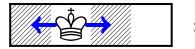
Do The Manual Calculations (Don't Try Monte Carlo)



All moves reversible!

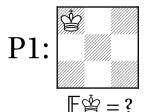


Proposals: Uniform

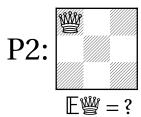
Acceptances: 100%

P0:

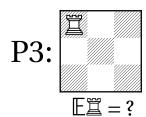
Expected return: $\mathbb{E}^{\ddagger} = 3$

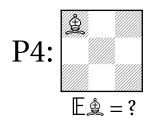


The King (): moves one step horizontally or vertically (to a square with common boundary) or one step diagonally (to a square with common corner)

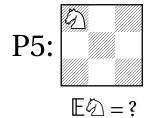


The Queen (): moves a finite number of steps in the same direction, either horizontally or vertically (along a sequence of squares connected by common boundaries) or diagonally (along a sequence of squares connected by common corners)





The Bishop (魚/魚): moves a finite number of steps in the same direction diagonally (along a sequence of squares connected by common corners)

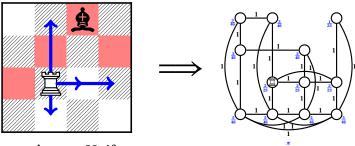


The Knight (\triangle/\triangle) : moves two steps in the same direction horizontally or vertically and then one step in a perpendicular direction; or one step horizontally or vertically and then two steps in a perpendicular direction.

$${P1, P2, P3, P4, P5} = {6, 8, 9, \frac{28}{3}, \frac{40}{3}}$$

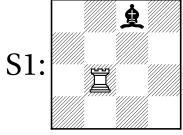
Stage 1 (Simple boards)

All moves reversible (no captures)!



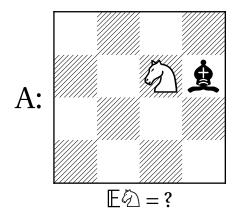
Proposals: Uniform Expected return

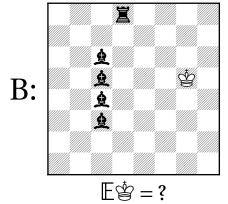
Acceptances: 100%

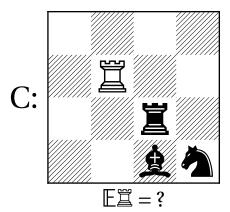


Expected return: $\mathbb{E}\mathbb{Z} = 11.5$

Answer format: 23/2

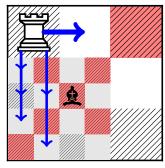






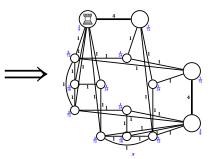
Stage 2 (Composite boards)

All moves reversible (no captures)!

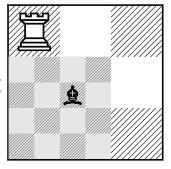


Proposals: Uniform

Acceptances: $\mathbb{P} = \min \left\{ 1, \frac{\text{Area}_{\text{end}}}{\text{Area}_{\text{start}}} \right\}$

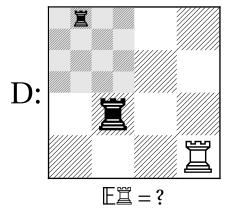


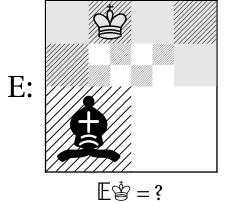
S2:



Expected return: $\mathbb{E}\mathbb{I}=8$ (acceptances)

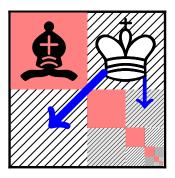
Answer format: 8/1

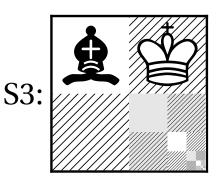




Stage 3 (Infinite boards)

All moves reversible (no captures)!





