!"#\$"%&\$"&''\$()*+\$"),-.'%/-\$0/1%\$2'3-4'\$

!

; %\$/G=!\4H4=!1+1+4!LN/0&%(:!hF90K9:/\$\$'(i!&<0'7:<!0/3'0Kj!L(!/-'UC6C&/K%-!9(966C%C!'3!&0933%-! -'(:/C&%'(!9(\$!&09(CI'0&9&%'(!I'0%-6!:0%\$G'-@!%(!?/&0'!?9(%694!24)-

 $\frac{8}{(\$9K\%(=!; 4=!) \%66/\&\&/=!L4=!9(\$!L6\$/0K9(=!)>454=!1+1+4!hc/!-9(f\&!0/\&70(!\&'!('0K9Gi)!-'KK\%\&\&\%(:!\&'!\&'?0\%CK!/17\%\&6!\%(!\&</!I'C&UI9(\$/K\%-!9:/4!J), 4!/D\&F')54\%A.1'/=!+!a+b=!''_Z4! }$

8p0p-A=!V4=!1+1+4!57(:906)!C7CI/(\$%(:!0%:<&C!9(\$!30//\$'KC!%(!9!I9(\$/K%-U%(\$7-/\$!C&9&/!'3!\$9(:/04!:3)! O4!H966'0=!E4!;<90K9=!L4!?90&%(=!9(\$!;4!\9K/C'(=!/\$C4!;%-%\$E,/-1*'\$%3@\$289:;<=>7\$F6)G%6\$ H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/!20/CC=!''^X_'Y*4!

8 '&/0K9(=! c 4B4=!1+1+4!M0.9(UB709G!2 '690%C9&\' (!\(!H\K/C! '3!&</!F'0'(9!, 7&.0/9@j!H</!#9066! >/K':09I<\-!9(\$!E/':09I<\-!29&&/0(C!'3!&</!; LB;UF'SU1!#I\\$/K\-!\(!&</!Q/&</069(\$C4! J1N@/*.410-\$C))4\$'*)3)D1/*. '\$'3\$/)*1%6'\$5')54%01'=!"""!a*b=!Y"*_Y1W4!

- 8 '&A/(=! c 4=!>7\mathbf{R}(\$9K=!;4=!9(\$!N9(!8/7@/0\mathbf{k}(:=!24=!1+1"4!O/CC'(C!3'0!-G\mathbf{K}9\mathbf{k}/!I'G\mathbf{K}-6!30'K!./<9N\mathbf{N}'09G! .\mathbf{N}9C/C!\mathbf{k}'] 90\mathbf{S}C!F, SV>U"\mathbf{N}!0\mathbf{S}[4]=G\mathbf{K}9\mathbf{k}/!-<9(:/!0\mathbf{N}C@C4!B)46@\mathbf{B}; 'C'6)AD'3==!"*[=!"+Y1"^4!
- 809C<=!\4=!1+1+4!;<7&&(:!>'](!&</!2'C&%(\$7C&0%96!;<'I!PG''0)!H</!5%:<!O%(/!9(\$!8%'I'C&&-96! 20'\$7-&'(!%(!29(\$/K%-!H%K/4!21-?\$*I*\$'')*1'-?=!(`9!a(`9b4

870(C=!B=!1+1+4!L!F, SV>U''W!I9(9-/9!%(!%:%896!&/-<('G':%/Cj!F<966/(:/C!3'0!%/K'-09-6!9(\$!<%:</0!))))

F<7(\$9@@9\$9(=!B4!9(\$!B9N%(\$09(=!B4=!1+1+4!V(3'0K9&%'(!36']!9(\$!F,SV>U"W!0/-'N/064!*B*)46@\$; 'C'6)AD'3-=!"*X=!"+Y""14!

F < 7(:=!F4J4O4=!m7=!(!T<9(:=!?4=!1+1+4!E/':09I<!'3!F'N))

- >966=!L4=!1+1+4!>%:%496!/K/0:/(-6!%C`9C!&</!\$%:%496!a(/]b!('0K964!:3)!O4!H966'0=!E4!;<90K9=!L4!?90&(=! 9(\$!;4!\9K/C'(=!/\$C4!;%-%\$E,/-1*'\$%3@\$289:;<=>7\$F6)G%68H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/! 20/CC=![X_Z"4!
- >9((/(./0:=!24=!P7-<C=!?4=!B%/\$G/0=!H4=!9(\$!c%/\$K9((=!F4=!1+1+4!>%:%&96!H09(C%&%'(!.6!F,SV>U"W! 29(\$/K%-j!H</!E/0K9(!P''\$!,(C%(/!B/&9%G4!J1N@/*.410-\$C))4\$'*)3)D1/*.'\$'3\$/)*1%6'\$5')54%01'=! """!a*b=!Y^*_YX+4!
- >9&&9=!L4=!1+1+4!;/G3a%/bU:'N/0(9(-/)!H/-<('G':%/C!'3!%(&%K9&/!C70N/%G69(-/!%(!V(\$%9!7(\$/0!F,SV>"W4!;1%6)5,'/\$13\$(,D%3\$F')54%A.?=!1+^*Z1+X1+W1W[W4!
- >9&&9=!L4=!L\$%&%=!L4=!E<'C<9G=!L4=!H<'K9C=!L4=!9(\$! ? %C<09=!D4=!1+1+4!LIIC=!K9IC!9(\$!] 90!0''KC)!'(! &</!K' \$/C!'3!/g%C&/(-/!'3!hF, S&/-<i!%(!V(\$%94!*M4G%3*\$F')54%A.?=!+!a+b=!''_W4!
- >9&7=! J 4=!1+1+4!F'0'(9N%07C!\$%C/9C/!9(\$!G'-9G!: 'N/0(K/(&4!F')54%A.1*%6\$L'/'%4*.=!(`9!a(`9b4!
- $>9N\%/C=! c 4=!1+1+4!H</!09C\&!:0'.90!-0\%C\%C!\%\%(f\&!-<9(:/!\&</!]'00\%4!87\&!\&<\%C!'(/!-'70\%4!J.'\%F,\%4@1\%3=!1^!?'904!$
- >/69(/6=!L4=!1+1+4!H</!I'0#&#-C!'3!C-96/!%(!&</!-''0\$%(9&/\$!K9(9:/K/(&!9(\$!/K/0:/(-6!0/CI'(C/!&'! &</!F, SV>U"W!I9(\$/K#-4!;1%)5, '/\$I3\$(,D%3\$F')54%A.?=!1+^*Z1+X1+W*^W114!
- >/C9%=!>4!9(\$!B9(\$/0%9=!;4=!1+1+4!M(30//A%(::!7(CI/(&!C'-%96!CI/-%96UI70I'C/!37(\$C!3'0!&</!F'N%\$U"W! -0%C%C)!-0%&%-96!0/36/-&%'(C!30'K!V(\$%94!*B*)46@\$;'C'6)*AD'3*-=!"+Y"*Z4!

