Switch - quartet choreography and text

1 minute 43 second section of dance "Switch"

Last revision: 4/26/2009 L = Leslie Viezee, N = Noel Wetzel, R = Rivera Sun, K = Karl Schaffer

Choreographed and performed in 2009 at the 418 Project in Santa Cruz, California.

Text and choreography by Karl Schaffer, bell ringing score by Leroy Clark.

Some lines mistakenly left out in Vimeo performance!

	Speaker	Switch	Starting Order	Script	Movement
1	*K*	*LN* or (23)	*KLNR*	A, C, T, G. Adenine, Cytosine, Thymine, Guanine?	Back to back
2	*R*	*LR* or (34)	*KNLR*	Aren't those the bases that make up DNA?	Hand to hand
3	*N*	*NR* or (23)	*KNRL*	Isn't that DeoxyriboNucleic Acid?	Hand to hand
4	*L*	*NL* or (34)	*KRNL*	What about RNA?	L grabs N's left
5	*K*	*RL* or (23)	*KRLN*	Doesn't each DNA molecule have 3 billion of those bases?	Back walk half turn
6	*N*	*KL* or (12)	*KLRN*	What happens when two bases switch with each other?	Shoulder to shoulder
7	*R*	*KR* or (23)	*LKRN*	What happens when one kind of DNA switches bases with another kind of DNA?	K lifts R
8	*N*	*LR* or (12)	*LRKN*	How often do these things happen?	1-1/2 turns
9	*K*	*LK* or (23)	*RLKN*	People contain DNA;	Look askance at each other
	L			What happens when two people take each other's places?	*(Missed in Vimeo video)*
10	*R*	*LN* or (34)	*RKLN*	Is switching people like switching DNA?	Bunny hop
	K			Is switching DNA like switching people?	*(Missed in Vimeo video)*
11	*R*	*KN* or (23)	*RKNL*	Is combining the efforts of two people like combining DNA?	Finger turn
12	*L*	*KL* or (34)	*RNKL*	Sometimes!	Ballet "lift"
13	*R*	*NL* or (23)	*RNLK*	I'm an identical twin, but is my DNA identical to my sister's?	Lean back, Lt to Lt
14	*K*	*RL* or (12)	*RLNK*	What about me and my brother, don't we have similar DNA?	L falls into R, Lt leg over
15	*R*	*RN* or (23)	*LRNK*	What about me and a bacteria?	N lifts R, 1-1/2 turns
16	*L*	*LN* or (12)	*LNRK*	Can they switch?	L under N
17	*K*	*LR* or (23)	*NLRK*	When virus DNA mutates is the new virus always more dangerous?	Arm waves
18	*N*	*LK* or (34)	*NRLK*	Do mutations make monsters?	Hand "battle"
19	*R*	*RK* or (23)	*NRKL*	Do mutations make angels?	R pulls K's hand
20	*N*	*RL* or (34)	*NKRL*	Or do people become monsters or angels, all on their own?	R falls toward K then L
21	*R*	*KL* or (23)	*NKLR*	Don't you mean our own?	L climbs K's arm
22	*R*	*NL* or (12)	*NLKR*	If my identical twin sister has children, will that be like me having children?	Push w/ feet
23	*N*	*NK* or (23)	*LNKR*	But hasn't your DNA changed since you were born?	N/K rise together
24	*L*	*LK* or (12)	*LKNR*	Is it changing right now?	L's/K's legs reach across
25	*N*		*KLNR*	If your DNA changes,	Begin spinning
26	R			Are you still you?	Spinning
27	K			What about her?	Spinning
28	L			Am I still me?	L and R face each other

Discrete Mathematics, De Anza College Name: _____
Wtr, 2016

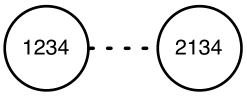
People-Permutations

This exercise is based on a workshop by Mary Laycock (1915-2011) who was in turn inspired by Zoltán Pál Dienes (1916-2014).