Proposals:

$$\mathbb{P} \propto \min \left\{ 1, \sqrt{\frac{\text{Area}_{\text{end}}}{\text{Area}_{\text{start}}}} \right\}$$

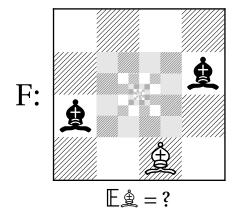
Expected return:

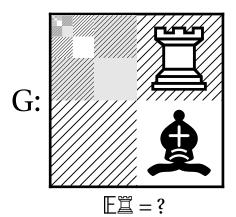
$$\mathbb{E}^{\ddagger} = 3.2$$
 (acceptances)

Acceptances:
$$\mathbb{P} = \min \left\{ 1, \sqrt{\frac{\text{Area}_{\text{end}}}{\text{Area}_{\text{start}}}} \right\}$$

Answer format:

16/5





									Numerato										
1 Z R 2 D D	G T I N V Y K F C	Q Q F U H U	I H X K N I N S M Q R	K E D O N I	R H W P V L T F T N C Q	T Y O M V O U U S Y	L E M F Z D N J				Q J F R F V U K X M	DUGG YWQG	Q U N E G U B U W I	T T E L K Z W Q	Z V L C E H I B D A	J Y X X Z K N W A P	M U B I O	F X W Y X H J F T D	F J F N N P Q R
4 C S	T J A L R E I O 1 H I C V S K L Y I	HDAARI	PVKLX	R R Y L H :	SULRMN EXTMCE	YFUYF	H F W U	N B D X G . M Q L X E	S G T R	Q H C Q D	JQJGM	B J H M S G H W	K Y P O F Y U T F T	H D V F	N I K G G H K C E X	O U E C Q D T A D T	N E F G Z W Z E W C	YRKLP	Q V A G S N G G
5 V J 7 Y N 8 X O	W N Z D N B J Z O N X Y E L E O J E C K I J Y P A P P	F H B J C I M C A R J C J F H L A I	L J H J A H C K D W U W F S R Z	R C G R B I	U M E P W U Q F T D E C D Z V W D V	R T T Q V D K W F H	F H J Z G E A Y H C V I	JYAXSI EXJEH ZZSUE!	D D V S L I H B T B I R M D U	S Y E Y Q H O S C S I Y C X U	T Z X M G	K K B L W Z X A	Z A A N Y T E U G Y T S Z U J	T V Y E Z V G Q O M K B	N S Q E L E S K M Q D Z Q W U	H F X Y T Q H H R K F A F V O	SDVCA UKWPN UADFK	UXFYA	F K J J P T T A
9 F F	K D X B Y K W E E	UPSTI	N N T A E	D J U K A	X F G D T N Y S Q Q P R	E T Q A G O G S E H	K U D O	N S N Q W :	E E R L Q X C W R	O O B P I	R S U W C	R X V N I O D C	O L G A X M L Y G E	FYQA QTET	C B S P S G J L R Q	U I R L H	T E B I E A B N X P	G P M U P E D X Q G	N R U W L K Y H
11 Q E 12 B O	J T B B O H D H F W H O B H B W V ;	S V I S L .	V U N W U V I S H B C J I W R E U S	L F B S P	A	U B I A S Y E D C W D I R E G	I M U O I A K G H E I Z	Z N G L X I A J W X L I S R N I G	K N U G D D G P Q Q J K H T G	K B I G K Q A A E B K O I O W	J F G D Q G E C Y R	J X Q A	M M F X A A G L L I	FRTK QKBX	X D R W B T K E H H J G T T U	I T K C R U V T M M S L Y G O	STXBR ACQQH HJJZF	P C Y D Z Y B O Q B J M G L K	J F E Z X B S L
