

7ci fgY[·]Cj Yfj]Yk

GhJZZ 7 cbhJWh 8 YhJ] `g

7cbj Ybcfg

B Ua Y		9a U]`	5j U]`UV]`] m	@cWUhjcb	D∖cbY
>UbY [·] 8	3Ybb]g	-0 0	5ddc]bha Ybhg Uj U]`UV`Y`j]U		

cb'mci f'k cf_žk]h\`U[YbXU']hYa g'UXXYX'Vmmci f':]Y`X'9Xi WUhcf"'5hd`UWYa Ybhg'k]h\`bc'gcW]U``k cf_gi dYfj]g]cb'cb!g]hYžghi XYbhg'dUff]W]dUhY']b'Ub'9I hYfbU``Gi dYfj]g]cb'; fci d'\Y`X'Uhh\Y'i b]j Yfg]hm Zcfhb][\hmh\fci [\ci hh\Y'd'UWYa Ybh'

" "''Mci f'XU]'m'8]Ufm'UbX'k YY_`m'DfUWf)W''>ci fbU`'k \]W\ 'Wcbf]bi Y'UWfcgg'DUfh'5 'UbX'DUfh'6 'cZh\Y d`UWfa Ybf'

"(""Moi f":]bU``D`UWa YbhF YdofhXYj Y`odYX`]b'Wobgi `HJHJob'k]h\rh\Y':]Y`X'9Xi WJhof"

``*"```±bHY[fUH]cb`GYa]bUfg`Uhi b]j Yfg]lmXi f]b[`d`UWYaYbhž'k\YfY`kcf_`k]```VY`gYhUbX`HjaY`U``cWUHYX`Zcf`]hg Wcad`YH]cb"

5ggYgga Ybh

⊕Zcfa UhjcbʻUVci hʻ⊕bHY[fUhjcbʻGYa]bUfgʻk]``'VYʻdfcj]XYXʻcbʻAccX`Y"

8 YW] g.

5 fUb[Y'cZ]bhYfUWij Y'UbX'k f]hYb'WUgg'UWij]hJYg'fYWY]j Y'j YfVU``ZYYXVUW_']b'WUgg'Zfca 'h\Y'h hcfz'UbX'UfYfUhYX'cj YfU```gUhJgZUWcfm'cf'i bgUhJgZUWcfm'

5XX]h]cbU`XYhU]`g.

H\Y'-\b\Y'| fUh| Y'GYa \bUfg'\Zcf'GC7K'\\$\"D'U\\angle a Ybhk\\\\\Y'\\Y'\X'cb': f\X\Um('\UbX'\\%'>i\b\Y'\&\\$\\\"

5ggYgga Ybh' . 'D`UWYa Ybh8]UfmUbX >ci fbU`

8YW]`q.

H\Y'D`UWa Ybh8]UfmUbX'>ci fbU``U``ck 'h\Y'gh XYbhhc'fYZYWicb'h\Y]f'XU]`m'UWjj]hjYg'UbX'hc'a Ud'h\Y]f XYj Y`cda YbhUg'U'dfUWjhjcbYf'Xi f]b['h\Y'd`UWa Ybh'9bhf]Yg']b'h\Y'8]UfmUbX'>ci fbU``UfY'hc'VY'ghcfYX'Vmh\Y':]Y`X'9Xi WUhcf'UbX'h\Y'@]U]gcb'Hi hcf'Zcf'h\Y'di fdcgYg'cZhYUW\]b[UbX``YUfb]b["

.

5ggYgga Ybh (. '9bX cZD`UWYa Ybh F Ydcfh

8YHJ]`q.