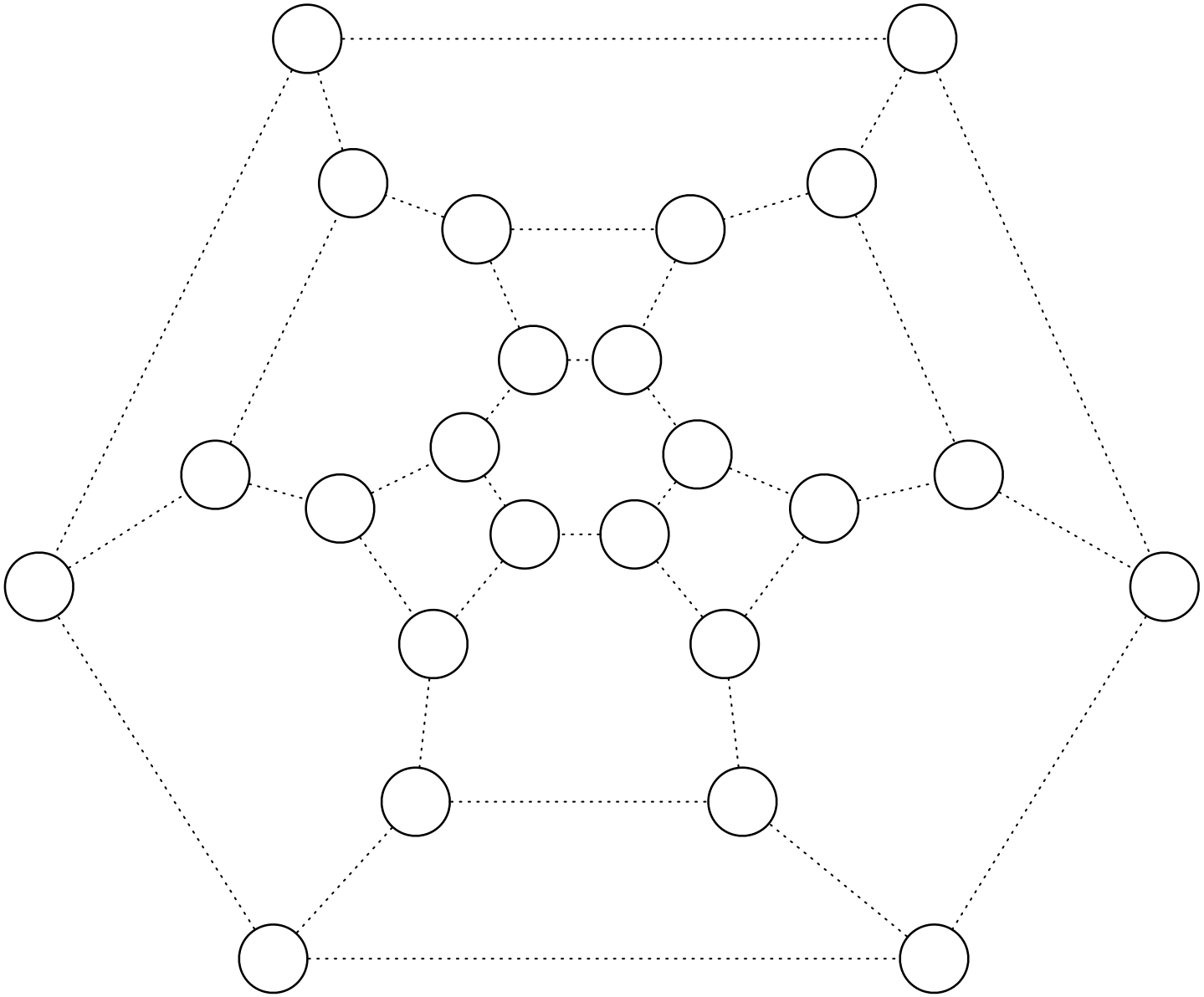
Use the numbers 1, 2, 3, and 4 for your group members, and write their names here:

