



ARTS2570

☯HYfa YX]UHŸ`GdUb]g\`5

HYfa `H\ŸŸ`##`&\$%-

7ci fgY`Cj Yfj]Yk

`GHUZZ7cbhUW`i8YHU]`g`

`7cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]]m	@cWU]cb	D\cbY
B UHU]U`C fhjn 7 YVYfjc	b"cfhjnWVYf]c4 i bgk "YXi "Ui	VmUddc]bħa Ybhcb`m	A cfj Yb`6fck b `Yj Y`&cZ]WV &&,	fZ`*%&`\$& - ' ,)`%\$*(

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GWXcc``cZ<i a Ub]h]Yg`UbX`@Ub[i U[Yg

@cWU]cb. `GWXcc``C Z]WV`ZA cfj Yb`6fck b`6i]X]b[ž`@Yj Y`&ž&),

CdYb]b[`<ci fg.`A cbXUm!`: f]XUmž`- Ua `!`) da

D\cbY. `Z`*%&`- ' ,)`%*, %

: U! . `Z`*%&`- ' ,)` , +\$)

9a U]: [\U`4 i bgk "YXi "Ui](#)

7ci fgY'8YHJ]`g

7fYX]hDc]bqg`*`

Gi a a UfmicZ\hY'7ci fgY

Gi VYWh5fYU. 'E bS` [eZ S` V >Sf[3_ Wd[US` E fgV[Wd

K]h'a cFY'hUb'' 'a]'cb'GdUb]g\`gdYU_Yfg]'b'hY'i G5`U'cbYž<]gdUb]WW`h'fY'jg']bWfYUg]b[`m
g][b]Z]WbH'h\]g'Wci fgY`Yb\UbW'g'mci f'UV]'mhc`UddfYU]UHY`hY`Wca d'YI]mhcZ<]gdUb]WW`h'fY`UW'cgg
fk c`Wcb]bYbqg" H\Y`Wci fgY]g`UVci h`YUfb]b[`hc`gdYU_žfYUX`UbX`k f]hY`GdUb]g\`Vmi g]b[`hY`a`YX]i a`cZ
W`h'fY`"J cWVi `UfmUbX`[fUa a U]WU`gfi W] fYg`UfY`dfYgYbH'X`]'b'hY`Wcb]hI hcZW`h'fU`mfY`Yj Ubh]cd]Wg"
Hcd]Wg'a Um]bW] XY. `Ub[i U[Y`UbX`Wca a i b]W]h]cbžVY`]YZgmg]hYa gžUbX`hY`Ybj]fcb a YbH'

H\Y`Ub[i U[Y`cZ]bgfi W]cb`]g`GdUb]g\`"K Y`UfY`hY`Z]fghi b]j Yfg]m]b`5i g]fU`U`i g]b[`hY`]bbcj Uhj Y`cb`]bY
WcUW]b[`dfc[fUa`k` \]W`cZYfg`mci `U`i b]ei Y`cddcfh b]mhc`k`cf`ci`hg]XY`cZWUgg`k`h`U`dYfgcbU`žbUhj`Y!
gdYU_Yf`Ub[i U[Y`WcUW`]'b`U`fYU`h]a Yžcb`]bY`YUfb]b[`Ybj]fcb a YbH`K Y` \cdY`h`Uh`h`g`i b]ei Y`dYfgcbU`
YI dYf]YbW`k`]'VY`f]i`mYb`emUV`Y`UbX`k`]'a`chj`UHY`mci`hc`Wcb]bi`Y`YUfb]b[`GdUb]g\`"