- #\$] 90\$C=!O4=!1+1+94!LIIC=!I'GM&M-C!9(\$!I']/0)!I0'&/-&M(::!0M:<&C!] %&<!G/:96!9(\$!C'3&]90/!-'\$/4!:3)!O4! H96G'0=!E4!;<90K9=!L4!?90&M(=!9(\$!;4!\9K/C'(=!/\$C4!;%-%&E,/-1*'\$%3@\$289:;<=>7\$F6)G%6& H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/!20/CC=!^+_^W4!
- #\$] 90\$C=!B484=!1+1+.4!87..6/!%(=!.7..6/!'7&)!O/CC'(C!3'0!&</!F, SV>U"W!0/-'N/06!9(\$!37&70/!-0%C/C! 30'K!&</!29-%3%-4!*B*)46@\$; 'C'6)AD'3-=!"*Y=!"+Y+[14!
- #/(K99U>%K%&0%/N9=!54=!H%@@=!#4=!9(\$!J/0&&7(/(=!?4=!1+1+4!#C&'(%9!9(\$!P%(69(\$)!&</!I'6%&%-C!'3!9! I9(\$/K%-4!:3)!O4!H966'0=!E4!;<90K9=!L4!?90&%(=!9(\$!;4!\9K/C'(=!/\$C4!;%-%&E,/-1*'\$%3@\$289:;< =>7\$F6)G%%H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/!20/CC=!"1+_"1Y4!
- $$\begin{split} \# @ I / (6'(:=!L4!9(\$!29-</-'=!?4;4=!1+1+4!F, SV>U''W)!B/36/-\&M(::!'(!\&</!0'6/!'3!\&</!c5,!M(!@(']6/\$:/!/g-<9(:/!./\&]//(!\&</!E6'.96!Q'0\&<!9(\$!;'7\&<4!F6)G\%\%'')*1\%\%H)61*?=! \\ & "^XZ+"Z''1+WXXXY[4! \end{split}$$
- #0'•G7=!54=!1+1+4!#33/-&C!'3!F'N\\$U''W!'7&.0/9@!'(!/(N\0'(K/(&!9(\$!0/(/]9.G/!/(/0:6!C/-&'04! #3Cl4)3D'3-P\$; 'C'6)AD'3-\$\%3@\$'',/-\%13\%Gl6l-?4!
- #0&/(=!84!9(\$!L(&'(%'', -9KI'=!\4=!1+1"4!H</!37&70/!'3!-'KK'\$%&6!I0%-/C!9(\$!&</!I9(\$/K%-U\$0%N/(! :6'.96!0/-/CC%'()!#N%\$/(-/!30'K!"Y+!6/90C!'3!\$9&94!*B*)46@\$; 'C'6)AD'3-=!"*[=!"+Y"X^4!
- #N9(:/(%C&9=!B4!9(\$!P%0K%('=!B4=!1+1+4!809A%G)!K'\$/C!'3!I9(\$/K%-!/g%C&/(-/)!&/00%&'06=!%(/179C%&6=!9(\$! &/-<('G':64!:3)!O4!H96G'0=!E4!;<90K9=!L4!?90&(=!9(\$!;4!\9K/C'(=!/\$C4!;%-%&E,/-1*'\$%3@\$ 289:;<=>7\$F6)G%&H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/!20/CC=!"++ "+[4!
- #N/0%(:<9K=!24!9(\$!F<9CC9:(/=!Q4=!1+1+4!2'C&!F, SV>U''W!/-'G':%-9G!9(\$!C'-%9G!0/C/&)!K'N%(:!9]96!
 30'K!-9I%&9G%C&!:0']&<!K'\$/6C!&']90\$C!&'70%CK!9C!87/(!S%N%04!J),41/D&F')54%A.1'/=!+!a+b=!"_
 "14!</pre>
- #N/0&C=!\4=!1+1+4!H</!\$9C<.'90\$!I9(\$/K\-4!;1%)5,'/\$13\$(,D%3\$F')54%A.?=!1+^*Z1+X1+W*Y*YY4!
- $$\begin{split} & P96@/(<9\%(=!~?~4=!P6\%-@=!M4=!~5~\%0C/69(\$=!L4=!Q9R\%=!~;~4=!~;~/\%\%/6C'<(=!~J~4=!9(\$!~S~/069:~/=!H4=!1+1+4!~;~/\&.~9-@!\%(!~69.~'~70!~K90@/\&!\%(\&/:09\&\%)'(!\%7/!\&'!\&</!F'N\%\$U''W!-0\%C\%Cj!L(!/gIG'09\&\%N/!\%(C\%:<\&!''(!3'0-/\$!~K\%:09(\&Cf!N76(/09.~\%6\%6!\%(!E/0K9(64!#,4)A''\%3\$'')*1'-1'/=!+!a+b=!''_''X4!) \end{split}$$
