cuj lpi vqp"
                          Uvcvg"Wpkxgtukv{."Wpkxgf"Uvcvgu+
Vr3I /4"363: ¢3658" Nqy "Rqy gt"Hcuv"Et {qi gpke"EO QU"Ektewkv"hqt""""9; 5
                          F ki kscriTgcf qw'qh'Upi rg'Grgevtqp''Vtcpukryqt
                          Mwj criF cu'cpf "Vqtuvgp"Ngj o cpp"*Vj g"Wpkxgtukv{ "qh"
                          P gy 'Uqwi 'Y crgu.'C wuxtcrlc+
Vr3I /5"36-58¢36-76" C'P qxgrlöF kxkf g'cpf 'Eqps wgtö'Vgukpi 'Vgej pks wg''''''9; 9
                          hqt'O go tkwqt'Dcugf 'Nqqmwr''Vcdrg
                          Xggtguj "C0'J qpi cn "Tci j cxgpf tc" Mqvkmcmcr wf k"
                          *O kuuqwtk"Wpkxgtukv{"qh"Uekgpeg"cpf "Vgej pqmi {."
                          Wpksgf "Ucvgu+" | qpi/Dkp"Mko "Pqtyj gcuvgtp"Wpksgtukv{."
                          Woksef "Ucvgu+"cpf "O kpuw'Ej qk'*O kuuqwtk'Woksegtukv{ "qh"
                          Uelgpeg"cpf "Vgej pqrqi {."Wpkgf "Uvcvgu+
Vr3I /6"36\gamma6\epsilon6\epsilon37\figs4" Uvduvtcvg"Dlcu"Eqpulf gtcvlqpu"lqt"Nqy "Ngcmci g""": 23
                          38po 'R/Ej cppgrlEctdqp'P cpqwdg'Vtcpukrqtu
                          [ cpcp"Uwp"cpf "Xqmcp"Mwtuwp"*Vj g"J qpi "Mqpi "
                          Wpkxgtukv{ "qh"Uekgpeg"cpf "Vgej pqrqi { ."J qpi "Mqpi +
Vr3I /7"37-34¢37-52" Vj g"Ko r cev"qh"Eqttgrcvkqp"dgwy ggp"P DVKcpf """: 27"
                          VFFD'qp'vj g'Rgthqto cpeg'qh'Fki kcn'Ektevksu
                          J qpi "Nwq."[ w'Y cpi "*Vukpi j wc"Wpkxgtukv{."Ej kpc+."
                          L(qy k'Xgrco crc."[ w'Ecq"*Ctk qpc"Uvcvg"Wpkxgtukv{."
                          Wpkgf "Uvcvgu+:" wcp"Zkg"*Vj g"Rgppu{nxcpkc"Uvcvg"
                          Wpkxgtukv{."Wpkvgf "Uvcvgu+."cpf "J wc| j qpi "[ cpi "
                          *Vukpi j wc'Wpkxgtukv{.'Ej kpc+
```

```
Uguukqp"Vkxrg" "JVr 3J _"Ur gekcn"Uguukqp"qp"Uki pcn"Rt qeguukpi "hqt"
                 Uqhvy ctg'F ghkpgf 'cpf 'Eqi pkkxg'Tcf kqu'/'K
 Uguukqp'Ej ckt" F t'C'Rtcucf 'Xkpqf"
                  *P cp{cpi 'Vgej pqnqi kecn'Wpkxgtukv{.'Ukpi cr qtg+
Fcvg"
                 Cwi wuy, .'4233'*Vwguf c {+
Vko g''
                 36<22¢37<52
Vr3J/3"36-22¢36-3: "Rtqi tco o cdrg"Cpcrqi wg"Dcugdcpf "Hkngtu"hqt""": 2;
                           Uqhıy ctg'F ghlpgf 'cpf 'Eqi plakxg'Tcf lq
                           Lco gu"O qtkv ." [ kej wcpi "Uwp"*Wpkx gtukv { "qh"
                           J gt shqtf uj ktg. "Wpkgf "Mipi f qo +"cpf 'Zk"\ j w™O ces wctkg"
                           Wpkxgtukv{.'Cwuxtcrkc+
Vr3J /4" 363: ¢3658" C"Nqy "Eqo r ngz kv{ "Eqqr gtcvkxg"Ur gevt wo """: 35"
                           Ugpukpi 'Uej go g'hqt'Eqi pkkxg'Tcfkqu
                           O gpi f c"Nkp"cpf "C0R0Xkpqf"*P cp{cpi "Vgej pqrqi kecn"
                           Wpkxgtukv{."Ukpi cr qtg+
Vr3J /5"36-58¢36⊲6" C"I co g"Vj gqtgske"Crrtqcej "hqt"Rqy gt"Eqpstqnl""":39
                           cpf "Ur gevtwo "Cmqecvkqp"hqt"Eqi pkskxg"Tcf kq"
                           P gw qtmu
                           Piw{gp"Fw{"Fwqpi."C"U"Ocfjwnwoct."cpf"C"D"
                           Rt go mwo ct"*P cp { cpi "Vgej pqnqi kecn"Wpkx gt ukv{."
                           Ukpi cr qtg+
Vr3J/6"36<76¢37<34" Tgurqpug"Cpcn(uku"qhi"Ugeqpf/Qtfgt"Ownk/Dcpf"""": 43
                           S wcf tcwtg" "O qf wrcvqtu"y ky "Crrrkecvkqpu"kp"
                           Eqi pkkxg'Tcf kq'F gxkegu
                           "Leening" Oct vkre. "Oct mwu' Cnf p. "cpf "Okming" Xemicoc"
                           *Vco r gtg'Wpkxgtukv{ ''qh'Vgej pqmi { .''Hkprcpf +
Vr3J /7"37-34¢37-52" Cf cr vkxg"Ko r gf cpeg"O cvej kpi "cpf "Cpvgppc""": 47
                           Vwpkpi "hqt"I tggp"Uqhvy ctg/F ghkpgf "cpf"
                           Eqi pkkxg'Tcf kq
                           [ kej wcpi "Uwp."Lco gu"O qt kv "*Wpkx gt ukv{ "qh"
                           J gt vhqtf uj ktg. "Wipkigf "Milipi f qo + "cpf "Zk"\ j w™O ces wctkg"
                           Wpkxgtukv{.'Cwuxtcrkc+
                                                              Tqqo 'K'C664+
Uguukqp"Vkrrg" ]Vr3K_THKF 'U{ uvgo u'cpf 'Ektevksu
Uguukqp'Ej ckt" Ft"Tqe'Dgtgpi wgt'*Wpkxgtukv{ 'qh'P cxcttc. 'Ur ckp+
                Cwi wuy; .'4233'*Vwguf c{+
Fcvg"
Vko g"
                36<22¢37<52
\label{eq:Vgej} $$Vr3K3"$ 36-22¢36-3: "$ Go gti kpi "Vgej pqnqi kgu"cpf "Ej cmgpi gu"hqt" yi g""": 4;
                           Kovgtpgv'qh'Vj kpi u
                           \label{eq:continuity} \begin{tabular}{ll} Kingt "O c { qtf qo q. "Rgvgt "Ur kgu. "Hitkw" "O gkgt. "Uvgr j cp" } \end{tabular}
                           Qwq."Ugdcukcp"Ngo r gtv."Lqugh"Dgtpj ctf."cpf'
                           Crgzcpf gt "Rhœwo "*Htcwpj qhgt "Koukwwg hqt "Kovgi tcvgf"
                           Ektewku'KKU.'I gto cp{+
Vr 3K4" 363: ¢3658" Nqy "Rqy gt "Xqnxci g"Nko kgt "F guki p"hqt "c"Hwni"": 55
                           Rcuukxg'WJ H'THKF'Ugpuqt
                           GO'Hgtpa pf g| .'CO'Dgtkckp.'J O'Uqnct.'CO'I cte\range{c}/Cmpuq.'TO'
                           Dgtgpi wgt"*Wpkxgtukv{"qh'P exette."Ur ckp+:"10/Uque."10/O 0"
                           Oqp| »p"."UNI cte%/Cmpuq."cpf "INCOO qpvkgn/P gnqp"
                           *Wpkxgtukv{ ''qh'Ncu'Rcro cu'f g'I tcp'Ecpctkc.''Ur ckp+
Vr 3K5" 36-58¢36-76" C"O wnk/Ucpf ctf "O qf wrcvqt"hqt"J ki j "Higs wgpe{"""": 59
                           Rcuulxg'THKF'Vtcpurqpfgt
                           Nko "[ k'Hgk "Mj cy "O gk'Mwo "*O wnko gf kc"Wpkxgtukv{."
                           O cnc { ulc+."cpf "Hckucri'O qj f/[ culp"*I tkhhkj "Wpkxgtukv{."
                           Cwutcrkc+
Vr 3K6" 36/26¢37/34" Cxcnvcvkqp"qhl"Vci "O qxkpi "F ktgevkqp"F gvgevkqp"kp"""": 63
                           c'WJ HTHKF'I cvg'U{uvgo
                           [ quj kpqtk'Qkney c'*P GE'VQMkP 'Eqtr 0'Lcr cp+
Vr 3K7" 37-34¢37-52" C"Rqy gt/Ghhelgpv"F wcn Vcpm"HUM"F go qf wrcvqt""": 67
                           hqt'Rcuukxg'Y ktgrguu'O ketqu{uvgo u
                           Z + T = T  (gtuqp"Wpkxgtukv{."
```

Ecpcf c+

		"Ft"Ujw	Uki o c/Fgnc'cpf 'Qxgt'Uco rngf 'Ektewkvu /Ej wcp''J wcpi "*Vcwpi "Wpkrgtukv{."Vcky cp+ /'; .'4233 "*Vwgufc{+ 3937
	"37 - 67¢	: 38-25"	C"EV"Uki o c/Fgnc"Oqfwrcvqt"ykj "c"J{dtkf"""":6; Nqqr"Hungt"cpf"Ecrcekkkg"Hggfhytyctf Ljkp/Hcpi"Jwcpi."[gp/Lwpi"Np."Mwp/Ejkgj"Jwcpi" *Pcvkqpcn"Vckycp"Wpkxgtukv{"qh"Uekgpeg"cpf" Vgejpqnqi{:"Vckycp+"cpf"Tqp/[k"Nw"*Ejwpi/Jyc" VgngeqoowpkcKqp"KpEqtrO'Vckycp+
Vr 4C/4	"38-259	t 38∢3"	Enqem'Lkvvgt"Ugpukvkxkv{"Tgf wevkqp"kp"EV" """"": 75' Oqf waevqtu"Wukpi "Xqnci g/Etquukpi "Fgvgevkqp" FCE
"	"		['cpi 'Llcpi .'Ej gp/[cp'Eck'UckY gpi 'Up.'Ugpi /Rcp'W' cpf "TwkRXOctvlpu"'qhiOcecw'Ej lpc+
Vr 4C/5	"38∢43¢ "	385; "	C"Vwpcdrg"UE"Dcpfrcuu"Fgnc/Ukioc"Oqfwrcyt""": 79 y kij "Pqkug/Eqwrrgf"Ctej kvgewtg Uj wEj wcp"J wcpi "cpf"Vkpi/[gp"Ycpi "*Vcwpi" Vykxgtukv{.'Vckycp+
Vr 4C/6	"385; ç	± 38∕49"	U{uvgocvke"Fgukip"qh"Ownvk/Dkv"Eqpvkpwqwu/""": 83 Vkog"Fgnxc/Ukioc"Oqfwravqtu"Wukpi"Vyq/Uvgr" Swcpvklgt Ucmmaterepk/Deneiqren'Teleteo'Oqjep'Tq{"Mqrrwae." cpf"Xkujen'Uczgpc"*Dqkug"Uvcvg"Wpksgtukv{."Wpksgf" Uvcvgu+
Vr 4C/7	"38 <i>⊲</i> 9¢ "	: 39∢7"	C"Fwcn'XEQ/Dcugf"Swcpvk gt"ykyj"Jkijn("""":87 Kortqxgf"Npgctkv{"cpf"Gpnctigf"F{pcoke"Tcpig Vcq'Jg,"[wp'Fw'[cpi"Llcpi."UckYgpi"Up."Ugpi/Rcp" Wcpf"TwkROCctvkpu'"Wpkxgtukv{"qhlOcecw'Ejkpc+
			Tago 'D'\\$92G+
	"Ej ckt"	Ft"[qpi / *Pqtvj gc	Tqqo "D"392G+ pcrqi "cpf "O kzgf /Uki pcrlDkqo gf kecrlEktewku "/"KK /Dkp"Mo " :uvgtp"Wpkxgtukv{."Wpkyf "Uvcvgu+ ."4233"*Vwguf c{+
Uguukqp "" Fcvg" Vkog"	"Ej ckt"	Ft"[qpi/ *Pqtvjgc Cwiwuv"; 37-∕67¢3	pcnqi "cpf "O kzgf /Uki pcn/Dkqo gf kecn/Ektewkku"/"КК /Dkp"Mo " :uvgtp"Wpkxgtukv{."Wpkxgf "Uvcvgu+ ."4233"*Vvguf c{+
Uguukqp "" Fcvg" Vko g" Vr 4D/3"	"Ej ckt" 37-67¢	Ft"[qpi / *Pqtvj gc Cwi wuv'; 37-67¢ 3 38-25"	pcnji "cpf" Okzgf / Uki pcn" Dkqo gf kecn" Ektewkku "/" KK / Dkp" Mo" uwgtp" Wpksgtuk { ." Wpksgf" Uvcvgu+ ." 4233" *Vwguf c{+ 39-37 Nqy "Rqy gt" Kpvgi tcvgf" Rqvgpvkquvcv" Fguki p" hqt" "" 8; Ùgngevtqf gu"y knj" Kortqxgf" Ceewtce { Ocvoj gy "Fwy g"cpf" Vqo "Ej gp" *Eqnqtcfq" Uvcvg"