7ci fgY`@YUfb]b[`Ci hWca Yg

%`I` bXYfghUbX`UbX`fYgdcX`hc`hY`a`U]b`dc]bqg`cZcfU`UbX`k`f]hY`b`hYI`hg`XYU`]b[`k`]h`hcd]Wg`cZ
VfcUXYf`gcW]U`WcbWf]bg`YbWci`bHfYX`]'b`GdUb]g\`gdYU_]b[`Wca`a`i`b]hYg`"
&" DfcXi`W`g]a`d`Yž`Wc`\YfYb]h]hYI`hg`fc`fU`UbX`k`f]hY`b`cb`Wca`a`cb`hcd]Wg`cf`UfYUg`cZdYfgcbU`]'bHfYgH'
'`" `8YgW]VY`YI`dYf]YbW`g`UbX`Yj`Ybqg`UbX`dfcj`]XY`fYUgcbg`cf`YI`d`UbUh]cbg`Zcf`cd]b]cbg`UbX`d`Ubq
(`" `8]gh]b[i]g\`g][b]Z]Wb]hX]ZYfYbW`g`VYh`YYb`gca`Y`W`g]hca`gž`Uh]h`XYg`cf`VY`]YZg`dfYj`U`Ybh]b`hY
<]gdUb]WgdYU_]b[`Wca`a`i`b]mUbX`h`cgY`cZ\hY]f`ck`b`"
)`" I`gY`ghfUHY`[]Yg`hc`Wc`cdYfUHY`YZY`W]j`Y`mk`]h`ch`Yf`a`Ya`VYfg`cZ\hY`[fci`d`"

HYUWX]b[`GhfUHY`[]Yg`

F Uh]cbU`Y`Zcf`hY`]bW] g]cb`cZ`Wcb]h]bh]UbX`hYUWX]b[`UddfcUWX

@Ub[i U[Yg`UfY`VYgh`YUfbYX`h`fci [\`i`gY`cZ\hY`Ub[i U[Y`"K`Y`dfcj`]XYž`h`YfY`ZcfYž`cddcfh b]hYg`Zcf
gh`XYbqg`hc`i`gY`hY`Ub[i U[Y`UbX`k`Y`Xc`gc`]'b`U`a`YUb]b[Z`k`Um`H\Uh]gž`k`Y`i`gY`U`h`Ya`U]WUddfcUWX`hc
hY`cf[Ub]nUh]cb`cZ`Wci`fgY`a`Uh]f]U`g`"H\Y`hcd]Wg`Wc] YfYX`fYdfYgYb]h`W`ffYbh]ggi`Yg`]b`GdUb]g\`gdYU_]b[
Wci`bf]Yg`"

H\]g`Wci`fgY`Ya`d`cmg`gh`XYbh`W`bHfYX`YUfb]b[`Ug`hY`VUg]g`Zcf`]hg`]bgfi`W]cbU`XYg][b`UbX`Ya`d\Ug]nYg
hY`]a`dcf]UbW`cZUW]j`Y`YUfb]b["

H\Y`hYUWX]b[`]b`h`g`Wci`fgY`]g`V`Yb`XYX.`cb`]bY`UbX`]b`WUgg`UW]j`]hYg`"``

H\Y`Ub[i U[Y`cZ]bgfhi W]cb`]g`GdUb]g\`"

: fca`h\Y`; i]XY`]bYg`cb`@YUfb]b[`h\Uh`bZcfa`HYUW]b[`gh`XYbhg`Wca`a`i`b]W]hY`]bZcfa`U]cbz`]XYUg`UbX`
Uf[i`a`Ybhg`Vch`cfU`mUbX`]b`k`f]h]b[``H\Ymi[U\Yf`UbX`dfcW]gg`]bZcfa`U]cb`Zca`U`j`Uf]YmicZdUdYfz`
Ui`X]c]`]gi`U`UbX`Y`YWfcb]Wgci`fW]g``H\Ymi`gY`#i`YZYW]j`Y`mVch`Ug`U`a`YUbg`cZWca`a`i`b]W]h]cb`UbX`Ug`Ub`
U]X`hc`YUfb]b[`Ug`k`Y``Ug`XYa`cbgfhU]h`gca`Y`UV`]m]Ug`Ub`]bXYdYbXYbh`YUfbYf`"