- H'70%CK!9(\$!, 7&.0/9@!'3!F'0'(9N%07C!aF, SV>U"Wb)!L!F0'CCUF'7(&06!L(966C%C4!E), 43%6\$)0\$ J4%C'6\$L'/'%4*.=!++^[1Z[Y1+W*"YW*4!
- $\begin{array}{l} P/((/^{0}G=!>4L4=!1+1+4!H/-<('^{0}:6!9(\$!\&</!C7C\&9\%(9.6/!\&'70\%C\&!\%(!\&</!(/]!9:/!'3!\$\%C07I\&\%'(4!E),43\%6\$)0\$) \\ ~~,/-\%l3\%66'\$J),4l/D=!+!a+b=!''[4! \end{array}$
- $\begin{array}{l} P/0(r(\$/AU209\$'C=!\setminus4;4=!O'A9('U>s9A=!L4=!9(\$!?76'0UB'\$0s:7/A=!\setminus4=!1+1+4!P9-\&'0C!/gI69\%(\%(:!C'-\$96!))) \\ 0/C\%0\%/(-/!9:9\%(C\&!F,SV>U''W)!\&</!-9C/!'3!;I9\%(4!\#,4)A'\%3\$'')*1'-1'/=!+!a+b=!''_''4! \end{array}$
- P/009((%(%=!L4=!890.%/0%=!#4=!8%::/0%=!?4=!9(\$!>%!H'KK9C'=!?4B4=!1+1"4!V(\$7C&0%96!I'C%-6!3'0! C7C&9%(9.6/!<7K9(!\$/N/6'IK/(&!%(!&</!I'C&UF'N%\$"W!/094!*B*)46@\$;'C'6)*AD'3*==!"*[=!"+Y1"Y4!
- $$\begin{split} \mathbb{P} &((=!84?4!9(\$!J'.969C<\$=!O4F4=!1+1+4!;\&07-\&709G!\%(/1790\%\&6!\%(!\&</!\&\%K/!'3!F,SV>U''W)!M0.9(\%A9\&\%'(=!C/:0/:9\&\%'(=!9(\$!I9(\$/K\%-!-'(\&0'G!\%(!C7.U;9<909(!L30\%-94!;1\%6)5,'/\13(,D\%3\$F')54\%A.?=!1+^*Z1+X1+W*^*''+4! \end{split}$$
- PGp:/G=!P4!9(\$!E,0&(/0=!;4=!1+1+4!H</!F,SV>U"W!29(\$/K%-!9(\$!B/G9&('C<%I!89(@%(:!%(!E/0K9(6)! c%GG!B/:%'(9G!89(@C!F7C<%'(!9(!#-'('K%-!>/-G%(/!'0!%C!L!89(@%(:!F0%C%C!O''K%(:j! J1N@/*.410-\$C))4\$'*)3)D1/*.'\$'3\$/)*1%6'\$5')54%01'=!"""!a*b=!^"X_^**4!
- P66N.R/0:=!84=!1+1+4!H</!69]!'3!0/:0/CC%'(!&'!&</!&9%6)!5']!&'!C70N%N/!F'N%\$U''W=!&</!-0%C%C=!9(\$! '&</0!\$%C9C&/0C4!#3Cl4)3D'3-%6\$''*1'3*'\$I\$H)61*?4!
- $P' $'0=! €4=! E0/: '0=! L4=! J' G\&9\%=! 4=!9 ($! J' Nr\&C=! #4=! 1+1+4! H</!\% K I9-&!'3! F, SV>U''W!'(!&</!:/($/0! $\%N\C\'(!'3!-<\GS-90/!]'0@!\(!57(:9064! #, 4)A'\%3`)')*1'-1'/=!+!a+b=!''_'X4!$
- P'(&9(!;/0C=!F4!9(\$!?7:<9G=!?4=!1+1+4!F'N\\$U"W!'7&.0/9@!9(\$!&</!(//\$!3'0!0\-/!C/G3UC733\-\/(-6!\(! c/C&!L30\-94!B)46@\$;'C'6)AD'3==!"*Y=!"+Y+["4!
- $\begin{array}{l} P' = !04U24 = !F < \$(=! ? 4UD4 = !H9(=! J 4U04 = !9(\$! 2 < 79 < =! J 4UH4 = !1 + 1 + 4!H < / !\$KI9 \&! '3!F, SV > U''W!'(!\& '70\% CK! \\ \$(\$70\% C\&16! \&! (! ? 96960\% 94! 2, 44' 3 \&: //, '/\$! 3\&1), 4!/D = !+!a + b = !''_Y4! \end{array}$
- P'0/C&/0=!\4=!1+1+4!J%(\$(/CC=!269((/0Cf!B/CI'(C/!&'!S76(/09.%6%&6=!9(\$!9(!#&<%-C!'3!F90/!%(!&</!H%K/!'3!F'N%\$U"W4!H6%33135\$J.')4?\$I\$H4%*-1*'=!1"!a1b=!"ZY_"ZZ4!
- $P09(-\cent{WC}=2\cent{U}) = 124\cent{U} =$