Uguukqp "" Fcvg" Vko g" Vr 4D/3" "	"Ej ckt" 37-67¢ " 38-25¢ "	Ft"[qpi /* *Pqtyj gc Cwi wuv"; 37-67¢ 3 38-25" 38-43"	pcnji "cpf" O kzgf / Uki pcn Dkqo gf kecn Ektewku "/" KK / Dkp" Mo " uwgtp" Wpksgtuk \{. "Wpksgf" Uvc vgu+" 4233 "*Vwguf c \{+ 1937 Nqy "Rqy gt" Kpvgi tcvgf" Rqvgpvkquvcv' Fguki p" hqt" "": 8; Ùgngeutqf gu"y kj "Kortqxgf" Ceewtce \{ 0 cvvj gy "Fwy g"cpf" Vqo "Ej gp" *Eqnqtcfq" Uvcvg" Wpksgtuk \{. Vyksgf" Uvcvgu+ Fguki p" qh" Tgncdng" Ewttgpv" Tge \{enkpi "Nkpgct" "": 95 Tgi wncvqtu" hqt" Dkqo gf kecn Kornepuu ["vcp \{vcp" [cpi ."Vqtuvgp" \}ej o cpp." cpf" Jquvpi "Ej vp"
Uguulqp "" Fc vg" Vko g" Vr 4D/3" " Vr 4D/4" " Vr 4D/5"	"Ej ck" 37-67¢ " 38-25¢ " 38-43¢ "	Ft"[qpi /* Pqtyj gc Cwi wuv'; 37-67¢ 3 38-25" 38-43" 38-43"	pcni "cpf"O kzgf /Uki pcnDkqo gf kecnEktewku "/"KK /Dkp"Mo " uvgtp"Wpksgtukv{."Wpkgf "Uvcvgu+ ."4233"*Vwguf c{+ 89-37 Nqy "Rqy gt"Kpvgi tcvgf "Rqvgpvkquvcv"F guki p"hqt""": 8; Ùgngevtqf gu"y kj "Kortqxgf"Ceewtce{ Ocvj gy "Fwy g"cpf" Vqo "Ej gp"*Eqnqtef q"Uvcvg" Wpksgtukv{. Vybkgf"Uvcvgu+ F guki p"qh"Tgncdng"Ewttgpv"Tge{enkpi "Nkpgct""": 95 Tgi wncvqtu"hqt"Dkqo gf kecnikornepu ['vep{vep"[cpi."Vqtuxgp"Ngj ocpp."cpf"J quvpi "Ejyp" *Vj g"Vybksgtukv{'qhlPgy "Uywj "Y cngu "Cwntcnkc+ C"Nkpgct" Vwpcdng "Cornkhlgt"hqt" Kornepvedng""": 99 P gwtcnTgeqtf kpi "Crrnkecvkqpu J cokftgl c"Tg cgg/Fgj uqtnj."Peuuko "Texepuj cf." Tgl c'Nyhk'cpf"MjcnkiOchkpg j cf"*Hgtfqy ukWpksgtukv{"

Uguulqp"Vkrg"]Vr4E_"Ko ci g'Rtqeguulpi "cpf 'Rcvgtp"Tgeqi pklqp Uguulqp'Ej ckt" F t'O clkf 'Cj o cf k"*Wpkxgtukx{ "qh'Y kpf uqt. 'Ecpcf c+ Fcvg" Cwi wuv'; .'4233'*Vwguf c{+ Vko g" 37-67¢39-37 Vr 4E/3" 37-67¢38-25" Tgy gki j vgf "n,"pqto "O kpko k¦ cvkqp"Crrtqcej "vq"""::;; Ko ci g'Kor ckpskpi 'Dougf 'qp'Topn'O kpko k cskqp Vqo qj ktq"Vcmcj cuj k"*Vqm(q"Wpkxgtukv("qh"Uekgpeg." Icr cp+"Mcvwo k"Mqpkuj k"*Mqi cmvkp"Wpkxgtukv{."Icr cp+" cpf "Vquj kj ktq"Hwtwncy c"*Vqm(q"Wpkxgtukv{ "qh"Uekgpeg." Lcr cp+ Vr4E/4"38≥25¢38≰3" Dnggf kpi "T gi kqp"F gvgevkqp"kp"Y EG"Ko ci gu"""; ; 5 Deugf "qp"Eqrqt"Hgewtgu"cpf "P gwtcriP gw qtm "cpcp"Hw. "O tkpcn"o cpf cn "cpf "I gpej gpi "I wq" *Wpkxgtukv{ ''qh'Crdgt vc.'Ecpcf c+ Vr 4E/5"3843¢385; " C"P gy "Cf cr vkxg"Vj t guj qnf "Vgej pks wg"hqt"""; ; 9 Kortqxgf 'O cvej kpi 'kp'UKHV "U{gf"Icj cp| gd"J wunckp"Rkt| cf c. "O kt| c"Y cs ct "Dcki ." Gj ucp"WhJ cs."cpf 'J {wpej whUj kp"*J cp{cpi "Wpkxgtukv{." Matgc+ Vr 4E/6"38-5; ¢38-₹9" Rgf guvt kcp"F gvge vkqp"6"C"P gwt qo qt r j ke"""; 23 Crrtqcej Y qq"Lqqp"J cp"cpf "Ki"Uqpi "J cp"*Mqtgc"Cf xcpegf" Koukweg'qh'Uekgpeg'cpf 'Vgej pqmi {.'Mqtgc+ Tqqo 'F'*47; + Uguukqp"Vkrrg" "JVr 4F_"Go gti kpi "Vgej pqrqi kgu"kp"Eqo o wpkeckqpu" cpf 'Cf cr vkxg'F UR'/'KK Uguulqp'Ejckt" Ft'Iqqpj {wn'Mcpi "*Mqtgc'Cfxcpegf 'Kourkwyg'qh'Uekgpeg" cpf 'Vgej pqnqi {.'Mqtgc+ Cwi wuv!; .'4233'*Vwguf c{+ Fcyg" Vko g" 37-67¢39-37 Vr 4F/3" 37-67¢38-25" Kpvgtecttkgt"Kpvgthgtgpeg"O kki cvkqp"cpf "O wnk/"""; 27 wugt "F gvgevkqp"Go r nq{kpi "Cf cr vkxg"KEC"hqt" O KO Q/QHF O 'U{uvgo u'kp''Vko g'Xctkcpv'Ej cppgnu Tci j wtco "Tcpi cpcvj cp"*Wpkx gtukv{ "qh"Egpvtcn" Hnqtkfc."Wpkgf"Uvcvgu+:"Vj qo cu"[cpi "*Go dt {/Tkffrg" Cgtqpcwkecn'Wpkxgtukv{."Wpkxgf "Uvcvgu+:"cpf "Y cuh{" Okmjegni*Wpkxgtukv{'qh'Egpvten'Hnqtkfe.'Wpkxgf'Uvevgu+ Vr 4F/4"3825¢3843" Eqo r gpucvlqp"qh"Vlo lpi "Qhhugv"cpf "Hrgs wgpe{""""; 2; Qhhugv'kp'O wnk/dcpf 'Tgegkxgt''dcugf ''qp'TH'Uwd/ Uco rnkpi J wkM(w'Ngg'cpf 'J gwpi/I {qqp'T{w'*Ej wpi dwn'iP cylqpcn' Wpkxgtukv{.'Mqtgc+ Vr 4F/5"38-43¢38-5; "O qdkrg"Tqdqv"Vtcemkpi 'kp"\j g"DUP 'wukpi 'Uwr r qtv""""; 35 Xgevqt'O cej kpg "Y qq{qpi "Ej wpi ."J {wnfqq'Ej qk''cpf 'Gwpvck'Mko "*{ qpugk' Wpkxgtukv{.'Mqtgc+ Vr 4F/6"38-5; ¢38-₹9" Vj g"Ur cvlcri'Eqttgrcvlqp"Ej ctcevgtkuvleu"qh'5/F"""; 39

Cpvgppc'Cttc{'U{uvgo u

Wpkxgtukv{."Vcky cp+

ĽwJ qpi "Ngg"cpf "Ej kpi /Ej kc"Ej gpi "*P cvkqpcn"Vcky cp"

Uguukqp'Ej cktu'''Ft'J wk/Tw'Llcpi ' *P cvkqpcn'Ej kcq"Vvpi "Wpkxgtukv{."Vcky cp+ Ft'OctmRq/Jwpi'Nkp" *P cvkqpcnEj wpi 'Ej gpi 'Wpkxgtukv{."Vcky cp+ Fcvg" Cwi wuv!; .'4233''*Vwguf c{+ 37<67¢39<37 Vko g" Vr 4G/3" 37-67¢38-25" Tgegpv"T gugctej "F gxgmr o gpv"kp"O gvcn'Qpn("""; 43 ŒQ Ej wcp/[cq"Vcp"cpf "Kku"J wk/Tw"Lkcpi "*P cykqpcn"Ej kcq" Vwpi 'Wpkxgtukv{."Vcky cp+ Vr 4G/4" 38-25¢38-43" Ej kr/Ngxgrl'F guki p"cpf "Qr vko kļ cvkqp"hqt"F ki kscrl""; 47 O ketqhnwlf ke'Dkqej kru "Vuwpi /Y gk"J wcpi "*P cykąpen"Ej gpi "Mwpi "Wpkx gtuky{." Vcky cp+"[cp/[qw'Nkp"*F wng"Wpkxgtukv{."Wpkxgf "Uvcvgu+" Ikc/Y gp"Ej cpi ."cpf "Vuwpi /[k'J q"*P cwqpcn'Ej gpi " Mwpi 'Wpkxgtukv{.''Vcky cp+ Vr 4G/5" 38-43¢38-5; " T gegpv"T gugctej "F gxgnqr o gpv"kp"Rj {ukecn""""; 4; F guki p'hqt'O cpwhcewtcdkrkv{ "Vck/Ej gp"Ej gp."Vck/J wpi "Nk"Dk/Vkpi "Nck"cpf"[wp/Ej kj " Vuck*PcvkqpcnEgpvtcnWpkxgtukv{."Vcky cp+ Vr 4G/6" 38-5; ¢38-₹9" Tqwklpi /Cy ctg"Rrcego gpv'Cni qtkvj o u"hqt"""; 55 O qf gtp'Cpcnqi 'Kpvgi tcvgf 'Ektevkvu Ej gpi/Y w'Nkp."Ej gpi/Ej wpi "Nw."Ej wp/Rq"J wcpi." Uqqp/L(j "Ej cpi ."cpf "Ick/O kpi "Nkp"*P cvkqpcn'Ej gpi " Mwpi 'Wpkxgtukv{.''Vcky cp+ Vr 4G/7" 38-79¢39-37" Tgegpv"Tgugctej "kp"Enqem'Rqy gt"Ucxkpi "y kj """"; 59 Ownsk/Dks/Hrkr/Hngru O ctm'Rq/J wpi "Nkp. 'Ej kj /Ej gpi "J uw. "cpf "[cq/Vuwpi " Ej cpi "P cvkqpcn'Ej vpi 'Ej gpi 'Wpkxgtukv{."Vcky cp+ Tggo 'H*533+ Uguulqp"Vkng" ""]"Vr 4H_"TH'cpf 'O letqy cxg'Eltevku"/"KK Ugunlqp"Ej ckt" Ft"Fcxkf"Rgttgcwn/"*Ocuucej wugvuu"Kpuvkwwg"qh" Vgej pqnqi {.'Wpkgf 'Ucvgu+ Cwi wuv'; .'4233'*Vwguf c{+ Fcvg" Vko g" 37.67¢3937 Vr 4H/3" 37-67¢38-25" Eqf kpi "Ghhkekgpe{"Qr vko ki cvkqp"hqt"O wnxhrgxgri"""; 63 RY O 'Dougf 'Uy kej gf/O qf g'TH'Vtopuo kwgtu "Uj wrkEj k" 1 tc| "Wpkxgtukv{ "qh"Vgej pqrqi { ."Cwuvtlc+"Rgvgt" Upi gtrl*Kphkpgqp"Vgej pqrqi kgu"Cwwtkc"CI. "Cwwtkc+" cpf "Ej tkukcp" Xqi gri "Vgrgeqo o wpkeckqpu "Tgugcej " Egpygt'Xkgppc'\HVY +'Cwivtkc+ Vr 4H/4" 38-25¢38-43" Hggf dcem/Dcugf "F ki kscrlRtgf knytygt 'hqt 'O wnk/Dky''''"; 67 Fgnxc/Uki o c''Vtcpuo kwgt O qj co o cf "O qlvcdc"Gdtcj ko k"UO'Ckf kp"Dcuuco ." O qj co gf "J grcqwk"cpf "Hcfj gn"O 0'I j cppqwej k" *Wpkxgtukv{ 'qh'Ecn ct { . 'Ecpcf c+ Vr 4H/5" 3843¢385; " F guki p"qh"Etquu"Eqwr ngf "EO QU"Wpucwtcvgf """"; 6; Tkpi 'Quekncvqtu Dqueq'Ngwpi "*Wpkxgtukv{ "qh'Y cvgtnqq. 'Ecpcf c+ Vr 4H/6" 38-5; ¢38-₹9" Vj g"GO E"Cpcn(uku"dgw ggp"EQO U"TG"cpf "vj g""""; 75" J ØC'Newpej gt'TU Gwk/Ejcp"Mko."Lc/Ejwp"Mqq"*Mqtgc"Cgtqurceg" Tgugctej "Kourkwyg." Mqtgc+."cpf "J cm/Lw' Ngg" *Mqtgc" Grgevtle 'Ray gt' Tgugctej 'Kourkwyg. 'Matgc+ Vr 4H/7" 38-79¢39-37" Cp"Wntc/Nqy "Xqnci g"Wntc/Nqy "Rqy gt"EO QU""; 78 Okzgt'Wukpi 'vj g'Dqf { 'Ghhgev P gi ct"\ qmc."Gj ucp"mti ctcp"*Ucf lcf "Kpurkwwg"qh" J ki j gt "Gf wec klapu." Ktcp+"I j c| cn"P cdqxc k" *Hgtfqy uk" Wpkxgtukv{ "qh'O cuj j cf ."Kcp+."cpf "J qqo cp"P cdqxcvk"

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Uguulqp"Vkrg"']Vr 4G_'Go gti kpi "Vqr keu'kp'Rj {ukecnF guki p

Uguukqp"Ej ckt"	Ft"J ge	_'O GO U'Ugpuqt'Ektewksu eqt''Uqmt''*Vgepwp''/'Wpksgtukv{ "qh'Pcxcttc."Urclp+
Fcvg" Vkog"	Cwi wu 37∢67¢	v'; ."4233"*Vwguf c {+
Vr 4I /3"37-67¢	38-25"	Ngy ó Rgy gt"O GO U"Rtguuwtg"Ugpuqt"hqt"Y ktgrguu"""; 82" Dkqo gf lecri'Cr r rkecvkqpu UNI cte%/Cuppuq:"VODewkwe:"LOUQue:'LOOOQp »p/
		Xgtqpc."HIDUcpvcpc6Octvp."XDPcxcttq6Dqvgnq." LD'Cpvcpc6Ecdtgtc."cpf "LD'CO'Oqpvkgn'Pgnqp" *Vjkxgtukv{'qltNcu'Rcno cu'f g'I tcp'Ecpctlc.'Urclp+
Vr 4I /4"38∕25¢	38∢3"	Whate "Nqy "Rqy gt" J ki j "Ghhekgpe { "Ej cti g "Rwo r """"; 86 F guki p "Wukpi "P GO "T gre { u
		Teo emtkuj pep"Xgpnrveuwdteo eplep."Uvlep"M" Oepqjet."epf "Rqteu"VDemete" "Vykkgtukv{"qli Vgzeu"ev" Femru "Vykgf" Uvevgu+
Vr 4I /5"38∢3¢	385;"	Oqfgnlpi."Ulo wnc vlqpu"cpf"Fgulip"qh"OGOU""";8: "Ggevtqogejcplecn"Ulioc/Fgnc"OqfwncvqtFtciq"Uvng""qh!Nvdnlcpc."Unysgplc+
Vr 4I /6"385; ¢	38⊲9"	White"my "r qy gt"; 220J 14470J "Vicpuegkigt""; 94'dcugf "qp" Kplgevlqp" Nqemlpi "hqt"c" Ugo k/cevkig"
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Vr 4I /7"38∢79¢	39∢7"	\mathbb{C} "RNN"Dcug f "Tgcf qww"cp f "Dwkd'kp "Ugth'Vguv"hqt""; 98" O GO U"Ugpuqtu
" "		Vetgs 'O vý co o cf' Uvr qp.' Mkuj pco qj cp' Vj cpi etelej ." Teuj kf' 'Teuj kf cf gj ."cpf' O clkf' 'Cj o cf k* Wplssgtuls {"qh' Y lpf uqt. 'Ecpcf c+
		Tqqo 'J '*468E+
		• •
Uguukqp"Vkng" Uguukqp"Ej ckt"	Uqhvy	_"Ur gekcn"Uguukqp"qp"Ukipcn"Rtqeguukpi"hqt" ctg"FgHkpgf"cpf"Eqipk-kkxg"Tcfkq"/"KK ktcucf"Xkpqf"
"		
Fcvg" Vkog"	Cwi w	cpi "Vgej pqnqi kecn"Wpksgtuks{."Ukpi crqtg+ ıv'; ."4233"*Vwgufc{+ ¢39⊰7
Vko g"	Cwi w 37∢67	vv'; ."4233"*Wwgufc{+ ¢ 39-37
Vko g"	Cwi w 37∢67	ıv'; ."4233"**Vwguf c{+