5ggYgga Ybh

H\]g]g*! c7`Wci fgYžYei]j U`YbhY`tc`%) \$`lci fg`cZghi XmUh\ca Y`UbX`]bWUggžmci`g\ci`X`a U_Y`gi fY`tc U`cWUhy`hja Y`Zcf`h\]g`Wci fgY"

Gh XYbhg`UfY`YI dYWYX`tc`Wca Y`tc`: UWY`tc`: UWY`YWYi fYg`UbX`h`hcf]U`g`dfYdUfYX""D`YUgY`Wca d`YhY`hY`k YY`_miUWYj`]Yg`VYZcfY`YWYi fY`UbX`hY`UWYj`]h]Yg`VYZcfY`h`hcf]U`g`fIGYY`A ccX`Y`Zcf`Z`f`hYf`XYhU]YgŁ"

5ggYgga YbhHUg_g`

5ggYgga YbhHUg_	K Y][\h	8i Y`8UHY	Gh XYbh@YUfb]b[Ci hWca Yg`5ggYggYX
9!DcftZ`c`	&\$i	cb`[c]b[%ž&ž{
&`b!7`Ugg`HYgh`	*\$i	k YY`_)`UbX`%\$	%ž&ž ž{
C fU`	&\$i	k YY`_`,` %o	

%o

5XX]h]cbU`XYHJ]g.

⊕`HYgh%UbX`HYgh&`h.Y`Zc`ck]b[`k]`VY`UggYgggYXž

- DUfh%`; fUa a Ufžj cWUVžfYUX]b[`Wca dfY\Ybg]cbžYHW`C b`]bY`E i]n
- DUfh&.`K f]h]b["

HYgh%DUfh%UbX`&`hU_Yg`d`UW`i]b`k`YY_) žfł \$i Ł"7 cbhYbhWŁj YfYX`]b`k`YY_g`%ł (

HYgh&DUfh&ž9ggUmK f]h]b[ž`hU_Yg`d`UW`i]b`k`YY_-`Xi f]b[``YW`h fY`h)a Y`f%ł) i Ł`UbX`dUfh&`; fUa a Uf`]b k`YY_`%\$`f%ł) i Ł"7 cbhYbhWŁbj YfYX`k`YY_g`) !%\$