E7%\$'=!T4=!J(7\$C'(=!F4=!9(\$!B<%(/6=!J4=!1+1+4!c%GC!F,SV>U"W!./!'(/!C<'-@!&''!K9(6!3'0! CK9G6<'G\$/0!-'33//!G%N/G%<''\$Cj!B)46@\$;'C'6)AD'3==!"*X=!"+Y"[14!

- V9- 'N' (/=!F4=!E0%C=!L4S4=!;93%(9=!L4=!2'G6%'=!L4=!9(\$!E'N/0(9=!P4=!1+1+4!80/9@%(:!&</!\$%C&9(-/)!
 >%96':7/C!'3!-90/!%(!9!&%K/!'3!6%K%&/\$!:/':09I<%/C4!;1%6)5, '/\$13\$(,D%3\$F')54%A.?=!"+!a1b=!
 "1^_"1[4!</pre>
- V'9((%\$/C=!>4!9(\$!E6%Kw&<6=!;4=!1+1+4!H</!F, SV>U"W!-0%C%C!9C!9(!'II'0&7(%&6!3'0!/C-9I%(:!&</! 7(C7C&9%(9.6/!:G'.9C!&'70%CK!I9&<4!J),4!/D&F')54%A.1'/=!+!a+b=!"_W4!
- $\begin{array}{l} \label{eq:constraint} \end{tabular} \end{tabular}$
- $\begin{array}{l} \label{eq:V0N} \end{tabular} \end{tabular} $$ VON & (-!? 4=!F'K.C=!>4=!; @90<9=!>4=!$/6!2'A'=!84=!B\end{tabular} = (1+1+4) \\ \end{tabular} \end{tabu$

J9(:=!?4=!F<'%=!D4=!J%K=!\4=!O//=!J4, 4=!O//=!;4=!290@=!V4J4=!290@=!\4=!9(\$!;/'=!V4=!1+1+4!F, SV>U"W! %KI9-&!'(!-%&6!9(\$!0/:%'()!]<9&fC!(/g&!93&/0!G'-@\$'](j!:3-'43%-1)3%%E),43%%\$)0&M4G%3\$ "*!'3*'/=!1^!a*b=!1W[_*"Y4!

J9(:9=!;4=!;7\$<9(C<7=!?/09R=!E4=!P90''1=!?4=!Q9&<9]9&=!?4;4=!9(\$!;%(:<=!;4J4=!1+1+4!B/I'0&%(:!&</!

- J G9CC/(=!;4!9(\$!?70I<6=!;4=!1+1+4!#17%&6!9C!.'&<!9!K/9(C!9(\$!9(!/(\$)!O/CC'(C!3'0!0/C%%/(&!3''\$! C6C&/KC!30'K!F, SV>U"W4!*B*)46@\$;'C'6)AD'3-=!"*X=!"+Y"+^4!
- $\begin{array}{l} J \ \texttt{G/\%(=!Q4=!1+1+4!;-0/(!Q/]!>/9\texttt{G})!M(\$/0!F'N/0!'3!?9\texttt{CC!}>/9\&<=!L(\$0/]!F7'K'!F9\texttt{G}\texttt{C}!\%(!\&</!88\texttt{K}\texttt{G}\texttt{K}'(9\texttt{M}0/\texttt{C}!\&'!87\texttt{K}\texttt{G}\texttt{S}!9!5\%:<UH/-<!>6C\&'1\texttt{K}94!J.'(\$:3-'4*'A-4!) \end{array}$
- J G/%(K9(=!?4=!1+1+4!2'G%-6!-<966/(:/C!3'0!&</!I'C&UI9(\$/K%-!-%&64!#3Cl4)3D'3-\$%3@\$H6%33l35\$K7\$ M4G%3\$03%6?-1*/\$%3@\$21-?\$''*1'3*'=!^[!a[b=!'''*X_'''*W4!
- J G%(:./0:=!H4=!1+1+4!?'0/!&<9(!N%096)!'7&C%\$/0C=!, &</0C=!9(\$!&</!%G67C%'(C!'3!F, SV>U''W4!#,4%/1%3\$ F')54%A.?\$%3@\$#*)3)D1*/=!+!a+b=!"_"14!

