



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

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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`]g`]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]hY`hcZ`W`h`fU`mfY`Yj`Ub]hcd]Wg`  
Hcd]Wg`a`Um]bW`XY. `Ub[ i`U[ Y`UbX`Wca`a`i`b]W]h]cbžVY`]YZgmg]h`a`gž`UbX`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`gfU`]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`cZ`WUgg`k`]h`U`dYfgcbU`ž`b]h]j`Y!  
gdYU\_Yf`Ub[ i`U[ Y`WcUW`"]b`U`fYU`h]a`Yž`cb`]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`hY`hg`XYU`]b[ `k`]h`hcd]Wg`cZ  
VfcUXYf`gcW]U`WcbWf]bg`YbWci`bH`fYX`]b`GdUb]g\`gdYU\_]b[ `Wca`a`i`b]h]Yg`"  
&`DfcXi`W`g]a`d`Yž`Wc` \`YfYb]h]hY`hg`fc`fU`UbX`k`f]hY`b`c`b`Wca`a`cb`hcd]Wg`cf`UfYUg`cZ`dYfgcbU`"]bH`fYgfi`  
'`" `8`YgW]VY`YI`dYf]YbW`g`UbX`Yj`Ybqg`UbX`dfcj`]XY`fYUgcbg`cf`YI`d`Ub]h]cbg`Zcf`cd]b]cbg`UbX`d`Ubq  
(`" `8`]gh]b[ i`]g\`g][ b]Z]Wb]h]X]ZY`fYbW`g`VY`k`YYb`gca`Y`W`g]hca`gž`Uh]h`XYg`cf`VY`]Yž`dfYj`U`Ybh]b`hY`  
< ]gdUb]WgdYU\_]b[ `Wca`a`i`b]m]UbX`h`c`gY`cZ`hY`]f`ck`b`"  
)`I`gY`ghfU]h`[ ]Yg`hc`Wc`cdY`fU]h`Y`ZY`W]j`Y`mk`]h`ch`Y`f`a`Ya`VYfg`cZ`hY`[ fci`d`"

HYUW]b[ `GhfU]h`[ ]Yg`

F Uh]cbU`Y`Zcf`hY`]bW`i`g]cb`cZ`Wcb]h]bh]UbX`hYUW]b[ `UddfcUW

@Ub[ i`U[ Yg`UfY`VYgh`YUfbYX`h`fci`[ \`i`gY`cZ`hY`Ub[ i`U[ Y`"K`Y`dfcj`]XYž`h`Y`fY`ZcfYž`cddcfh`b]h]Yg`Zcf  
gh`XYbqg`hc`i`gY`hY`Ub[ i`U[ Y`UbX`k`Y`Xc`gc`]b`U`a`YUb]b[ ž`k`Um`H`U]h]gž`k`Y`i`gY`U`h`Ya`U]WUddfcUW`hc  
hY`cf[ Ub]nUh]cb`cZ`Wci`fgY`a`U]h]f]U`g`"H\Y`hcd]Wg`Wci`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`bH`fYX`YUfb]b[ `Ug`hY`VUg]g`Zcf`]hg`]bgfi`W]cb`U`XYg][ b`UbX`Ya`d`Ug]nYg  
hY`]a`dcf]UbW`cZ`UW]j`Y`YUfb]b[ "

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

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 Uhcbz]XYUg`UbX  
Uf[ i a Ybhg`Vch`cfU`mUbX`]b`k`f]h]b[ ``H\Ymi[ U\Yf`UbX`dfcW]gg`]bZcfa Uhcb`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]hcb`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`%) \$`\\ci 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`XYHJ]YgŁ"

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9!DcftZ`c`	&\$i	cb`[`c]b[	%ž&ž{
&`b!7`Ugg`HYgh`	*`\$i	k`YY`_)`UbX`%\$	%ž&ž`ž{
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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&ž`9ggUmK 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`

