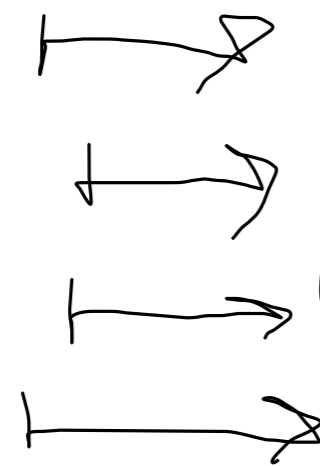


C

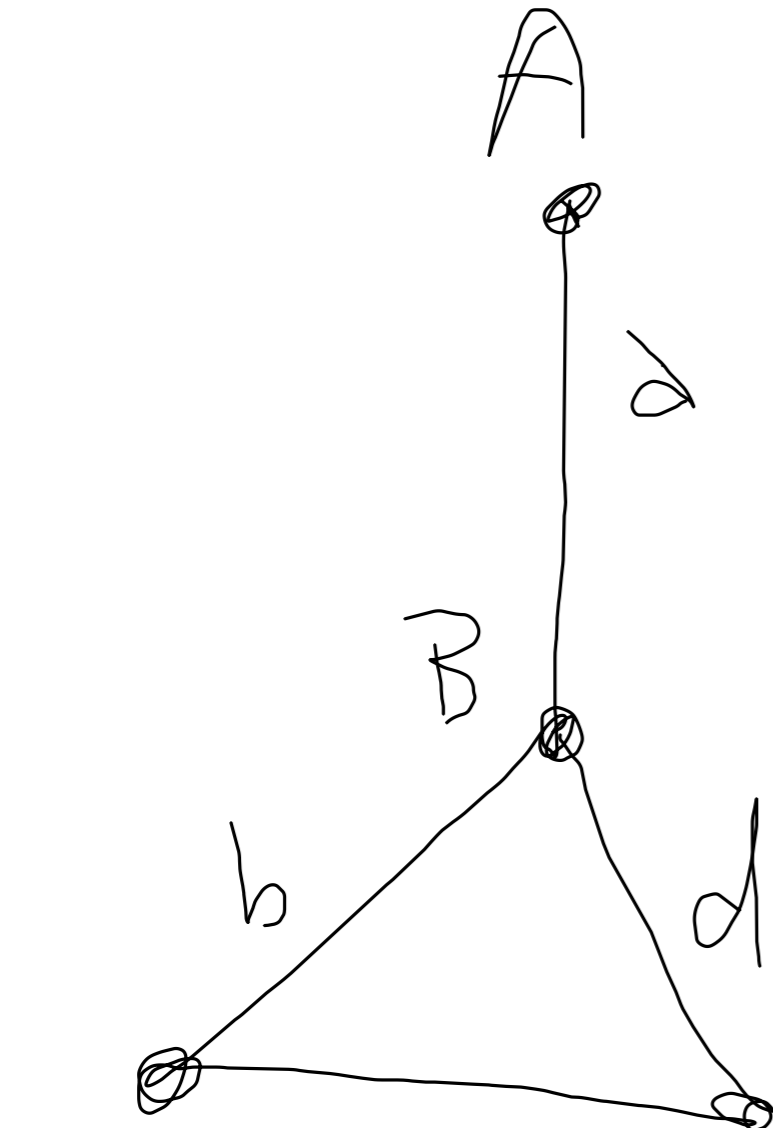
Q

a

D C A B C D



H G B C H



Q

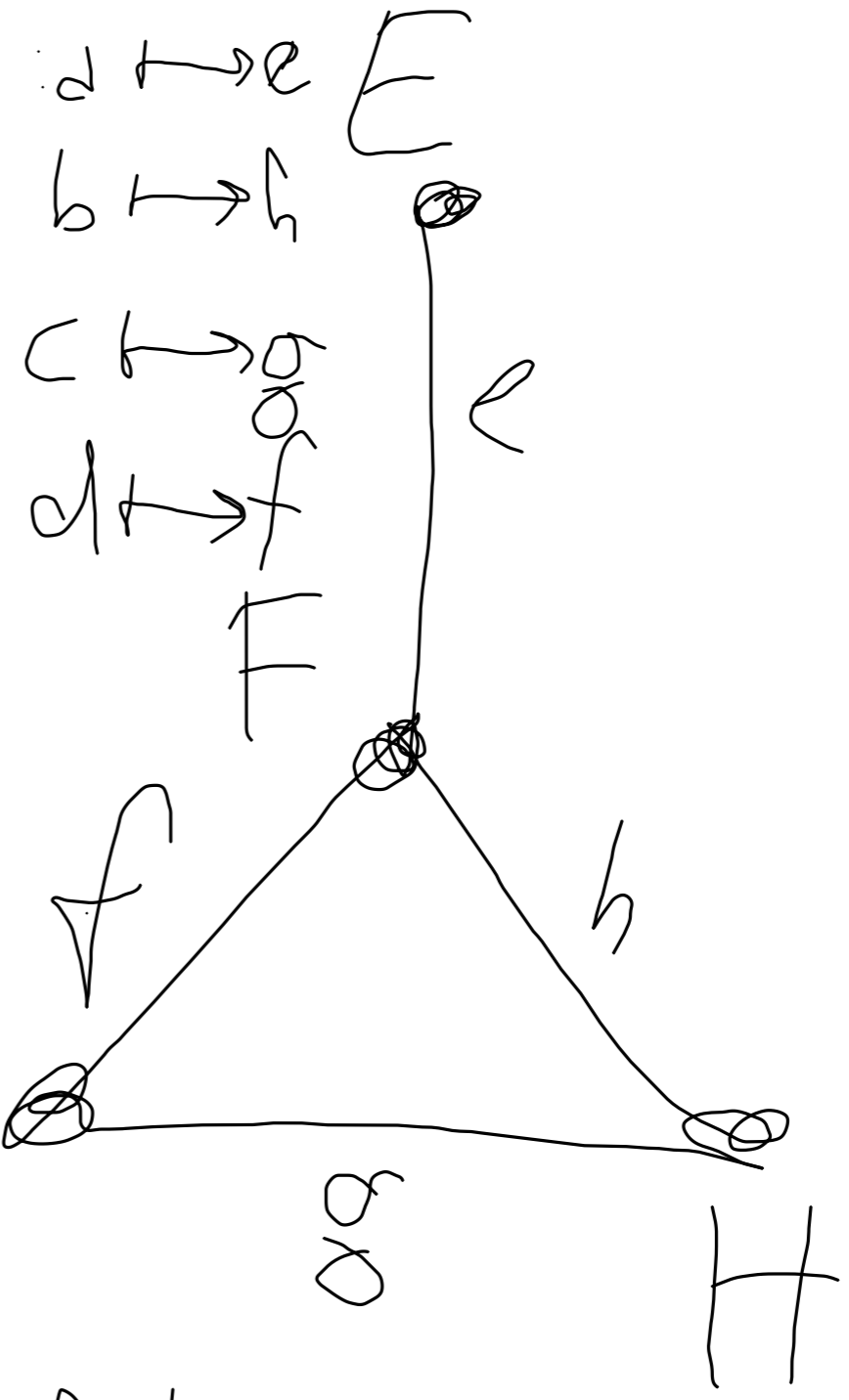
A → E
 B → F
 C → H
 D → G

Q

Q

a → b → c → d
 e → f → g → h

Q



a → e
 b → f
 c → g
 d → h

Tricks