14 D K 15 E U	R Q H B G Y K D F X K G G B U Z T F	LCTSB	R I A Z V T M F J W	X K C K I C	V L K D K M N X W L T A	0 R H D J F Z U K I	N X U M Z W F L	E P Y H M I A Z Q U R I	D I U H J C F N L R	HEYRG ZEYHB	Z W V Q F W D S J X	L X Z O T D Y S	Z X Z S U G C Z P X	TYYB OJRR	L Y X Q W U A K B T	Q H N G T O H E E T	U Q D Y F Y O E R I	N D T S V Q M Z S I	J W I F C O D B
16 R S 17 K M	I M S L V B N Z C	ZZKIY	V P I S H V A Y M B R V B J P	NPAVK	и V B G Y W Q V Y E O S Y Y J M N K	R K H L A A V A J W N X W M P	B C G N	HOHQSI DABBP AWFCI	P	AJZJK NNRKR WMSHW	INJRW	EMZP	YLPTW	Q M D Z	N S A J S N D J K O B W X F N	FKAJA ESWPH LLIZV	Q P J B O I I W X C B N W K I	PCXHP HTLOF JNDEM	S D J D B L Z Z O J O D
19 Z K 20 B N	B Q M W F V L B L F E V F H Y J W	JYCER AFTOT			Z P P R T E Z N R B Z V	M F R C G K G Z Y J	A C N B Q V N M	C Y T K C I	0 0 C J G	S F W E	D V U X X A U F C P	Y L E Y Y X R P	Z L K A H K F Y F F	F B N L M T W K	Y F G Y C S I R A U	U G S M I X C W A N	B W G Z N Y E N F B	0 F K X U P 0 V V U	B G U L F X K W
21 B X 22 Z F	M M M V D X O V F M S T K L N X P I E X E M L V V E .	Z X J B S Q W W W L I	LDGBT	IXIAGI DNHZRI UWPMP	B	0 Q Z O Z Y C J W D	X O N Z D V O Y E Y C R	E Z D X P I T T X Z I . I X B L J !	AIZJL JHPMY VRWBD	N P M P K N Q H A H F M Y G Z	X D G X R	J N I N S W W I U R T H	R P C L P S V J K Z O C N Y Z	O A Y N D V D C	Z D X K W D J K P U A F U W J	QVHTD IBODD KIGMD	GDXBD MUJGA TGXSD	A W H F R	Z I U W A K B P T P V W
24 Z R 25 O E	DEBZPPVHV KTKUSJAR	F Q A C E T	0 M Z J M C T J O P	K D Y E I	L K H O G V D S Y X G B	N Z E M J X G P Z Q	T X D Q D X D X	S E J W P I	BLATV	R L H W X V L M Y P	Z C K Y G U F O Y C	G L M Q F D U O	A Y L K D	U J X M S A K T	T I U E L S D Q P V	U X I U E Q L B D N	L Q W V W	R N P I B I E N G H	B X B P L D F Y
26 N H 27 M U	UTUDIDZVS	X R A F M .	STEOU	0 G X S J ' 0 A U N J W P X N H	V I K W M B A W T Q M B J K H C P G	A D E S W C Q Z N V F T H M K	F G M Q	ZYBSWI GASCQI WBJUDI	C C J E A D P S X Z N B Y G T	BDDRS ZGEOM DJKWN	V G C Y E K D R B Z I M C D G	J Y I I B L M E O O E S	L B J I B N R T N P Z U C A H	F H F P U L O F F O O Z	OYFHB TRXLJ RWLHN	N F Y R F Z U P V G Z B Z U N	D L A K S D Y W V P S H U H K	W Q R B Q Q A Y Y Q U F N U P	X E Z D M X W M
