

=a a][fUh]cbY

6UbW



6UbW! ; YbYfUY

9gdYfUbhc

ä i 'a]'dcj UgfYhf]'a cbc'b'Yb'ObXcOgYb'dU[]
_ch]nc'b3

8 ca UbXUFY'gY'V]gcbc'gdYgY'X] Vta a]gg]cbY'ei UbXc'dfY'Y]]'b'i b'XYHYfa]bUrc'dUYgY

J]YhbLa]hU

HE]W'h 'fÖh] b' 'fA'i hb WQ_\Eb['a hd\Ei W
_\Eb[3

?]c'YgUg`U`_ch]nc^gY'a]i nUgY_gYfUb
a cbU hca Urcb3

8 ca UbXUFY'ei U]'gcbc`Y'gdYgY'X] Vta a]gg]cbY'ei UbXc'dfY'Y]]'U`c'gdcfY`c`VubVta UhiX]'i bfiU'fU'VubW

D\EfÖh] b' '5HA `_\Wb[3b` \b[`14Uc'b\]Æ 3

6UbW! '5df]fY'i b Vebhc VeffYbhY

9gdYfUbhc

A]' Uhi g'a UZYfa]'Vub_Ub`_cbhc'b"

8]fY'WXY'j i c]'Udf]fY'i b Vebhc VeffYbhY

J]YhbLa]hU

HE]a i b'a 'a h14_\c b'b[3b` \b[

A]' Uhi g'ZYfa]'Vub_Ub`_cbhc'b"

8]fY'WXY'j i c]'W]i XYfY]' 'h c`Vebhc VeffYbhY

HE]a i b'i i b['14_\c b'b[3b` \b['WUa Eb\

ä i 'a]'dcj Ug'a UZYfa]'Vub_c`_cbhc'b'fYHY3

8 ca UbXUFY'gY'di c]'Udf]fY'i b Vebhc VeffYbhY Veb'i bU'dfcWxi fU'cb']bY

HE]W'h 'a '14_\c b'b[3b` \b['cb']bYi W_\Eb[3

ä i 'a]'f]W] cg_Ufrcb'XY'XYWYrc`U`_fYX]h_Ufrcb3

8 ca UbXUFY'WXY'h]dc`X]'WfHU'Ä'dfY]]gU'Veb]' 'h c`Vebhc

HE]g `b\ b'i W\ j Umrb `Umh h b`X b[3

ä i 'a]'dcj Ugi n]'Vub_]ga cb'g f'a]UH'YZcbc3

8 ca UbXUFY'gY'di c]'YZYhi UY'cdYfU]cb]'VubWf]Y'XU`'h c`W`i`UFY

HE]W'h `1a` h`h Wb[3b` \b['fA'i] b'hc]i W
_\Eb[3

?]c'h]dc^XY'Vub_c`_cbhc^j]'\Uj Ug3

8 ca UbXUFY'ei U]'h]d] X]'Vebhc VeffYbhY'gcbc`X]g]cb]V']

6 bW'b\ b[`c]h` b'c3

_i fUbu`_cbhc

H]dc`X]'Vebhc VeffYbhY

h14_\c b`\ b'h]