A graph isomorphism

sends loops to loops

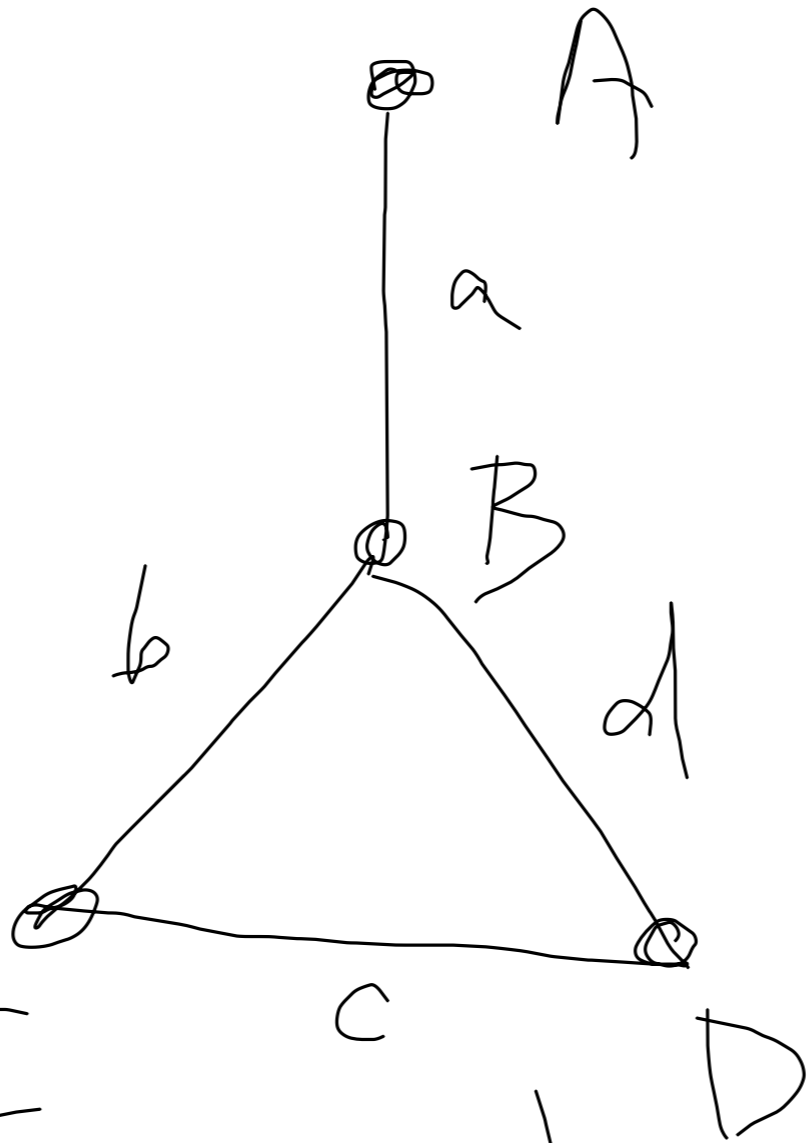
sends multiple edges to multiple edges

sends a vertex of degree k

to a vertex of degree k

sends n vertices to n vertices

m edges to m edges

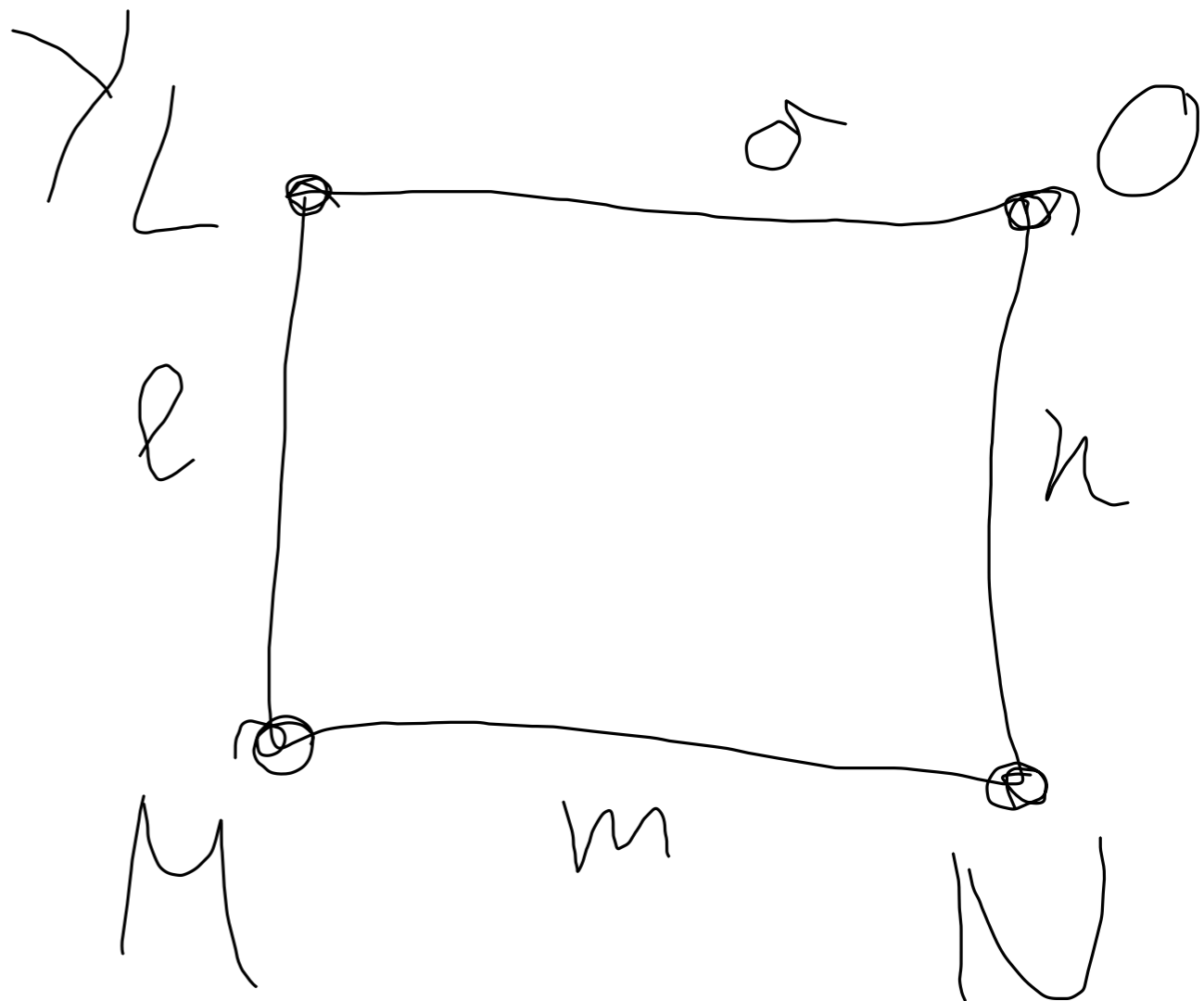
