

7cifgY[·]8YHJ]`g

5ggYgga Ybh

5ggYgga Ybh'HJg_	K Y][∖h	8iY`8UHY	7cifgY`@YUfb]b[CihWcaYgʻ5ggYggYX
%"`Cb`]bY`Ei]nnYg	&\$1	8if]b[`WUgg	%ž`&ž`' Ž`(Ž`) Ž`*
&" 5gg][ba Ybhg	'\$I	A cbXUmi‰)) 'da 'cb'Y]h\Yf h\Y'Zc``ck]b['k YY_'cf'h\Y k YY_'UZhYf"	%ž &ž ' ž (ž) ž *
' "':]bU``YI Ua) \$I	H65	%ž". &ž" (

5ggYgga Ybh% Cb`]bYEi]nnYg

GHUFHHXUHY. '8i f]b['WUgg 8i Y'XUHY. '8i f]b['WUgg

H\]gʻUggYgga YbhWcbg]ghgʻcZUʻgYf]YgʻcZcb`]bYʻkYY_`mei]nnYgž[]jYbʻVYZcfYʻUbXʻXif]b[ʻh\YʻkYY_`m hihcf]U``WUgg"

5XX]h]cbU``XYHJ]`

FYgci fWfg

FYWca a YbXYX FYgci fWYg

HYI HVcc_g

- 6]ca YWXUb]Wg. 7]fW `Uh]cbžVmM'7": i b[`fBYk `Mcf_. Gdf]b[Yfž% *Ł" BchYžUb YUf]YfYX]h]cb Vm h\Y`gUa Y`Ui h\cf'! 6]cXmbUa]Wg. 7]fW `Uh]cb`fBYk `Mcf_. Gdf]b[Yf!J YfU[ž% , (Ł'!]g`Uj U]`UV`Y`]b h\Y``]VfUfm"
- A W8 cbU`X'g`V`ccX`Zck `]b`UfhYf]Yg.`h\YcfYh]WźYI dYf]a YbhU``UbX`W]b]WU``df]bW]d`YgžYX]hYX`Vm K_]`a Yf`K_"`B]W\c`g`UbX`A_]W\UY``: "`C`F ci f_Y`fl@cbXcb.`9Xk UfX`5fbc`Xž% - \$Ł"
- 7 UfX]cj UgW `Uf`d\mg]c`c[mž`VmF cVYfhA "`6YfbY`UbX`A Uth\Yk `B "`@Yj mfGh"@ci]g.`A cgVmž&\$\$%{"
- 6]cZi]X a YWXUb]Wg. h Y i a Ub WfW Uhcbz Vm? f]g\bUb 6"7 \UbXfUbz Ghub Ym9" F]h Yfgz UbX 5 h

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

@UVcfUhcfmfYdcfhg'UbX'a U/cf'Ugg][ba Ybhg'k]``fYei]fY'U'<u>Bcb'D`U[]Uf]ga '8YWUfUhcb'7 cj Yf'G\YYh</u>''

5gg][ba Ybhgʻg\ci `X`VY`gi Va]hhYX`cbʻhJa Y"`5`XU]`mdYbU`hmcZ) i _`cZh\Y`a Uf_gʻUj U]`UV`Y`Zcfʻh\Uh Ugg][ba Ybhk]```Udd`m'Zcf`k cf_`fYWY]j YX`UZhYf`h\Y`Xi Y`XUhY"`5bm'Ugg][ba Ybha cfY`h\Ub`) `XUmg``UhY`k]``bch VY`UVWYdhYX"`H\Y`cb`mYI Ya dh]cb`k]```VY`k \Yb`df]cf`dYfa]gg]cb`Zcf``UhY`gi Va]gg]cb`\Ug`VYYb`[fUbhYX`Vm h\Y`7 ci fgY`WccfX]bUhcf"`9I hYbg]cbg`k]``VY`[fUbhYX`cb`mcb`a YX]WU``cf`Wca dUgg]cbUhY`[fci bXg`i bXYf YI hYa Y`W]fWi a ghUbWfg"

