Dquvqp"Eqngig"

Cvj ngvkeu"Cfxkuqt{"Dqctf" Cppwcn"Tgrqtv."4228/29"

 $\label{thm:continuous} Vjku"Cppwcn"Tgrqtv"ku"kpvgpfgf"vq"uw\ o\ o\ ctk\ |\ g"hqt"vjg"Wpkxgtukv\ \{"eq\ o\ o\ wpkv\ \{"dqvj"\ vjg"\ o\ clqt"fgxgnqr\ o\ gpvu"tgncvgf"vq"Dquvqp"Eqmgigøu"kpvgteqmgikcvg"cvjngvkeu"rtqitc\ o\ "cpf"\ vjg"Cvjngvkeu"Cfxkuqt\ \{"Dqctføu"*CCD+"rtk\ o\ ct\ \{"cevkxkvkgu"fwtkpi"vjg"rtgegfkpi"cecfg\ o\ ke"\ \{gct0"\ Okpwvgu"qh"vjg"CCDøu"\ o\ ggvkpiu"fwtkpi"vjg"rcuv"\{gct"ctg"crrgpfgf"vq"vjku"tgrqtv"cu"\ Cvvcej\ o\ gpvu"C\ o"\ I\ 0"$

30"Vjg" [gctøu" Jki jnki jvu"

 $\label{lem:comp} Vjg" \{gct"ucy" ocp \{ "uweeguugu" hqt" DE"uvwfgpv/cvjngvgu." dqvj" cecfgokecnn \{ "cpf" cvjngvkecnn \{ 0 "C" hgy" qh"vjgug" yknn" dg"uw oock | gf" dgnqy0" Kp"cffkvkqp." vjku" ycu" qwt" ugeqpf" hwnn" \{ gct"cu"c" ogodgt" qh"vjg" Cvncpvke" Eqcuv" Eqphgtgpeg" *CEE+. "yjkej" gpvckngf" eqpvkpwgf" cecfgoke" eqnncdqtcvkqp" coqpi" vjg" ogodgt" uejqqnu" cu" ygnn" cu" cvjngvke" eqorgvkvkqp0"$

C0"CEE"Cecfgoke"Eqmcdqtcvkqp"

Vjg"Kpvgt/Kpuvkvwvkqpcn"Cecfgoke"Eqnncdqtcvkxg"coqpi"CEE"Wpkxgtukvkgu"
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$D\emptyset "Cecfgoke" Cejkgxgogpvu" qh "Kpfkxkfwcn" DE "Uvwfgpv/Cvjngvgu"$

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 $DE"vgc\ o\ u"cej\ kgxg\ f"eqpuk\ fgtcdng"uweeguu"qp"vjg"rnc\ \{kpi\ "hkgn\ f"\ fwtkpi" neguu"qp"vjg"rnc\ grade "hkgn\ f"\ fwtkpi"qp" neguu"qp"vjg"rnc\ grade "hkgn\ f"\ fwtkpi"qp" neguu"qp"vjg"rnc\ grade "hkgn\ f"\ fwtkpi"qp" neguu"qp" neguu"$

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Vjg"Cvjngvkeu"Cfxkuqt{"Dqctf<"
Tqdgtv"Dnqq o *Ncy+"
Uwucp"Dtweg"*NUQG+"
Oct{"Gmgp"Hwnvqp"*NUQG+"
N{pp"N{gtn{"* J kuvqt{+"
Okejcgn"Ocnge"*Uqekqnqi{+"

Lwfkvj"Ujkpfwn/Tqvjuejknf"*EUQP+"
Rcwn"Urcipqnk"* Jkuvqt{+"
Tkejctf"Vtguej"*Geqpq okeu+"
Tqdgtv"Vciictv"*EUQO."Ejckt"cpf"
Hcewnv{"Cvjngvkeu"Tgrtgugpvcvkxg+

CCD"Cppwcn"Tgrqtv"28/29 Cvvcej o gpv"C"

 $Okpwvgu"qh"vjg"Cvjngvkeu"Cfxkuqt\{"Dqctf"Oggvkpi"\\Qevqdgt"38."4228"\\33<52"CO/34<52"RO"\\Hwnvqp"J cnn"635"$

 $Og\ o\ dgtu"rtgugpv<"Uwucp"Dtweg."N\{pp"N\{gtn\{."Okmg"Ocnge."Lw\ f\{"Uj\ kp\ fwn/Tqv]\}\}\}$