- J'C&%y=!84=!2/0@'N=!84=!2/&0'NC@%=!L4=!9(\$!J0%N'@9I%y=!>4=!1+1+4!c/C&/0(!896@9(C)!%(C&07K/(&C!'3! -<%GG%(:!I'G%&%-C4!:3)!O4!H96G'0=!E4!;<90K9=!L4!?90&%(=!9(\$!;4!\9K/C'(=!/\$C4!;%-%&E,/-1*'\$%3@\$ 289:;<=>7\$F6)G%&H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/!20/CC=!1W1_*+"4!
- $\begin{array}{l} J \ 09R/\] \ C@\texttt{h=!}\ ?\ 4=!P0\dagger-@\ '\]\ \$9@=!\ ?\ 4=!J\ 7\ .\ 9-@9=!\ ?\ 4=!9(\$!B\ :\ '\] \ C@\texttt{h=!}\ \ddagger\ 4=!1+1+4!H</!\ .\ 0\%\ :\ <\&!C\texttt{\$}\$/!\ '\ 3!\&</!\ -\ 0\%C\texttt{KC4!}\\ H</!I\ '\ C\texttt{k}\texttt{k}\texttt{N}/!9CI/\ -\&C!\ '\ 3!\&</!\ F\ ,\ SV>U''W!I9(\$/K\texttt{h}-!9--\ '\ 0\$\texttt{h}(\ :\ !\&\ '\ !\&</!\ 2\ '\ 6/C4!\#\ ,\ 4)A\ '\%3\$''\)\ast 1'-1'/=!+!\\ a+b=!''_''^4! \end{array}$
- J 0A6CA& '3%@=!B4=! J 9(& '0U2%/&09:9=!V4=!9(\$!; Iw0(9=!H4=!1+1+4!; I9&%96!9(\$!37(-&% '(96!\$%K/(C% '(C!'3!&</! F, SV>U"W!/I%\$/K%-!%(!2'69(\$4!#,4%/1%3\$F')54%A.?\$%3@\$#*)3)D1*/=!+!a+b=!''_''^4!
- J7/.90&=!L4!9(\$!; &9.6/0=!?4=!1+1+4!V(3/-&%'7C!>%C/9C/C!9C!;'-%'U;I9&%96!20'-/CC/C)!H</!F,SV>U"W! ,7&.0/9@!V(!E/0K9(64!J1N@/*.410-\$C))4\$'*)3)D1/*.'\$'3\$/)*1%6'\$5')54%01'=!"""!a*b=!^Z1_^WX4!
- $J 76\% !!Q4 = !; 9(\% = !E4?4 > 4 = !; \&097CC = !; 4 = !9(\$!8/669(\% = !O4 = !1 + 1 + 4! # '('K\% !\$\%C\&70.9(-/C!\%(!\&</!F, SV>U''W! 0\%C\%C!9(\$!\&</\%0!:/(\$/0/\$!\%K19-\&!'(!7(19\%\$!9-&\%N\%\&\%/C!\%(!E/0K9(6!9(\$!V\&9664!#,4)A'%3\$'')*l'-l'/=! + !a + b = !''_' [4!$
- J7G7=!54!9(\$!>'0/6=!24=!1+1+4!V(3/-&%'(!09&/C!30'K!F'N%\$U

- O//=!>4=!5/'=!J4=!9(\$!;/'=!D4=!1+1+4!F, SV>U"W!%(!;'7&<!J'0/9)!O/CC'(C!3'0!\$/N/6'I%(:!-'7(&0%/C4! B)46@\$;'C'6)AD'3-=!"*Y=!"+Y+Y[4!
- O//=!J4=!1+1+4!c5, !7(\$/0!3%0/)!H</!(//\$!&'!/G/N9&/!&</!1796%&6!'3!I'G%&%-C!%(!:G'.9G!</9G&<4!F6)G%%% ")*1%%%H)61*?=!"^XZ+"Z"1+WXXXX"4!
- O/::/=!>4E4=!1+1+4!F, SV>U"W!0/CI'(C/!/gI'C/C!\$//I!369]C!%(!:6'.96!</96&<!:'N/0(9(-/4!F6)G%6\$ ")*1%6\$H)61*?=!"^XZ+"Z"1+WXXXYW4!
- O/'(90\$=!J4=!1+1+4!?/\$%-%(/!0%(/C!9(\$!F,SV>U"W)!V(\$%:/('7C!:/':09I<%/C!'3!%K9:%(/\$!.'0\$/0%(:4!;1%6)5,'/\$13%(,D%3%F')54%A.?=!1+^*Z1+X1+W*^W^"4!
- O/]=!L4L4=!F<//0=!\4?4=!596]''\$=!?4=!80'7\$/0=!24=!9(\$!;969A90=!Q484=!1+1+4!S%C%'(C!'3!&09N/6!9(\$! &'70%CK!93&/0!&</!:6'.96!F,SV>U"W!&09(C3'0K9&'(!'3!1+1+4!J),41/D&F')54%A.1'/=!+!a+b=!"_"14!
- $\begin{aligned} \mathsf{O}_{\texttt{H}} &: 5 \\ \mathsf{H}_{\texttt{H}} &: 5 \\ \mathsf{H}_{\texttt{H}} &: 1 \\ \mathsf{H}_{\texttt{H$
- Oh=!\4=!5966C] '0k<=!L4E4=!9(\$!F'-9v;&/39(h9@=!\4L4=!1+1+4!F<9(:h(:!E0'-/06!;<'IIh(:!8/<9Nh'70C! LK'(:!F<h(/C/!F'(C7K/0C!L&!H</!,7&C/&!,3!H</!F,SV>U"W!,7&.0/9@4!JIN@/*.410-&C))4\$ '*)3)D1/*. '\$'3\$/)*1%6'\$5')54%01'=!"""!a*b=!Y[^_YZ*4!
- $\begin{array}{l} \mathsf{O}^{\texttt{W}}(\texttt{W}_{1}) = \mathsf{O}^{\texttt{W}}(\texttt{W}_{1}) \\ \mathsf{O}^{\texttt{W}}(\texttt{W}_{1}) = \mathsf{O}^{\texttt{W}}(\texttt{W}_{1})$
- $O_{\text{W}}(\$/0=!84=!1+1+4!F'KK/(C709.\%\%66=!F,SV)=!9(\$!\&</!>'K/C\&\%-)!L!Q'\&/!'(!;-9690\%664!04'\%=!(`9!a(`9b4!)'))$
- O%7=!\4=!1+1+4!P0'K!C'-%96!\$09K9!&'!I'G%&%-96!I/03'0K9(-/)!F<%(9fC!K7G&%U30'(&!-'K.9&!]%&<!&</!F'N%\$U ''W!/I%\$/K%-4!24!-1*%6\$0/1%3\$''-,@1'/=!+!a+b=!''_1''4!
- O%7=!m4!9(\$!8/((/&&=!?4?4=!1+1+4!S%096!.'0\$/0C)!F, SV>U"WfC!/33/-&C!'(!C/-70%&%A9&%'(=!C70N/%669(-/=! 9(\$!%\$/(&&&6!%(!?9%(69(\$!F<%(9!9(\$!5'(:!J'(:4!;1%6)5,'/\$13\$(,D%3\$F')54%A.?=! 1+^*Z1+X1+W**Z1Z4!
- $\begin{aligned} \mathsf{O}^{\texttt{N7}} &= \mathsf{D}^{\texttt{N}} = \mathsf{D}^{\texttt{N}} = \mathsf{O}^{\texttt{N}} = \mathsf{D}^{\texttt{N}} = \mathsf{O}^{\texttt{N}} = \mathsf{D}^{\texttt{N}} = \mathsf{O}^{\texttt{N}} = \mathsf{O}^{\texttt{N}$
- $\begin{array}{l} Op \] = ! ? 4!9(\$! J ('.697 <=! 5 4=! 1 + 1 + 4! > 9(-\%(:!\%(!x 7909(\&\%(/)!H < /!; I9\&\%96!B/3\%: 709\&\%'(!'3!; '-\%/\&6!9(\$! \& < /!\%(\&/09-\&\%'(!,0\$/064!''A\%''\%30) 2, 6-, 4'=!1*!a*b=!11''_11Y4! \\ \end{array}$
- O']=!;4!9(\$!;K90&=!L4=!1+1+4!H<'7:<&C!9.'7&!27.0%-!;I9-/!>70%(:!F'N%\$U"W!29(\$/K%-4!21-?\$I\$ ")*1'-?=!*1!a"b4!