Vko g" Vr 4J /3" 37 <67¢	Cwi wi 37-670 38-25"	nv'; ."4233 "*Vwguf c {+ \$\phi\$ 39-37 Oqf gridcugf "Y cxglqto "F guki p "lqt" vj g "Wpkxgtucri"""; : 2 Uqhwy ctg"Tcf kq"Rgtkr j gtcri'y kj "Ulo wripm Okej cgri'Uej y cm''Uglpcp''Pci gn''Ej tkrokp''Tglo gt."cpf" Higftlej "Mitapftcri'Mttnutvj g' Knokwag'qh' Vej popuji {." I gto cp{+ Tglphqtego gpv'Ngctpkpi "Crrrkecvkqp" Uegpctkq" lqt'"""; : 6
Vko g" Vr 4J /3" 37 67¢ " "	Cwi wi 37-670 38-25"	nv'; ."4233 "*Wwgufc{+ \$\phi\$ 39-37 Oqfgridcugf "Y cxghqto "F guki p"hqt"vj g"Wpkxgtucri"""; : 2 Uqhwy ctg"Tcfkq"Rgtkrj gtcri'y kj "Ulo wilpm Okej cgriUej y cm"Uyghcp"Pci gn"Ej tkrvkcp"Tglo gt."cpf" Higftlej "MoLapftcri"Metnutvj g"Knukwwg"qh"\&ej panji {." I gto cp{+
Vko g" Vr 4J /3" 37-67¢ " " Vr 4J /4" 38-25¢	Cwi w. 37-676: 38-25"	n'; "4233 "*Vwguf c {+ \$\psi\$ 3937 Oqf gridcugf "Y cxghqto "F guki p"hqt" vj g"Wpkxgtucri"""; : 2 Uqhvy ctg"Tcf kq "Rgtkr j gtcri'y kaj "Uko whpm Okej cgri'Lej y cm''Uvghcp'Pci gn''Ej tkrskep'Tgko gt."cpf" Hlgf tkej "MoLapftcri Metnutvj g"Kankswag"qh''Vej popuji {." I gto cp{+} Tgkphqtego gpv'Nyctpkpi "Crrrhecvkqp"Uegpctkq "hqt""""; : 6 Qrrqtwpkuvke"Urgevtwo "Ceeguu Y cuuko "Lqwkpk'Tqdkp"Dpmgpdcej."Ocvoj kgw'I wkngv." Ej tkrsyr j g"Oq ("cpf"Coqt"Pchnj c" "Kpurkswv'f ø Gngestqpksvag"gv'fg"Vgngeqo o wpkecvkqpu'fg"Tgppgu." Hcpeg+ Dhpf "E {enquvcvkqpct{"Hgcwtg"Fgvgevqt"dcugf""""; :: qp"Urctukv{"J {rqvj gugu"hqt"Eqi pkskxg"Tcf kq"
Vko g" Vr 4J /3"37-67¢ " " Vr 4J /4"38-25¢ " "	Cwi w. 37-676: 38-25"	nv'; ."4233 "*Vwguf c {+ \$\phi\$ 39-37 **Oqf gridcugf "Y cxghqto "F guki p "hqt" vj g "Wpksgtucri"""; : 2 Uqhvy ctg"Tcf kq "Rgtkr j gtcri'y kaj "Ulo wihpm Okej cgri'Uej y cm' Ughcp "Pci gn" Ej tkrikep "Tgko gt." cpf" Hilgf tkej "Mil apf tcri "Mtnutvi g" Kurkwag" qhi Vgej papaji {." I gto cp{+ Tgkphqtego gpv' Ngctpkpi "Crrnecvkqp" Uegpctkq "hqt""""; : 6 Qrrqtvwpkuvle "Urgevtwo "Ceeguu Y cuuko "Lqvkpk "Tqdlp" Dangpdcej. "Ocvj kgw I wkngv." Ej tkuvqrj g" Oq {"cpf" 'Coqt" Pclmj c" "Kpuvksw' fø Ggevtqpksvg" gv'f g" Vgrgeqo o wpkecvkqpu" fg" Tgppgu." Hcpeg+ Dilpf" "E {enquvcvkqpct {"Hgcvwtg" Fgvgevqt" dcugf""""; ::
Vko g" Vr 4J /3"37-67¢ " " Vr 4J /4"38-25¢ " " Vr 4J /5"38-43¢ " Vr 4J /6"38-5; ¢	Cwi w. 37-676; 38-25" \$ 38-43" 38-5; "	In'; ."4233 "*Vwguf c {+ \$\psi\$ 39-37 Oqf gridcugf "Y cxghqto "F guki p "hqt" yi g "Wpkxgtucri""; : 2 Uqhwy ctg"Tcf kq "Rgtkr j gtcri'y kj "Ulo wipm Okej cgri'Uej y cm' Ughcp"Pci gn'Ej tkrkcp"Tglo gt."cpf" Hlgftlej "Mi apftcri'Mttnitvj g "Kurkwyg"qli'Vej paqi {." I gto cp{+ Tglphqtego gpv'Ngctplpi "Cr r rlecvkqp"Uegpctlq"hqt"""; : 6 Qr r qtwpkuvle "Ur ge viwo "Ceeguu Y cuulo "Lqwlpk"Tqdlp"Djmgpdcej ."Ocvj kgw'I wngv." Ej tkrvqr j g"Oq ("cpf "Coqt"Pchnj c" "Kpuvkww'f ø Ggevtqpksvg"gv'f g "Vgrgeqo o wpkcvkqpu"f g "Tgppgu." Hcpeg+ Dilpf "E {emuw vlqpct { "Hgcwtg"F gvge vqt"dcugf """"; :: qp"Ur ctukv{"J {r qvj gugu"hqt"Eqi plxkxg"Tcf kq" Gs wkr o gpv Vkef "M crch "Coqt"Pchnj c."cpf "Lees wgu"Rcnleqv' *UNGNE: 'Hcpeg+ C"P gy "Uvtwe wtg"hqt"Tgeqphki wtcdng"Vy q/Uvci g"""; ; 4" P {s wkuv'Rwnug"Uj cr kpi "Hngtu
Vko g" Vr 4J /3" 37-67¢ " " Vr 4J /4" 38-25¢ " " Vr 4J /5" 38-43¢ " "	Cwi w. 37-676; 38-25" \$ 38-43" 38-5; "	IN'; "4233 "*Wayuf c {+
Vko g" Vr 4J /3"37-67¢ " " Vr 4J /4"38-25¢ " " Vr 4J /5"38-43¢ " Vr 4J /6"38-5; ¢	Cwi w. 37-676; 38-25" \$ 38-43" \$ 38-5; "	IN'; "4233 "*Wwguf c {+ \$\phi\$ 39-37 Oqf gridcugf "Y cxglqto "F guli p "lqt" vj g "Wplxgtucn"""; : 2 Uqhwy ctg"Tcf lq "Rgtlr j gtcn'y kj "Ulo wilpm Olej cgn'Uej y cm'Uglpr'Pci gn'Ej tknkrp'Tglo gt."cpf" Hlgftlej "Mi apftcn'Mttntvj g "Kunkwg'qh'Vej prquj {." I gto cp{+ Tglphqtego gpv'Ngctplpi "Crrnlecvlqp"Uegpctlq"lqt"""; : 6 Qrrqtwplavle "Urge vtwo "Ceeguu Y cuulo "Lqwlpk"Tqdlp"Dqngpdcej ."Ocvj lgw'I wlngv." Ej tkuvqr j g"Oq {"cpf"Coqt"Pchnj c" "Kpuvksw'f ø Grgevtqplsvg"gv'f g" Vgrgeqo o wplecvlqpu'f g"Tgppgu." Hcpeg+ Dilpf "E {enquv vlqpct {"Hgcwtg"F gvge wqt"dcugf """"; : : qp"Urctukv{"J {rqvj gugu"hqt"Eqi plxkxg"Tcf lq" Gs wlro gpv "lcf"MJ crch"Coqt"Pchnj c."cpf"Lces wgu"Rcnleqv' "UWKGNE. Hcpeg+ C"P gy "Uvtwe wtg"hqt"Tgeqplki wtcdrg"Vy q/Uvci g"""; ; 4" P {s wluv'Rwng"Uj crlpi "Hogtu Cok"G j dcnk"J "nap'Lqi cpuvqp"*Nprhi lpi "Wjksgtulsv{." Uy gf gp+"cpf"\cruf"Uctco @nk*\corgtg"\corgtg\corgtg\corgtg"\corgtg"\corgtg\corgtg\corgtg"\corgtg\corgtg"\corgtg

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Tggo 'C'*D328+

	1qq0 C 12326+
Uguukqp"Vkvrg" Uguukqp'Ej ckt" F cvg" Vko g"]Y c3C_'Quekmevqtu'cpf 'Uki pcn'll gpgtcvqtu Ft'Fqpcnf'Nkg'*Vgz.cu'Vgej 'Wpkxgtukx{.'Wpkxgf'Uvcvgu+ Cwi wuv'32.''4233'**Y gf pgufc{+ 2: 67¢32·37
Y c3C/3"2: •67¢	2; 25" Nqi/fqockp'Ownkrjcug'UkpwuqkfctlQuekmevqt"""323; Rkrcv'Rtqoogg."Pcrcv'Utc/kwo."cpf"Mqdejck'Fgljcp" *Mkpi "Oqpimwyu"Kpuvkwwg"qh'Vgejpqmi{"Ncfmtcdcpi." Vjcknepf+
Y c3C/4"2; 25¢	2; 43" Nqi /fqo clp'Cm'r cui'Hangt'cpf 'lsa'Crrnlecslqp''q'''''3245 S wef tewtg'Upwqkf enQuekmeyt Rkr cv'Rtqo o gg. "Vj cpcvg''Rewepewef er qpi "*Mkpi " O qpi mwwa''Kpuvkswwg"qh''Vgej pqnqi { "Nef mtedepi ." Vj cknepf +. "epf "O qpvtk'Uqo f wp{enepqm'*Ukeo " Wpksgtuks{:"Vj cknepf +
Y c3C/5"2; 4 3¢	2; ≤; "Ewttgp√Oqfg"S wcftcwtg"Quekmcvqt"wukpi """"3249
	Okpko wo "Gngo gpwu" Oqpwege"Mwo pi gtp. "Repks"Neo wp. "epf "Mqdej ck"F glj ep" "Mkpi "Oqpi mwwau"Kpwkwwg"qh"Vgej pqnqi { "Nef mtedepi ." Vj cknepf +
Y c3C/6"2; 5; ¢	P2; ₹9"\$ weftewig"Upwiqkferi'Quekneyt"deugf "qp"Nqi/"""3253 fqoekp"Ikij/reui'epf'Nqy/reui'Hingtu Rkrev'Rtqoogg."Pewcyk/"Rterengtp"*Mkpi "Oqpinwig u"Kpukwig"qh"Vgejpqiqi{"Nefnitedepi."Vjeknepf+"epf" Oqpik'Uqofwp{enepqn**Uco"Wpkxgtukv{."Vjeknepf+
Y c3C/7"2; ₹9¢	32:37" Nqi/fqockp"Ewttgp√oqfg"Vjktf/qtfgt"""32:57 UpwqkfcriQuekneqt Rkrc√'Rtqoogg"*Mkpi"Oqpinnw@u"Kpuvkwwg"qh" Vgejpqnqi{"Ncfntcdcpi."Vjckncpf+"cpf"Mtk/"Cpingcy" *Mkpi"Oqpinnw@u"Wpkxgtukv{"qh"Vgejpqnqi{"Pqtvj" Dcpinnym"Vjckncpf+

Uguulqp"Vkrg" | Y c3D_"XNUKU{ urgo 'F guki p Uguulqp'Ej ckt" Ft'I wpj gg'J cp"*[qpugk'Wplxgtulx{.'Wplxgf'Ucvgu+ Fcyg" Cwi wu\'32.'4233'*Y gf pguf c\{+ Vko g" 2: 67¢32\$7 Y c3D/3" 2: 67¢2; 25" Kor repwdrg" EO QU" Koci kpi "F gxkegu" hqt "Dkq/""" 325; Ogf kecn'Crrnkecvkqpu Lwp"Qj vc"*Pctc"Kpurkwyg"qh"Uekgpeg"cpf "Vgej pqrqi {." Lcr cp+ Y c3D/4"2; ≥5¢2; ≤43" C "Eqmcdqtcvkxg"F guki p"Crrtqcej "vq"""3265" Kpvgtfkuekrnkpct{"Okzgf/ukipcn"UqEu"hqt" Cwqo qvkxg'Crrnlecvkqpu P {co dc{ct"Dccvct"*Ej qpdwn'P cvkqpcn'Wpkxgtukv{." Mqtgc+'cpf 'Uj kj q'Mko '*[qpugk'Wpkxgtukv{.'Mqtgc+ Y c3D/5"2; 43¢2; 5; " Uko wncpgqwu'Uy kej kpi 'P qkug'Eqwr nkpi '\j tqwi j ''''''3269 Xkc"Vtcpukkqp"hqt"c"EOQU'P gi cvkxg"Hggf dceni' Qr gtc:\qpcrlCo r r\h\gt'\qp'U\{ uvgo /\qp/Rcenci g Dwo j gg"Dcg."[wlgqpi "Uj ko ."Lqpi j { wp"Ej q."cpf" Iqwpi j q"Mko "*Mqtgc"Cfxcpegf "Kpukkwyg"qh"Uekgpeg" cpf 'Vgej pqnqi {.'Mqtgc+ $Y~c3D/6"2; <5; \\ \not e2; <79"307o~Y~"O~kzgf/o~qf~g"P~gwtq/Hw|~ \{ \\ "Ceegrgtcvqt"""3273 \\ \\ \end{tabular}$ hqt'Mg{rqkpv'Nqecnk cvkqp'kp'Ko ci g'Rtqeguukpi Kplqqp"J qpi ."Lkpy qqm"Qj ."cpf "J qk/Lxp"[qq"*Mqtgc" Cf xcpegf 'Koukwag'qh'Uekgpeg'cpf 'Vgej pqrqi {.'Mqtgc+ Y c3D/7"2; <a>9632<a>37" GO E"F guki p"qh"C wqo cvke"Nqcf kpi "Eqpvtqri""3277 Eltevky \ j wkpi '[cq'*Pqtyj 'Wpkxgtukv{'qh'Ej kpc.'Ej kpc+ Tqqo 'E'\395+ Uguulqp"Vkrg"]Y c3E_'E {dgtugewtkx{ 'hqt'Eqi pkkxg'Tcf kq Uguulqp'Ej ckt" Ft'Qy gpu'Y cmgt'*Xkti kpkc'Vgej .'Wpksgf'Ucvgu+ Cwi wuv'32.'4233'*Y gf pguf c{+ Fcvg" Vko g" 2: 67¢32\$7 Eqo o wplecylqpu'Ugewtky{ T{cp'F0Y j kv{."V0Qy gpu'Y cmf gt"KKC'cpf 'Ej tkrvqr j gt" TO'Cpf gtuqp"*Wpkgf "Uvcvgu'P cxcn'Cecf go {."Wpkgf" Ucvgu+ Y c3E/4"2; $\ensuremath{\cancel{2}}$ 5¢2; $\ensuremath{\cancel{4}}$ 3" Encuukhkecvkqp"qh"F UC"Ej cppgn"Ugngevkqp"hqt""3285 Gurko cykąp"qh"Ugeqpf ct { "Wugt 'Dgj cxkqt O cwj gy "IOT gdj qn' ."Vco cn'Dqug"*Xkti kpkc"Rqn(vgej ple" Kpurkwyg"cpf "Uvcvg"Wpkxgtukv{."Wpkxgf "Uvcvgu+."cpf" Uj wdj c"N0'Mcf co dg"*Tqemy gm'Eqmkpu."Kpe0"Wpksgf" Ucveu+ Y c3E/5"2; 43¢2; 5; "Enwryt"Dcugf "Eqqr gtc\kxg"Ur gevtwo "Ugpukpi """3289 wukpi "Nqecvkqp"Kphqto cvkqp"hqt"Eqi pkxkxg"Tcf kqu" wpf gt"T gf wegf 'Dcpf y kf vi "Uo kij c"MOI O'cpf "CO'RO'Xkpqf"*P cp{cpi "Vgej pqrqi kecri" Wpkxgtukv{."Ukpi crqtg+ Y c3E/6"2; *<*5; ¢2; *<*79" Ugewt kv{ "Xwrpgt cdkrkvkgu"kp"Rj {ukecn'Nc{gt"qh'""3293 Eqi pkkxg'Tcf kq "Vtcpi "X0O ck" Iqugr j "C0O qrpct."cpf "Mgxlp" Twf f "P cxcri" Tgugctej 'Ncdqtcvqt {.'Wpkgf 'Uvcvgu+ Y c3E/7"2; ₹9¢32\$7" Y j cv'ctg"vj g"Tqrgu"qh'Grgevtqpke"cpf "E{dgt"""3297" Y cthctg'lp'Eqi pkkxg'Tcf kq'Ugewtkv{A Co dgt"Ueqw:"VOIOJ ctf {."Tlej ctf"MOO ct lp."cpf"T {cp" Y 0'Vj qo cu"*Vj g"Ckt"Hqteg"Kpukkwyg"qh"Vgej pqnqi {."