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 $\label{thm:cvjngvgu} $$ \text{cvjngvgu"ctg"vqnf"kp"cfxcpeg"vjcv"vjg} $$ \{ \text{"ykm"hceg"ejcmgpigu"dwv"vjcv"pqv"cm"qh"vjgo" crrtgekcvg"vjg"vtwg" ocipkvwfg"qh"vjgug"ejcmgpigu0"Kv" ycu"cnuq"cuugtvgf"vjcv"vgco" ogodgtu" kp"jkijgt/rtqhkng"urqtvu"uqogvkogu"tgegkxg"oqtg"eqorngvg"kphqtocvkqp"cdqwv"cxckncdng" ugtxkegu"cpf"tguqwtegu."cpf"vjcv" yjkng"vjg"ucog"tguqwtegu"ctg"cxckncdng"vq"cm"uvwfgpv/" cvjngvgu."uqog"qh"vjgo"ctg"pqv"hwnn{"cyctg"qh"vjcv0 Kv" ycu"cnuq"uwiiguvgf"vjcv"kv"okijv"dg" wughwn"vq"ugv"cukfg"c"fc{"kp" yjkej"cp"cfokpkuvtcvqt"htqo"gcej"uejqqn"okijv"eqog"vq"Eqpvg" Hqtwo"vq"cpuygt"swguvkqpu"cpf"vq"gzrnckp"rqvgpvkcn"uejgfwnkpi"fkhhkewnvkgu"kp"vjgkt"uejqqn"qt"oclqtu"cpf"rquukdng"yc{u"ctqwpf"vjgo0"}$

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$50"Vjg"Oqxg"vq"vjg"CEE"cpf"vjg"Igpgtcn"Swcnkv{"qh"vjg"Uvwfgpv/Cvjngvg"Gzrgtkgpeg"cv"DE"}$

 $C"pwodgt"qh"CCD" ogodgtu"gzrtguugf"eqpegtpu"cdqwv"cffkvkqpcn"encuugu"okuugf"dgecwug"qh"kpetgcugf"vtcxgn"fgocpfu"ecwugf"d{"DEøu"oqxg"vq"vjg"CEE0"Vjg"UCCE"ogodgtu"cempqyngfigf"vjcv"uqog"vgcou"jcf"dggp"rctvkewnctn{"chhgevgf0"Urqtvu"vjcv"ecog"wpfgt"fkuewuukqp"kpenwfgf"dcugdcnn."hkgnf"jqemg{."uqeegt."uqhvdcnn"cpf"xqmg{dcnn0"Uqog"CCD"ogodgtu"tgkvgtcvgf"vjg"fguktg."gzrtguugf"cv"qwt"rtgxkqwu"oggvkpi."hqt"hwtvjgt"uvwf{"qh"vjg"ghgevu"qh"DEøu"oqxg"vq"vjg"CEE0"}$

Vjg"UCCE" og odgtu"hgnv"vjcv"vjg"v{rkecn"uvwfgpv/cvjngvg"cv"DR

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 $\label{eq:control_stru} \begin{tabular}{ll} ue jqnctu j kru"cpf"pg y "hceknkvkgu0" J g"u jq y g f"v j cv"vqvcn" fqpcvkqpu"vq"cv j ngvkeu" j c f"tkugp" \\ pgctn \{"ukz/hqnf"fwtkpi "v j ku" rgtkq f0"Cv"v j g"uc o g"vk o g." jq y gxgt"ue jqnctu j kr"equvu" j cxg"cnuq" \\ tkugp"uwduvcpvkcnn \{0" J g"cnuq"uvtguug f"v j g"k o rqtvcpeg"qh"eq o rnkcpeg" y kv \\ \end{tabular}$

 $CEE"\ og\ odgtujk""ec\ og"kp"vjg"hqt\ o"qh"pcvkqpcn"gzrquwtg."vjtqwij"vgngxkukqp"cpf"qvjgt"\ ogfkc"uqwtegu."cpf"cuuqekcvkqp"\ ykvj"c"pw\ odgt"qh"jkijn{/tcpmgf"pcvkqpcn"wpkxgtukvkgu0"}$

$D \emptyset "Vjg" Korcev" qh"vjg" Oqxg"vq"vjg" CEE" qp" Vtcxgn" Vkog" cpf" Okuugf" Encuugu" quad tallaharan qaran qaran$

 $S\,wguvkqpu"ctqug"cdqwv"j\,q\,y\,"\,o\,we\,j\,"v\,j\,g"\,o\,qxg"vq"v\,j\,g"CEE"$

CCD"Cppwcn"Tgrqtv"28/29 Cvvcej o gpv"G"