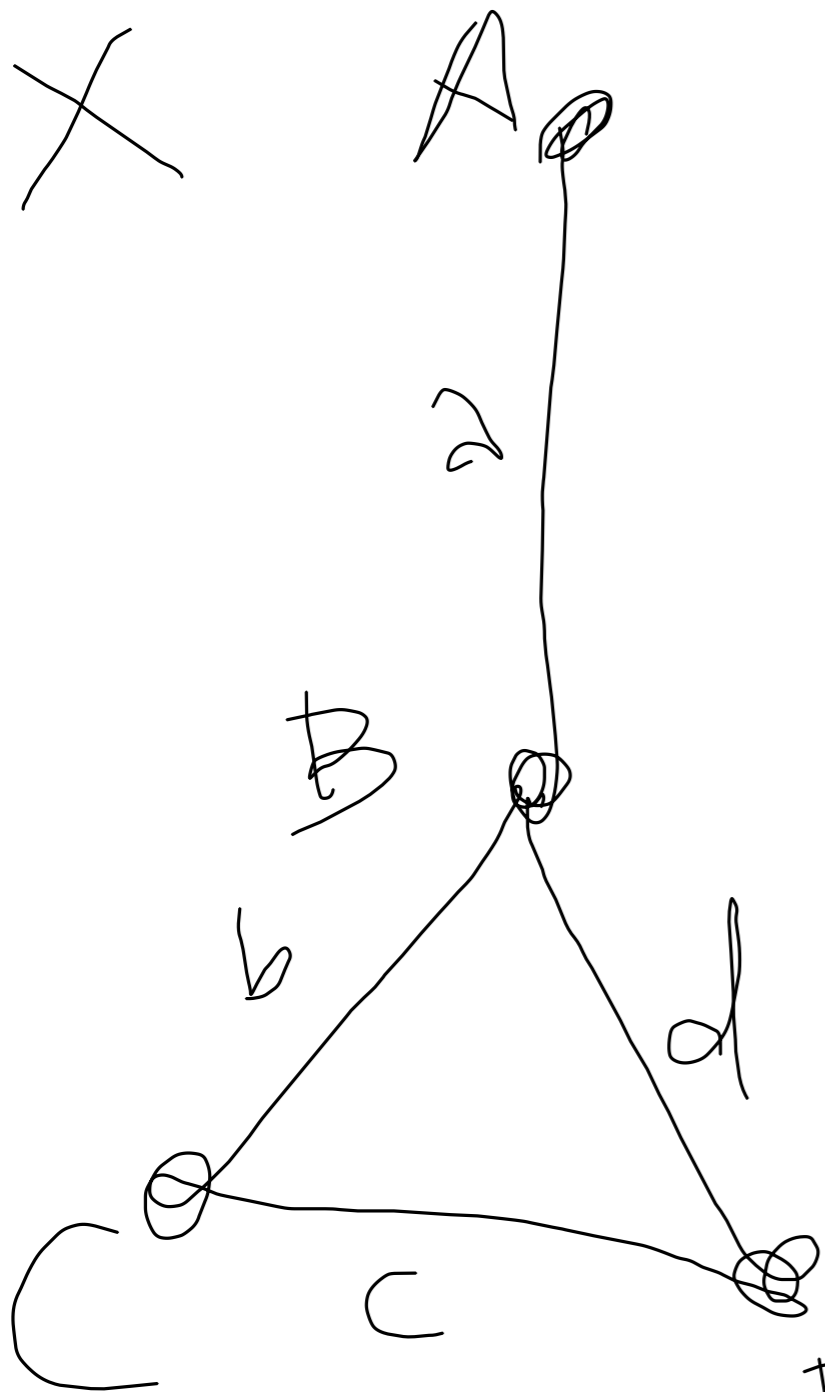


$A \mapsto A$
 $B \mapsto B$
 $C \mapsto C$
 $D \mapsto D$
 Identity

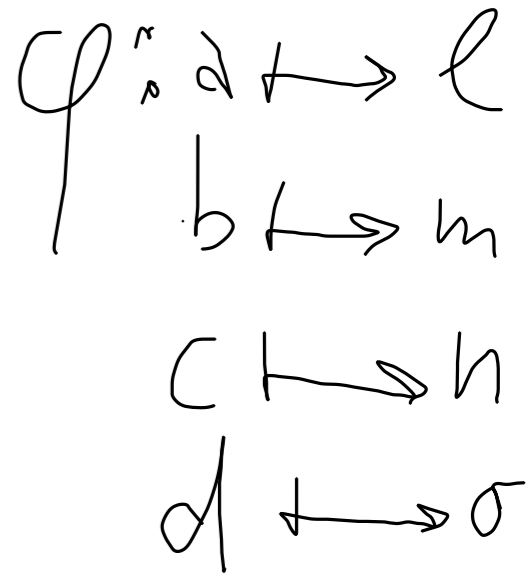
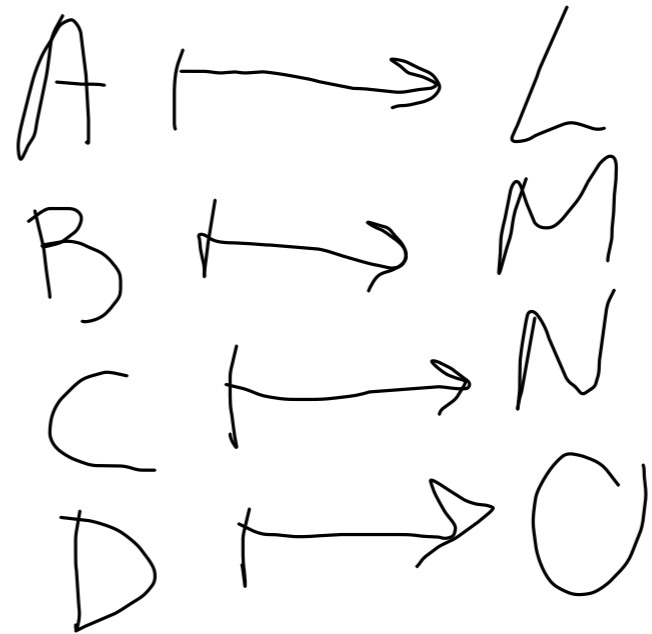
$C \mapsto C$
 $a \mapsto a$
 $b \mapsto b$
 $c \mapsto c$
 $d \mapsto d$