Hi fb]h]b`gYHh]b[.`H\]g`]g`bchU`Hi fb]h]b`Ugg][ba Ybh

5ggYgga Ybh' .`CfU`

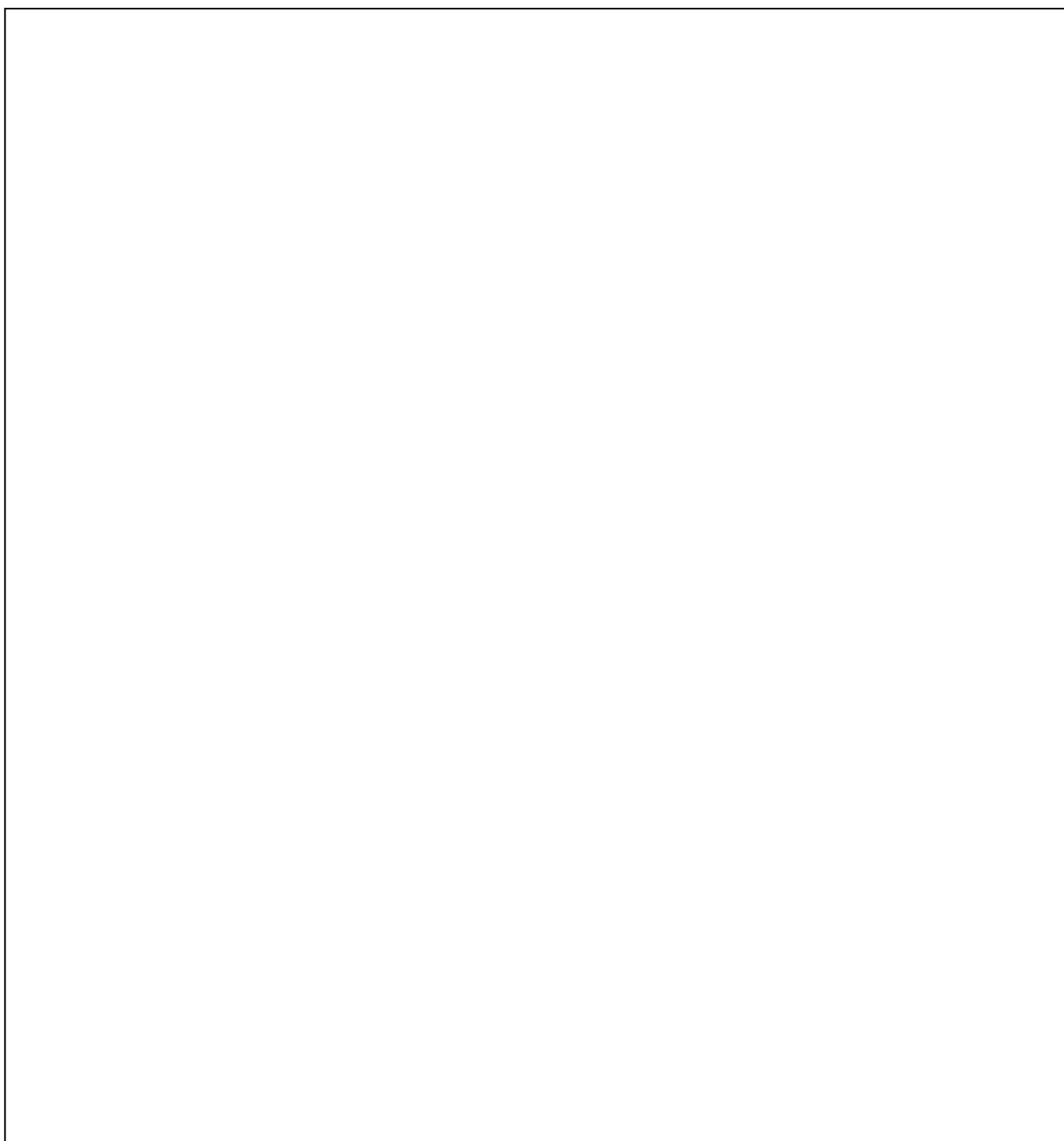
GHUfhXUH` .`cb`[c]b[