0'A9('U

- ? p<0%(:=!J4=!Q97K9((=!#4=!B/%3/(C-</%\$=!?4=!c/(A=!L4=!B/&&%:=!H4=!J0%/:/0=!M4=!P0%/\$/6=!;4=!P%(@/6=! ?4=!F'0(/CC/=!F4=!9(\$!86'K=!L4E4=!1+1+4!H</!F, SV>U"W!I9(\$/K%-!9(\$!C7.R/-&%N/!]/GU./%(:)! G'(:%&7\$%(96!/N%\$/(-/!'(!C9&%C39-&%'(!]%&<!]'0@!9(\$!39K%664!#,4)A'%3\$'')*1'-1'/=!+!a+b=!"_"[4! ? '%C%'=!;4=!1+1+4!;&9&/!I']/0!9(\$!&</!F, SV>U"W!I9(\$/K%-)!&</!-9C/!'3!P%(G9(\$4!#,4%/1%3\$F')54%A.?\$ %3@\$#*)3)D1*/=!+!a+b=!"_Z4!
- ? 'GGM--<%=!;4=!2/II%(=!L4=!;939@=!F4=!9(\$! c 96@/0=!H4=!1+1+4!M(%&/\$!J%(:\$'K)!I9(\$/K%-C=!I']/0=!9(\$! I7.GM-C)!&0/(\$C!%(!I'C&U-OWC%C!</9&<!&/-<('G':64!:3)!O4!H966'0=!E4!;<90K9=!L4!?90&(=!9(\$!;4!) \9K/C'(=!/\$C4!;%-%&E,/-1*'\$%3@\$289:;<=>7\$F6)G%&H'4/A'*-1C'/4!O'(\$'()!?/9&CI9-/!20/CC=! 1[X_1Z*4!]

!