dUFUXc^_cbhc

H]dc`X]'Vebhc VeffYbhY

h14_\c b'h] h_] a

⇒ a a] [f Uh] cb Y 6 Ub W



dYfgcbU_cbrh H]dc`X]`Vzbrh`VzffYbhY	H4`_`c b`Wz`b`3b
_i bU_cbrh H]dc`X]`Vzbrh`VzffYbhY	H4`_`c b`Wi b[
]bZubU_cbrh H]dc`X]`Vzbrh`VzffYbhY	H4`_`c b`Wz
ZYa XUj Ui rh`_`cbrh H]dc`X]`Vzbrh`VzffYbhY	H4`_`c b`b[c]h
UZfU_cbrh H]dc`X]`Vzbrh`VzffYbhY	H4`_`c b`_]b`XcUb\
gi XYbhU_cbrh H]dc`X]`Vzbrh`VzffYbhY	H4`_`c b`g]b`j]AE
ä i`Yghg`a cbUU`^`_`ch]nc`3 8 ca UbXUFY`gY`gcbc`dfYj`]g]`W]bcb]`a`Ybg]`dYf`Vzbrh	7i`_`c b`d`É`É`1b[`h`1b[`b`%`_`Éb[`3
?]c`Yghg`U`_`ca`]g]cbc`^`dcf`]bhYfbUWU`^`hfUbgdU[`c`3 8 ca UbXUFY`]bZcfa`Uh]cb]`g`Y`Vz`a`a`]gg]cb]`dYf`Vcb]Z]WY`YghYf]	D`É`Wi`mb`h]`b`ei`Wh`^`1/4`Uc`b`]AE`3
ä i`_`Y_n]g]h]g`U`b`Ub`UgY`_`i`fcb`Yb`_`Uhc`_`Y`a`]U`_`Ufrc Yghg`dYfX]HU`U`^`h`]HU3 8 ca UbXUFY`gY`Ä`Zcfb]HU`i`bf]gg]W]fUh]cbY`]b`W]gc`U`W]fHUj`Yb[`U`dYfg]c`fi`VUU	7i`V`c`\`a`h`fcb[`h`b[`\`d`h`b[`3b`\`1b[`WU]H]V a`h`c`W`i`1b`\`Wd`\`Um`\`Éb[`3
ä i`a`]`f]Wj`Ug`äY`_`Ufcb3 8 ca UbXUFY`gY`j`]YbY`Zcfb]rc`i`b`V]fYfrc`XY`U`UggY[`b]`ei`UbXc`g]`UdfY`i`b`Vzbrh	HÉ]`W]g`H4`_`c b`_`Éb[`3
?]c`Yghg`U`]bhYfYnc`XY`dUfUXc`3 =bZcfa`Ufg]`f][`i`UfXc`]`h]ggc`Xf]bhYfYggY`g]`f]gdUfa`]	@_i]g`h]h`h_]`a`^`1/4`Uc`b`]AE`3
9b`_`c`^]`c`é`^]`]dcj`Ug]dfchY`_`h]`a`]b`XY`ZFU`Xc`3 8 ca UbXUFY`ei`U`]dfcj`j`YX]a`Ybh]`dfYbXU`U`V`UbW]`]b`W]gc`X]`ZfcXY	7i`b`\`b[`W`W`b`%`i`V`c]`HÉ]`_`\`]W]WY`^`U`i`c`3

⇒ a a] [f Uh] cb Y 6 Ub W



A] ' dYfX] g'a] Ub _ fYX] h_Ufrcb"

8] fY'WXY' \ U] ' dYfgc' ' U'h U'WfU'X] ' WfYX] rc

HÐ] ' a h' h' h' b' X b [

A] U _ fYX] h_Ufrc ' Yg] g' h'] ' h' U'

8] fY'WXY' ' U'h U'WfU'X] ' WfYX] rc ' Ä' g' h' U' fi VU' U

H\ ' b [3% \ 1% [' WU' HÐ] V ' a h' Wd

ä i] '] ' dcj U' g' V' c _] ' a] Ub _ cbrcb3

7 \] XYfY' g' ' U' VUbW' di ' V' c' WfY'] ' h' c' V' brc' V' ffYb' h

7 i' h' _ \ i' U' h'] _ \ c b' b [3% \ 1% [' WU' HÐ] i' W _ \ Eb [3

A] ' WncbU' g' Ub' g' h' U' Ub _ Ufrcb"

8] fY'WXY' \ U] ' V] gc [bc' X] i' bU' WfU' g' g' h' h' j' U

HÐ] ' Wb' a h' h' ' a] ' h' U' h' h'

6 Ub W ! ' 5] i rc ' Z] b Ub n] Uf] c

9 gdYfUbrc

A] ' U' h' g' \ U] '] bZcfa c' b' df] ' dfi brc'^

7 \] XYfY'] bZcfa U' h] cb] ' g] ' dfYg] h

J] Y' h' Ua] h' U

HÐ] ' a i b' W' h' Eb [' h] b] ' W' V _ \ c b] j' U' m

?] cb] '] ' dcj U' g' X] f] ' a] b' df] ' U] b' h' Yfnc3

= bZcfa U' f] g] ' ' h' Ugg' X] f] b' h' YfYgg' Y

7 i' i'] a [' E' Wb' ~ i' U' j' ' a' W'] ' g' h' _ \ Eb [3

A] ' U' h' g' \ U] '] bZcfa c' b' df] ' \] dchY_c'^

7 \] XYfY'] bZcfa U' h] cb] ' g] ' a i h] '] dch' Wf]

HÐ] ' a i b' W' h' Eb [' h] b] ' h' ' W' d

A] ' U' h' g' dU' f] ' _] i b' \] dchY_c' cb] g] ' U' brc"

