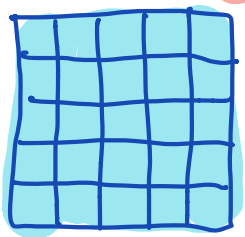
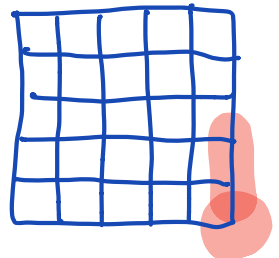


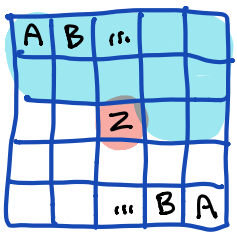
HW2 SIG [4] Up to rotations and flips, mark 3 squares of 5x5 board.

$|G| = 8 = 4 \cdot 2$



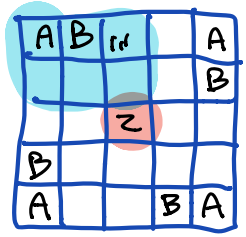
Identity

1
 $\binom{25}{3}$



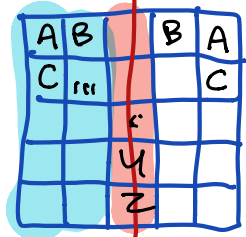
$\frac{1}{2}$ turn

1
must choose Z and any pair
12



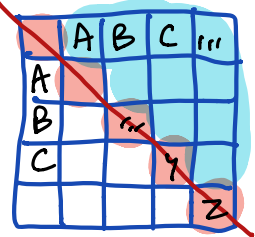
$\frac{1}{4}$ turns

2
0



Side flips

2
3 from $\binom{5}{3}$
1 from 5 · 10



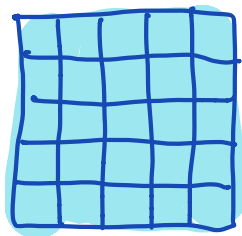
vertex flips

2
"

$\frac{1}{8} \left(\binom{25}{3} + 12 + 4 \left(\binom{5}{3} + 5 \cdot 10 \right) \right)$
12 4 · 60 30

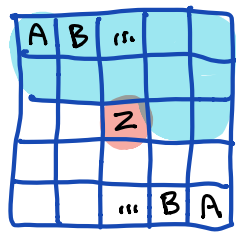
$\frac{25 \cdot 24 \cdot 23}{3 \cdot 2 \cdot 1}$
319

2309
2312 ÷ 8
300 - 11 - 30



identity

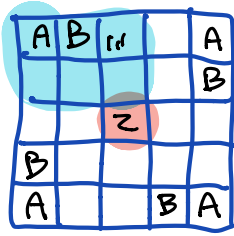
1



$\frac{1}{2}$ turn



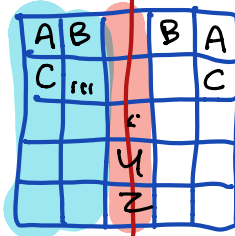
1



$\frac{1}{4}$ turns

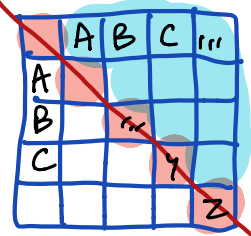


2



Side flips

2



vertex flips

2

k colors

k^{25}

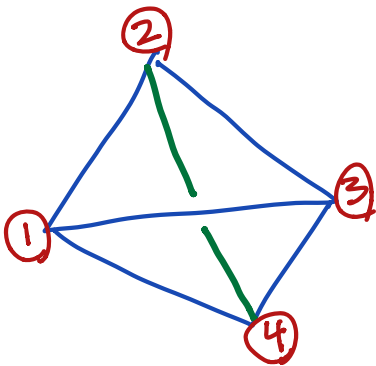
k^{13}

k^7

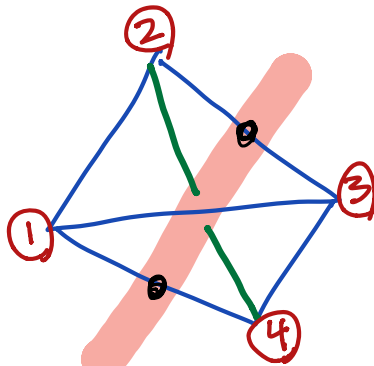
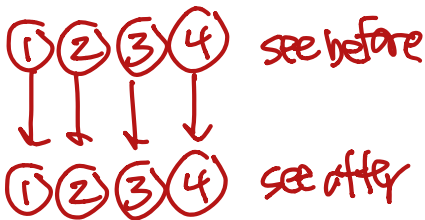
k^{15}