H\Y`9bX`cZD`UWYa YbhF Ydcfhi]g`Wca d`YhYX`i g]b[`h\Y`gdYW]Z]YX`hYa d`UhY`Uj U]`UV`Y`cb`A ccX`Y"`K \YbdfYdUf]b[`h\Y`:]bU`D`UWYa YbhF Ydcfhz'h\Y`gh XYbhg\ci `X`XfUZhWcbhYbhUbX`h\Yb`X]gW gg`k]h\`h\Y]f`:]Y`X 9Xi WUhcf``]b`UXj UbWY`cZh\Y`Xi Y`XUhY"`±b`dfYdUf]b[`h\]g`XcW a Ybhzgh XYbhfg`YUf]Yf`d`UWYa Ybh XcW a YbhUhjcb`g\ci `X`VY`fYZYfYbWYX"`H\Y`9bX`cZ`D`UWYa YbhF Ydcfhg\ci `X`]bWi XY`Vch\`h\Y`WcbhYbh Zfca `h\Y`A]X!D`UWYa YbhF YdcfhUg`k Y```Ug`bYk `]bZcfa Uhjcb`fY[UfX]b[`dfc[fYgg`a UXY`]b`h\Y`gYWcbX`\U`Z' Zh\Y`ghi XYbhg``YUfb]b[`[cU`g`UbX#cf`hUg_g`ufY`U`hYfYX`Uhh\Y`a]X!d`UWYa Ybhdc]bhz'h\Y`9bX`cZD`UWYa Ybh F Ydcfhq\ci `X`]bWi XY`U`XYqWf\dhcb`cZ\ck `h\Ymk YfY`gi VqYei YbhmUW\]Yj YX"

H\Y':]Y`X'9Xi WUhcf'U`gc'XfUZhg'U'gYWhcb'cZh\Y'fYdcfhk\]W\Zcfa g'dUfhcZh\Y'gh XYbhfg'ZYYXVUW_cbd'UWYa Ybhdfc[fYgg"'H\Y'9bX'cZD`UWYa YbhF Ydcfh]g'fYj]Yk YX'Vmh\Y'@|U]gcb'Hi hcf'k]h\]b'hk c'k YY g'cZ

5 hm/b XUb WY F Yei]fYa Ybhg

 $\hbox{Ghi XYbhg'UfY'ghfcb[`mYbWci fU[YX'hc'UhhYbX'U```WUggYg'UbX'fYj]Yk ``YWhi fY'fYWcfX]b[g''] } \\$

7ci fgY'GWXYXi `Y

J]Yk 'WUgg'hja YhUV'Y

H]a YtUV`Y

8 UHY	HmdY	7 cbhYbh
K YY_'%'' %'A Umi!'('>i bY	GYa]bUf	H\Y'GYWcbX'±bHY[fUH]jY'GYa]bUf'Zcf'GC7K'\$% @YjY`''D`UWYaYbhk]``VY'\Y`X'cb':f]XUm('>ibY &\$&%'Zfca'\$\$'\cifg'!'%\$\$'\cifg"
		H\Y'GYa]bUf'k]``'VY'\Y`X']b'h\Y'7YbhfU`'@YWhifY 6`cW_'f17@6Ł'+"
		H\]g`]g`]bhYbXYX`rc`VY`U`gYa]bUf`k]h\`ZJVW!rc!ZJVWUhhYbXUbWV`cdh]cb`k]``VY UhhYbXUbWV"``5b`cb`]bY`UhhYbXUbWV`cdh]cb`k]``VY Uj U]`UV`Y`Zcf`ghi XYbhg`k\c`XYacbghfUhY`U`bYYX`hc UhhYbX`]b`h\]g`acXY"``D`YUgY`WcbhJWhh\Y`7cifgY 7cbjYbcf"`
		5HYbXUbW^]g^a UbXUhcfm"
K YY_'&.'+'>i bY'!'%% >i bY	GYa]bUf	H\Y`H\]fX`+bhY[fUh]jY`GYa]bUf`Zcf`GC7K'\$% @YjY``'D`UWYaYbhk]``VY`\Y`X`cb`:f]XUm%%>ibY &\$&%`Zfca`\$\$`\cifg'!%'\$\$`\cifg"
		H\Y'GYa]bUf'k]``VY'\Y`X']b'h\Y'7YbhfU`'@YWnffY 6`cW_ff7@6Ł'+"
		H\]g`]g`]bhYbXYX`rc`VY`U`gYa]bUf`k]h\`ZJVW!lrc!ZJVW UrhYbXUbVW"``5b`cb`]bY`UrhYbXUbVW`cdh]cb`k]``VY