29 R U 30 G O	F N L K P E B J V L X I N T R N A F	U K C L W C	UQCXS	K G A A N I	C P L L K F	L N K D U	J A Y Z G D C H	W S R C N I	PYVR PQFV	A Y F V O	C E R A Z T P S R A	UZKZ KJFT	R V D U J M A X S M	N V A P B D I C	Y Q E D A O E N D O	I U U P E X G V K B	B J I H K P B A R O	W N H H J	F X B W
31 C D 32 K F 33 G D	EPSJTRQNV PQFWVHKU	BZNLJ	LLYXE	D D T R C :	AOQIUV SMSZFC AYNUBL	X G C N A V S U J D F M X S J	T Q J K K K Q K W Z D F	0 E A B V V 0 T B 0 L : X H 0 R U	VNIXD STOXA LKOVF	N S B K C Y Z R B Z D G M Q B	EDKOW SNXAW	Y A A L	Q L F Q L H D I Z S X F O H P	F O Q V	O A W S N V A G Y H C I M U F	EQSOI PGAZE ZAEST	T K O T C I Q N V W U R C I Z	A K S K C B B U Y H L F M X R	J B X E A H N M
34 Y N 35 T S	B K D Y K K W B F R Z H J W U R P F	V S T E I	B G M J X J E I D O	U J Y E B I	M D H N B V A P H Z W Y	S I O W U N G P T A	J K P F Z G I M	A D C E T :	K G B B I	H V I K K	T H W T G	P E H Y H O G C	OZCAF IXUWH	O I Y A	U R S C K S X D F I	N M S D D C N K O Q	R T Z I W M E D W L	O H U Q B Q M G X V	B Z Z W O L F N
37 C A 38 Z Y	PUXPUSOTV UFFMQKBNV	RFPHQT	CWPQO	LHPEU	YYWEBP	RAHDQ WQIFQ	G F T K	G S N Y D '	Y 0 Q J C	Y I S T K Y A P W Q	M R P W Q	G A E I	W P A Y N	V R C R	R S E H L E Y D X Y	J G B A W M T I S N	V D L W T	IIIIM	C Q A R
39 L J 40 V X	O Y M S O S Z F E	H K X K O E	A L Z P X	G K R S Z I	J A R Q Z P R Z V W G	WFCGD	J F C W	Y G T A L I	ASABJ	V D W V P	Z I F G L F O S K R	H X H F	S H Y Z O	E A J A L J Z V	G V E D S D K M M L	Y Y Q O B	JKFRK	N V J K M N A Q W Q	M A I G
42 K B 43 M U	LZSCQEUXC	GTWOV	MFPKM	I H Y N X I	Q H E T T R C V B J X W	PNLJM	E D E I	J E C D M . H K W U V :	0 B Z D	N F L U N H U Q V B	NPLDH	H T J R	UWZDN	T U S N	Q M Z G Z N D D U H	L B Y O K	S X E B G Z R O H U	BUPBG	E P C U
44 T Z 45 K B	GUFEGKAXV SRBRTCAK	MITHX	A M Y E S	AMKDC	G K Q W A Q U G P V P H	PEART	Q A J H C M J C	V I S O T	FNKRC	D L M K U	W V N B B	E X T W	J F X C J	JTCF	V K J C C	B M H M M D Q L K D	L B H B F F P F H Y	H B M A D	H F G B
47 R E	F S Y Y I A V S N M V N J N M O D (QZTWAG	J H G J N	J G R X A	Y B S O E E	S A N U G D P D W J	S N D T	F F C G O	E V P J H	B J Z Q U Z T E A C	R Q O B P	N Q M Q R S F Z	R L D O G L E D N F	K B M A	I U O G S	X I F P W U C B B W	T L F R C L H B N H	Y F C D G E M A T S	Z N Q G T G V B