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 $Ogodgtu"rtgugpv<"N{pp"N{gtn{.}"Okmg"Ocnge."Lwf{/Ujkpfwn/Tqvjuejknf."Dqd"Vciictv="Fkem"Vtguej."ogodgt/gngev"Rcwn"Urcipqnk"}}$

 $Ogodgtu"cdugpv<"Uwucp"Dtweg."Oct\{"Gmgp"H$

 $rtqitco0"Hwnn/vkog"uvchh"ogodgtu"ctg"gpeqwtcigf"vq"vjkpm"qh"vjgougnxgu"cu"gfwecvqtu."ogpvqtu"cpf"cfxkuqtu"vq"uvwfgpv"gornq\{ggu"cpf"vq"vtckp"uvwfgpv"gornq\{ggu"kp"vjg"rtkpekrngu"qh"tgurgev."rqukvkxg"cvvkvwfg."i$

70"Rtqitcou"cpf"Qvjgt"Tge"Rngz"Wug"

 $\label{lem:kpvtcowtcn} \begin{tabular}{ll} Kpvtcowtcn" urqtvu" cvvtcevgf" qxgt" 9522" rctvkekrcpvu" kp" 4227/28"*wr" htqo" lwuv" qxgt" 6222" kp" 3; ;8/;9+" kp" 37" fkhhgtgpv" urqtvu0" Kp" tgurqpug" vq" swguvkqpu." rctvkewnctn {"cdqwv" keg" vkog." Lqjp" cempqyngfigf" vjcv" kpvtcowtcn. "enwd" cpf" xctukv {"urqtv" wug" fqgu" rqug" uejgf wnkpi "ejcnngpigu" hqt" gzkuvkpi "hceknkvkgu0" } \end{tabular}$

 $\label{eq:decomposition} DE"Tgetgcvkqp"cnuq"qxgtuggu"44"enwd"urqtvu."\ y\ jke\ j"cvvtcevg\ f"qxgt":22"rctvkekrcpvu"kp"\\ 4227/280"V\ j\ gug"urqtvu"ctg"cttcp\ i\ g\ f"kp"v\ j\ tgg"vkgtu"ceeqt\ fkp\ i\ "vq"tg\ swktg\ o\ gpvu"v\ j\ g\ "\ o\ wuv"\ o\ ggv"cp\ f"wpkxgtukv\ \{"dgpghkvu"hqt"\ y\ jke\ j"v\ j\ g\ "ctg"gnk\ i\ kdng0"Uq\ o\ g"\ swguvkqpu"ctqug"cdqwv"v\ j\ g"\ hcev"v\ j\ cv"enwd"urqtvu"hcnn"wpf\ gt"v\ j\ g"uwrgtxkukqp"qh"DE"Tgetgcvkqp"dwv"tgegkxg"v\ j\ gkt"hwpf\ kp\ i'' htq\ o"v\ j\ g"Qhhkeg"qh"v\ j\ g"Fgcp"hqt"Uvw "$

CCD"Cppwcn"Tgrqtv"28/29 Cvvcej o gpv"H"

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 $Og\,o\,dgtu"cdugpv<"Uwucp"Dtweg"$

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Vjg"gpvktg" o gg pi"ycu" fgxqvgTvq" p"kphqto cn" fkuewuukqp"y "DE

 $Lghh"uckf"vjcv"jg"ectghwnn \{"oqpkvqtu"encuu"cvvgpfcpeg"tgrqtvu"hqt"jku"hqqvdcnarren encuu"cvvgpfcpeg"tgrqtvu"hqt"jku"hqqvdcnarren encuu"cvvgpfcpeg"tgrqtvu"hqt"jku"hqqvdcnarren encuu en$