- $\begin{array}{l} \mathsf{B96=!V4:!1+1+4!S\%/[I'\%(\&!\&!59(\$]9C<\%(:!9(\$!F,SV>U''W)!;\%KIG/:!0\%:<\&!\&</0/\bullet j!B)46@\$; 'C'6)AD'3-:!\\ "+Y+ZX4! \end{array}$
- $\begin{array}{l} B / / C @ / (C=!H4=! ? 7\%C=! x 4=! ; \% / . / (=!V4=! S 9 (\$ / -9C \& / /6/=!O4=!O7\%R @ g=!B4=!9 (\$! 5 9 G K 9 (=!O4=!1+1+4! ; \& 9.\%C \& 6! '0! \\ < 9 (: /! '3!I7.C \& -! 'I\% (\% '(!9 (\$!N967 / C!\$70\% (: !\& < /! '0' (9N\%07C!-0\%C\%Cj!#gIG'0\% (: !>7\& <! G' (: !\&7\% (96!I9 (/6!\$9\& 94!#, 4) A '%3 \$') *1 '-1 '/=!+!a+b=!''_ 'W4! \\ \end{array}$
- $\begin{array}{l} \mathbf{B} / \$ </6 \& = ! ? 4 = ! ? 9 @ ' N \$ = ! \mathbf{J} 4 = ! 9 (\$! ; 90 : C69 (= ! \mathbf{L} 4 = ! 1 + 1 + 4 ! \mathbf{H} < / ! \$ \mathbf{K} \mathbf{I} 9 \& ! ' 3 ! \mathbf{F} , \mathbf{S} \mathbb{V} > \mathbb{U}'' \mathbb{W}! ' (! : / (\$ / 0! \$ (/ 1796 \& 6! \$ (! \& </ ! 69 . ' 0! \mathbf{K} 90 @ / \& ! 9 (\$! : / (\$ / 0! 0 ' 6 / ! 9 \& \& \% 7 \$ / C4! \#, 4) \mathbf{A} ' \% 3 \$'') * 1' 1' / = ! + ! a + b = !''_''Z4! \end{array}$
- $B/ \& C! P \& C' = ! O = ! 1 + 1 + 4! Q' : ; 93/! ; 19-/)! T' K . \& / ! P \& K! H0 ' I/C! $70 \& (:! \& </!F, SV > U'' W! 29 (/ K 4! "A & ') \\ \% 3 @ \& 2, 6-, 4' = ! 1 * ! a * b = ! 1Y * _1YZ4!$
- $\begin{array}{l} B/(=!m4=!1+1+4!29(\$/K\$-!9(\$!\texttt{G'}-\texttt{@}\$'))()!9!\&/00\%\&'0\%9\texttt{G}!9\texttt{II0'}9-<!\&'!\texttt{F},\texttt{SV}>\texttt{U''W!}\$(!\texttt{F}<\$(9=!V\&9\texttt{G}\texttt{G}!9(\$!\&</!M(\%\&/\$!);\&9\&/\texttt{C}!))) \\ M(\%\&/\$!;\&9\&/\texttt{C}!) \end{array}$

; 90@' \$%/=!; 4L4!9(\$!,] 7C7=!24L4=!1+1+94!VKI9-&!'3!F, SV>U''W!I9(\$/K%-!'(!)9C&/!K9(9:/K/(&4!)9)))

- ; '((=!\4 c 4!9(\$!O//=!\4 J 4=!1+1+4!H</!CK90&!=%&6!9C!&%K/UCI9-/!=90&':09I</0!%(!F, SV>U''W!='(&0'6)!&</! ; '7&<!J'0/9(!C&09&/:6!9(\$!\$/K'-09&%=!='(&0'6!'3!C70N/%669(-/!&/-<('6':64!#,4%/1%3&F')54%A.?\$ %3@\$#*)3)D1*/=!+!a+b=!"_""4!
- ; I90@/=! ? 4!9(\$!L(:7/6'N=!>4=!1+1+4!F'(&/g&796%C%(:!-'0'(9N%07C!:/':09I<%-96664!*J4%3/%*-1)3/*\$)0\$-.'\$:*3/-1-,-'*\$)0\$*K*41-1/.\$*F'*)54%A.'4/=!&09(4"1*ZW4!
- ; I9C<=!F4O4=!1+1+4!eH</!/-'('K6f!9C!%3!I/'IG/!K9&&/0/\$)!0/N%C%&%(:!-0%&%17/C!'3!/-'('K%-!:0']&<!%(!9! &%K/!'3!-0%C%C4!F6)G%61S%-1)3/=!+!a+b=!''_''Z4!
- ; I0%(:/0=!;4=!1+1+4!F90%(:!:/':09I<%/C)!H</!F, SV>U"W!%(&/00/:(7K!9(\$!9!0/&70(!&'!K7&796!9%\$4!;1%6)5, '/\$13\$(,D%3\$F')54%A.?=!1+^*Z1+X1+W*"1[[4!
- ; &9(\$0%(:=!L4!9(\$!>9N%/C=!\4=!1+1+4!P0'K!-0%C%C!&'!-9&9C&0'I</)!H</!\$/9&<!9(\$!N%09G!G/:9-%/C!'3!97C&/0/! (/'G%./09G%CK!%(!#70'I/j!;1%6)5, '/\$13\$(,D%3\$F')54%A.?=!1+^*Z1+X1+W*^1[+4!
- ; &9(@'N=!M4=!P%0%K'(97=!S4=!9(\$!S7R%...%y=!?4>4=!1+1+4!L!K%(\$376!C<%3&)!9(!'II'0&7(%&6!3'0! K%(\$376(/CCU\$0%N/(!&'70%CK!%(!9!I'C&UI9(\$/K%-!]'06\$4!J),41/D\$F')54%A.1'/=!+!a+b=!"_"+4!
- ; &/I<9(6=!P4=!>7((=!?4=!;9]6/0=!;4=!9(\$!O/<\$'(N%0&9=!S4=:1+1+4!>%C&9(-%(:!8'(7C!,0!>'](C-9C%(:! O'CCj!H</!F<9(:%(:!O%N/C%<''\$!'3!MC!,(C%(/!c'0@/0C!%(!H%K/C!'3!F,SV>U''W4!J1N@/*.410-&C))4& '*)3)D1/*.'\$'3\$/)*1%6'\$5')54%01'=!''''!a*b=!YX''_Y[*4!
- ; &/I</(C=! ? 4=!1+1+4!L!:/'CI9&%96!%(3'\$/K%-)! ? 9II%(:!H] %&&/0!-'(CI%09-6!&</'0%/C!'3!F, SV>U"W4! ; 1%6)5, '/\$13\$(, D%3\$F')54%A. ?=!1+^*Z1+X1+W*YXZ*4!
- ;&'%-9=!F4L4!9(\$!MK.0/•=!B4=!1+1+4!;7CI%-%'7C!K%(\$C!%(!&%K/C!'3!-0%C%C)!\$/&/0K%(9(&C!'3!B'K9(%9(Cf! ./G%/3C!%(!F,SV>U