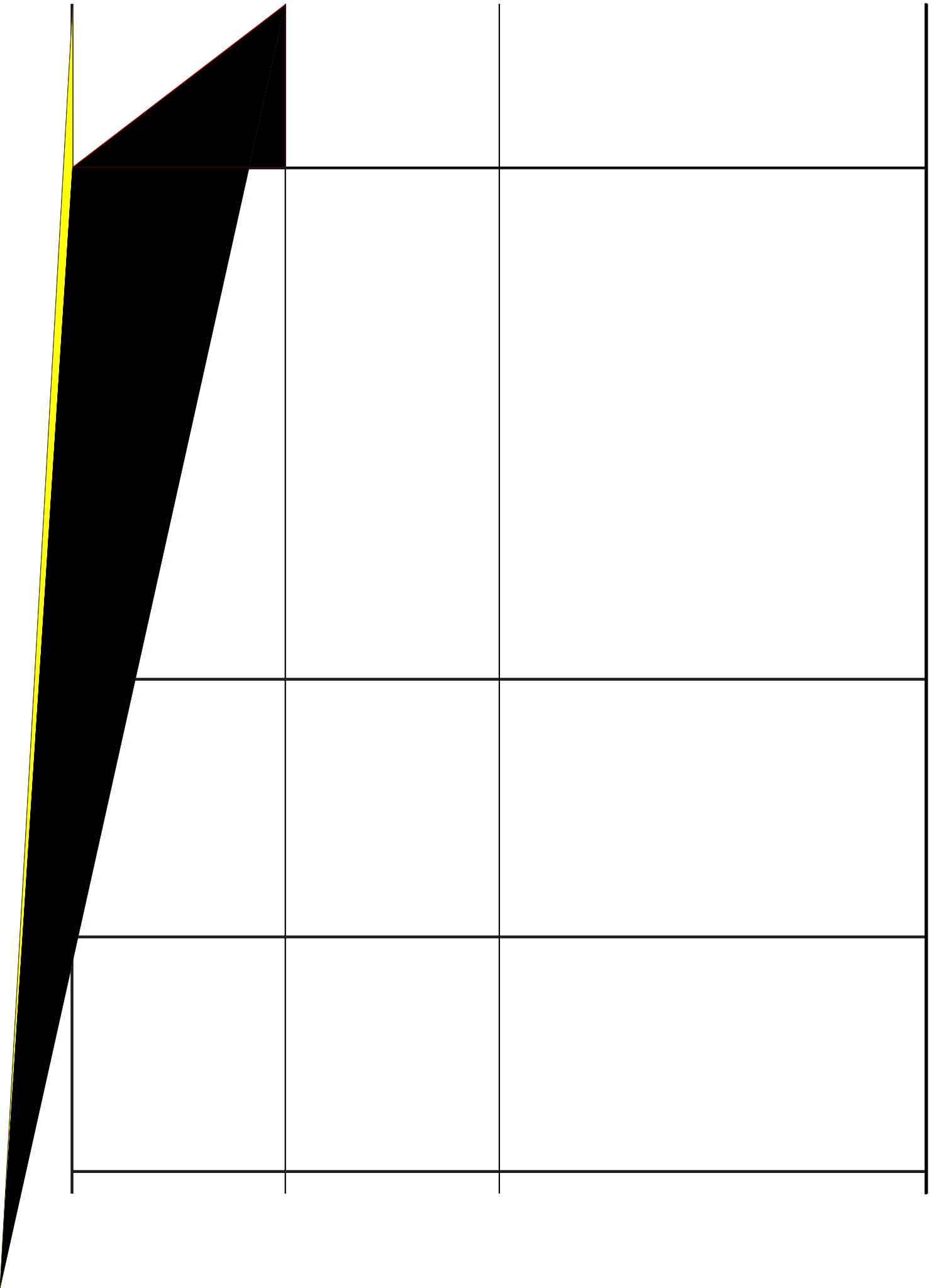
@Yb[h. `j Uf]Yg

8YHJ]g. `C b[c]b[`UbX`Z]bU`f%\$!%` `a]bi hYgŁ`VmUddc]bha Ybh`C fU`Z`YXVUW`UbX`a Uf_g`dfcj]XYX"

5XX]h]cbU`XYHJ]g.