Wpkgf 'Ucvgu+

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Uguukqp"Vkng"
                  ]Y c3F_'Cr r necvkqpu'qh'F ki kxcn'Uki pcn'Rtqeguukpi "/'K
  Uguukqp'Ej ckt" Ft"Y cuh{ 'O knj cgn'
                     *Wpkxgtuks{ "qh'EgpytcriHrqtkf c. "Wpkxgf "Uvcygu+
 Fcvg"
                    Cwi wu\'32.'4233'\*Y gf pguf c{+
  Vko g"
                    2: 67¢32$7
 Y c3F/3"2: 67¢2; 25"J ki j n("Ghhkekgpv"J wo cp"Cevkqp"T geqi pkxkqp"""329;
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                             Ur exteniepf "Vtepuliqto "f qo ekpu
                             O qi co gf "C O'P ckgn "O qcvc| "O O'Df gny cj cd"*P kng"
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 Y c3F/4"2; 25¢2; 43"T grkcdrg"Vtcpuhqto "F qo ckp"Cf cr vkxg"Hknygtu"""32: 5
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                            Tgf wpf cpv"J ctf y ctg"O qf wrgu"cpf "Cri qtkj o le"
                            Gttqt'F gvgevkqp'Cpf 'Eqttgevkqp
                             E0Tcf j cntkuj pcp"cpf "Y 0M0Lgpmkpu"*Vj g"Rgppu{nxcplc"
                             Uvcvg'Wpkxgtukv{.'Wpkxgf'Uvcvgu+
 Y c3F/5"2; 43¢2; 5; "Wpf gt/f gelo cwgf "5F "HKT"Ur ceg/Vlo g"Eqpg"""32: 9
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Vgej pks wg"hqt "cp""""32; 3
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                                                               Tqqo 'G'\594+
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Uguukqp'Ej ckt"
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Fcvg"
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                  2: 67¢3237
Vko g"
Y c3G/3" 2: 67¢2; 25"O qf grlpi "yj g'Qxgtuj qq\lpi "Ghlgev'qhl'O wnk/lpr w'''''32; ;
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                           Vj ggtcej gv'Uqqtcrcpvj "*Pcvkqpcn'Grgevtqpkeu"cpf"
                          Eqo r wgt 'Vgej pqrqi { 'Egpvgt.'Vj ckrcpf +
Y c3G/5"2; 43¢2; 5; "Ghhkekgpv"Cni qtkyj o "hqt"Uqnxkpi "U{uvgo u"qh"""3329
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                           Kpurkwyg'qh'Vgej pqrqi {.'Lcr cp+
Y c3G/7" 2; ₹9¢32-37" Cpcnqi 'Ektewku'Uk kpi 'Wukpi 'Dkr ct vkg'I tcr j u'''''3337
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Hetenj 'Lexk'.'Teo { 'Kmepf gt+'O etkg/O kpgtxg'Nqw,tev." cpf 'F co kgp'F wrwku'*Wpkxgtuvk['Rkgttg'cpf'O ektg'Ewtkg/

NKR8. 'Htcpeg+

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> Uw wnk"*Mcpc| cy c"Wpkxgtukv{."Lcr cp+."J ktquj k'O cmkpq" *Quene "Kouskwag"qh" Vgej pqnqi {."Ler cp+:"Uj kpøkej ktq" O wqj "*P VV"Eqtr 0"Icr cp+."O cuc { wnk"O k{ co c. "cpf" [quj kq'O cwwf c"*Mcpc| cy c'Wpkxgtukv{."Icr cp+

JY c3J _"Ur gekcnl'Uguukqp"qp"Tgegpv'Vtgpf u"kp"Eqpvtqnl Uguukqp"Vkmg" Uguulqp'Ej ckt" Ft'[qwpi 'Uqq'Uwj '*Whicp'Wpkxgtukv{.'Mqtgc+ Cwi wuv'32."4233"*Y gf pguf c{+ Fcg" 2: 67¢32\$7 Vko g" Y c3J /3"2: 67¢2; 25"Eqpxtqn"F guki p"qh"P qprkpgct"U{uvgo u"Qxgt"c""""3377 Eqo o wpłecyłąp'P gw qtm "Uwpi "J {wp"Mko ."Dwo "[qpi "Rctm"Y qp"Ki'Ngg."cpf" RqqI {gqp"Rctml*Rqj cpi "Wpkxgtukv{"qh"Uelgpeg"cpf" Vgej pqnqi {.'Mqtgc+ Y c3J /4"2; 25¢2; 43" U{pej tqpk cwqp"Cni qtkij o "hqt"J {dtkf "Eqpvtqn"""337; P gw qtmx ECP "cpf "Y ktgrguu' EqpxtqriP gw qtmu I k[gqr 'Ngg. 'Lcg/J {wpi 'Ngg. 'Gwpi /Uqq'Ngg. 'cpf 'F qpi / Uwpi "Mko "*Mwo qj "P cykqpcn"Kourkwyg"qh"Vgej pqnqi {." Mqtgc+ Y c3J /5"2; 43¢2; 5; " Hqqv'O qxlqp"Vtcentpi "Wukpi "Xkulqp""""3385 "Vtk/Pj wv'Fq"cpf"[qwpi/Uqq"Uvj"*Wpkxgtukv{"qh"Whxcp." Mqtgc+ Y c3J /6"2; ₺; ¢2; ₺9" Hewn/F kci pquku'qh'I cu'Vwtdkpg'Gpi kpgu'd{"Wukpi """3389" F {pco le'P gwtcn'P gw qtmu T0'O qj co o cf k "G0'P cf gtk "M0'Mj qtcucpk "cpf "U0' J cuj vtwfk/ cf "Eqpeqtfkc Wpksgtukv{. 'Ecpcfc+ Tqqo 'K*C664+ Uguukqp"Vkng"]'Y c3K'F guki p"cpf "Cpcn(uku'qh'Nkpgct"cpf "P qp/Nkpgct" U{uvgo u Uguulqp"Ej ckt" Ft"K qt"Hkrepqxum("*Wpkxgtulv("qh"Cndgtvc."Ecpcf c+ Fcvg" Cwi wu\'32."\4233"\Y gf pguf c\{+ 2: **6**7¢32**3**7 Vko g" Y c3K3" 2: 67¢2; 25"F guki p"qh"c"O QU'TNE/Quekmcvqt"y kij "Ur gekhlgf """3393 VqvcnJ ccto qpke'F kuvqt vkqp Kqt"O 0'Hkrcpqxum("*Wpkxgtukv("qh'Cndgtvc."Ecpcfc+" cpf "Nwku"D0'Qrkxgktc"*Wpkxgtukf cf g"P qxc"f g"Nkudqc." Rqt wi cn+ Y c3K4" 2; $\ 25$ ¢2; $\ 43$ "T geqpuvt wevkqp"qh"Qxgtuco r rgf "Uki pcm"htqo """3397 yj g"Uqnwkqp"Ur ceg"qh"F gnxc/Uki o c"O qf wrcygf" Ugs wgpegu 'O crk-c"O ctklcp"cpf "fi grlmq"K plcvqxke"*Wpkxgtukv{ "qh" Tqej guvgt. 'Wpkygf 'Uvcvgu+ Y c3K5" 2; 43¢2; 5; "Rlgegy kug/Nlpgct"Rj cug"Htgs wgpe{"F gygevqt"hqt"""339; " Hcuv/Nqen'iRj cug/Nqengf 'Nqqr u $\mbox{l'gp/Ej kg' "Ej kj ."Ej kpi /Vg''Ej kw."Igp/O kpi "Y w."Uj wq/$ J wpi "J uw."cpf "[ct/Uwp"J uw"*P cwkqpen"Vukpi "J wc" Wpkxgtukv{."Vcky cp+ Y c3K6" 2; 5; ¢2; \triangleleft 9" Vj g'P qxgriUy kej gf/Ecr cekqt'FE/FE'Eqpxgt gt''''''33: 5 hqt"Hcuv'T gur qpug"Vko g"cpf "Tgf wegf "Tkr r ng Kougqm'Lwpi."[qpi/Dkp"Mko "*Pqtyjgcuvgtp"Wpkxgtukv{." Wpkgf 'Uvcvgu+'cpf 'O kpuw'Ej qk'*O kuuqwtk'Wpkxgtuks{ ''qh'' Uelgpeg"cpf "Vgej pqnqi {."Wpkgf "Uvcvgu+ Y c3K7" 2; ₹9¢32\$7" Qp"Vy q/Rctv"Crrtqzko cvkqp"kp"U{pvj guku"qhl"""33: 9 Rwng/Uj cr kpi 'P gw qtmu

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Rqy gt"; 2'po 'EO QU

Vwep"Cpj "Xw."Uj cpvj k"Uwf enek{ cpf k "J °mqp"C0' J lqt vrepf ."Ókxlpf "P â uu."Vqt "Uxgttg"Ncpf g."cpf "Uxglp"

Gthm'J cotcp"*Wpkxgtukv{ "qh'Qunq."Pqtyc{+

Uguukqp"Vkng" JY c4J _'Ur gelcn'Uguulqp'qp'Qr vlo kt gf 'O qf vrg'F guki p'' hqt'FUR'u{uvgo u Uguulqp'Ej ckt" Ft"O cj gt"Itkf K"*Kpurkswv"Uwr²tkgwt"f g"npGrgevtqpks wg"gv" f w'P wo 2 tls wg'f g'Dtguv.'Htcpeg+ Fcvg" Cwi wu\'32.'4233'*Y gf pguf c{+ 32<52¢34<22 Vko g" Y c4J /3"32\52\psi32\6: " C"Uwddcpf "HHV/Dcugf "O gyj qf "hqt"Ucyle"Gttqtu'"""3493 Eqo r gpuckqp'kp'Vko g/Kovgtngcxgf'CFEu Ocj gt'Itkf k'*KUGP/Dtguv.'Htcpeg+ Y c4J /4"32-6: ¢33-28" Cni qtkj o "cpf "Rtqeguuqt"Eq/f guki p"hqt"Hcuv"""3497" Ego r wcylgp'kp'Tgcrl'Vko g'J F'O gylgp'Guyko cylgp Octlq"Xki rkt."I kepectmj"Tekeqpk"*Wpkxgtukxe"f gi rk"Uwf k" f k"Ucrgtpq. "Krcn(+"Co gf gq"F Cwtkc."cpf "I kwugr r g"F gri" O custq's REqpstqd'Utn'Kcn(+ Y c4J /5"33-28¢33-46" Nqy "Cf cr vcvkqp/F grc{"NO U"Cf cr vkxg"Hknyt"""349; Rctv K2Kovtqf vekpi "c"P qxgrlO wnkr rlecvkqp"Egm Rtco qf "Mwo ct"O gj gt"cpf "Ucpi "[qqp"Rctnj*Koukwyg" hqt'Kphqeqo o 'Tgugctej .'Ukpi crqtg+ $Y~c4J~/6"3346 \\ c33\cdot 64"~Nqy~'Cf~cr~vclqp/F~grc{'NO~UCf~cr~vlxg'Hnngt'Rct~v'''''''34:5}$ KKCp'Or wo k gf 'Ctej kgewtg Rtco qf "Mwo ct"O gj gt"cpf "Ucpi "[qqp"Rctm"*Kpurkwwg" hqt'Kphqeqo o 'Tgugctej .'Ukpi crqtg+ Y c4J /7"33-64¢34-22" O qf gmkpi "c"Hcuv"DNCU"Ngxgn/3"Kpur ktgf""""34: 9 Xgevqtk gf 'HRWhqt'CTO 'F gxlegu Octlq"Xki rlct."I kepectrq"Tekeqpk"*Wpkxgtukx«"f gi rk"Uwf k" f k"Ucrgt pq. "Krcn(+: "Co gf gq"F oCwtkc. "cpf "I kwugr r g"F gri" Ocustq" FREqpvtqrlUtn" Kcn[+ Tggo 'C'*D328+ Uguukqp"Vkng"]Y r 3C_'Co r nkhkgtu'cpf 'Hkngtu Uguukqp"Ej ckt" Ft"RcwrlHwt vj " *P gy 'O gzkeq'Ucvg'Wpkxgtuk/{.'Wpkgf 'Uvcvgu+ Fcyg" Cwi wuv32."4233"*Y gf pguf c{+ 36<22¢37<52 Y r 3C/3" 36-22¢363: " i'o INF "Deugf "P qlug" Cpen(ulul" hqt "EO QU'Cpenqi """" 34; 3 IcemiQw'*Uqpqoc'Uvcvg'Wpkxgtukv{.'Wpkxgf'Uvcvgu+ Y r3C/4"363: ¢3658" U{o dqrke"Dgj cxkqtcrl'O qf grkpi "hqt"Urgy "cpf"""34; 7 Ugwrlipi 'Cpen(uku'qh'Qr gtevlqpen'Co r nkhligtu J g"\ j cpi "cpf "I wq{qpi "Uj k'*Uj cpi j ck'Ikcq"Vqpi " Wpkxgtukv{.'Ej kpc+ Y r3C/5"36\58\\(36\76" J' ki j "Dcpf y kf vj "Ugeqpf "I gpgtcvkqp"Ewttgpv"""34; ; Eqpxg{qt"dcugf "Qr gtcvkqpcn"Vtcpueqpf wevcpeg" Cornkhket O ck'O O'Mco gn''Go cp''C O'Uqrko cp''*I gto cp''Wpkxgtukv{." Gi {r v+"cpf "Uqrlo cp"C0O cj o qwf "*Uj ctlcj "Wpkxgtukv{." Wpkgf 'Ctcd'Go ktcvgu+ Y r3C/6"36₹6¢37\$4" F guki p"cpf "Cpcn{uku"qh"c"S wcf/hgtgpvkcn"****3525" Corkthet "Vkppc"Octkg"Tqqmoccngt."Oqqp"UgqniMlo."cpf"[qpi/ Dkp'Mko '*P qt yj gcuvgtp'Wpkxgtukv{.''Wpkxgf'Uvcvgu+ Y r 3C/7"37-34¢37-52" Eqo r rgz 'Eqplwi cvg'Rqrg'Cpcn(uku'hqt 'Dcpf y lf y i"""3529 Gz vgpukqp"qh"Vtcpuko r gf cpeg"Co r ıkhkgtu Qo kftg| c'I j cugo k''Tcdkp''Tcw."cpf 'I ngpp''Eqy cp''