1 = _____ 2 = _____ 3 = _____ 4 = _____

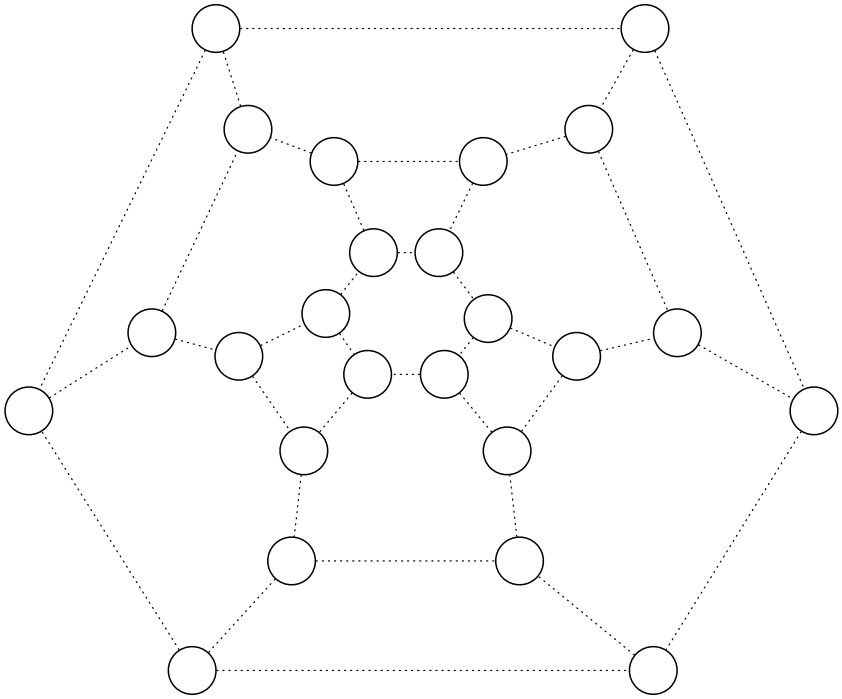
Fill in each of the circles with one of the permutations of 1, 2, 3, and 4. Two circles below should be adjacent (joined by an edge) if and only if the permutations they represent differ by the switch of two neighbors. For example 1234 will be adjacent to 1243, since that is obtained by switching the 3 and 4.:

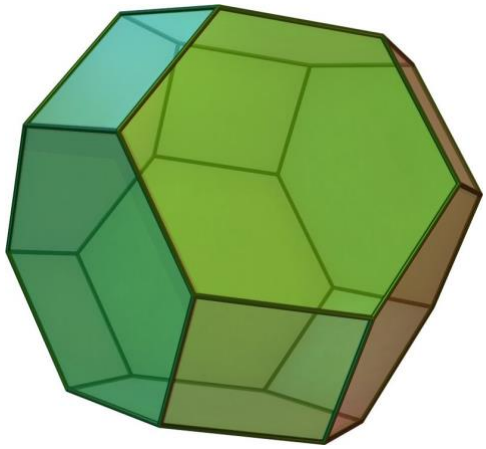


1234 is not adjacent to 2143, for example, since that would involve two simultaneous switches, 2↔1 and 3↔4.



Find a sequence of permutations that creates a Hamiltonian cycle in the above graph that includes every permutation (or circle "vertex") exactly once, and only uses the edges of the graph; darken the edges in the graph below to show this cycle (use the vertex labels from the previous page, you do not need to write the labels in here again, just show the cycle!) This shape is the "truncated octahedron," shown below on the right.





With your group standing in a line, practice going through the sequence of 24 permutations dictated by the Hamiltonian cycle you drew above. You may find patterns that help you remember the sequence. **Find an entertaining way to move efficiently through all 24 permutations; your group will demonstrate this to the class!**

Now also add all edges showing additional adjacencies between two permutations that differ by TWO simultaneous switches between the first and second numbers and the third and fourth numbers; for example, 1234 is then adjacent also to 2143, since 1 and 2 switch with each other at the same time that 3 and 4 switch. (Use the vertex labels from the previous page, you do not need to write the labels in here again!). Find and show a different Hamiltonian cycle through all 24 vertices using some of these new edges.