K`YY_`m` \$`a]bi hYg`cb`]bY`cfU`dfUW]gY`Ž





K YY_ ; ('Bcj Ya VYf! ; Bcj Ya VYf	Hcd]W	7 Ud]h `c`8Y`j]UY": SUWdUbX`]b`hja Y`Wcbgfi W]cbg" F Yj]g]cb`cZE 7 `Z`YbX`cZ7\UdhYf`F Yj]g]cb 9bX`cZ7\UdhYf`ei]n 7 ca d`YH`cb`]bY`YWH` fY`ei]n`h`Y`XUmVYZc`fY` mci f` : & ``YWH` fY``H\Y`ei]n`WcgYg`h`Y`XUm VYZc`fY`mci f`YWH` fY`Uh`& `) - " .
K YY_- . %%Bcj Ya VYf! %) 'Bcj Ya VYf	Hcd]W	7 Ud]h `c`%(`"9`a i bXc`a cXYfbcz` ; _ bWdSf]hWežhY Zcfa `Bcgcfcg`f`eY`h`W`a a UbXg``H\Y`E`gT`g` Uf]hW k]h`UXj YfV]U`YI dfYgg]cbg`cZWcbX]hcb`cf`di fdcgY" 9bX`cZ7\UdhYf`%(`ei]n HYgh&`DUfh&ž`9ggUmK`f]h]b[žXi`f]b[``YWH` fY`hja`Y` f%) i`E` 7 ca d`YH`cb`]bY`YWH` fY`ei]n`h`Y`XUmVYZc`fY` mci f` : & ``YWH` fY``H\Y`ei]n`WcgYg`h`Y`XUm VYZc`fY`mci f`YWH` fY`Uh`& `) - " 7 ca d`YH`k`YY_`m: CFI A
K YY_`%\$.`% `Bcj Ya VYf! &&`Bcj Ya VYf	Hcd]W	;`YbYfU`fYj]g]cb`cZW`i fgY`WcbhYbh]b`dfYdUfU]cb Zc`f`k`f]hYb`UbX`C`fU`YI`Ua`g" HYgh&`DUfh`% ;`fUa`a`Uf`f%) i`E`7`cbhYbh`Wcbj`YfYX k`YY_g`)!`%\$ 5WVYgg`A`ccX`Y`Zc`f`Z`fh`Yf`]bcZfa`Uh]cb`UbX`hc dfYdUfY`Zc`f`h`Y`hYgh` 5`Z`h`f`h`Y`hYghg\`c`fh`V`fU`_`Y`Zc`ck`YX`V`m`C`fU` YI`Ua`"
K YY_`%%`&) `Bcj Ya VYf! &- `Bcj Ya VYf	Hi`hcf]U`	H\]g]g]U`a`U`_`Y`i`d`h`hcf]U`Zc`f`k`YY_(``Xi`Y`h`U`di`V`]W \`c`]XUm`cb`A`cbXUm`+`C`W`c`VYf

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

Cb`]bY`7cUWk]b[.`di fWUg]b[`UbX`fY[]ghYf]b[`h\fc[[\`@]b[i Ua YYh]b[`k YVg]hY`

%" ; c`hc `[\hdg.##k k k`"\]b\[i Ua YYh\]b\["Vca`#fY\[\]ghfc"d\d](#)

&" GY`YWh`ci f`i b]j Yfg]mž`gY`YWh`mci f`]bgf`i Wc`f#WUgg`gYWh]cbžYb`hY`f`mci f`dYfgcbU``]bžc`fa U]cb`UbX`
gY`YWh`mci f`dUma`Yb`hcd]cb.

' " 7\ccgY`mci f`gYgg]cb`Zca`h`Y`Uj`U]UV`Y`gYgg]cb`h`a`Yg`"Mci f`gYgg]cb`k`j`"VY`cb`h`Y`gUa`Y`XUm`UbX`

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

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

≠mci`YbWci bhYf`U`dfcV`Ya`k`Yb`U`H`Ya`dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`
H`Y`d`cb`Y`9I`H`fb`U`Gi`ddcfh`cb`-`,`)`'`'`'`%`cf`Ya`U]`h`Ya`cb`YI`H`fb`U`H`hgi`ddcfh`4`i`bgk`"YXi`"Ui`"Gi`ddcfh`
`ci`fg`UfY`,`.\$\$Ua`-`%\$.\$\$da`cb`k`YY`XUmg`UbX`-`.\$\$Ua`-`).\$\$da`cb`k`YY`YbXg`fI`*)`XUmg`U`mY`UfL`≠mci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`Xi`Y`hc`U`ZU`hik`]h`Hi`fb]h]b`mci`a`Um`Udd`mi`Zc`f`Ub`YI`H`bg]cb`z`Vi`hmc`i`
a`i`gh`fY`hU]b`mci`f`h]W`Y`hbi`a`VYf`Z`ca`9I`H`fb`U`Gi`ddcfh`fU`cb[`k`]h`Ubmc`h`Y`f`fY`Yj`Ubh`Xc`W`a`Yb`hg`L`hc`
]b`Wi`XY`Ug`Yj`]XYb`W`hc`gi`ddcfh`mci`f`YI`H`bg]cb`Udd`]W]h]cb"≠mci`Ya`U]`9I`H`fb`U`Gi`ddcfh`mci`k`]"`