*Eqpeqtf kc'Wpkxgtukv{.'Ecpcf c+

Uguukqp"Vkarg" JY r3E_'Tgegpv'Cf xcpegu'kp'F ki kxch'Uki pch'Rtqeguukpi " Cni qtkyj o u Uguukqp'Ej ckt" Ft"Ygpi/Ujgpi 'Nw"*Wpkxgtuk{ 'qh'Xkevqtkc. 'Ecpcfc+ Cwi wu\'32.'4233'*Y gf pguf c\{+ Fcvg" Vko g" 36<22¢37<52 $Y~r~3E/3"~36-22\not c 36-3: "~Dc{gukcp"Mcm~cp"Hkngtkpi~."Tgi~wrctkl~cvkqp"cpf"""3533"}$ Eqortguugf 'Ucornkpi UO'E0'Ej cp. "DO'Nkcq."cpf "MO'O O'Vuwk"*Vj g"Wpkxgtukv{ "qh" J qpi 'Mqpi .'J qpi 'Mqpi + Y r 3E/4"363: ¢36-58" Cp"Ghhlekgpv"F guki p"qh"4/F "Hkt "F ki kxcn"Hkngtu""""3537 $d\{\mbox{ "Wukpi "Ukpi wrct"} Xcnwg\mbox{"} F\mbox{ geqo r qukwkqp"} cpf\mbox{ "}$ I gpgvle"Cri qtkj o "y kj "Ecpqplecri'Uki pgf "F ki k\" *EUF+'Egghhlelgpvu Deuj kgt "Gmetco k'epf "O elkf "Cj o ef k'*Wpkx gtukv{ "qh' Y kpf uqt. 'Ecpcf c+ Y r3E/5"3658¢36₹6" Hcuv'Cni qtkyj o u"hqt"T guvqtcvkqp"qh"Eqnqt""353; " Y ktgrguu'Ecruwrg'Gpf queqr { 'Ko ci gu J ck{ kpi "Nkw"*Uj cpf qpi "Wpkxgtukv{ ."Ecpcf c+:"Y 0'U0'Nw" *Wpkxgtukv{"qh'Xkevqtkc."Ecpcf c+."cpf "O cz"S 0J 0O gpi " *Uj cpf qpi 'Wpkxgtukv{.'Ecpcf c+ Y r 3E/6"36 \triangleleft 6¢37 \triangleleft 4" F guki p"qh"Ur ctug"F ki kxcn"F khhgtgpvkcvqt"Wukpi """"3545" Otvi qi qpcnO cvej kpi 'Rwtuvkk'O gvi qf Ej kgp/Ej gpi "Vugpi "*P cvkqpcn"Mcqj ukwpi "Hkt uv" Wpkxgtukv{ "qh'Uekgpeg"cpf "Vgej pqrqi { ."Vcky cp+"cpf "Uw Nkpi 'Ngg'*Ej wpi /Lwpi 'Ej tkurkcp'Wpkxgtukv{.'Vcky cp+ Y r 3E/7"37-\$4¢37-\$2" C"Eqo r t guukxg"Ugpukpi "O gyj qf "hqt"P qkug"""3549" Tgf weskqp"qh"Ur ggej "cpf 'Cwf kq"Uki pcnı F cngk"Y w."Y gk/Rkpi "\ j w."cpf "O 0'P 0'U0'Uy co {" *Eqpeqtf kc'Wpkxgtukv{.'Ecpcf c+ Tggo 'F'\47; + Uguukqp"Vkng" "Yr3F_"Cfcrvkxg"Fkikvcn"Ukipcn"Rtqeguukpi" Vgej pls wgu'hqt'Eqo o wplecwlqpu Uguukqp"Ejckt" Ft"Uwn/Ugwpi "Jycpi "*Ejquwp"Wpkxgtukv{.'Mqtgc+ Cwi wuv32.'4233'*Y gf pguf c{+ Fcvg" Vko g" 36<22¢37<52 Y r 3F/3"36-22¢36-3: " Rwpewtgf 'Rkqvu'hqt 'QHF O C'Eqo o wpkecvkqpu''''3553 Uwpi /[qqp"Lwpi "*[gwpi pco "Wpkxgtukv{."Mqtgc+"cpf" Uwpi j y cp'Mko '*Wpkxgtukx{ 'qh'Wncp.'Mqtgc+ $Y\ r\ 3F\ /4"36\ 3:\ \&36\ 58"\ \ \ \textbf{Kgtc\cdot kxg'Tgegkxgt'Dcugf'qp'Mcmcp'Hnngt''''''3557}$ Ucpi lqqp'Rctm'J cpc'J gq.'I {w{gqnlMqpi ."cpf 'Uqq{qpi " Ej qk'*{ qpugk'Wpkxgtukv{.'Mqtgc+ Yr3F/5"36-58¢36₹6" Ghlgev'gh"Uki pcnuø"Rtgdcdkrkurke"F kurtkdwkgpu'"""355; qp"Rgthqto cpeg"qh"Cf cr vkxg"P qkug"Ecpegnkpi " Cri qtkij o u [kpi "Nkw"*Wpkxgtukv{ "qh'Egpvtcn'Hrqtkf c. "Wpkxgf "Uvcvgu+." Vj qo cu'V0[cpi '*Go dt {/Tkffrg'Cgtqpcwkecn'Wpkxgtukv{." Wpkgf "Ucvgu+"cpf "Y cuh{ "D0O knj cgrl"*Wpkxgtukv{ "qh" Egpvtcn'Hrqtkfc.'Wpksgf'Uvcvgu+ Y r3F/6"3646¢374" Dgj cxkqt"qh"O kpko wo "Qwr w"Gpgti {"Cri qtkij o """3565" hqt'F ki kxcn'XUD'Uki pcnu [qwpi uwp"J c"cpf "Y qp| qq"Ej wpi "*Mqtgc"Wpkxgtukv{." Mqtgc+ Y r 3F /7"37-34¢37-52" F guki p"qh"Nkpgct/Rj cug"Cf cr vkxg"J gvgtqf {pg"""3569 O kej cgrl'C0'Uqf gtuvtcpf "*Wpkxgtukv{ "qh'Ecrkhqtpkc."

Wpkgf 'Ucvgu+

Uguukqp"Vkng" JY r3H_"Ugnh/j gcrkpi "Ektewku"cpf "U{ uvgo u"kp"F ggr Uecngf "Vgej pqnqi kgu $Ft'D\{wpi\ j\ qq'Lwpi\ '*Rwtf\ wg''Wpksgtuk\{.'Wpksgf\ 'Ucsgu+$ Uguukqp'Ej ckt" Fcg" Cwi wu\'32.'4233'*Y gf pguf c{+ Vko g" 36<22¢37<52 Y r 3H/3" 36-22¢36-3: " Ugnh/J gcnkpi "F guki p"kp"F ggr "Uecngf "EO QU"""3573 Vgej pqnqi kgu "Lepi lqqp"Ngg."Utknet"Dj ci exewre."Mewij km'Tq{."epf" D{wpijqq'Lwpi "*Rwtfwg'Wpkxgtukv{."Wpkxgf'Uvcvgu+ Yr3H/4"36-3: ¢36-58" Ugnh/Eqttgevkpi."Ugnh/Vguvkpi"Ektewkvu"cpf"""3577 U{ uvgo u"hqt"Rquv/Ocpwhcevwtkpi "[kgnf" Ko r tqxgo gpv Cdj kreuj 'I q{en'O ef j exep'Uy eo kpevj ep. "epf "Cdj klk" Ej cwgtlgg"*I gqti kc"Kpukwwg"qh"Vgej pqrqi {."Wpkvgf" Ucvgu+ Y r 3H/5" 36-58¢36-76" C"RXV/Vqrgtcpv."Wntc/Nqy / Rqy gt"Rj cug/Nqengf """357; Nqqr "hqt"Y ktgnguu"Ko r ncpvcdng"Dkqo gf kecn" Fgxlegu "Y w/J ukp"Ej gp."Y kpi /Hck"Nqng."cpf "D{ wpi j qq"Lwpi " *Rwtf wg'Wpkxgtukv{."Wpkxgf 'Uvcvgu+ $Y~r~3H/6"~36 \not = 6 \not = 37 \not = 4"~~Xctkckqp/cy~ctg"Nqy/r~qy~gt"Xkf~gq"Rtqeguuqt"""3585$ F guki p"Vgej pks wgu "Y qqllp"Tlo ."Llpo q"My qp."cpf "Lqpi uwp"Rctnf"Mqtgc" Wpkxgukv{.'Mqtgc+ Y r 3H/7" 37-34¢37-52" T gnkc d knkv{"Kort qx gog pv"kp"Ownvke qt g"""3589 Ctej kgewtgu'Vj tqwi j 'Eqo r wkpi 'kp'Go dgf f gf " O go qt { J cfk'J clko ktk'*\Pokxgtukv{"qh'Hrqtkfc."\Pokxgf"\Uvcvgu+." Uqo pcvj "Rcwn"Cpcpf ctqqr "I j quj ."Uy ctwr "Dj wpkc" *Ecug'Y gurgtp'T gugt x g'Wpkx gtukv{."Wpkxgf 'Uvcvgu+."cpf " Rtcdj cv'O kuj tc"*Wpksgtukv{ "qh'Hnqtkf c."Wpksgf "Uvcvgu+ Tggo 'I '*427+ Uguukqp"Vkrg"]Y r 3I _'F ki kxcrlVgej pks wgu Uguukqp"Ejckt" Ft"Mgp"Ejqk" *Knthpqku'Kpurkswg'qh'Vgej pqnqi {."Wpksgf 'Uscvgu+ Cwi ww/32.'4233'*Y gf pguf c{+ Fcvg" Vko g'' 36<22¢37<52 Y r3I /3"36-22¢36-3: " Tcpf qo "F {pco ke "Xqnxci g"Uecnkpi "F gui kp"vq"""3593 Gpj cpeg'Ugewtk{ 'qh'P EN'U/Dqz Ej wpej wp'Uwk'Lwp'Y w'[k{ w'Uj k*O kuuqwtk'Wpkxgtukv{ 'qh' Uekgpeg"cpf "Vgej pqrqi {."Wpkgf "Ucvgu+:"[qpi /Dkp"Mlo " *Pqtyj gcuvgtp"Wpkxgtukv{."Wpkvgf"Uvcvgu+."cpf"O kpuw" Ej qk'*O kuuqwtk'Wpkxgtukv{ "qh''Uekgpeg"cpf "Vgej pqrqi {." Wpkgf 'Ucvgu+ Y r3I /4"363: ¢3658" C"Nqy /Rqy gt"F ki kxcn"Htgs wgpe { "F kx kf gt"hqt"""3597 U{uvgo/qp/c/Ejkr'Crrnkecvkqpu J guj co "Qo tcp"*Mkpi "Cdf wncj "Wpkxgtukv{ "qh"Uekgpeg" cpf "Vgej pqrqi {."Mlpi f qo "qh"Ucwf k"Ctcdlc+"Mj crgf" Uj ctch"cpf "O ci f k'Kitcj ko "*Ckp"Uj co u"Wpkxgtukv{." Gi {rv+ $Y\ r3I\ /5"36 -58 \not c36 \not =6" \ C"O\ qpq vqple"cpf\ "Nqy\ /Rqy\ gt"F\ ki\ kcm("Eqp vtqngf"""""359;$ Queknevqt'y kij 'Rqtvcdktk\{ 'hqt'UqE'Crrrkecvkqpu F vq'Uj gpi 'cpf 'Lj kj /Ek'Ncp'*Hw'Lgp'Ecyj qrle'Wpkxgtukv{." Vcky cp+ Yr3I/6"36\alpha6\alpha37\alpha4" Uetcvejrcf 'Ogoqtkgu'kp''yjg'Eqpvgzv'qh'Rtqeguu'''''35:5 Uecrkoi Dgppkqp"Tgff."Ur gpegt"Mgnku."Pcvj cpkgn"I cumkp."cpf" Tkej ctf 'Dtqy p'*Wpkxgtukv{ ''qh'Wcj .'Wpkxgf 'Uvcvgu+ Yr3I /7"37-34¢37-52" Rqy gt "Ghhlelgpv"F cvc "T gvgpvkqp"Nqi le "F guki p"""35: 9 kp"vj g"Kpvgi tcvkqp"qh"Rqy gt"I cvkpi "cpf "Erqen"

I cvkpi

Vgej pqnqi {."Wyokogf"Uvcvgu+

 $\label{eq:linear_problem} \textbf{Nk'Nk'Mgp'Ej } qk''cpf''J q''Lqqp''Ngg''^*\textbf{Killp}qku''\textbf{K}uvkw''g''qh''$

Uguukqp"Vkng"]Y r 4C_'Co r rkhtu'cpf 'O go qt { 'Ektewksu Ugudqp'Ej ckt" Ft'Icng'Dengt" *Vj g'Dqkug'Uvcvg'Wpkxgtukv{.'Wpkxgf'Uvcvgu+ Cwi wu\'32.'4233'*Y gf pguf c\{+ Fcvg" 37-67¢39-37 Vko g" Y r 4C/3"37-67¢38-25" C"Uecredng'KO'Ctej kgewtg'lnt"Y kf g'KO'FTCO """"35; 3 S cy k'J ctxctf "cpf "T0'Lceqd"Dcngt "*Dqkug"Uvcvg" Wpkxgtukv{."Wpkgf"Ucvgu+ $Y\ r\ 4C/4"3825\not c3843"\ C"Ulpi\ rg/Uwr\ r\ n("Kpf\ wevqt\ rguu"EO\ QU"Ercuu"I\ """"35; 7"$ Ur gengt 'Cornkhkgt J wk{ wcp"\ j cpi ."O 0'V0'Vcp."cpf "R0'M0'Ej cp"*P cp{ cpi " Vgej pqnqi kecn'Wpkxgtukv{."Ukpi crqtg+" Y r 4C/5 "38436385; " Dcpf/r cuul "Hkngtuly kaj "J ki j "S works{ "Hoevqtul'cpf """ 35; ; Cu{o o gvtke/Unqr g'Ej ctcevgtkurkeu Rg{ocp'Cjocfk'Dtgpv'Ocwpf{"*Wpkxgtukv{"qh'Ecnict{." Ecpcf c+"C0"U0'Gny cnin' *Wpkxgtukv{ "qh"Uj ctlcj ."Wpkxgf" Ctcd"Go ktcvgu+."cpf "Ngqkf "Dgrquvqvunk"Wpkxgtukv{ "qh" Ecri ct {.'Ecpcf c+ Y r 4C/6"38-5; \$\omega\$8-79" P guvgf "O kmgt "E qo r gpuc