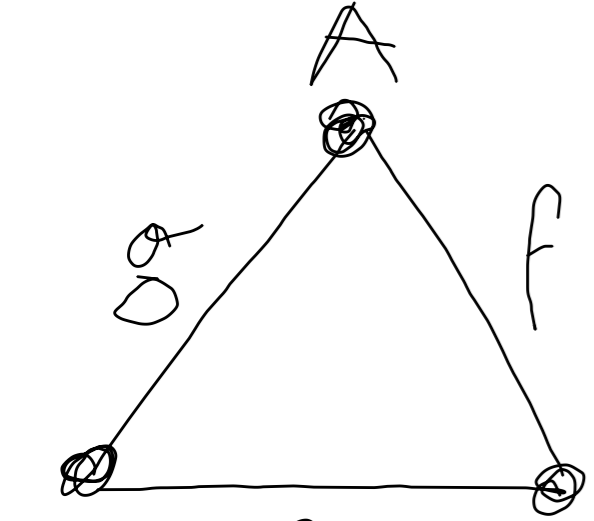
$A \mapsto A$
 $B \mapsto B$
 $C \mapsto D$
 $D \mapsto C$

$a \mapsto a$
 $b \mapsto d$
 $c \mapsto c$
 $d \mapsto d$



$\psi_Y(\varphi(a)) = \{O = \varphi(B)\varphi(D)$
 $\psi_X(a) = \{BD$





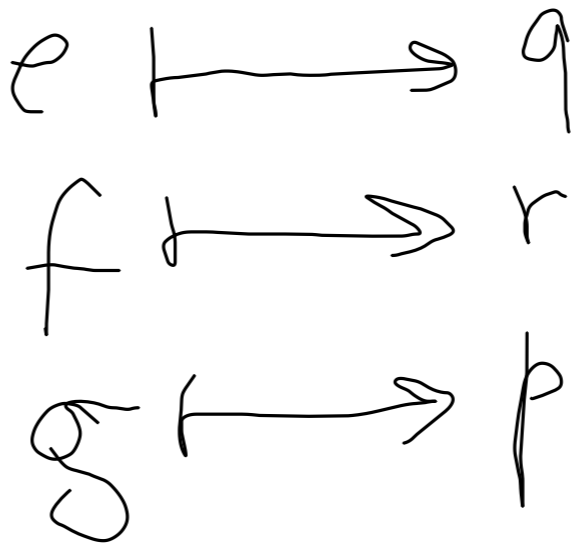
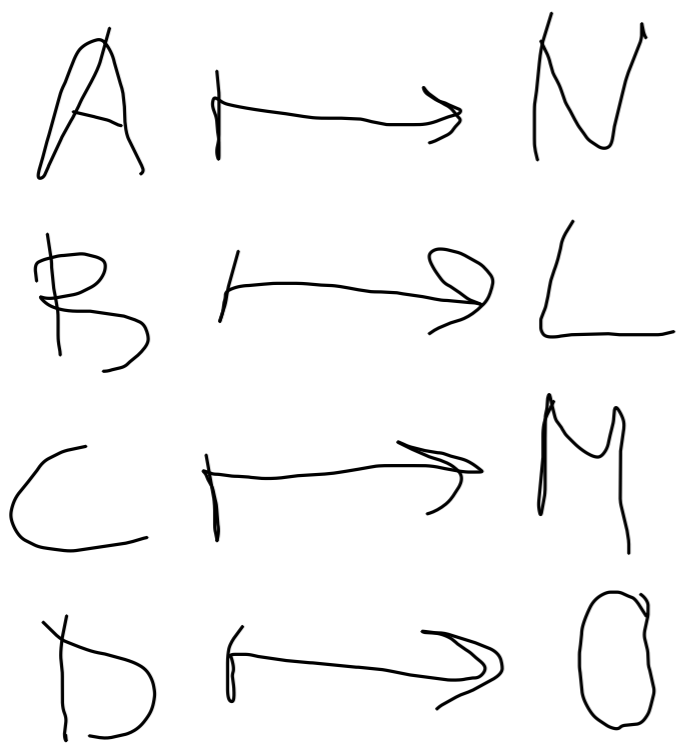
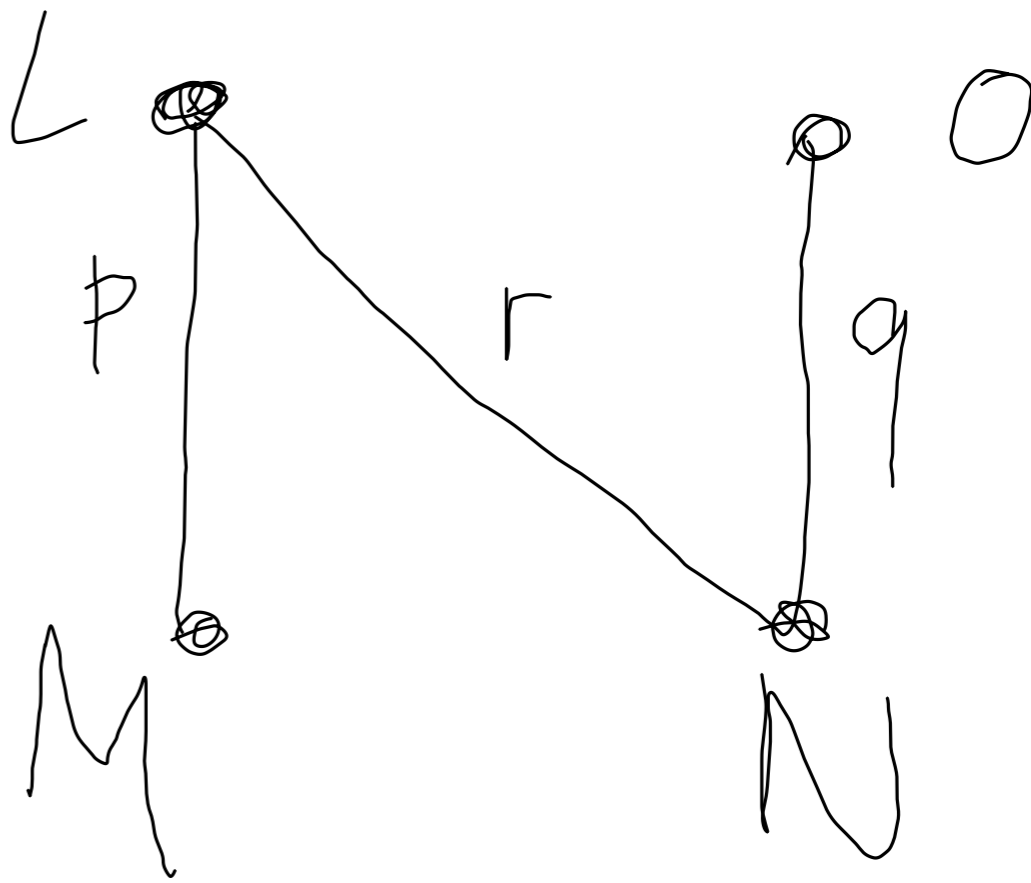
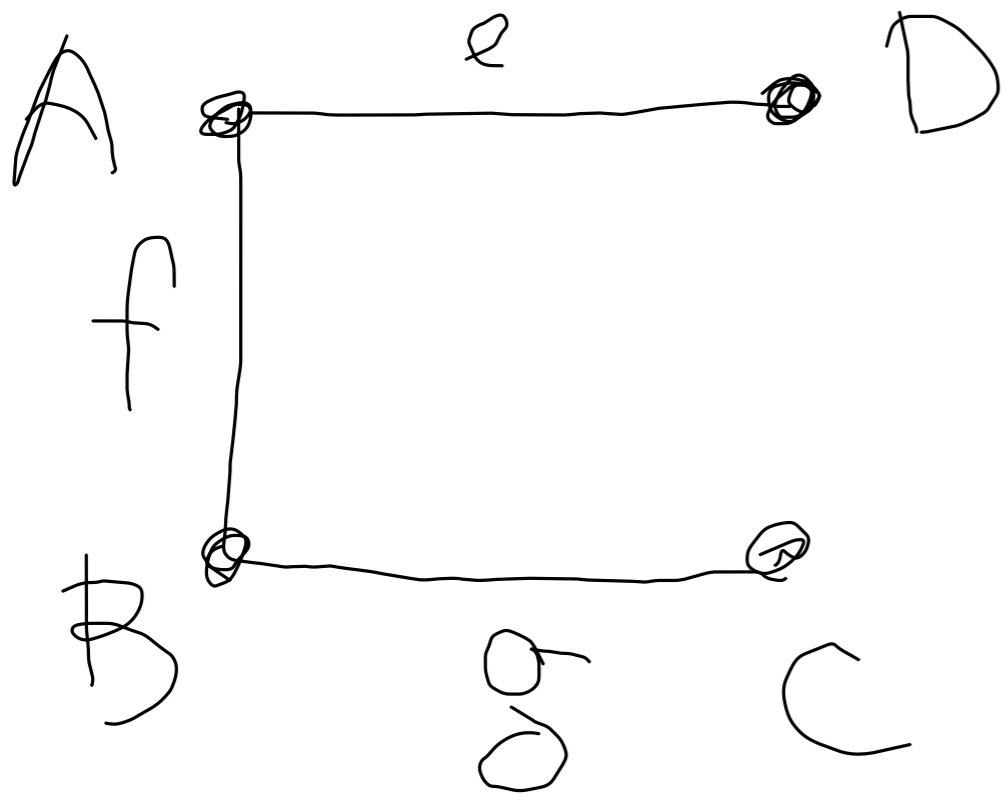
B		C
A	\rightarrow	A
B	\rightarrow	C
C	\rightarrow	B
A	\rightarrow	C
B	\rightarrow	B
C	\rightarrow	A