49 S D 50 W C 51 O K	C H Y D Z O X B X C W G R G D Q Y J U H M C T T O Y Z	IYEJL	RLNPJ	ERALN GLWRH	MSQCMU NXRCXK NJNZSK	FROPO ACBVY LOIHA	P G S J Y E S W B C T Q	NUDXWI RRIDJ: TGUIKI	N X Z A P	G F P O S H E P K L K D G S P	G B W R F	E N A Q E B I C M I A B	ATHMO	PRET ZRGA NEGJ	W W V D U X A D Y P O O Y Y V	I I S W S E U R D G V V D V K	PTVMN RUEAE CPCVT	Q G S V A B T B F P Z L N H F	DTLD ENCM NSKB
52 C Z 53 Q D	E I B O B Y D O M L H L E A T K I V C B N V D I M E L	L Q N Z D I	R Q S R I	X Z B J T I V P N Q E	HWAWEP PFUVDK	0 Z J M 0 T X T W P	X R N E L H U N	JNSSN TROWK	TWLUG	V X J K H V H Q C L	ARZPN GAZTJ	E K E E K H T D	N E B N I Z J P Q D	Q M R U S M V M	J F L I Q G I C I E	C B D W K O H Q M L	H L D U N T O V O I	V P X U R Q A U P Y	F H G L L P D Y
55 O U	N S E A Y A W P .	TQQIJI	SARMK DLRTZ	X A G M Q T	C J N P M Q Y B F D T I C X G D E R	Z N Q Z D Q Z T Q C	WAVL	I H D Z F I V N G R M I M O J C C I	H M V E O	BZBAW IWODS VHPSR	HEVLF	IQHG	HDZQK	UYFG	X A Q Y P E X L Z Q N H E X P	M X F C O	B F O X I K M Z M G J I W Y R	V N W N K R B G A J S J W T G	O V E Y
57 J B 58 N R	U Z A Q Z U D Y F B N F P Q N D X N	UZLQB	GODAI	G X C X L P Y S B H :	V M Z M H P X Y M M U B	1 Y E L I	P A L R	ISNMBI TSYMP	RUSV	LVRMM VNQOL	W H D H I M F B Q A	POKG HKYW	Q P S F K H H H B T	A D X H F E B I	G K M A E U F F M P	X O Y T R Z H W Y A	F V S F K E X E E P	P W Z K N D U G K U	N U R X X S C Z
60 O N	X U C H T Y X X V	XMDDBI	E C Z O D	T K S X D I	DJQUNS	WVPLX	M L J O	O A L S P I	W M P C	D Y D P V	SROGZ OIGYL	C L G V	T M W S C	MPEI	A E M R I	Q B A Z I L C D L M	Q B N B M J Q G W L	Y K V T F	I C L J
62 R J 63 H Z	H N C P C E G Y	HPXWQI	X E J B Y B P T U W D	F H H A C	E C G L J J J E P Z J G V N T T P P	ERLCL WTPHR	X X J E	W Y X Z G . Z J M A O !	1 0 T D V	POWDT	ULBRE	PBZO GQLQ	LHWIG	R X X C	Y L M Z C Q X G M H	J D S O Y	E L O N W	S S Q Y S B G X F R	LKNS
65 A A 66 Y Y	V G M F O R R D I	ERAQNA	RDBGC	PGLIT	Y V S P E H E J T G Q T	I Z P X W V H Z A G	V A S N Z D Q C	X D L I Z I E L S L V	LYCXU	FTZSU	K T U F D	Y P X O	N Z W K E S J Q X P	R W B E	B E L P X J E R I X	E K F E S K F A A K	R X X W L X X S S P	L N W Q L R O Q V M	C R J D G M O U
67 D V 68 W F	G R V R W T R I C	Q E V Q L E	E V D U T D A M I X B O D O W	0 A T 0 V I A 0 E F U M E Y I Y I	HUNHWT EBYCIB MHIGKW	R G X K M A D O H A P O U O O	T W S N O A C T Z Y P C	T Z I E P I V F Y U E (E A V O L :	NGGKX DBRUH SBJDA	D L V D N R Y G O P R K R E N	G C F A J U L P D S Z G P U M	Q O T T M J U U S C L W	X G G J U	R M A M	JZYNH BCKBV JTPSO	A G P I V L X R K R B W S O E	EAKTQ WTLHM YZOMG	I S L T S B Q S N U Z F P J E	W V E Y P M P S H T O E