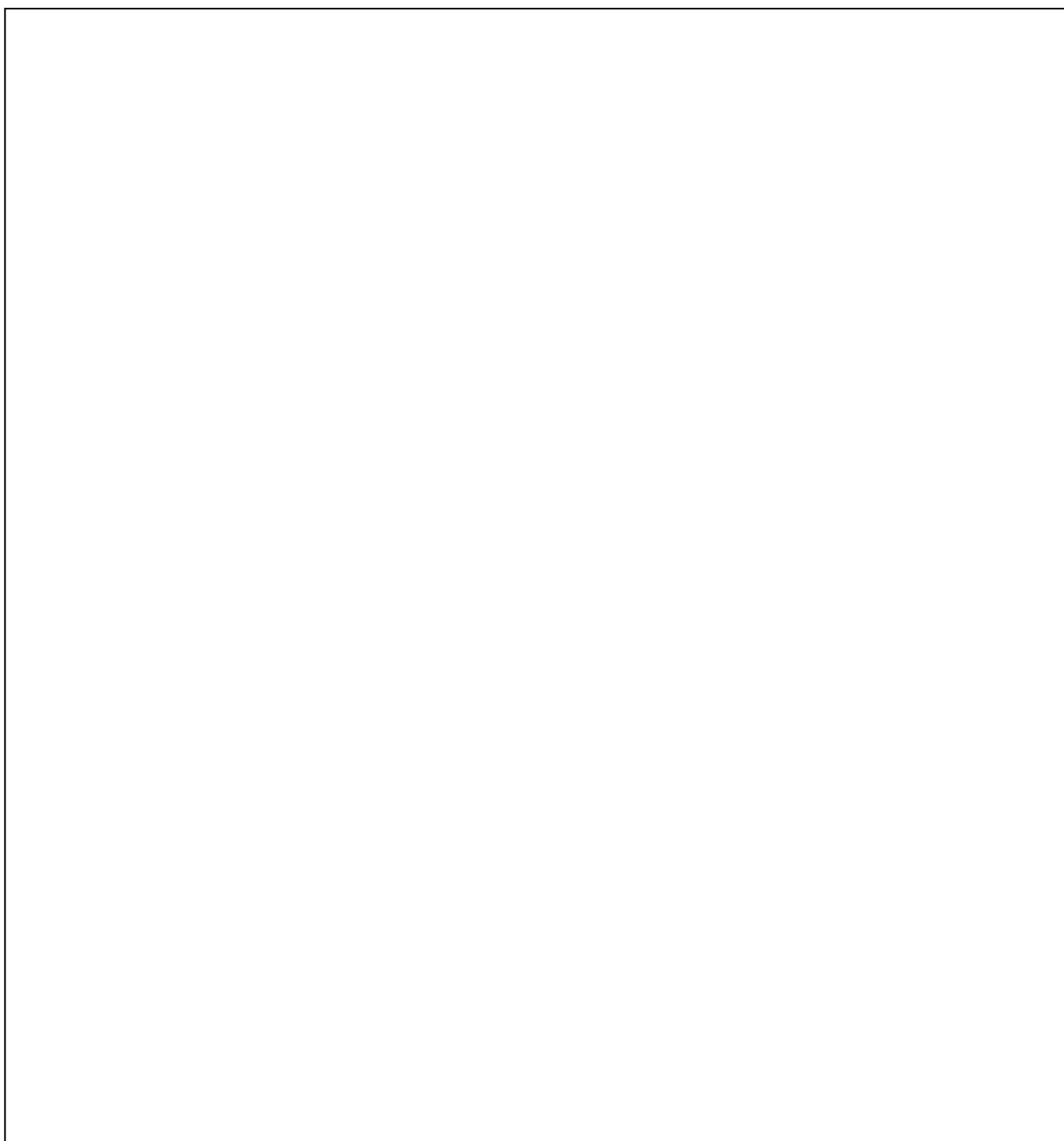
GhUfhXUHY.`cb`[ c]b[

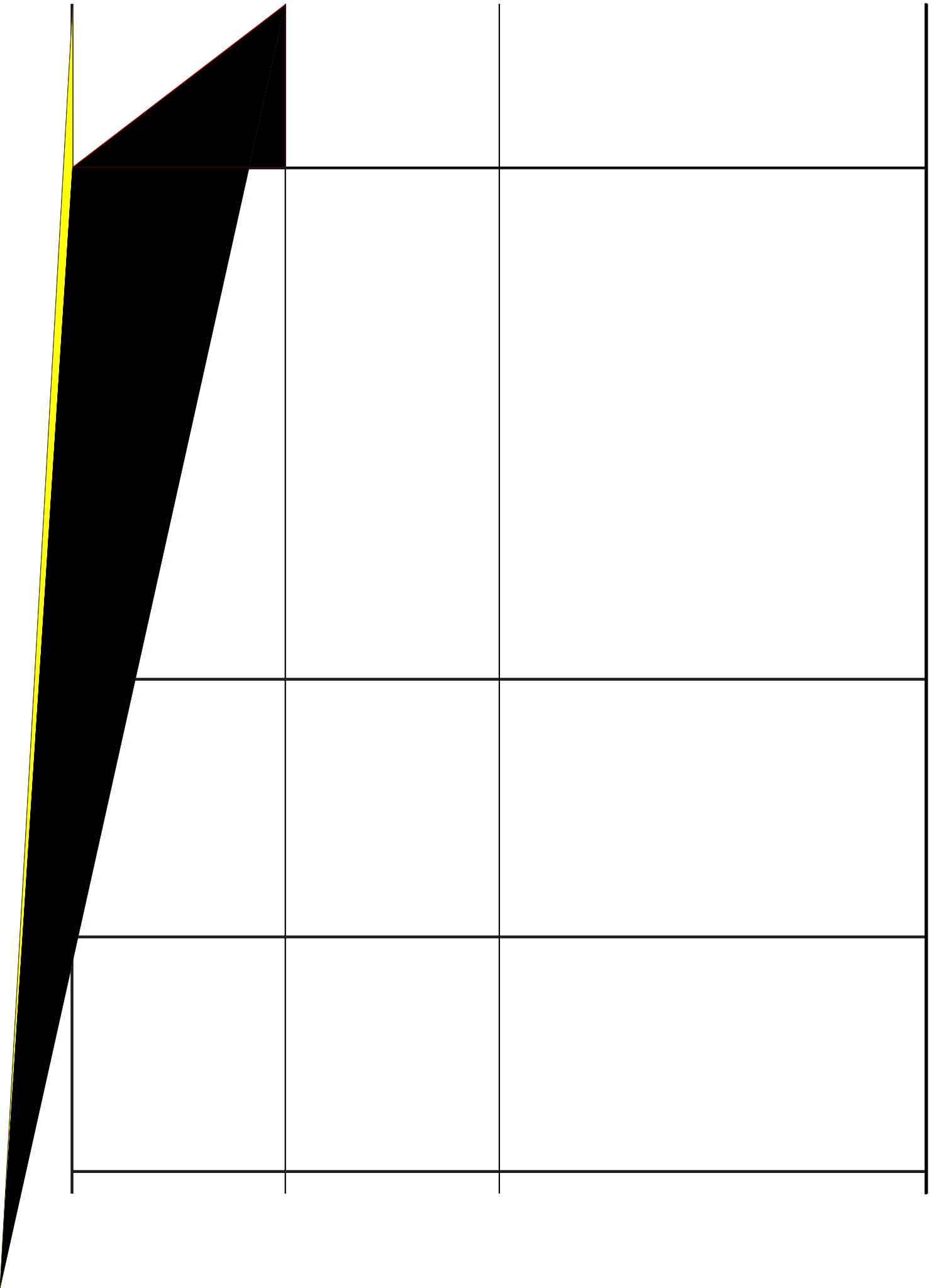
@Yb[ h.`j Uf]Yg

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": SUWd`UbX`]b`h`a Y`W`cbgf`i W`h`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 cXYfbc`z;_ bWdSf]hWe`z`h`Y Zcfa `Bcgcfcg`f`e`Y`h`g`l`W`a a UbXg``H\Y`E`gT`g` Uf]hW k ]h`UXj YfV]U`YI dfYgg]cbg`cZ`W`bX]h`cb`cf`di fdcgY"  9bX`cZ7`UdhYf`%(`ei ]n  HYgh&`DUfh&`z`9ggUmK`f]h]b[ `z`Xi`f]b[ ``YWH` fY`h`a`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: C F I A
K YY_`%\$.`% `Bcj Ya VYf! &&`Bcj Ya VYf	Hcd]W	;`YbYfU`fYj ]g]cb`cZ`W`i fgY`W`b`h`b`h]b`dfYdUfU]cb Zc`f`k`f]h`Y`b`UbX`C`fU`YI`Ua`g"  HYgh&`DUfh`%;`fUa`a`Uf`f%) i `E`7`cb`h`b`h`W`b`j`YfYX k`YY`_`g`)!`%\$  5`W`Y`g`g`A`cc`X`Y`Zc`f`Z`f`h`Y`f`]bc`Z`fa`U`h`cb`UbX`h`c dfYdUfY`Zc`f`h`Y`h`Y`gh`  5`Z`h`f`h`Y`h`Y`gh`g`c`f`h`V`f`U`_`Y`Zc`ck`YX`V`m`C`fU` YI`Ua`"