A	\rightarrow	A
B	\rightarrow	B
C	\rightarrow	C

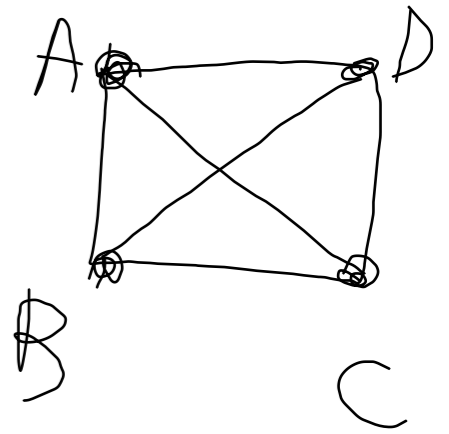
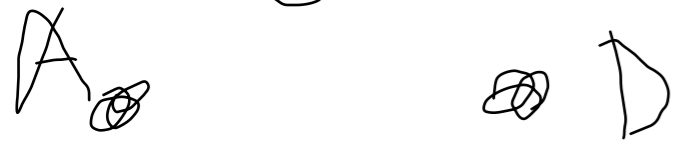
A	\rightarrow	B
B	\rightarrow	C
C	\rightarrow	A

A	\rightarrow	C
C	\rightarrow	B
B	\rightarrow	A

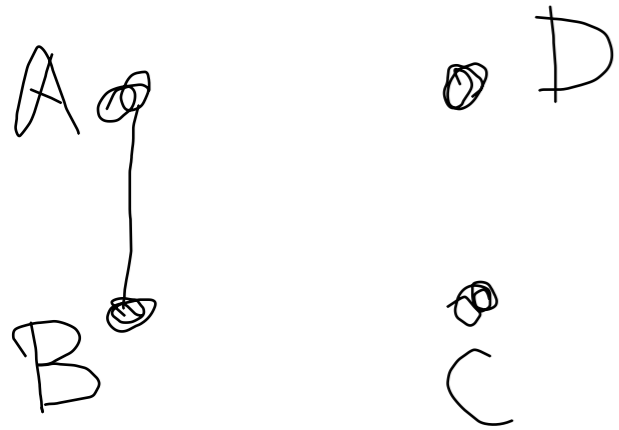
A	\rightarrow	B
B	\rightarrow	A
C	\rightarrow	C
B	\rightarrow	B
C	\rightarrow	A