70 A E	O F J S J I N S C H X E P G K E A I	A L P G R F	C A V N V	H Q T O I	G Q W M H C Y U I F F E	IZZAI	S X D C U U V I	BZSUKI XZKPG	I G F E	UWTH TFDQ	F N J C N E I A V H	A V C N C D L N	F Z N V M N Q Z L O	V O K I W M I Y	JPURX HWRAZ	S O X B O	U S N H Y G G D M J	C O E M A N M M B I	E W K Z B T K U
73 A G	JUXOJJEVO	SDHRHI	QJNYN	F M K M W	C T K A N V	W K W S B	BHQL	HRVEMI	ZATV	INWQW EAFJO	TQXSV	I G L P	AHCTP	XVFE	Q V R K R	N X H R K	0 H C C E	OXCFB	D C I H
75 V D 76 Z T	P 0 B X H M T K M Y M Z Q Z F D H 0	X W J H K V	L P N T J	F G O V U	P T X U N D C B H T T O	C J Z W C E I F P X	J C O E C O W R	T P J Q N : D O M U H I	S T Z H H	PSPBQ	LUUBY	D L J P L S W D	W Q J M Z I Z A Q W	T R J J S N X G	PAZAR YJYXD	OJKHW	I I S Q Q D H Y A N	HURKI	I L U G X D I A
78 N P	Q R T C H J L C E P R K K Y F E O I	PPJMX	S M T X D	UWEVP	K M C X L U	X P T I Y	I R D P	V B C Z R (X M K F	BBPVX	B M Q G Y F C B I I	CMJU	R Q J K L	CDTJ AKSV	HPKQW UCNNZ	V A U X V L R G I F	Y W S D H J Y H C K	D B K L Y V P V I U	D Z E U R U J K
80 M O 81 X I 82 Y O	X E D G M J M U I	D O G T G A	SPXAD LRWHT	PTWVF	PSAEER	U O M X R X W Z N E M L H Y F	E L G M N V M M	Y G I W Q I X Z B W W I V L B A M I	S F U A	RDSNH GPQQI LVJPF	C V M H D	P J Q I R W D S U O C B	R Q C U G O G V E B U I H W I	J O L N N K F D M B G R	X R T Z N Q Z K O H Y C O K W	MIJYA OTXQA XHEGL	IBACL GUVFT KGOBK	M V L U T	K T Y R X G P E U V C F
83 Z K 84 H D	PMMXZTYW GULHJPAJ	N I I R K	1 W R Y P	J S J B K	A A Q Y V I T U V U F Y	C W W D U	X P V A V J Z C	M M X Z O I	D K X H X	H K W Q E M J E G	M Y V C K	S C T J E C J U	C O F C Y	G H M P S F N Q	W L B A V H Z V T G	M G V N P G G I P L	G M O P J L D C G C	S F S U F H G B H W	D T T C
85 W R 85 M K 87 N H	V M J E N T D U E Q F H B J H J W I	I M A Q V N E	0 R 0 X A B V J K L X B B V F	X A X V R	R E A M D M E O R O S K Y Y T I H Y	BQMCR NDVNV	FUJR PYOZ ZHMA	S V G H F I Z M W T B I T A G C G I	MYJP MCPZ KLHTB	H K W F M J K D T J L C A K S	FVRDV WIOHN	E R E L O E R U W X F T	ZEZXW	J D B V O N Q V	S J M R H E D Q K V M Z E S F	X	W Q P U M M K G E P S G L J C	P P J K B P V X L Y F R E N A	B N Z Y S B X Z G V Y B