k^{15}

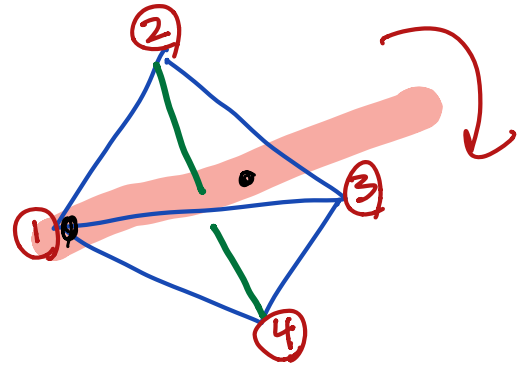
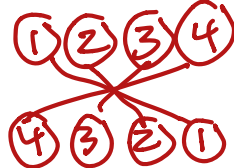
$$\frac{1}{8}(k^{25} + 4k^{15} + k^{13} + 2k^7)$$



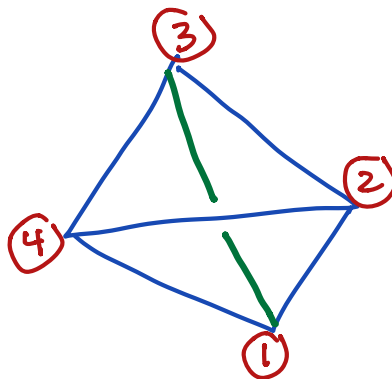
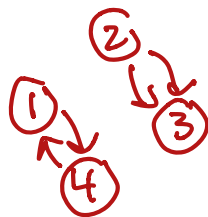
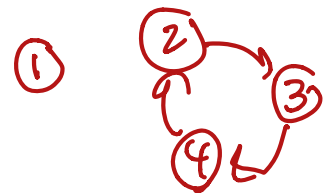
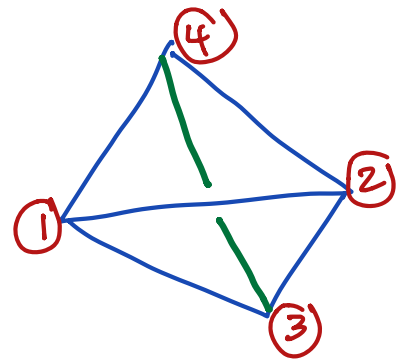
identity

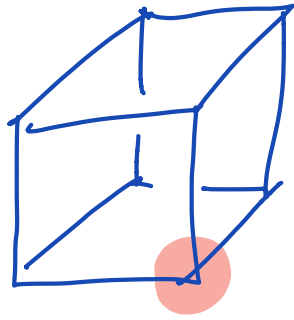


$\frac{1}{2}$ turn, edges

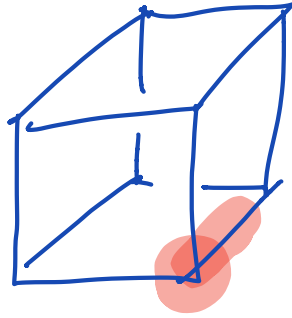


$\frac{1}{3}$ turn, face to vertex





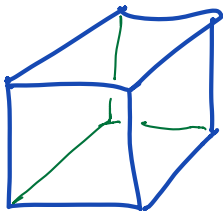
8 corners



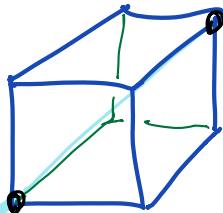
8 corners

• 3 edges meeting
that corner

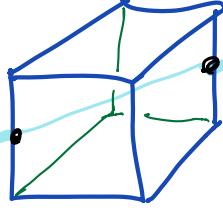
$$8 \cdot 3 = \underline{\underline{24}} \quad \square$$



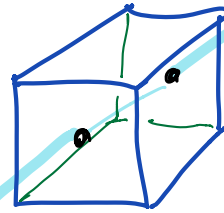
identity
1



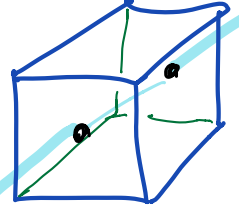
$\frac{1}{3}$ turn
8



$\frac{1}{2}$ turn
6



$\frac{1}{4}$ turn
6



$\frac{3}{4}$ turn
3

+ rotations