-kqp "Wukpi "E wtt gpv""""3625 Dwhlgtu'hqt'O wnk/uvci g'Co rıkhlgtu Cppclktcq"I ctko gmc"*P gy "O gzkeq"Uvcvg"Wpkxgtukv{." Wpkgf "Ucvgu+:"O 0'Y cugs wt "T cuj kf "¾1 gqti kc"Kpurkwwg" qh"Vgej pqrqi {.""Wpkgf "Uvcvgu+"cpf "Rcwh"Hwt y "*P gy " Ogzleq"Ucvg"Wpkxgtukv{."Wpkxgf"Uvcvgu+ Y r 4C/7"384963947" Tgi gpgtcvkxg"Ewttgpv"Co r nkhkgt"Wukpi "xcp"f gt"""3629" RqnCrrtqzko cvkqp Kqt'Hkrcpqxum('*Wpkxgtukv('Cndgtvc.'Ecpcfc+'cpf'Nvku'D0' Qrkxgktc' Wpkxgtukv Pqxc' Nkudqp. 'Rqt wi cn+ Tqqo 'F'*47; + Uguukqp"Vkng" JY r 4F _"F ki kxcn"Uki pcn"Rtqeguukpi "Vgej pks wgu"cpf" Crrilecykgpu Ft'Uwn/Ugwpi 'J y cpi "*Ej quwp'Wpkxgtukv{.'Mqtgc+ Uguukqp'Ejckt" Cwi wuv32.'4233'*Y gf pguf c{+ Fcvg" 37-67¢39-37 Vko g" Y r 4F/3"37-67¢38-25" C"Vy kp/T ghgt gpeg"Eqorngz "Hknygt gf/Z "NO U"""3633" Cri qtkj o 'hqt'Hggf hqty ctf 'Cevkxg'P qkug'Eqpvtqrl' cpf 'Ku'Eqpxgti gpeg ['qkej k'J kpco qvq"*Mci cy c"P cvkqpcn"Eqmgi g"qh" Vgej pqrqi {."Icr cp+"cpf "Cnko kww"Fqk"*J ktquj ko c" Koukweg'qh'Vgej pqmi {.'Lcr cp+ Y r 4F/4"38-25¢38-43" Op "Go r m { kpi "Ecuecf gf "Cf cr vkxg" Hkngtu ht """3637" Ceqwirke"Hggf dceni'P gwtcnk crkqp"kp"F ki kxcri' J gctkpi 'Ckf u O wi co o cf "Vcj kt"Cmj vct"*Vj g"Egpvgt"hqt"Htqpvkgt" Uekgpeg'cpf 'Gpi kpggtkpi .'Lcr cp+'cpf 'Cmkpqtk'P kuj kj ctc'' *Vqm(q'Koukwwg'qh'Vgej pqnqi {.'Icr cp+ Y r 4F/5"3843¢385; " C"Rqy gt/Ghhkekgpv"Rqn{rj cug"Uj ctr gpgf "EKE"""363; Hkngt'hqt'Uki o c/Fgnc'CFEu Pkmj kdTgff{"Mctpcvk"M{g/Uj kp"Ngg."Lqcp"Ectmgvc." cpf 'Tqdgtv'Xgkngvg''*Vj g''Wpkxgtukv{ "qh'Cntqp."Wpkxgf " Ucvgu+ Y r 4F/6'38-5; ¢38-₹9" Eqpxgz"Eqo dkpcvkqp"qh"Uwddcpf "Cf cr vkxg"""3645" Hkngtu'hqt'Ur ctug'Kor wnug'T gur qpug'U{uvgo u

Ucpi/Y qqm'Uqj p.'Icg/Ixp'[wp.'Igqpi m[w'Ngg.'] { gqp/F qqm'Dcg'*Ej wpi dwn'P cvlqpcn'Wpkxgtukv[.''Mqtgc+"cpf"

J wp'Ej qk'∜Fqpi gwk'Wpkxgtukv{.'Mqtgc+

Uguukqp"Vkng"]Y r 4H_'Cf xcpegf 'TH'Vtcpuo kvgtu Uguulqp'Ej ckt" Ft'Iqpi uqq'Ngg" *I y cpi lw'Kpunkwug'qh'Uekgpeg'cpf 'Vgej pqnqi {.'Mqtgc+ Fcvg" Cwi wu\'32.'4233'*Y gf pguf c{+ Vko g" 37-67¢39-37 Y r 4H/3" 37-67¢38-25" F guki p"Vtcf g/Qhhu"hqt"Ukpi ng/Gpf gf "xu0" 3649" Fkhhgtgpvkcn"Encuu/G"Ukl g"Dkrqnct"Rqygt" Co r nkhlgtu'y ky "Vj tqwi j /Y chgt/Xkcu'cv'406I J | Twkrk'Y w'[cp'Nk'Lgtt{'Nqrg|."cpf'Fqpcrf'[0E0Nkg'*Vgzcu" Vgej "Wpkxgtukv{."Wpkxgf"Ucvgu+ Y r 4H/4"38-25¢38-43" EO QU'Kovgi tcvgf "Ektewku'hqt"Z/dcpf "Rj cugf """"3653 Cttc{'U{uvgo u Dqp/J {wp"Mw."Fqpi/Yqq"Mcpi."cpf "Uqpiej gqn"Jqpi" *Mqtgc'Cfxcpegf'Kpurkwwg''qh''Uelgpeg''cpf''Vgejpqnqi{." Mqtgc+ Yr4H5"3843¢385; "Fwcn/o qfg"Rqygt"Cornkhkgt"hqt"NVG'J cpfugv""3657 Crrnlecvkqpu'wukpi 'DkHGV'Vgej pqnqi { Dqdcg"Mo "cpf "Iqpi uqq"Ngg"*I y cpi lw'Kpurkwwg"qh" Uelgpeg'cpf 'Vgej pqrqi {.'Mqtgc+ Y r 4H 6"38-5; ¢38-₹9" C"O wmk/Cpvgppc"82I J | "EO QU"Vtcpuo kvvgt"""365; wukpi "Y ktg/dqpf "Cpvgppc"hqt"J ki j "Qwr w' "Vcg"Y qqm"Mo "cpf "Ucpi j qqp"Lwpi "* qpugk"Wpkxgtukv{." Mqtgc+ Y r 4H/7"38₹9¢39₹7" Vj g"O qpqrkvj ke"Kpvgi tcvkqp"qh"KpI cCu"r J GO V"""3665" cpf "KpI cR"J DV"Vgej pqmi { "hqt"Ukpi ng/Ej kr " Y lO CZ"TH'HtqpvGpf 'O qf wrg EOMONIp. 'UOLONK'UOI O'Vuck'EOYOY cpi .'[OEOY cpi '*Y lp" Ugo leqpf wevqtu"Eqtr 0"Vcky cp+"ROJ O'Y w"cpf "LO[O'Nk" *Kpf wuntlen!Vgej pqnqi {"Tgugetej 'Kpunkwwg."Vcky cp+ Cytkyo]Vc3Vtcen3_'Cpcnqi 'Ektewku'cpf 'U{uvgo u'/'K Uguukqp"Vkng" Uguukqp'Ej ckt" Ft'Tcpf cmlI gki gt" *Kqy c'Ucvg'Wpkxgtukv{."Wpkxgf 'Ucvgu+ Fcvg" Cwi wuv!; .'4233''*Vvguf c{+ 2: €7¢32€7 Vko g" Vc3Vtcem3/3" 2: 57¢3237" Cp"Whtc"Nqy "Xqnci g"Whtc"J ki j 'I clp'EO QU"""38; 9" NP C'Wukpi 'Hqty ctf 'Dqf { 'Dkcukpi 'Vgej pks wg Gj ucp "Mcti ctcp" *Ucflcf "Kpuvkvwvg" qh" J ki j gt "Gf wecvkqp." Ktcp+. "I j c | cn"P cdqxcvk" *Hgtfqy uk"Wpkxgtukv{."Ktcp+."Oqj co o cf "Tg| c" Dci j dcpo cpguj "*Ucf lcf "Kpuvkwwg"qh"J ki j gt" Gf wecklap. "Krcp+: "Mj crkn"O chkpg j cf "*Hgtf qy uk" Wpkxgtukv{."Kcp+:"cpf"Jqqocp"Pcdqxcvk"*Ucflcf" Koukweg'qh'J ki j gt'Gf weckqp. 'Kcp+ Vc3Vtcen3/4" 2: 57¢3237" C"Whtc/Nqy "Rqy gt"Xqnci g"NgxgriUj khygt"hqt""""3669" Rcuukxg''Y ktgrguu'O ketqu{uvgo u Ecpcf c+ Vc3Vtcen3/5" 2: <57¢32<37" Dkcu/Nkpg"Eqo r gpucvkqp"kp"O wnwl/Uvci g"""36; 3 Corrkhketu Rwpkj "TOUwtnepvk'cpf "RowrlO O'Hwt vj "*P gy "O gzleq" Ucvg"Wpkxgtukv{."Wpkxgf"Ucvgu+ Vc3Vtcen3/6"2: 57¢3237" Wwpcdng. "Nqy/Rqygt." J ki j/I ckp"""3755 Vtcpuko rgfcpeg"Cornkhkgt"hqt"hPKTU" Rj qvqtgegkxgt'HtqpvGpf 'Gj ucp" Mco tcpk "Chtkp" Uwncpc. "cpf "O qj co cf" Ucy cp"*Rqn{ usko "P gwtqvgej pqnqi kgu"Ncdqtcvqt {." Ecpcf c+ Vc3Vtcem3/7" 2: 57¢3237" Kpvgi tcvgf 'Dkqugpuqtu'kp'EO QU'''3799

J wc'Y cpi "*Um(y qtmu'Uqnwkqpu.'Wpksgf 'Ucvgu+

Uguukqp"Vkmg"]Vc4Vtcen3_'Cpcnqi 'Ektevkul'cpf 'U{ uvgo u'/' 'KK Uguukqp'Ej ckt" Ft"Tepfem'l gkigt" *Kgy c'Ucvg'Wpkxgtukv{.'Wpkxgf 'Uvcvgu+ Cvi vuv"; ."4233"*Vvguf c{+ Vko g" 32<52¢34<22 Vc4Vtcen3/3"32\52\capp34\22"J" ki j n{ "Ghhkekgpv"CE"Rqy gt"Vtcpuhgt"kp"""3843 F kuvt kdwygf "Dkqo gf kecn"Ko r ncpvu"Wukpi " Ukheqp/Qp/Ucrrj ktg'Vgej pqnqi { Cukuj "\ ce"Cngz"cpf "Vgtuvgp"Ngj o cpp"*Vj g" Wpkxgtukv{ 'qh'P gy 'Uqwj 'Y crgu.'Cwurtcrkc+ Vc4Vtcem3/4"32\52\c434\22"C"4"I J | "Ghhgevkxg"Uco r nkpi "Htgs wgpe{"""3887 MF gnc/3/Uki o c'Cpcnqi/vq/F ki kxcnEqpxgtvgt Cpf tgy "Ncdc| kgy ke| "cpf "T0Lceqd"Dcngt"*Dqkug" Uvcvg'Wpkxgtukv{."Wpkxgf'Uvcvgu+ Vc4Vtcen3/5"32<52¢34<22"P qkug"Uj cr kpi "Ko r ngo gpvcvkqp"kp"Vy q/Ugr 1""""38: 7 UCT"CFE"Ctej kgewtgu"Dcugf "qp"Fgnc{gf" S wcpvk cvkqp'Gttqt " j klkg"Ej gp."Rgpi "\ j cpi "*Vukpi j wc"Wpkxgtukv{." Ej kpc+."J gi qpi "Y gk"Uck/Y gpi "Ukp."Ugpi /Rcp"W." Twk'Rcwrq"O ct vkpu"*Wpkxgtukv{ "qh"O cecw."Ej kpc+." cpf "\ j kj wc"Y cpi "*Vukpi j wc"Wpkxgtukv{."Ej kpc+ Vgej pls wg'hqt'I o /E'Dcugf 'Eqpvlpwqwu/Vlo g'' 'O qf wrcvqtu Ej gp/[cp'Eck"[cpi 'Lepi ."Uck'Y gpi 'Ulp."Ugpi / Rcp"W."cpf "Tvk"R0'O ct vlpu"*Wpkxgtukv{ "qh"O cecw." Ej kpc+ Vc4Vtcem3/7"32-52¢34-22"C"Vtcem1cpf"J qnf"hqt"Ukpi ng/Gpf gf "qt"""38; 5" F khhgt gpvkcn''Kor w''y ksj "Cf lwuvcdng"Qwr w'' Ego o gp'O gf g Vcko wt"I kdtcp"Tcdwung."Eguct"T0Tqftki wgu" *Hgf gtcn'Wpkxgtukv{ "qh'Ucpvc"O ctkc."Dtc| kn+."cpf" Ucgkf "P qquj cdcf k"*O kej ki cp"Vgej pqmi kecn" Wpkxgtukv{."Wpkxgf"Uvcvgu+ Cytkwo Uguukqp"Vkng"]Vc4Vtcem4_'F ki kscn'Ektewku'cpf 'U{ vgo u'/'K Uguukqp'Ej ckt" Ft'Rtco qf'O gj gt" *Kourkwag'hqt'Kohqteqo o "Tgugctej ."Ukpi crqtg+ Fcvg" Cwi wuv"; ."4233"*Vwguf c{+ 32<52¢34<22 Vko g" Vc4Vtcem4/3"32-52¢34-22" Nqy "Rqy gt"F guki p"qhl'c"HwnlCffgt"Ucpfctf""""3673 Egm Lkepr kpi "J w'epf "Lwp"Y epi "*P kpi dq"Wpkxgtukv{." Ej kpc+ Vc4Vtcem4/4"32-52¢34-22" Wm tc" Nqy "Rqy gt" Own k/Qr gtcpf "Cffgt"""3677" Ctej kgewtg'hqt'Uwdyj tguj qrf 'Ektewku Dkuy clki'O kuj tc. "E {tkrl'Dqvgtqp. "Rkgttg"C0'Hctkpg" *Kourkwwg"qh"O letq"Vgej pqmi {."Uy k\| gtrcpf +"cpf" Dcuj kt 'O 'Cn/J cuj ko k'*Wpkxgtukv{ "qh'Uqwj co r vqp." Wpkgf 'Mkpi f qo + Vc4Vtcen4/5"32<52¢34<22"Twp/Vko g"HRI C"J gcny "O qpkqtkpi "wukpi """367; Rqy gt'Go wrcwqp"Vgej pls wgu Cto kp'Mtkgi .'Iqj cppgu'I tkpuej i n'Ej tkwkcp'Uvgi gt.'' Tgkpj qnf "Y gkuu"*I tc| "Wpkxgtukv{ "qh' Vgej pqnqi {." Cwwtkc+."J qri gt"Dqem"cpf "Iqugh"J clf "*Kohkpgqp" Vgej pqnqi kgu'Cwurtkc'CI .'Cwurtkc+ Vc4Vtcem4/6"32<52¢34<22"C"Ogfkvo/Itckp"Tgeqphkivtcdrg"Rtqeguuqt"""3685 Oti cpk cykap Lcuqp"Xcp"F { ngp"cpf "Lqu2" I 0 F gn cf q/Ht kcu" *Y cuj kpi vqp"Uvcvg"Wpkxgtukv{."Wpkxgf"Uvcvgu+ Vc4Vtcem4/7"32-52¢34-22" J F N" vq" UR" E qpxgt ukqp" E qp vc kp kp i """"3689 Kpvgteqppgev'Ghhgevu'Wukpi 'UCF'Ocvtkz O cpqwej gj t"I j cj tco cpkcp"I qn ct"cpf" J co lf Tg| c"Vclq| | cngtlp" CucpRctf c| cp'Eqo r cp{." Кср+