5WUXYa]W<cbYghmUbX`D`U[]Uf]ga

D@5; =5F =GA

6Yk UfY**5b*Ugg][ba Ybhih,Uhi]bWi XYg*d*U[]Uf]gYX*a UhYf]U**k]***fYWY]jY*U*\$i=***U]*žUbX*ghi XYbhg*k \c d*U[]Uf]gY*a UmZU]**h\Y*Wci fgY**Ghi XYbhg*k \c*d*U[]Uf]gY*k]***\UjY*h\Y]f*bUa Yg*YbhYfYX*cb*U*d*U[]Uf]ga fY[]ghYf*UbX*k]***VY**]UV*Y*hc*X]gW]d*]bUfmUWf]cbž*]bWi X]b[_*YI Wi g]cb*Zfca *Ybfc*a Ybh***

#i]g'YI dYWYX'h\UhU```gh XYbhg`a i ghUhU```h]a Yg`gi Va]hh\Y]f`ck b`k cf_`Zcf`UggYgga Ybh'`Gi Va]hh]b[`h\Y k cf_`cf`]XYUg`cZgca YcbY'Y`gY`k]h\ci hWYUf`mUW_bck `YX[]b[`h\Y`gci fWY`cZVcffck YX`a UhYf]U``cf`]XYUg`]g d`U[]Uf]ga "

5```UggYgga Ybhgik \]W\`mci `\UbX`]b`a i gh\Uj Y`U`<u>Bcb`D`U[]Uf]ga `8YWUfUh]cb`7cj Yf`G\YYh</u>'`H\]g`]g`Zcf Vch\`]bX]j]Xi U``UbX`[fci d`k cf_"`5HUW\`]hhc`mci f`Ugg][ba YbhVYZcfY`gi Va]hh]b[`]hhc`h\Y`7ci fgY 7ccfX]bUhcf`cf`Uhih\Y`GW\cc``C Z]W\"

D`U[]Uf]ga `]gʻh\Y`i gY`cZUbch\Yf`dYfgcb'gʻk cf_`cf`]XYUgʻUgʻ]Zh\Ymk YfY`mci f`ck b"`K \Yb`]h`]gʻbYWYggUfmcf XYg]fUV`Y`hc`i gY`ch\Yf`dYcd`Y'gʻa UhYf]U``mci `g\ci`X`UXYei UhY`mUV_bck `YX[Y`k \cgY`k cfXg`cf`]XYUgʻh\Ym UfY`UbX`k \YfY`mci `Zci bX`h\Ya `f[]j]b[`h\Y`Vca d`YhY`fYZYfYbWY`XYhU]`gž`]bWi X]b[`dU[Y`bi a VYffgHz"`H\Y @YUfb]b[`7YbhfY`dfcj]XYgʻZ fh\Yf`]bZcfa Uh]cb`cb`k \UhWcbgh]h hYgʻD`U[]Uf]ga `Uh \hdg.#qh XYbh'i bgk "YXi "Ui #d`U[]Uf]ga

5WUXYa]W=bZcfaUh]cb

7CIFG9'9J5@ 5H€B'5B8'89J9@CDA9BH

Gh XYbhZYYXVUW_`\Ug`\Y`dYX`hc`g\UdY`UbX`XYj Y`cd`h\]g`Wci fgYž]bWi X]b[`ZYYXVUW_`cVhU]bYX`Zfca `cb! `]bY`Yj U`i Uh]cbg`Ug`dUfhcZI_BGK 'g`Ug`dUfhcZI_BGK 'g`a m9I dYf]YbWf`dfcWfgg"`Mci_`UfY`\][\`m YbWci fU[YX`hc`Wca d`YhY`gi W\`Ub`cb!`]bY`Yj U`i Uh]cb`hck UfX`h\Y`YbX`cZHYfa "`: YYXVUW_`UbX`gi [[Ygh]cbg dfcj]XYX`k]``VY`]a dcfhUbh]b`]a dfcj]b[`h\Y`Wci fgY`Zcf`Z h fY`gh XYbhg"

