H\Y`a UhW\`\_]W\_YX`cZZ`k ]h\`Ub`YUf`m`g\cW\_`Zcf`@cb[kccX"`K ]h\]b h\Y`Z]fgh`h\]fhm`gYWcbXgžBcVVYfg`GYUb`AYUXY`dih`\]g`hYUa`cb h\Y`gWcfYVcUfX`k`]h\`U`[cU`ž`][b]h]b[`h\Y`\ca Y`WfckXg Ybh\ig]Uga "B]U``: UffY``ei ]W\_`mZc``ck YXž'hUW\_]b[ cb'U'dc]bh'hc XYYdYb h\Y dfYggi fY cb @cb[k ccX" 7YbhfY VUW\_DUi ``A YUXY g

h\Y]f`f]j U`g"

@cb[kccXž=fY`UbX!!Cb'U'ZUbhUgh]WgiaaYf'YjYb]b[']b BcVVYfžYI WhYa YbhZ]``YX h\Y'U]f'Ug'BcVVYf'WUg\YX'k ]h\ @cb[kccX`]b`U`8]j]g]cb`(`FcibX`-``YU[iY`Z]IhifY`cb`\$bY`%-ž &\$&) "`H\Y``cWU``d]hW\ž`]b`[fYUh`WcbX]h]cbžgYh`h\Y`dYfZYWh`ghU[Y Zcf'h\]g`\][\!ghU\_Yg`a UhW\" < ck Yj Yfž]hk Ug`@cb[k ccX'h\Uh i`h]a UhY`m'Ya Yf[YX'j]Whcf]ci gžgYWff]b['U'\$!%('hc'&!\*'k]b'cjYf



@cb[kccX'XYZYUhYX'BcVVYf'\$!%('hc'&!\*']b'U'h\f]``]b[ 8]j]g]cb'('a Uh₩ cb'≯bY'%-žg\ck WUg]b['fYg]`]YbWY'UbX g ]``"

### BcVVYf:U``g'G\cfh'Ug'@cb[kccX Hf]i a d\g`]b`8]j ]g]cb`(`7`Ug\

ŧð WcbhfUghž BcVVYf Zci [∖hij U`]Ubh m Vi h ZY```g∖cfhi]b h∖Y YbX"

### gYUgcb"

@cb[kccXg`hf]iad\`kUg`Uhhf]VihYX`hc`gYjYfU``\_Ym`d`UmYfgž ]bWiX]b[`FmUb`AccfYžk\c`gWcfYX`Zcif`dc]bhgžUbX`<Uffm`<c[Ubž bchWX]b[ 'i d h\fYY]b U qhUbXci h dYfZcfa UbWY"H\Y hYUa '\UX VYYb'ZUW]b['W\U``Yb[Yg'XiY'hc'UVgYbWYg'WUigYX'Vm'kcf\_'UbX YI Ua gžmYhih\Ymia UbU[YXihcighYdii džg\ck WUg]b[ih\YiXYdh\icZ h\Y]f`qeiUX"'HifbcjYfg`Vm`6Yb`AW@ci[\`]b`UbX`5Xf]Ub`AU[i]fY kYfY'WfiWjU`']b'gYWf]b['h\Y'k]b"'BchUV`mž'h\Y'aUhW\'aUf\_YX VUW\_!hc!VUW\_``YU[iY`j]Whcf]Yg`Zcf`@cb[kccXž`U`Z]fgh`Zcf`h\Y

# ?YmD`UmYfg`UbX`BYIhAcjYg

H\Y'qYWcbX'\U`Z'g\ckWUqYX'@cb[kccXgifYq]`]YbWY"'H\Ym a U]bhU]bYX'U'bUffck '`YUX'h\fci [\ci hž'UX'i gh]b[ 'h\Y]f'ghfUhY[ mihc ghUm Wca dYh]h]j Y ]b h\Y ZUWY cZ BcVVYf g cZZYbg]j Y d`Um" 5g h\Y a UhWX 'YbhYfYX']hg'Z]bU`'%) a ]bi hYgž'@cb[kccX'`YX'Vm'/igh'cbY dc]bh'Uh'%%!%\$"'8U`Y'@Uf\_]b'a UbU[YX'hc'gWcfY'Ubch\Yf'ZfYY'Zcf BcVVYfž'k \]`Y'; i ghUg'DcW/j ]Wji g'a UXY'U'g][b]Z]WUbh']a dUWh'k ]h\ Ub`]a dfYgg]j Y`dc]bh"`=b`h\Y`Wcg]b[`ghU[YgžGYUb`AYUXY WcbjYfhYX'U'ZfYY'UbX'UXXYX'U'dc]bhž'mYh']h'k Ugbh'Ybci [\'hc WcgY'h\Y'[Ud'U[U]bgh'U'a cfY'W]b]WU``@cb[kccX'g]XY"