5 WUXYa]W<c bYghmUbX`D`U[]Uf]ga

D`U[]Uf]ga `]g`i g]b[`hY`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[`hYa `Ug`mci f`ck b" `hWUb`hU`Y`a Ubm
Zcfa gž`Zca `XY`]VYfUHY`WXYU]b[`hc`UWV]XYbhU`mW`dm]b[`Zca `U`gci fW`k]h`ci hUW_bck`YX[Ya Ybh`

I BGK `[fci dg`d`U[]Uf]ga `]bhc`hY`Zc`ck]b[`WUHY[cf]Yg.

7 cdm]b[.`i g]b[`hY`gUa Y`cf`j Yfmg]a]Uf`k cfXg`hc`hY`cf][]bU`hYI hcf]XYU`k]h`ci hUW_bck`YX[]b[`hY`
gci fW`cf`i g]b[`ei chU]cb`a Uf_g" `H\]g`U`gc`Udd`]Yg`hc`]a U[YgžUfhUbX`XYg][b`dfc`YWgžUg`k Y`Ug
dfYgYbhU]cbg`k \YfY`gca YcbY`dfYgYbh]g`UbchYf`g`]XYUg`cf`k cfXg`k]h`ci hWYX]h`

hUddfcdf]UHY`dUfUd`fUg]b[.`7`Ub[]b[`U`ZYk `k cfXg`UbX`d`fUgYg`k \]Y`a cghmifYU]b]b[`hY`cf][]bU`
ghfi W`i fY`UbX`#`f`dfc[fYgg]cb`cZ]XYUg`cZ`hY`cf][]bU`ž`UbX`]bZcfa U]cb`k]h`ci hUW_bck`YX[Ya Ybh`H\]g`U`gc
Udd`]Yg`]b`dfYgYbhU]cbg`k \YfY`gca YcbY`dUfUd`fUgYg`UbchYf`g`]XYUg`cf`k cfXg`k]h`ci hWYX]hU`bX`hc
d]YW]b[`hc[YhYf`ei chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk `k \c`Yž`k]h`ci hUddfcdf]UHY`fYZYfYbW]b["

7 c`i g]cb.`k cf_]b[`k]h`chYfg`Vi hdUgg]b[`cZ`hY`k cf_]Ug`U`dYfgcb`g`]bX]j]Xi U`k cf_]7 c`i g]cb`U`gc
]bWi XYg`dfcj]X]b[`mci f`k cf_]hc`UbchYf`gh`XYbhVYZc`fY`hY`Xi Y`XUHYž`cf`Zc`f`hY`di fdcgY`cZ`hY`a

- i bXYfghUbx'mci f'f][\hg'UbX'fYgdcbg]V]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[]Uf]ga ž'Wc'dmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5W'W'dhUV'Y'I gY'cZ I BGK '⇒H'F'Ygci f'W'g'Dc`]W'h
- VY'Uk UfY'cZ'Y'ghUbxUfXg'cZVY\Uj]ci f'YI dY'W'X'cZYj Yfmcby']b'h'Y'I BGK 'W'a a i b]m
- 'cW'W'h'gYfj]W'g'UbX']bZ'fa U]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZ'Y'gY'UfY'Ug'k]''VY'ZJa]]Uf'hc'mci ž'c'h'Yfg'k]''VY'bYk "'; U]b]b['U'gc`]X'i bXYfghUbx]b['cZU''h'Y fY'UH'X'UgdY'W'g'cZ9@-G9'k]''\Y'd'mci 'a U_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\h'hd.##ji V'Y'W'i \]X'Yg" \]VfUfm'i bgk "YXi "Ui #' \]gY#\]Vci h' \]gY](#)

5 WUXYa]WbZcfa Uh]cb`

: cfYggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[`rc.

- fYei Yghg`ZcfYI hYbg]cb/

