## **Corners Only**



**Aa**, probability=1/18 I' (U R') D2 (R U' R') D2 R2 (x') (R' D R') U2 (R D' R') U2 R2



E, probability=1/36 (x') [(R U' R') D (R U R') D'] [(R U R') D (R U' R') D']



**Ab**, probability=1/18
I (U' R) D2 (R' U R) D2 R2
(y2) (x') (L D' L) U2 (L' D L) U2 L2

#### **Edges Only**



Ua, probability=1/18 M2 U' (M U2 M') U' M2 F2 U (M' U2 M) U F2



H, probability=1/72 (M2 U M2 ) **U2** (M2 U M2 )



**Ub**, probability=1/18 M2 **U** (M U2 M') **U** M2 F2 **U'** (M' U2 M) **U'** F2



 $\begin{array}{l} \mathbf{Z}, \, \mathrm{probability}{=}1/36 \\ \mathrm{M2~U~M2~U~(\mathbf{M'~U2})~(M2~U2)~M'~U2} \\ \mathrm{(y')~M'~U~(M2~U~M2~U)~M'~U2~M2~U'} \end{array}$ 

#### Adjacent Corner Swap



Ja, probability=1/18
(R' U L') U2 (R U' R') U2 (L R) U'
(y) (x) R2 F R F' R U2 r' U r U2
(R D') VPerm (D R')
T. probability=1/18



 $\mathbf{T}$ , probability=1/18 R U R' U' R' F R2 U' R' U' R U R' F'

R2 U R2 U' R2 U' D R2 U' R2 U R2 D'



 $f{Jb}$ , probability=1/18 (R U R' F') [R U R' U' R' F R2 U' R' U']



 $\mathbf{F}, \, \text{probability}{=}1/18$  (R' U' F') [R U R' U' R' F R2 U' R' U' R U R' U] R



 $m {\bf Ra}$ , probability=1/18 (R U' R' U') (R U R D) (R' U' R D') R' U2 R'



Rb, probability=1/18
R2 F R (U R U' R') F' R U2 R' U2 R U
(y') R' U2 R U2 R' F (R U R' U') R' F' R2'

# Diagonal Corner Swap



Y, probability=1/18
F [(R U' R' U') (R U R' F') (R U R' U') R' F
R] F'



 $\mathbf{V},\,\mathrm{probability}{=}1/18$  (R' U R' U') (y) R' F' R2 U' R' U R' F R F



Na, probability= $\frac{1}{72}$  [r' D r U2]x5

(L D L' F') TPerm without F (L D' L')



f Nb, probability=1/72 R' (f U R' f U' R') (F' f U' F) (R f U R' F) R' F' R f U' R

### **G** Permutations



 $f{Ga}$ , probability=1/18 R2 (U R' U R')  $f{U'}$  R U' R2 (U' D)  $f{R'}$  U R D' (y') (R U R' U' R') U F (R U R U' R') F' U R' U2 R



 $\begin{array}{l} \mathbf{Gb}, \, \mathrm{probability}{=}1/18 \\ \text{R' U R (U D') } \mathbf{R2} \, \text{U (R' U R U') R U' R2 D} \\ \text{R' U' R (y)} \ \ \, \text{R2 u (R' U R U' R) u' R2} \end{array}$ 



 $\mathbf{Gc}$ , probability=1/18 R2 U' R U' (R U R' U) R2 (U D') **R** U' R' D (y) F2' D' L U' L U L' D F2 R U' R'



Gd, probability=1/18
R U R' (U' D) R2 U' R U' (R' U R' U) R2 D'
L U2 L' U F' (L' U' L U L) F U (L' U' L' U L)