Uguukqp'Ejckt" Ft'Tcpfcmll gki gt" *Kgy c'Ucvg'Wpkxgtukv{.'Wpkxgf'Uvcvgu+ Fcg" Cwi wuv'; .'4233'*Vwguf c{+ Vko g" 36<22¢37<52 Vr3Vtcem3/3"36-22¢37-52"C"; yj / Qtf gt"Eqpvkpwqwu"Vko g" / CF E"***3693" y ky "Z/Eqwr ngf "F khhgt gpvkcnl'Ukpi ng/Qr co r " Tguqpcvqtu Ugdcurkep'\ gmgt."Ei tkrrkep'O wgpmgt"*Wpkxgtukv{ "qh" Crrnkgf "Uekgpegu"O wpkej ."I gto cp{+"cpf "Tqdgtv" Y gki gn"*Wpkxgtukv{ "qh"Gtrcpi gp/P wtgo dgti ." I gto cp{+ Vr3Vtcen3/4"36-22¢37-52" Qr vko cn"F guki p"qh"c"Vj tguj qnf "U{ uvgo """3697" dcugf 'F gvgevqt I gpej gpi 'I wq"cpf 'O tkpcn'O cpf cn'*Wpkxgtukv{ "qh" Crdgt vc. 'Ecpcf c+ Vr3Vtcem3/5"36-22¢37-52" Cp "Cf cr vkx g"Dkuvcdng" U{ uvgo "dcugf """369; " F gvgevqt"cpf "ku"Crrnkecvkqp"kp"Y cvgto ctm" Gzytceykqp I gpej gpi "I wq"cpf "O tkpcn"O cpf cn"*Wpkxgtukv{ "qh" Crdgt vc. 'Ecpcf c+ Vr3Vtcen3/6"36\22\chi37\52"Cp"Whtc"Nqy/Rqy gt"Tckn/vq/TcknEqo rctcvqt"""36: 5 hqt'CFE'F guki pu Uqpi "Ncp."Ej cq"[wcp."[xqppg"[0'J 0'Nco ."cpf" Nkvgt "Ukgni"*P cp { cpi "Vgej pqnqi kecn"Wpkx gtukv{." Upi crqtg+ Cvtkvo Uguukqp"Vkvrg"]Vr3Vtcenf_'Nkpgct'cpf 'pqp/Nkpgct'U{ uvgo u Uguulqp"Ejckt" Ft"Oclkf"Cjocfk" Wpkxgtukx{ "qh"Y kpfuqt. "Ecpcfc+ Cwi wuv'; .'4233'*Vwguf c{+ Fcvg" 36<22¢37<52 Vko g" $\label{lem:conf} Vr 3Vtcenf/3" 36 <22 \\ \not e 37 <52" Rgt hqto cpeg" Cpcn \\ \{uku"qh" Vcdng/Dcugf" \color="36:9" Rgt hqto cpeg" Cpcn \\ \{uku"qh" Vcdng/Dcugf \color="36:9" Rgt hqto cpeg" Rgt hqto$ Crrtqzko cykqpu"qh"yj g"J {rgtdqrke"Vcpi gpv" Cevkxcvkqp'Hvvpevkqp Mctrl'Ngdqgwh "Tqdgt vq"O wuegf gt g. "cpf "O cllf" Cj o cf k Wpkxgtukv ('qh'Y kpf uqt. 'Ecpcf c+

Vr3Vtcenf/4"36-22¢37-52"Qp"Rtqrgtvkgu"qh"Fqwdng"Ncrnceg"""36;7

Xct{kpi 'U{uvgo u

Vr3Vtcenf5/5"36<22¢37-52" Tgi lqpcrlTcpf qo 'P wo dgt'I gpgtcvqt"Htqo "c"""36; ;

Ogf lecrlkpe0'Wpkgf 'Uvcvgu+

Etquu/Eqwr ngf 'Ej cqvke'Quekmcvqt

Vtcpuhqto cvkqp"Hqt"Cpcn(uku'qh'Nkpgct"Vko g/

qh'Grgevtqpleu'cpf 'Et { r vqrqi { ."Vwtng{+

Uj gtxkp"Gthcpk"O clkf "Cj o cf K'*Wpkxgtukv{ "qh" Y kpf uqt."Ecpcf c+."cpf "P ko c"Dc{cp"*D"Dtcwp"

Ucrkj 'Gti Ãp'*V©D VCMP cylqpcn'T gugctej 'Kpurkswg''

]Vr3Vtcen3_'Cpcnqi 'Ektewksu'cpf 'U{ uvgo u'/' KKK

Uguukqp"Vkng"

```
Uguulqp'Ej ckt" Ft'J wt'M(gqp'* qpugk'Wpkxgtukv{.'Mqtgc+
Fcvg"
                  Cwi wuv'; .'4233'*Vwguf c{+
Vko g"
                  36<22¢37<52
\label{lem:constraint} Vr3Vtcen \& 2/3"36 \& 2 \& 2/37 \& 52" Mg \{ \text{"Ewwkpi "Cri qtkj o "hqt" Uqrxkpi "Qr vko cri"" 3725} \} \\
                                Ray gt'Hray 'Rtadigo u
                                Wj gp'Nggvqp'cpf 'Vj cpcvej ck'Mwry qtcy cplej r qpi "
                                *Uwtcpctgg'Wpkxgtukv{ ''qh'Vgej pqnqi { .''Vj ckncpf +
                                                                       Cytkwo
Uguukqp"Vkng"
                ]Vr4Vtcen4_'Fki kcnEktevku'cpf 'U{ vgo u'/'KK
Uguukqp'Ej ckt" Ft'Rtco qf'O gj gt"
                   *Kourkweg'hqt'Kohqteqo o 'Tgugctej .'Uspi crqtg+
Fcvg"
                  Cwi wuv"; ."4233"*Vwguf c{+
Vko g"
                  37-67¢39-37
Vr 4Vtcen4/3" 37-67¢39-37" C"Eqo dkpcvkqpcri"Nqi ke"Ko r ngo gpvcvkqp"qhi"""3729
                                U/Dqz"qh'CGU
                                RO'XO'UO'Uj cuvt {."Cpwlc"Cipkj qvtk"Fkx{c"
                                Mcej j cy cj c."Lc { cuo kwc"Ukpi j "*O MUUU"
                                Ewo o kpu"Eqngi g"qh"Gpi kpggtkpi "hqt"Y qo gp."
                                Kpf kc+."cpf "O 0"U0"Uwcqpg"*RKGVøu"Eqmgi g"qh"
                                Gpi kpggtkpi .'Kpf kc+
Vr 4Vtcem4/4" 37-67¢39-37" J' ki j n{/Ceewtcvg"RNN"Ur ggf "Eqpvtqn'd{"""3733
                                Cffkpi 'R-F'Tgrgvkkxg'Eqpvtqn
                                J kf gnc | w'O cej kf c"*O ck wtw'P cykqpcn'Eqngi g"qh"
                                Vgej paggi {."Ler cp+:"Veneuj k"Kpawg."cpf "Hwo kpatk"
                                Mqdc { cuj k"*M{ wuj w"Kpukwwg"qh"Vgej pqmi { ."
                                Lcr cp+
Vr 4Vtcen4/5" 37-67¢39-37" Qp"vj g"Ko r ngo gpcvkqp"qh"ECP "Dwugu"vq"""3737"
                                Dewgt { 'O epci go gpv'U{ uvgo u
                                Ej wpi /J ukgp"J uw "Mwp/Ej wp"Ej cpi ."[ cpi /Ej kgj "
                                Qw."Mvcp/[ wgp"Nkcq"cpf "Ej kp/Nqpi "Y g{ "*O gvcn"
                                Kof wuxkcn'T gugctej "cpf "F gxgmr o gpv'Egpvtg."
                                Vcky cp+
Vr 4Vtcem4/6" 37-67¢39-37" Vj g"KE"Ectf "Kpvgthceg"Wukpi "Go dgf f gf """373;
                                Vgej pqnqi {'hqt'\j g'Nkxkpi ''U\vr qt\v'U{uvgo
                                O cucuj k'P cmc { co c."O kuwenk'C dg"*Mci cy c"
                                P cwqpcn'Eqngi g"qh"Vgej pqmi {."Lcr cp+."cpf"
                                Lxplej k'Koco wtc'*Mq{co c'U{uvgo 'Koe0'Icr cp+
                                                                        Cytkyo
  Uguukqp"Vkarg"
                  ]Vr 4Vtcen6_'Ko ci g'cpf 'Xkf gq'Rtqeguukpi
  Uguulqp"Ej ckt" Ft'J {wn/Icg'Ngg"*UgqwrlPcvkqpcrlWpkxgtukv{."Mqtgc+
                   Cwi wuv'; .'4233'*Vwguf c{+
  Fcyg"
                    37-67¢39-37
  Vko g"
 Vr 4Vtcen6/3" 37-67¢39-37"CUKE"Ko r rgo gpvcvkqp"qhlc"I cwulcp"R{tco kf """"3745"
                                hqt'Wug'kp'Cwqpqo qwu'O qdkrg'Tqdqvkeu
                                 'O cwj kcu'O kgmg. 'Cpf t2 "Uej @rgt. "cpf 'Tckpgt 'Dt Ãeni'
                                 *Wpkxgtukv{'qh'Ukgi gp.'I gto cp{+
 Vr 4 Vtcen6/4" 37-67¢39-37"C r r nke c vkq p " q h " Nq y / Rc uu" ( " J ki j / """3749
                                 Rcuu"T geqpuvt wevkqp"hqt "Kortqxkpi "vjg"
                                 Rgthqto cpeg'qh'\'j g'RQEU'Dcugf 'Cri qtkj o
                                 Uwpi /O kp'T j q''*[ qpugk'Wpkxgtukx{.''Mqtgc+:'Ej wprgk'
                                 Nkw"*F wng"Wpkxgtukv{."Wpkxgf"Uvcvgu+:"cpf"Fqpi/
                                 J {wp'Mlo '%[ qpugk'Wpkxgtukx{.'Mqtgc+
 Vr 4Vtcen6/5" 37-67¢39-37" Kpvgtcevkxg'5F "Ugtgqueqr le'O T"Xgpqi tcr j {"""3752"
                                 Tgeqpustweskqp"Wukpi 'o KR
                                 Ugqm'J {wp"Uj kp"cpf "F qukm'J y cpi "*[ qpugk"
                                 Wpkxgtukv{.'Mqtgc+
 Vr 4Vtcen6/6" 37-67¢39-37"C p"Qr vko k| gf "J ctf y ctg"F guki p"hqt"""3759
                                 Uvgtgqueqrke"Ko ci g"I gpgtcvkqp"Dcugf "qp"
                                 Fgryj 'Ko ci g
                                 Dkpi "Nkw"Lk gpi "Y gk"Uj cqhgk"Uj k"[ kuqpi "Ej cpi ."