88 U N 89 O W	K S A Z Y S C U X O E C P B Q Z B N	NUNVAT	TURUR	S U T T O	C Q S B P Y	V Z U O M H K X P Y	E N V O	I C S W C I	V X N Z E	F X D Q O	H J N X L M K X E M	YYKH	D B L F S D V T K A	C E S K	K E A J O D W G S F	H N Y V M N S F K W	UNLBM	C E J B G O B P V W	G P L H B R S R
91 T Y 92 Q H	U P V B H W Q O E	Z H B P M I	L B O T G	SJHJU	N V L C Y K	N Y M R K	S D C G	I A Z G T I	V Q Y B	D S M F M A S H U Q	H Q O P N	G A N N W S U G	ULTNE	JQHL	RHVUI	V Z Z H G C H Q A H	K Q T X J O Q N E S	Z Q V R V R H X T H	F B B X
93 B L 94 X C	S E X Y Q O F I A D Q V A D N B D S	W U G C L 6	0 H C B K	ZBRKKI TPBDR	MYETZR CEMXDG	X B Q M W E Q G R T W W R M D	T C F W Y O M A	QEPZF	Y S X T L A F K Y R	JHEMY PZGTR	I F E L Z	A F Z E	Q R K X D Q G H B I	T T S Z G A N Z	T F J U C F N B Y Y	X S W U P Y F U H V	EXFXV CEILQ	R F N J Q W W U F A P R V V T	Y W W T
96 K C	A H H F N S P W N K A Y P N V X Q V	PQMKA.	I B P D V	I J D R D	L Z C Z I C	H Z G R B	A L C X	I I G Y F	Y D L I M	Q O X A U	HZKOZ XXIKQ	C N I I	JPVJR ARLMZ	L G D S W Q D J	H M O F B	Z S W Q B T G W A G	0 0 H X W	M K U S M Q V K M Q	T X E E
98 Q P 99 J F 100 S K	V D G I O U H A G Z B G D P L N P A O T A C A X C G	G C S S D E	C D I H K C O N Z Q V K X J M	PNCPU TECIAI	G U P D F C M X J N A Y X N S U V U	Q L V F J V E X K S R Q G O V	Q V I Q V I J P H Y B Y	X P E Z D Y A V A W X I J U M C I	YQXBO RZQBW JXDGW	G F G W T I P G G Q D Z E D F	D P V X M R U J F T S S O O J	Y M L D E W O Q R L B N	H T K E A Y Z N Y J N K W W S	V 0 0 P L W P W R Q F N	HDXZW NAXEM PJANS	J P L X I K R P G S G Y V M F	C G H R J M K D Q D W O E C Y	M U Y A A U U V F C J J H E X	HAPC TTWE

Final Stage (Combined boards)

A, B, C, D, E, F, G
$$\Longrightarrow$$
 $\frac{1}{\sqrt{1-x^2}}$

Proposals:
$$\mathbb{P} \propto \min \left\{ 1, \sqrt{\frac{\text{Area}_{\text{end}}}{\text{Area}_{\text{start}}}} \right\}$$

Acceptances:
$$\mathbb{P} = \min \left\{ 1, \sqrt{\frac{\text{Area}_{\text{end}}}{\text{Area}_{\text{start}}}} \right\}$$

$$\begin{array}{c|c} 5 & 7 \\ \hline 3 & 4 & 6 \\ \hline 1 & 2 \end{array}$$

Final stage expected returns:

$$\mathbb{E} \hat{\triangle}_{A}, \mathbb{E} \mathring{\Phi}_{B}, \mathbb{E} \overset{\square}{\mathbb{Z}}_{C}, \mathbb{E} \overset{\square}{\mathbb{Z}}_{D}, \mathbb{E} \mathring{\Phi}_{E}, \mathbb{E} \mathring{\underline{\mathbb{Z}}}_{F}, \mathbb{E} \overset{\square}{\mathbb{Z}}_{G}$$