K YY_`%%`&) `Bcj Ya VYf! &- `Bcj Ya VYf	Hi`h`cf]U`	H\]g]g]U`a`U`_`Y`i`d`h`h`cf]U`Zc`f`k`YY`_`(`Xi`Y`h`c`U`di`V`]W \c`]XUm`cb`A`cbXUm`+`C`W`h`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 `[\hfdg.#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`]bgfhi Wc`f#WUgg`gYWh]cbžYb`hY`f`mci f`dYfgcbU``]bžcfa Uh]cb`UbX`  
gY`YWh`mci f`dUma Ybhcdh]cb.

' " 7\ccgY`mci f`gYgg]cb`Zca `hY`Uj U]UV`Y`gYgg]cb`hja Yg`"Mci f`gYgg]cb`k`j`"VY`cb`hY`gUa Y`XUmUbX`

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`HYa`dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`  
HY`Yd`cbY`9I`HYfbU`Gi`ddcfhcb`-`,`)`'`'`'`%cf`Ya`U]`h`Ya`cb`YI`HYfbU`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`fI`\*)`XUmg`U`mY`UfL`≠mci`  
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhXi`Y`hc`U`ZU`ihk`]h`Hi`fb]h]b`mci`a`Um`Udd`mi`Zc`f`Ub`YI`HYbg]cb`z`Vi`hmc`i`  