7 \] XYfY' X] ' dU' f] U' Y' V' b] i b' V' b] g] ' Y' b' h' f] [i U' fXc] ' a i h] '] dch' Wf]

HÐ] ' a i b' b' i] ' W' i' m] b] j] ' b [] ' h] j b' h' ' W' d

A] ' U' ä' Y' rc' g'a] Ub' i bi Ub' \ Y' a' cb"

8] fY'WXY' g' h' U] ' V' ä' a' dfUbXc' ' U' h' U' df] a' U' W' g' U

HÐ] ' a i U' b' \ 1/4 b' i' i' h' / 4

A] ' U' ä' Y' rc' g'a] Ub' Xi Ub' dfcd' fU' cb"

8] fY'WXY' g' h' U] ' V' ä' a' dfUbXc' i' bU' g' Y' V' bXU' dfcd' f] Y' h' / 4

HÐ] ' a i U' V' h' i' b [' g' b' ~ b' h' ' \ U]

A] ' U' h' g' ' Ub' ù] ' U' \] dchY_c' b"

8] fY'WXY' j] i c] ' U' W' b' X' Y' f' i' bU' g' Y' V' bXU'] dch' Wf]

HÐ] ' a i b' h' ' W' d

A] ' U' h' g' f' Y' _ n' Ua' Yb] ' U' \] dchY_c' b"

8] fY'WXY' j] i c] ' f] j' Y' X' Y' f' ' Y' V' bX] n] cb] ' X' Y' ' h' i' c' a' i' h' i' c] ' dch' Wf] c

HÐ] ' a i b' ~ 1/4 a'] ' h' ' W' d' WU' a' h' b' \

⇒ a a][fUh]cbY 6UbW



A]'UäYhcgbYa cj Y'Ucb'dcf`Ugj"
8]fY'WY'gUj] Wäa dfUbXc'i bU'dfcdF]Yh¼XU'UZZ]hUFY

HÐ]a i UH¼g b'í Wc

A]U'a UbYHU'UFU'YbgdYnc'YgUgj'SSSSSS"
8]fY'U'ei Ubc'Ua a cbUj]'hi c'fYXX]hc'Ubbi c`cfXc

H\i 'b\ d\ b['bBa 'f W\i 'WU'HÐ]'¼SSSSSSSS"

6UbW! 5ggj]WfUh]cbY

9gdYfUbhc

J]YhbLa]hU

A]' Uhi gUäYh] Ugy_i fcb"
8]fY'WY'gy]']bhYfYggUhc#U'UX'UWäi]gUFY'i bfiUggj]WfUh]cbY

HÐ]a i b'a i UV c\] a

\Y'a U#Xca UbUFU'Ugy_i fc
H]dc'X] Uggj]WfUh]cbY

6 c\] a \ []Uí Bb\

j c^UuU'Ugy_i fc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'Xi ~ W

j]j U'Ugy_i fc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'b\¾h

gUbU'Ugy_i fc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'g W_\ Y

U hcUgy_i fc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'ÐHÐ

Xca WgfcUgy_i fc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'h.Öbi Ð]

h'U'Ugy_i fc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'f a Wd

\]dchY_UdfchY_hc
H]dc'X] Uggj]WfUh]cbY

V c\] a 'h W d

gi XYbhcrcgYXc^
H]dc'X] Uggj]WfUh]cbY

V c\] a 'h¼g b'g]b\ j]Æ

⇒ a a][fUh]cbY
6UbW



[fi dclUgY_i fc
H]dc`X]`Uggj]WfUh]cbY

V c`) a `b\i a

dfcdf]YncUgY_i fc
H]dc`X]`Uggj]WfUh]cbY

V c`) a `h\g b

]bi bXclUgY_i fc
H]dc`X]`Uggj]WfUh]cbY

V c`) a `~` h

ZJfclUgY_i fc
H]dc`X]`Uggj]WfUh]cbY

V c`) a ` \ U\c b

Dcf`_]ca`XU`a`cbUrc^a`Y]YgUg`_cj`fUUB
8 ca`UbXUfY`dYf`ei`Ubh`a`Yg]`gUfU]`VtdYfrc#U`XU`fUggj]WfUh]cbY

6 c`) a `WU`H]`W`\] i`~`Wfcb[`VUc`b\]AE`h`b[3

?]c`YgUg`U`dfYnc`dcf`U`UgY_i`fc3
8 ca`UbXUfY`]`Vdgr`XY`fUggj]WfUh]cbY

;]\WUV c`) a `b\m`VUc`b\]AE3