 $\begin{array}{l} H'K9CC\%(\$!O4!9(\$!F9N9:(90'=!#4=!1+1+4!H</!('N/6!CI9-/C!9(\$!I')/0U:/'K/\&0\%/C!\%(!\&'70\%CK!9(\$!</2005)/(1+1+1)) \\ <'CI\%\&9C\%\&6!93\&/0!1+1+1] \\ & \texttt{MGC}:\&(1\&'!\&</2eG'-96f4!) \end{array}$

- c 9(:=!T4=!D9'=!?4=!?/(:=!F4=!9(\$!F6909K7(&=!F4=!1+1+4!B%C@!LCC/CCK/(&!'3!&</!, N/0C/9C!VKI'0&/\$! F,SV>U"W!'3!,-/9(UE'%(:!;<%IC!89C/\$!'(!LV;!9(\$!V(3/-&%'(!>9&94!:"HL"\$:3-'43%-1)3%6\$ E),43%6\$)0\$F')<:30)4D%-1)3=!W!aXb=!*Y"4!
- c 90\$=!F4=!1+1+4!H</!9((%<%09&%'(!'3!&%K/!.6!CI9-/!%(!&</!F,SV>U"W!I9(\$/K%-!\$'](&70(4!;1%6)5,'/\$ 13\$(,D%3\$F')54%A.?=!1+^*Z1+X1+W*YXZY4!

- c /%=!D4=! c 9(:=!\4=! ; '(:=! c 4=!m%7=!F4=! ? 9=!O4=!9(12/8=!H4=!1+1+4!; I0/9\$!'3!F, SV>U"W!%(!F<%(9)! 9(966C%C!30'K!9!-%66

- $D/<=!; 4U; 4=!1+1+4!H'70\%CK!0/-'N/06!C&09\&/:6!9:9\%(C\&!F, SV>U''W!I9($/K\%-4!J), 41/D\&L'*4'\%-1)3\&L''/'\%4*.=!+!a+b=!''_[4!]$
- D/'K9(=!V4;4=!1+1+4!F, SV>""W!K/9(C!&</!37&70/!'3!&'70%CK!%C!9!.69(@!I%/-/!'3!I9I/04!E),43%6\$)0\$ J),41/D\$U,-,4'/=!X!a1b=!""W_""W4!
- $D/7(:=! J 4=!1+1+4! \vee (C\&07K/(\&C!3'0!I9(\$/K\$-!: 'N/0(9(-/4!:3)!O4!H966'0=!E4!; <90K9=!L4!?90\&\(=!9(\$!;4!) \vee (9K/C'(=!/$C4!; %-%&E, /-1*' & 3@$289:; <=>7 & F6)G% & H'4/A'*-1C'/4!O'($'()!?/9\&CI9-/!20/CC=!) + Y+Y[4!]$
- $\begin{array}{l} D \ (=:>4=:E9'=:x_{4}=:T<7=:5_{4}=:9(\ (:=:=1+1+4:27,\ (:=:1/0-1)_{1}\times (:::1/0-1)_{1}\times (::1/0-1)_{1}\times (:::1/0-1)_{1}\times (::1/0-1)_{1}\times ($
- T9-@U c %GG%9KC=!L4=!1+1+4!L30%-9!_!- ' I%(:!] %&<!&</!e(/]!('0K96f4!L'Cl'&\$)0\$O041*%3\$H)6l-1*%6\$ #*)3)D?=!^[!a"X*b=!"_W4!
- $T9R9@=!; 4=!; \&R/I9(\$y=!J4=!9(\$!; \&/\%(<\$GI/0=!#4=!1+1+4!20'UK\%:09(\&!I0'\&/C\&!\%(!\&\%K/C!'3!F, SV>U''W)! \\ \%(\&/OC/-\&\%'(96!.'7(\$906!CI9((\%(:!9(\$!<6.0\%\$!I0'\&/C\&!I09-\&\%-/C4!#,4)A''3\$'')*l'-l'/=!+!a+b=!''_''14!$
- $T/(:=!T4=!F</(=!24U\4=!9(\$!O/]=!L4L4=!1+1+4!P0'K!<\$:<U\&'7-<!\&'!<\$:<U\&'-<)!F, SV>U''W!\$0\%N/C!0'.'\&\%-C! 9\$'I\&\%'(4!J), 41/D\&F')54\%A.1'/=!+!a+b=!''_'''4!$
- T < 9 = ! c = !0 = ! (1 1) = ! (1 1
- T < 9(:=!54:!F < / (=!D4:!E9'=!24:!9(\$! c 7=!T4:!1+1+4!?9II\$(:!&</!-<9(:\$(:!V(&/0(/&!9&&/(&%'(!&'!&</!E3))))) = (0.5,0.5)) = (0.5,0.5)
- $T < 9(:=! + 1+94! > N \times / \$! (!9!-'((/-\&/\$!)'00\$)! B/36/-\&\%'(C!'(!F, SV>!"W!30'K!5'(:!J'(:4!2!-?\$I\$')*!'-?=!*1!a"b4!$
- $T < 9(:=! \ 4 \ 9 \ (\$!; 9 \ 9 \ 9: \ /=! \ S \ 4 \ B \ 4=! \ 1+1+4! \ H < /!: \ /' \ I' \ G \ \& \ b \ -9 \ G \ !0 \ 9$