 $8 \text{ Y} \text{ g} = \frac{1}{2} \text{ m} \text{ g} = \frac{1}$ h\fYY`WcbgYW'h]jY`dc]bhg`hc`YeiU`]nY`h\Y`gWcfY"`<ckYjYfžBcVVYf hcc\_'h\Y`YUX'U[U]b'UZhYf'Ubch\Yf'[cU`'Zfca''8U`Y'@Uf\_]bž'k \]W\ Vfci [\h'h\Y'\U`Z!h]a Y'gWcfY'hc'&!&'Zcf'BcVVYf'UbX'\$!- 'Zcf @cb[kccX"\*+hgkcfh\bch]b[\*h\UhBcVVYfgdUh\Xif]b[\*h\YZ]fgh \U`Z'k Ug'Vc`ghYfYX'Vm'ghfcb['dYfZcfa UbWfg'UWfcgg'h\Y]f'hYUa ž k ]h\ 'd`UmYfg``]\_Y '8 U`Y '@Uf\_]b 'U`gc 'Wcbhf]Vi h]b[ 'U'[ cU``UbX 'U'dc]bh"

# 5 : ][ \h 6UW\_

]bZiYbWY k UqZY`hUq`\Y`Wcbhf]VihYX'dcq]h]jY`mhc`BcVVYfq`]b]h]U` cZZYbq]j Y`YZZcfhq"`A YUbk \]`YžF ]W\]Y`G\]Y`Xq`k Ug`\_Ym`]b``]b\_]b[ XYZYbqY`UbX`UhhUW\_ž`\_YYd]b[`BcVVYf`]b`WcbhYbh]cb`h\fci[\`h\Y Z]fgh \ U`Z'

# 6Ygi WXYb'G]Y'i bg'Ui Z.'a Y]b!k ]Yb"bYh

8YhU]`g	
Cfh	@cb[kccXž=fY`UbX
EiY``Yb	• ∖c[UbghUbX"Wca
	• `cb[kccX[UU"Wca
	• k k k "[ UU"]Y

### ; 55"]Y"

: cf'Zi ```a UhW\`XYhU]`gž'j ]g]h'< c[Ub`GhUbXž'UbX'Zcf'Zi fh\Yf ]bg][\hg`]bhc`h\Y`cb[c]b[`hfYbXg`]b`; UY`]WZcchVU``ž'W\YW\_`ci h`

K ]h\`Vch\`hYUa g`g\ck ]b[`hfYa YbXci g`dchYbh]U``UbX XYhYfa ]bUh]cbž`h\Y`i dWca ]b[`Z]I hi fYg`dfca ]gY`hc`VY`Ug`h\f]``]b[ Ug`h\]g`YbWci bhYf`k Ug"`H\Y`Wca a i b]hm`]g`YU[Yf`hc`gYY`\ck`h\YgY XYj Y`cda Ybhq`k]```i bZc`X`]b`h\Y`XUmg`U\YUX"

#### a cXYfb; UY`]WZcchVU``"

H\]g'WUg\'bch'cb`m'\][\`][\hg'h\Y'Wca dYh]h]j Y'gd]f]h'cZ``cWU` ; UY`]WZcchVU``'Vi h'U`gc'fYZYWhg'VfcUXYf'hfYbXg']b'h\Y'gdcfh']hgY`Z" 5g'WUdhi fYX'Vm'U'fYWYbh'fYdcfh'Zfca '; 55"]Yž'cb[c]b['ghUh]gh]WU` UbU`mg]g'cZ'[Ua Yg']g'\Y`d]b['hc'fYj YU`'dUhhYfbg']b'd`Um'UbX'h\Y Yj c`j ]b['bUhi fY'cZ'hUWh]Wg']b'; UY`]WZcchVU``"'=bg][\hg'Zfca bchUV`Y'Z][i fYg']b'h\Y'gdcfhž'`]\_Y'HcV]bž'gi [[Ygh'U'[fck]b['ZcW'g cb'XUhU'h\Uh'Wci `X']bZcfa 'h\Y'Z hi fY'ghfUhY[]Yg'cZ'Wi Vg'`]\_Y @cb[k ccX'UbX'BcVVYfžYbgi f]b['h\Ym'UXUdh'hc'h\Y'bi UbWYg'cZ

# H\Y`6][[Yf`D]WhifY

H\Y]f`bYI h`cddcfhi b]hm`hc`Vci bWY`VUW\_`k]```VY`U[U]bgh`7Ugh`Yhck b cb`\$ bY`&-`Uh`%%`5A "`K]h\`d`UmYfg``]\_Y`8Ufm`<i hW\]bgcbž`7c`]b 7`Uf\_Yž`UbX`ch\Yfgž`BcVVYf`k]```VY``cc\_]b[`hc`\UfbYgg`h\Y]f ghfYb[h\g`UbX`fYWh]Zm`h\Y`g\cfhWca]b[g`gYYb`]b`h\]g`a UhW\"