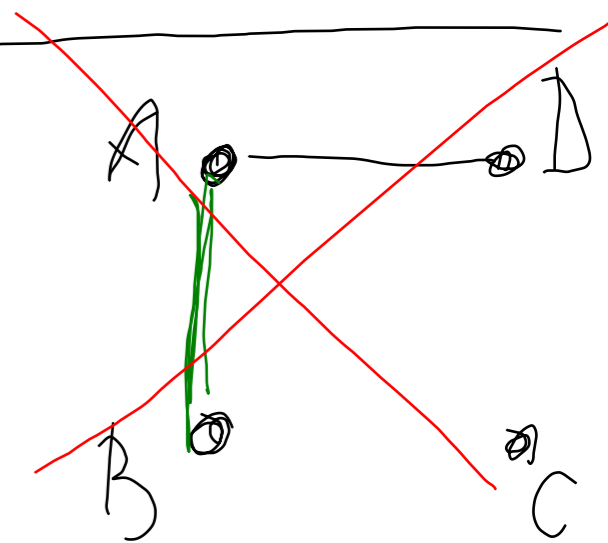
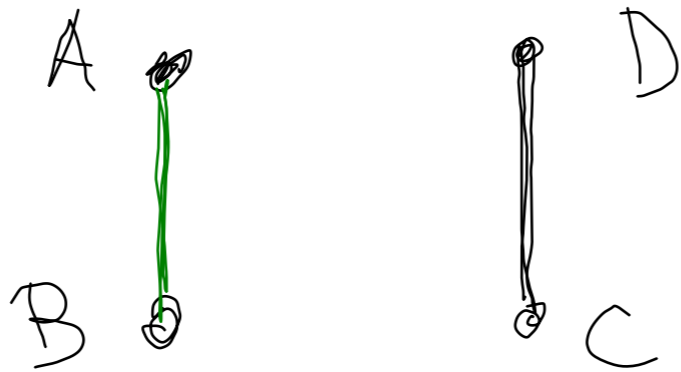
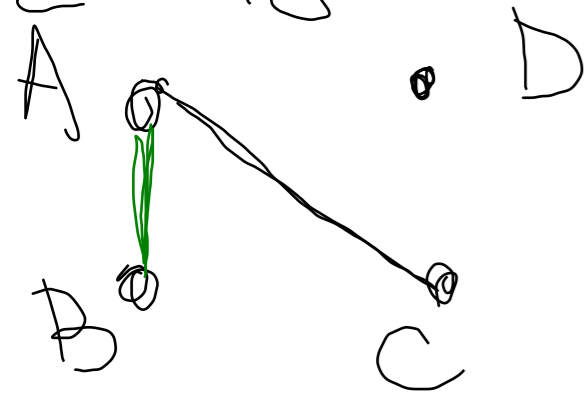
0 edges



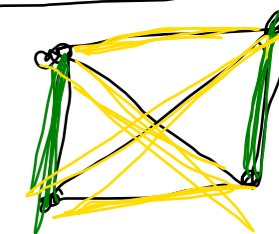
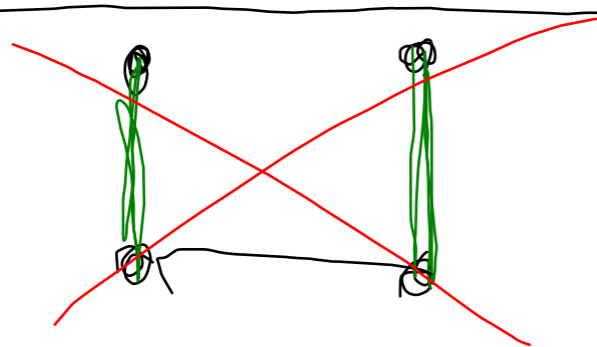
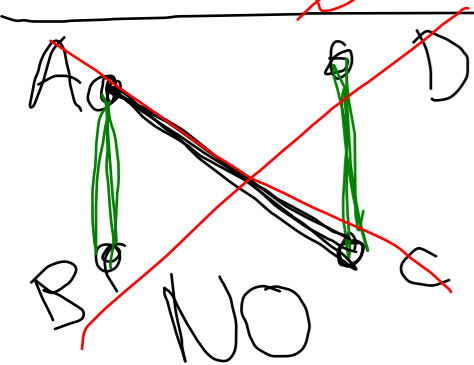
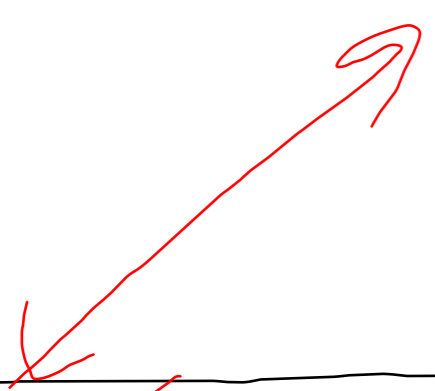
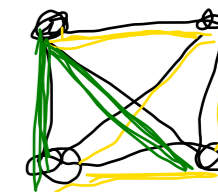
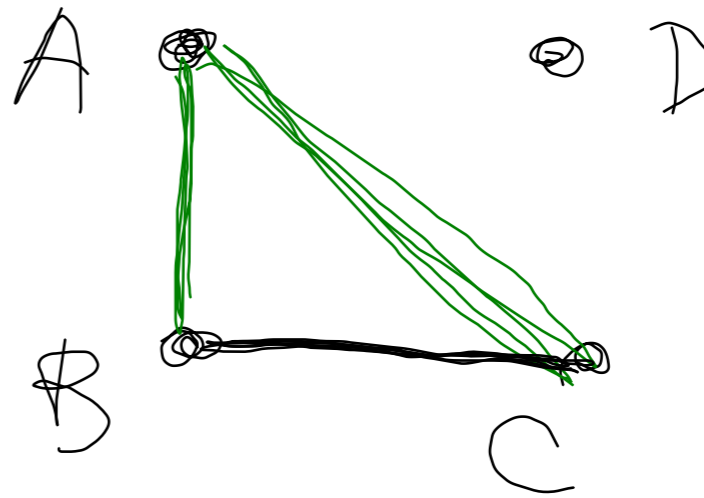
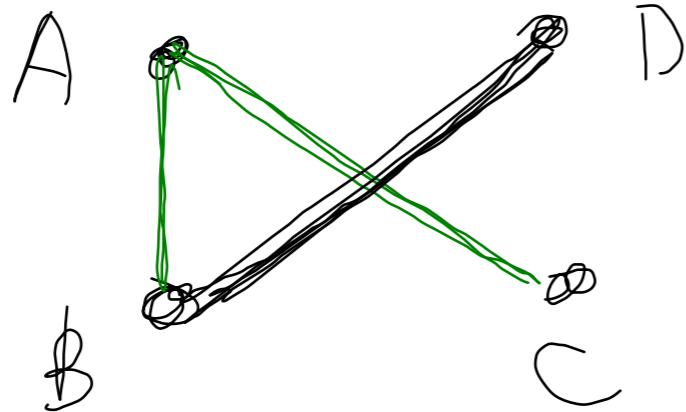
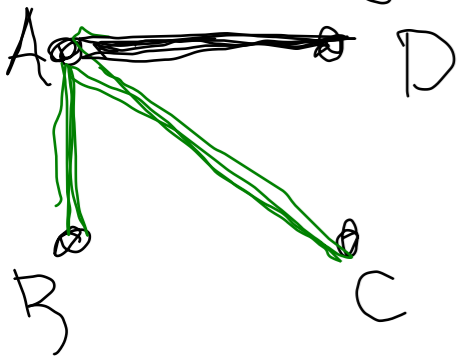
1 edge