 $eq\:o\:o\:wpkv\:\{/dwkn\:f\:kp\:i\:."cu"\:j\:g"hgnv"v\:j\:cv"\:rnc$

 $\label{eq:vjcw} Vjgtg"ku"c"vgco"nkhv"vkog"cv"3"RO."dwv"vjku"ku"hngzkdng"kh"c"vgco"ogodgt"pggfu"vq"vcmg"c"encuu"cv"vjcv"jqwt0"Kp"igpgtcn."ocp{"eqcejgu"ykvj"chvgtpqqp"rtcevkeg"vkogu"gpeqwtcig"vjgkt"rnc{gtu"vq"vt{"vq"hkpkuj"encuugu"d{"gctn{"chvgtpqqp"kh"rquukdng"uq"vjcv"hgygt"encuugu"yknn"dg"okuugf"dgecwug"qh"vtcxgn"hqt"eqorgvkvkqp0"Lqf{"rqkpvgf"qwv"vjcv"yqogpøu"dcumgvdcnn"ku"ukoknct."kp"vjcv"vjg"4/9"RO"qt"3/9"RO"rgtkqfu"ujqyp"qp"vjg"rtcevkeg"uejgfwng"ctg"pqv"cm"vcmgp"wr"d{"rtcevkeg"cpf"vgco"oggvkpiu0"Tcvjgt."vjg"eqcej"rtghgtu"vjcv"rnc{gtu"dg"cxckncdng"fwtkpi"vjqug"rgtkqfu"kh"rquukdng."dwv"rnc{gtu"ecp"vcmg"c"4"RO"encuu"kp"vjg"urtkpi"kh"pggfgf0"}$

 $\label{eq:continuity} J\,q\,y\,"fq"rnc\,\{gtu"\,y\,qtm"ctqwp\,f"v\,j\,g"eqphnkev"dgv\,y\,ggp"v\,j\,g"CEE"Vqwtpc\,o\,gpv"cp\,f"qwt"hkpcn"gzc\,o\,"rgtkq\,f\,A"$

 $Vgc\ o"\ og\ o\ dgtu"vt \{"vq"tguqnxg"cp \{"eqphnkevu"qp"cp"kpfkxkfwcn"dcuku"\ y\ kv\ j"v\ j\ gkt"kpuvtwevqtu"\ cpf"ctg"gpeqwtc\ i\ gf"vq"vt \{"vq"\ y\ qtm"v\ j\ gug"qwv"cu"gctn \{"kp"v\ j\ g"ug\ o\ guvgt"cu"\ r\ quukdng0"\ new properties of the pr$

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 $C" \ oqtg" igpgtcn" fkuewuukqp"hqmq ygf" eqpegtpkpi "urqtvu"kp" yjkej" rtcevkeg" cpf" eq orgvkvkqp" uejgfwngu" fkevcvg" vjcv" uvw fgpv/cvjngvgu" oc {"jcxg" fkhkkewn {"vcmkpi" encuugu" hqt" yjkej" vjg{" yqwnf" okuu" hgygt" vjcp" vyq" hwm" yggmu" qh" encuu"*kllg0."pq" oqtg" vjcp" hkxg" okuugf" encuugu" hqt" c"OYH" encuu"qt" pq" oqtg" vjcp"5" okuugf" encuugu" hqt"c"V"VJ" encuu+0"Hqt" vjg" urtkpi" ugoguvgt." CCD" ogodgtu" kfgpvkhkgf" dcugdcm." yqogpøu" dcumgvdcm." ogpøu" cpf" yqogpøu" iqnh" cpf" uqhvdcm" cu" cr rgctkpi" vq" hcm" kp" vjcv" ecvgiqt {0"Yjkng" cempqyngfikpi" vjcv" vtcxgn" uejgfwngu" hqt" dcugdcm." iqnh" cpf" uqhvdcm" rqug" urgekcn" rtqdngou" hqt" vgco" ogodgtu" fwtkpi" vjg" urtkpi" ugoguvgt." Lqf {"fkf" rqkpv" vq" uqog" okvkicvkpi" hcevqtull" Cu" rtgxkqwun {"fkuewuugf." yqogpøu" dcumgvdcm" cpf" uqhvdcm" fq" jcxg" uqog" hngzkdknkv {"cu" vq" vjg" rtcevkeg" vkogu" ujqyp" kp" vjg" uejgfwngl" ky" cffkvkqp." vjg" CEE" uqhvdcm" uejgfwng" { rkecm {"kpenwfgu" cfqwdngjgcfgt" kp" yggmgpf" ugtkgu." yjkej "tgfwegu" encuugu" okuugf" dgecwug" qh" vtcxgnll" CEE" dcugdcm" v{rkecm {"fquu" pqv" kpenwfg" fqwdngjgcfgtu." jqygxgt." kp" rctv" dgecwug" uqog" qh" vjg" uqwvjgtp" uejqqnu" ecp" cvvtcev" tgncvkxgn {"nctig" etqyfu" rnc{kpi" qp" vjtgg" uweeguukxg" fc{u0" Lqf{"cnuq" rqkpvgf" qwv" vjcv." kp" iqnh." vgco" ogodgtu" yjq" rgthqto" rqqtn {"cccfgokecma {"kp" vjg" hcm" ugoguvgt" fq" pqv" vtcxgnlly kvj" vjg" vgco" kp" vjg" urtkpi" ugoguvgt0"$

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