85H9G⁻HC⁻BCH9

FYZYfihciAmlBGK iZcfiældcfhUbh8UhYgžUjU]`UV`Y`Uh \hhdg.##amlibgk"YXi"Ui#ghiXYbh#fYgcifWYg#?Ym8UhYg"\ha`

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- GdYWU 7 cbg]XYfUh]cbgž
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fYZYf'hc'h\Y'GW\cc``kYVg]hY'UjU]`UV`Y'Uh \hhd.#k k "Yb[]bYYf]b["i bgk"YXi "Ui #/]ca YX]WU`!Yb[]bYYf]b[#

Gi dd`Ya YbhUfm9I Ua]bUh]cbg.

Gidd Ya Ybł Jfm 91 Ua]bUh]cbg Zcf HYfa "% & & 'k] `` VY '\Y X 'cb 'fH67 Łg\ci `X 'mci 'VY 'fYei]fYX 'hc 'g]hcbY"

H\]gʻWcifgYʻcih]bYʻgYhgʻcihXYgWf]dh]cbʻcZWUggYgʻUhhXY`XUhYʻhXYʻ7 cifgYʻCih]bYʻ]gʻdiV`]g\YX"'H\Y bUhifYʻcZWUggYgʻaUmWXUb[YʻXif]b[`hXY`HYfa`UZhYfʻhXYʻ7 cifgYʻCih]bYʻ]gʻdiV`]g\YX"``AccX`Y`g\ci`X`VY Wcbgi`hYX`Zcfʻh\Y`id`hc`XUhY`WUggʻXYgWf]dh]cbg"``=Zh\YfY`]gʻUbm]bWcbg]ghYbWm]bʻh\Y`XYgWf]dh]cbʻcZ UWnjj]h]YgʻVYhkYYbʻh\Y`Ib]jYfg]mmh]aYhUV`Y`UbX`h\Y`7 cifgY`Cih]bY`fUgʻidXUhYX`]b`AccX`YhZʻh\Y XYgWf]dh]cbʻ]bʻh\Y`7 cifgY`Cih]bY#AccX`Y`Udd`]Yg"

∋a U[Y[·]7fYX]h

97; kUjYZcfa Zfca 5#DfcZ8c_cgfickbfYgYUfW."7UfX]UW]aU[YgcifWYXZfca \hhdg.##JZ]V"bYk`]ZYcihcc_ "Wca #k\UH]g!UZ]V!k]h!fjf#3ihaSgcifWY1D]bhYfYgbYihaSaYX]ia1GcW]U/ihaSWcbhYbh15fh]WYSG\UfY

7F=7CG

7F=7CG'Dfcj]XYf'7cXY.'\$\$\$-,;

5W_bck `YX[Ya YbhcZ7ci bhfm

 $\label{eq:constraint} \begin{array}{l} K = Y^{UW}bck^{YX}[Y^{H}Y^{G}YXY][U^{T}dYcd^{Y}k^{T}bY^{H}UX]h]cbU^{T}WghcX]Ubg^{T}cZhY^{T}UbXg^{T}cb^{K}^{W}I=BGK\\ ? Ybg]b[hcb^{W}adig^{T}g^{T}cWhYX'' \end{array}$

5cdrob%lpX9jb[.jb9bg]\$b}AYfjgf5siとghfMg]JJEf05kt[DfcrZYcgg]chbUm9b[]bYYf7cadYhYbWm GHJbXUfX

Dfc[fUa ʻ∌hYbXYX`@YUfb]b[ʻCihWcaYg			
?bck`YX[Y'UbX'g_]``VUgY			
D9%"%"7cadfY\Ybg]jYžh\YcfmVUgYX"ibXYfgHUbX]b["cZh\Y"ibXYfd]bb]b["bUhifU``UbX d\mg]WU``gW]YbWYg`UbX"h\Y'Yb[]bYYf]b["ZibXUaYbHU`g`Udd`]WUV`Y"hc"h\Y`Yb[]bYYf]b["X]gW]d`]bY			