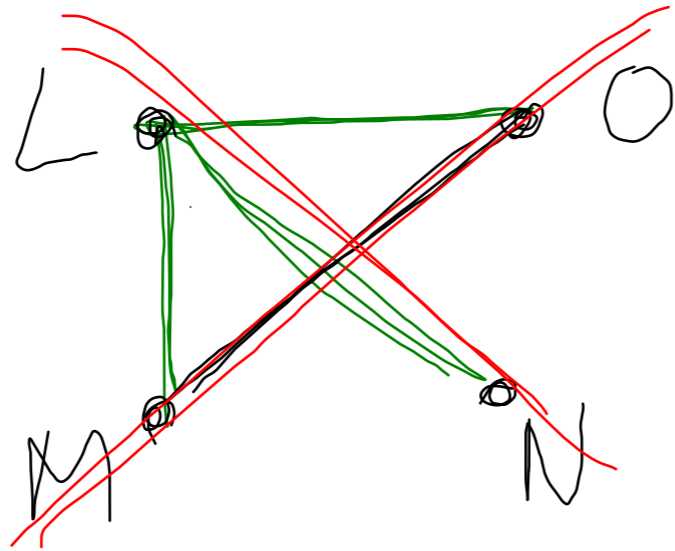
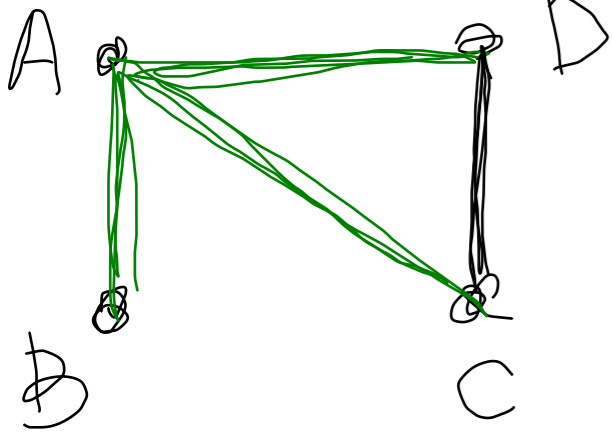
2 edges



3 edges



4 edges

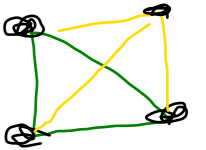
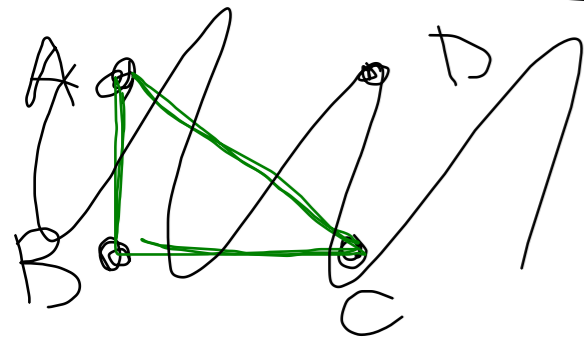
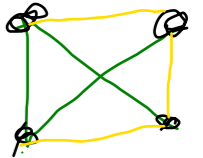
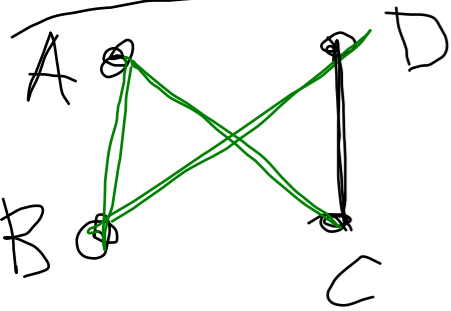
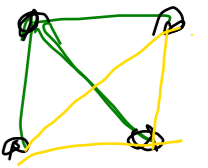


A \longleftrightarrow L

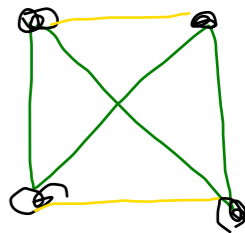
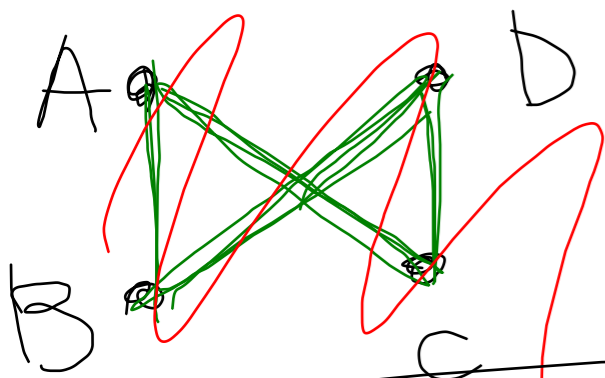
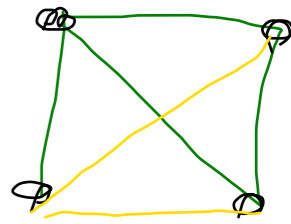
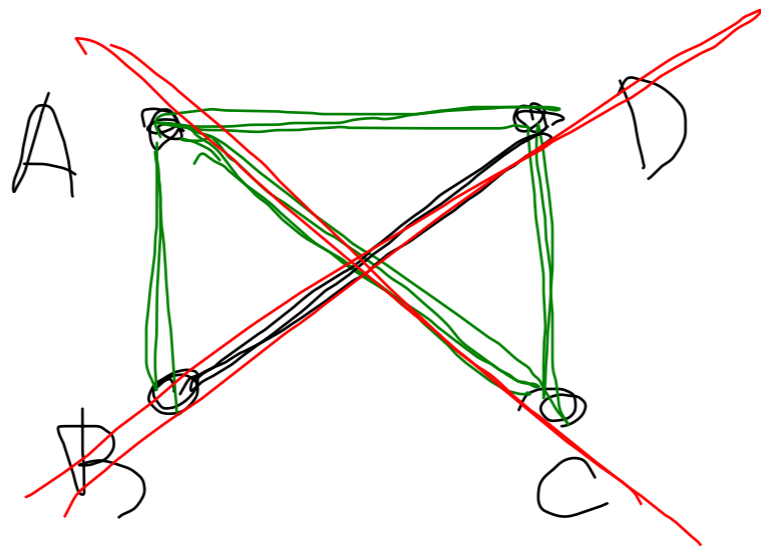
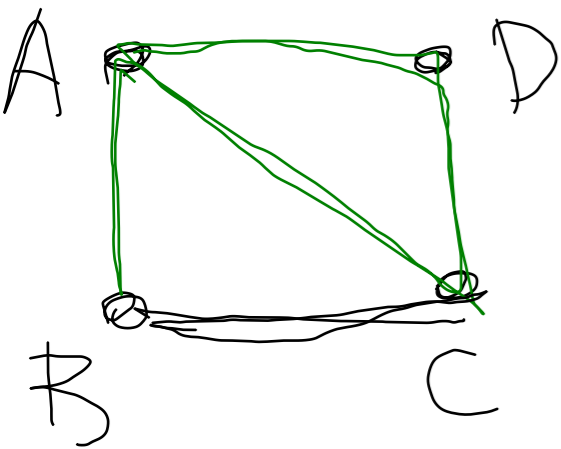
B \longleftrightarrow N