a`i`gh`fY`hU]b`mci`f`h]W`Yhbi`a`VYf`Zca`9I`HYfbU`Gi`ddcfh`fU`cb[`k`]h`Ubmc`h`Yf`fY`Yj`UbhXcW`a`Yb`hg`L`hc`  
]bWi`XY`Ug`Yj`]XYbW`hc`gi`ddcfhmc`i`f`YI`HYbg]cb`Udd`]W]h]cb"≠mci`Ya`U]`9I`HYfbU`Gi`ddcfhmc`i`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[ Ygž`UfhUbX`XYg][ b`dfc`YWgž`Ug`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`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'5Ww'dhUV'Y'I gY'cZ I BGK '⇒H'F Ygci fW'g'Dc`]Wm
- VY'Uk UfY'cZh'Y'ghUbxUfXg'cZVY\Uj ]ci f'YI dYW'X'cZYj Yfmcby'jb'h'Y'I BGK 'Wca a i b]m
- `cWJh'gYfj ]Wg'UbX'jbZcfa Uh'cb'UVci hl 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 bXYfghUbx]b[ 'cZU`h'Y fY'UH'X'UgdYW'g'cZ9@G9'k ]`Y'd'mci 'a U\_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\hhd.##ji V'YW'i \]XYg" \]VfUfm'i bgk "YXi "Ui #' \]gY#JVci h' \]gY](#)

5 WUXYa ]WbZcfa Uh]cb`

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

- fYei Ygh]ZcfYI hYbg]cb/