```

cpf "Y gkI wq" *Vkcpllp" Wpkxgtukv{."Ej kpc+

Uguulqp"Vkrg"]Vr3Vtcem32_'Rqy gt'U{uvgo u

Uguukqp"Vkng" Uguukqp"Ej ckt" " F cvg" Vko g"	
Vr 4Vtcem7/3"	37-67¢39-37"C"Gpgti {/Ghhkekgpv"U{uvgo "d{"Tgf wekpi """"3763" Dgceqp"Nkuvgpkpi "hqt"Rgtkqf ke"Xkvcn"Uki p"
"	Oqpkqtkpi " " D{wpi ej gqrl'Mcpi ."Lwpj c"Ko ."Ej wrj q"Ej wpi ."cpf' Legugqrn'Mo "{ qpugk'Wpkxgtukx{.'Mqtgc+
Vr 4Vtcen7/4" :	37-67¢39-37"J ki j / Ur ggf "Ctej kgewtg"hqt"mf lo gpulqpcri"""3767 NHUT"hp"J 1Y "Korngo gpvolqp " " " Ej cp/Dqm"Lgqpi."Fcg/J q"Mko "*Grgevtqpkeu"cpf Vgrgeqo o wpkecvkqpu"T gugctej "Kpukkwyg."Mqtgc+:" cpf "J { gqp/F gqm"Dcg"*Ej wpi dwm"P cvkqpcn" Wpkxgtukv{.'Mqtgc+
Vr 4Vtcem 7/5"	37-67¢39-37"Dnkpf "Uqwteg"Ugrctcvkqp"kp"Ocej kpg"""376; Oqpkqtkpi " " Vj gqfqt"F0'Rqrguew'*Pcvkqpcn"Kpuvkswwg"hqt" Tgugctej "cpf"Fgxgmqrogpv"kp"Kphqtocvkeu." Tqocpkc+
	Cvilsvo
Uguukqp"Vkvrg" Uguukqp'Ej ckt" " F cvg" Vko g"]Y c3\tcen7_'Eqo o wp\ecs\qpu'cpf 'FUR'''\K Ft'Mgppgj 'Igpn\qu'' *Rgppu\ncp\e'Uc\g'\Wp\kgtuk\{.'\Wp\kgf 'Uc\gu+ Cwi wu\32.'\4233'*Y gf pguf c\{+ 2: \d7\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Y c3\tcen\forall/3"2	: -67¢32-37 Rgtegr wcriRtlqtls{"Dcugf "Rcengv"Uej gf whpi """"3775" hqt "S kcnkv{"Eqpuvtckpgf "Nqy f grc{"Nkxg" Uvtxgknrpeg"U{u{ vgo " " My cpi j { wp"Ngg"cpf "Ucpi j qqp"Ngg"*[qpugk' Wpkxgtukv{.'Mqtgc+
Y c3Vtcen7/4"2	: -67¢32-371% r ngo gpwwqp"qh"\ ki Dgg/I UO "Dcugf""3779" J qo g"Ugewtkv{"O qpkqtkpi "cpf "T go qvg" EqpvtqntU{ugo 0 " " Ctdcd"Y cj ggf "Cj o cf ."P cggo "Lcp"*J cp{cpi " Wpkxgtukv{."Mqtgc+:"Ucggf "K dcn"*Wpkxgtukv{"qh' Opi ggtkpi "cpf "Vgej pqnqi (."Rcnkuvcp+"cpf "Ej cpnkt' Ngg"*J cp{cpi "Wpkxgtukv{."Mqtgc+
Y c3Vtcen7/5"2 "	: 67¢3237'Chtgew'qh'Ej cppgn'Eqf kpi "cpf "Kpygtngcxkpi """"3783 kp'O KO Q/QHFO "U{wgo u " " " '' chct"Ks dcn'*1 y cpi lw'Kpwkwwg"qh'Uekgpeg"cpf " Vgej pqnqi { ."Mqtgc+"cpf "Ucgkf "P qquj cdcf k' *O kej ki cp'Vgej pqnqi kecn'Wpkxgtukx{ .'Wpkgf 'Ucvgu+
Y c3Vtcem7/6"2	:-67¢32-37'Vko kpi "cpf "U{ pej tqpk cvkqp"qh'Y ktgrguu"""3787 Dcug'Ucvkqpu'Qxgt'RcengvP gw qtmı " " Ico gu'Cy g{c.''Ucngj ''CrtCtclk'cpf ''Dcuko ''O clggf'' *Mj crkhc'Wpkxgtukv{.'Wpkgf ''Ctcd'Go ktcvgu+
Y c3Vtcen7/7"2	: -67¢32-37'O kpko wo "Uwo / O UG'F guki p"hqt"F kntkdwgf """"378; O wn*k/T gnc { "C kf gf "O wn*k/ Wugt "O KO Q" P gwy qtm " " [qwpi / O kp"Ej q. "Ugwpi j wp"Lcpi . "F qpi "Mw'Mko ' *[qpugk'Wpkxgtukv{. "Mqtgc+"cpf "Lcpi j qqp"[cpi " *Mqtgc'I gto cp"Kpurkwwg'qh'Vgej pqnqi {. Mqtgc+

Uguukqp"Vkrg"]Y c3Vtcem _'O GO U'cpf "THKF Uguukqp'Ej ckt" Ft'Lwcp'O qpvkgrlP gruqp" *Wpkxgtukx{ ''qh'Ncu'Rcno cu.''Ur ckp+ Fcyg" Cwi wuv'32."4233"*Y gf pguf c{+ 2: 67¢32\$7 Vko g" Y c3Vtcem /3" 2: 67¢3237" C"Nqy /Rqy gt" J ki j /Nkpgctkv{ "U{ o o gvtkecri"" 3795 Tgcfqw'Ektewk'hqt'Ecrcekkxg'Ugpuqtu Mclo lp"\ j qw"\ ls lcpi "Y cpi ."Hwrg"Nk"Ej wp"\ j cpi ." cpf "\ j kj wc"Y cpi "*Vukpi j wc"Wpkxgtukv{."Ej kpc+ Y c3Vtcem /4"2: 67¢3237" Gngevtquvcvke"Gpgti {"J ctxguvkpi "Wukpi """"37: 3 F qwdngtu'qh'Gngevtkekv{ Cpvqpkq"S wgktqu"O 0'f g"S wgktq| "cpf "O ctegrq" F qo kpi wgu'*Hgf gtcn'Wpkxgtukx{ "qh'Tkq"f g"Icpgktq." Dtc|kn⊢ Y c3Vtcem /5"2: 67¢3237" F gxgmr o gpv"qh"cp"TH/EO QU"Uwthceg""37: 7" Ceqwirke"Y cxg"*UCY +"Tguqpcvqt HD'Ukf gm"C0'P 0'P qtf kp"*Kpvgtpcvkqpcn"Kirco ke" Wpkx gt ukv{ "O cm { ukc. "O cm { ukc+."cpf "O 0'G0' \ ci j nqwn'* 1 gqti g"Y cuj kpi vqp"Wpkxgtukv{."Wpkxgf" Ucvgu+ Y c3Vtcem /6"2: 67¢32\$7" C"P qxgriRrcego gpv'Cri qtkij o "hqt"O wnk/r kp"""37:; F ki kscn'O ketqhrwlf le'Dkqej kr u Rtcpcd"Tq{."Uwncpvc"Tq{."J chk wt"Tcj co cp" *Dgpi cn'Gpi kpggtkpi "cpf "Uekgpeg"Wpkxgtukv{.' Kpf kc+"cpf "Rct vj cuct cvj k"F cui wr vc"*Kpf kcp" Koukweg'qh'O cpci go gpv.'Kof kc+ Y c3Vtcem /7"2: 67¢32\$7" Ko r repvcdrg"Y ktgrguut"O ketqu{urgo ut"hqt"vj g"""37; 5 O gcuwtgo gpy'qh'Kovtcqewrct'Rtguuwtg Cpf tg"Hcwn"O cwj gy "Vwtpgt."cpf 'Lqj p'P cdgt" *Wpkxgtukv{ ''qh'Nqvkuxkng. 'Wpkxgf ''Uvcvgu+ Cvtkvo]Y c4Vtcen4_'F ki kscnEktewksu'cpf 'U{ vgo u'/'KKK Uguukqp"Vkmg" Uguukqp'Ej ckt" Ft'Rtco qf'O gj gt" *Koukweg'hqt'Kohqteqo o "Tgugctej ."Ukpi crqtg+ Cwi wu\'32.'4233'*Y gf pguf c\{+ Fcvg" 32<52¢34<22 Vko g" Y c4Vtcen4/3"3252¢34-22"C"Eqo r ctcvkxg"Xctkcdkrkv{ "Cpcn{ uku"hqt"""37; 9 EO OU'cpf 'EP HGV'8V'UTCO 'egmi Ecto gp"I 0'Cm wf2xgt"cpf"Cpvqpkq"Twdkq" *Vj g"Wpkx gt ukvc v"Rqrkv³ epkec"f g"Ecvcnwp { c0" DctegnqpcVgej .'Ur ckp+ Y c4Vtcen4/4"32-52¢34-22"EP VHGV"I cvg"F guki p"y knj "Vqngtcpeg"vq"""3823 O gvcnle EP Vu Hrqtkep'I tki qrgkv.''Lqug'I 0F gri cf q/Htkeu.''cpf "\ j g" \ j cpi "*Y cuj kpi vqp"Uvcvg"Wpkxgtukv{."Wpkvgf" Ucvgu+ Y c4Vtcem4/5"32<52¢34<22"F guli p'O gy qf 'hqt'8V'EP HGV'O kucrki po gpv"""3827 Ko o wpg'UTCO 'Ektewky 'Y gk''Y cpi ."\ j k{ wcp"[w."Rgky gp"J g."Mgp"Ej qk" cpf "J qlqqp"Ngg"*Kakpqku"Kpurkwvg"qh"Vgej pqrqi {." Wokgf 'Ucvgu+

Y c4Vtcem4/6"32-52¢34-22"Hcdtlecvlqp"cpf "O qf grkpi "qh'Ci IVkQ4IKVQ"""382; " O go tkrqt Uguulqp"Vkng"]Y c4Vtcen8_"XNUKECF Uguulqp'Ejckt" Ft'Mk{qwpi'Ejqk'*UgqwrlPcvkqpcrlWpkxgtukv{.'Mqtgc+ Cwi wu\'32.'4233'*Y gf pguf c\{+ Fcyg" Vko g'' 32<52¢34<22 Y c4Vtcen8/3"32\52\phi34\22"Nc{qwi"Wpkhqto kv{\"C"O gvt ke"hqt"[kgnf """"3835 Gpj cpego gpv J cuucp"Ncej mct"*KO 4P R "Htcpeg+: "Qrkxkgt"Tk | q" *Kovgn'O qdkrg"Eqo o wpkecvkqpu."Htcpeg+:"Igcp" O lej grlRqt vcn"cpf 'Qrlxxlgt"I lpg| "*fO 4P R'Htcpeg+ Y c4Vtcen8/4"32-52¢34-22"\$ wc uk/ F gnc { / Kp ugp ukvkx g" E q o r kngt <**"""**3839" Cwqo cwe"U{ pyj guku"qh"Cu{ pej tqpqwu" Ektevksu'htqo "Xgtkrqi "Ur gekhlecvkqpu Tqpi '\ j qw'My gp/Uqpi 'Ej qpi .'Dcj /J y gg'I y gg." cpf "Iqugr j "U0'Ej cpi "*P cp{cpi "Vgej pqmi kecn" Wpkxgtukv{."Ukpi cr qtg+ Y c4Vtcen8/5"32<52¢34<22"P gy "Vgej pls wg"hqt"Vguvkpi "qh"F grc{"Hcwn/"""3847 kp'Enwrgt'Dougf 'HRI C P cej kngyc'F cu.'Rtcpcd'Tq{."cpf 'J chk wt'Tcj co cp" *Dgpi cn'Gpi kpggtkpi "cpf "Uekgpeg"Wpkxgtukv{.' Kpf kc+ Y c4Vtcen8/6"32:52¢34-22" Vko kpi /"cpf "Kpvgthgtgpeg/Htgg"O wnk/rc{gt"""384; Tqwkpi 'Vtgg Rk/J wc"Uw"*Ej wpi "[wcp"Ej tkukcp"Wpkxgtukv{." Vcky cp+:'Jukp/Jukwpi 'Jwcpi '*Nwpijy c'Wpkxgtukv{'' qh"Uelgpeg"cpf "Vgej pqnqi {."Vcky cp+"cpf "Vuck/ Okpi "Jukgj "*Ej wpi "[wcp"Ej tkukcp"Wpkxgtukv{." Vcky cp+ Cvtkvo Uguukqp"Vkmg"]Y r 3Vtcem3_'Cpcnqi 'Ektewku'cpf 'U{ uvgo u'/' 'KX Uguukqp"Ejckt" Ft"Tcpfcm'I gki gt" *Kgy c'Ucvg'Wpkxgtukv{.'Wpkgf'Ucvgu+ Cwi wu\'32.'4233'*Y gf pguf c{+ Fcvg" 36<22¢37<52 Vko g'' Y r 3\tcen3/3" 36\22\chi37\52" \text{Xqnxci g/O qf g"Nqugt 1Y kppgt/Vcng/C m''''' 3855 Ektevku O qi co o cf "Uqngko cpk"cpf "O qi co o cf" Pc|ctcrkmqq"¾Kurcole"C|cf"Wpkxgtukv{."K/cp+ Y r 3Vtcen3/4"36-22¢37-52" Nkvj kwo "Dc vvgt { "O qf gnu"hqt "Dc vvgt { """3859" Ej cti kpi "cpf "U{ uvgo "Nqcf kpi Ej kp/Nqpi "Y g{."Mxp/Ej xp"Ej cpi ."Ej xpi/J ukgp" Juw."Hgpi/Ejk"Nkw"*Pcwkqpcn"Egpwtcn"Wpkxgtukv{." Vcky cp+"cpf "Uj gpi /Y gk"Ej gp"*O gvcn'Kpf wuxtkcn" Tgugctej 'cpf 'F gxgrqr o gpv'Egpvtg.''Vcky cp+ Y r 3\tcen3/5"36\22\chi37\52"\Cp"\Wmtc/Y kf gdcpf."\Eqp\kp\wq\wu/V\ko g."""3863 Fkhlgtgpvkcn"Ukpi rg/Dkv"S wcpvkt gt"kp"; 2"po " **EO OU** Vwcp"Cpj "Xw."Uj cpvj k"Uwf crck{ cpf k"J °mqp"C0" J lqt vrcpf ."Ókxkpf "P â uu."Vqt "Uxgttg"Ncpf g."cpf "

Uxglp'Gtkn'I co tcp'**Wpkxgtukv{ 'qh'Qurq.'Pqty c{+

Zkqpi nlepi "Nlep"epf "Hgk"[wep"*T { gtuqp"Wpkxgtukv{."

EO QU'I krdgtv'O kzgtu''kp"Y gen'iepf "Ustqpi"

Y r 3Vtcen3/6"3622¢3752" C "Eqo r ct cvkx g"Uwf { "qh"Nqy / Rqy gt"""3867

Koxgtukqp

Ecpcf c+

C n C	Yr4Vtcem4a3_FkikcriEktewku/cpf"U{ wo u\"KX Ft'Rtco qf"O gj gt" *Kpurkwwg'hqt"Kphqteqo o "T gugctej ."Ukpi crqtg+ Cwiwuv32."4233"*Y gf pguf c{+ 37-67¢39-37
Y r 4 Vtcen4a3/3"	37-67¢3937" J' ki j 'Ewttgpv'GiHekgpe{ 'Ugpug'Co r rikkgt'''"386; '' wukpi ''Dqf {/Dkcu'Eqpvtqri'lqt''Wintc/Nqy / Xqnci g'UTCO
" "	" Ej qvctq"O cuwf c."Vgvuw{ c"J ktqug."Mgk' O cwwo qvq."[wlk'Qucnk"P qdwcne"Mwtqnk" cpf "O cucj ktq"P wo c"*Mqdg"Wpkxgtukv{." Icr cp+
Y r 4Vtcem4a3/4"	37-67¢39-37" Dwhytrguu'T guqpcpv'Enjembpi 'y ksj 'Ngy ''''''3875"
" "	Ungy "cpf"I ki j "Xctk:vkqp/Vqngtcpv " " [' k'Z w."Uj w o kpi "Ej gp. "Z kcpi / { wcp"Nkw"cpf " Vcq"Vcpi "*P c vkqpcn"Wpkx gt ukv{ "qh"F ghgpug" Vgej pqnqi {.'Ej kpc+
Y r 4Vtcen4a3/5"	37-67¢3937" Qr vko cri'Dqf { "Dkcukpi "hqt"O czko k kpi """3879 Ektewky"Rgthqto cpeg"kp"87po "EO QU" Vgej pqmi {
" "	" "Hetuj ef "O qtefk" Vwep" Xw'Eeq. "Fei "V0' Y kurepf. "Upqttg" Cwpgy "Wpkxgtuk ("qh' Qurq." Pqtye{+"cpf" Jeokf" Ocjoqqfk" "Ucyu Hicpekueq' Uvey "Wpkxgtuk (. "Wpkgf" Uveyu+
Y r 4Vtcem4a3/6"	37-67¢39-37" Cp"Cf cr vkxg"Uej go g"hqt"Dwu"Gttqt"""3883"
" "	F gygevkqp " I' g"Ej gp"*Wpkxgtukv{ "qh"P gy "Uqwyj "Y crgu." C wnvtcrhc+"cpf "Ucgkf "P qquj cdcf k"*O lej ki cp" Vgej pqrqi lecriWpkxgtukv{ ."Wpkxgf "Uvcygu+

Cvtkwo

		Cvtkwo
С н С .	Ft'Rtco qf'O gj gt	nqteqoo'Tgugctej.'Ukpicrqtg+
Yr4Vtcen4a4/3" " "	37-67 <i>6</i> 39-37" C"]	P qxgn"F w:n"Gf i g"Vtki i gtgf "P gct/""388; Vj tguj qrf 'Ucvg"Tgwpvkg'Ncwj 'F guki p Ucpf ggr "Utktco ."C twp"Tco pcvj "Tco cpk" J cks kpi "P cp."J qlqqp"Ngg."cpf "Mgp"Ej qk' *Krikpqku"Kpukkwwg"qh"Vgej pqrqi {."Wpkvgf" Ucvgu+
Yr4Vtcen4a4/4"	37-67¢39-37" Nq	y "Xqnci g"cpf "Nqy "Ngcmci g"Hnkr /""3895 Hnqr u"dcugf "qp"Vtcpuo kuukqp"I cvg"kp" P cpqo gvgt'EO QURtqeguugu Z kcq{kpi "[w."Z kcq{cp"Nwq."cpf "Ikcpr kpi "J w" *P kpi dq'Wpkxgtukx{.'Ej kpc+
Yr4Vtcen4a4/5"	37-67¢39-37" P g	ct/Vj tguj qnf "Ugs wgpvkcn"Ektewkw!"""3899 wukpi "Ko rtqxgf "Enqengf "Cf kcdcvke" Nqi ke'kp'67po 'EO QU'Rtqeguugu P k''J ck{ cp"cpf "J w'Lkcpr kpi "*P kpi dq" Wpkxgtukv{.'Ej kpc+
Y r 4Vtcen4a4/6" " "		niklikkgu"q"O kur"Rtgf kevlpi "Vko kpi """38: 3" Gttqtu'lp'Ecpct { 'Hir /hqr u