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Hi fb]h]b Gi Va]gg]cb

Image: Ybwei bhyfu'dfcv'ya k \yb'uhhya dhjb['hc'gi va]hmci f'Ugg][ba Ybhh\fci [\ 'Hi fb]h]bž'd'YUgY

Hy'Yd\cby'9| hy'fbu''Gi ddcfhcb'-',) '' ' ' %cf'Ya U]''h\Ya 'cb'Y! hy'fbu'hy'hgi ddcfh4 i bgk "YXi "Ui "''Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUft"'=Z'mci
UfY'i bUV'Y'hc'gi va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi 'hk]h\ 'Hi fb]h]b'mci 'a Um'Udd'mZcf'Ub'Y! hy'bg]cbž'Vi hmci
a i ghfYhJ]b'mci f'h]W_Yhbi a VYf'Zfca '9! hy'fbU''Gi ddcfhfU'cb['k]h\ 'Ubmch\Yf'fy'Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj]XYbW' 'hc'gi ddcfhmci f'Y! hy'bg]cb'Udd']WUh]cb"'=Zmci 'Ya U]''9! hy'fbU''Gi ddcfhmci 'k]'`
Ui hca Uh]WJ'`mfYW']j Y'U'h]W_Yhbi a VYfZ'Vi h]Zmci 'hY'Yd\cbY'mci 'k]``bYYX'hc'gdYW]Z]WJ'`mUg_'Zcf'cbY''
Hi fb]h]b'U'gc'dfcj]XYg'i dXUhy'g'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hyf''

; YbYfU`mž'UggYgga YbhiHug_g'a i ghVY'gi Va]hhYX'Y`YVWfcb]\WJ``mij]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k]h\U`hYfbUh]j Y'gi Va]gg]cb'XYHJ]`g"

cfi]bZcfa Uhjcbicbi\ckihcigi Va]hUgg][ba Ybhgicbi]bYij]UiA ccXiY.i\hdg.#gh XYbhi bgk "YXi "Ui #\ck! gi Va]hUgg][ba Ybha ccXiY

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

D`U[]Uf]ga `]g`i g]b['h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX`dfYgYbh]b['h\Ya `Ug`mci f`ck b"`±hWJb`hU_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b['hc`UWW]XYbhJ``mWcdm]b['Zfca `U`gci fWY`k]h\ci hUW_bck `YX[Ya Ybh'

IBGK [fcidg'd'U[]Uf]ga]bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

 $7 \text{ cdm}b[...i g]b[...h\Y.gUa Y.cf.j Yfmig]a] \Uf'k cfXg'hc'h\Y.cf][]bU''hYl h'cf']XYU'k]h\ci h'U\V_bck `YX[]b[...h\Y.cf][]bU''hYl h'cf']XYU'k]h'cf']$

- i bXYfgfUbX mci f'f][\hg'UbX'fYgdcbg]V]`]hJYg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd`U[]Uf]ga ž'Wcdmf][\hz'l BGK 'Gh XYbh7cXY'cZ7cbXi WhUbX'5VWWdhUV'Y'l gY'cZ I BGK '= H'F Ygci fWYg'Dc`]Wh
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj]ci f'Yl dYWYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wca a i b]hm
- `cWUHY 'gYfj]WYg'UbX `]bZcfa UH]cb'UVci hI BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZh\YgY'UfYUg'k]``VY'ZJa]`]Uf'hc'mci ž'ch\Yfg'k]``VY'bYk"'; U]b]b['U'gc`]X'i bXYfgHJbX]b['cZU``h\YfY`UhYX'UgdYWng'cZ9@+69'k]``\Y`d'mci 'a U_Y'h\Y'a cghicZmci f'ghi X]Yg'UhI BGK "'\\hd.##qi VYWfi |XYg"`]VfUfm'i bqk "YXi "Ui #\`]qY#JVci hY`]qY