C \longleftrightarrow M O

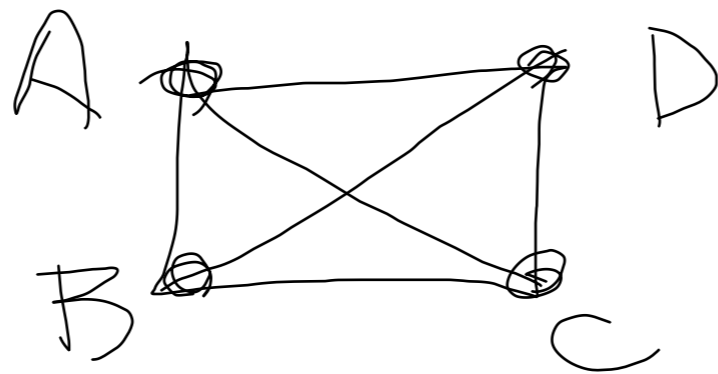
D \longleftrightarrow O M



5 edges



6 edges



Implication

(not A) or B

Definition:

$(\neg A) \vee B$

$A \Rightarrow B$

\sim

"is equivalent"

means

"has the same truth table"

A	B	$\neg A$	$(\neg A) \vee B$
T	T	F	T
T	F	F	F
F	T	T	T
F	F	T	T

the light is on | there is current

WARRENING $A \Rightarrow B$ ~~WARRENING~~ $B \Rightarrow A$

Instead of

$$A \Rightarrow B \sim$$

$$(\neg B) \Rightarrow (\neg A)$$

$$(\neg B) \Rightarrow (\neg A)$$

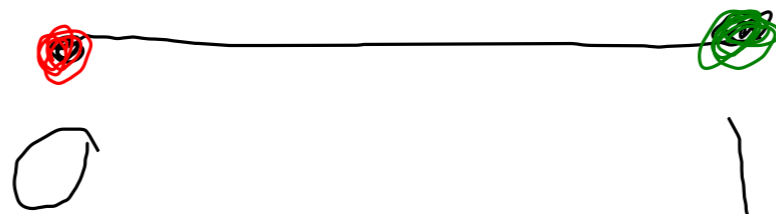
counterpositive of
 $A \Rightarrow B$

$$(\neg(\neg B)) \vee (\neg A)$$

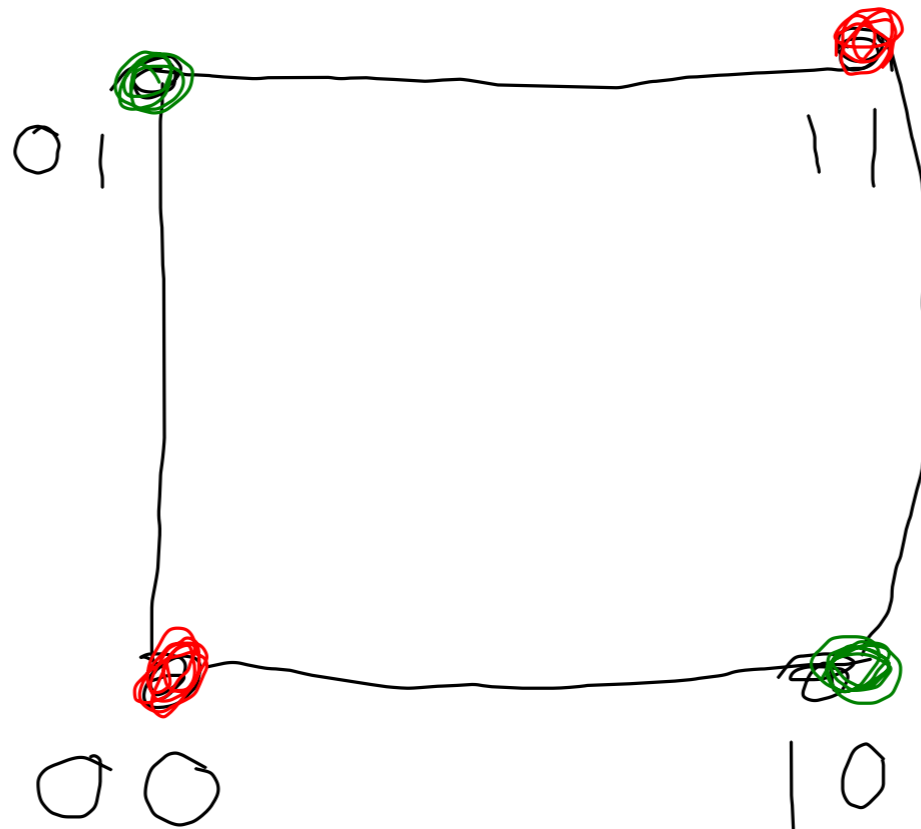
$$B \vee (\neg A)$$

$$\sim (\neg A) \vee B \sim A \Rightarrow B$$

1-cube



2-cube



3-cube

