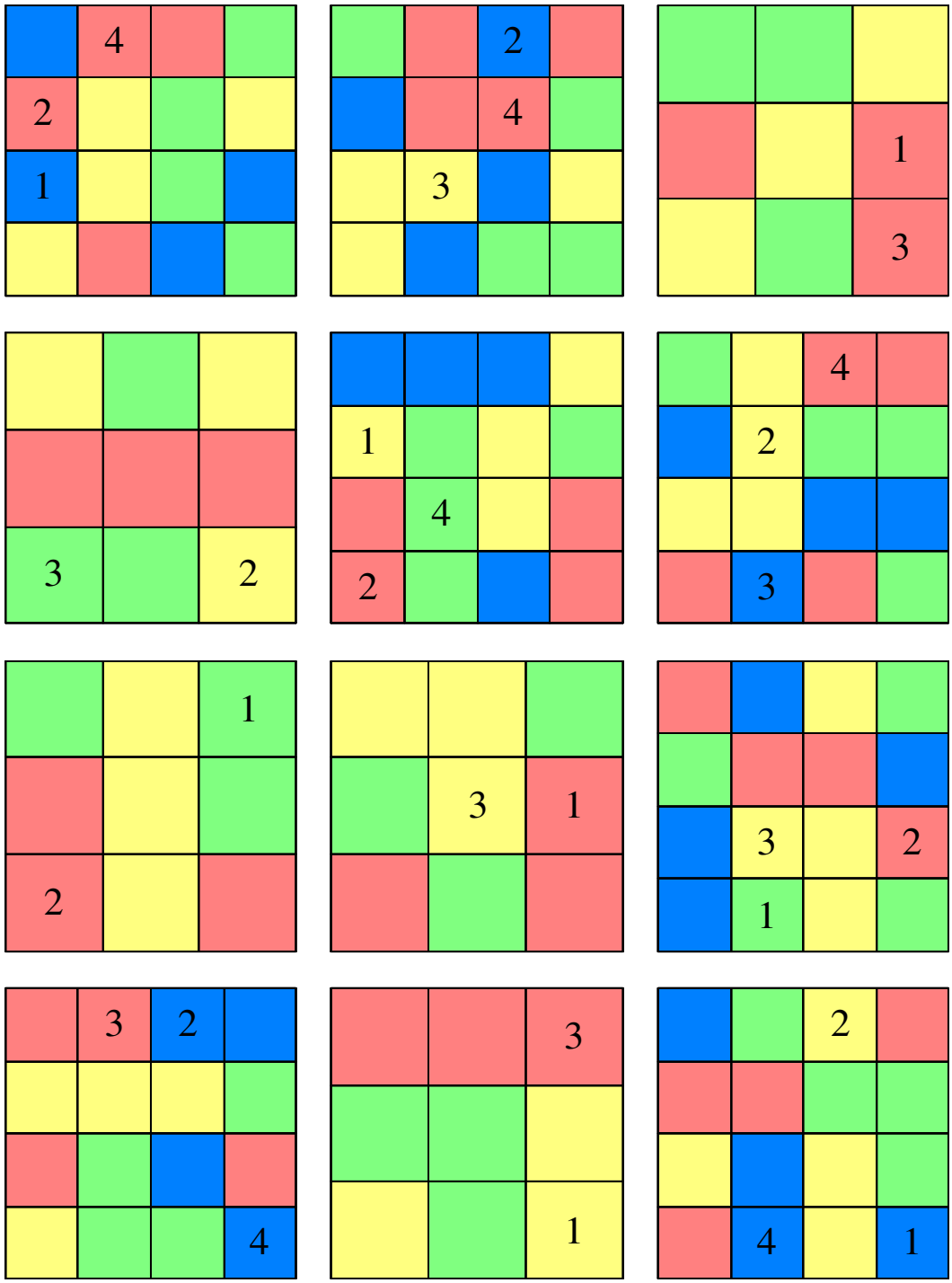
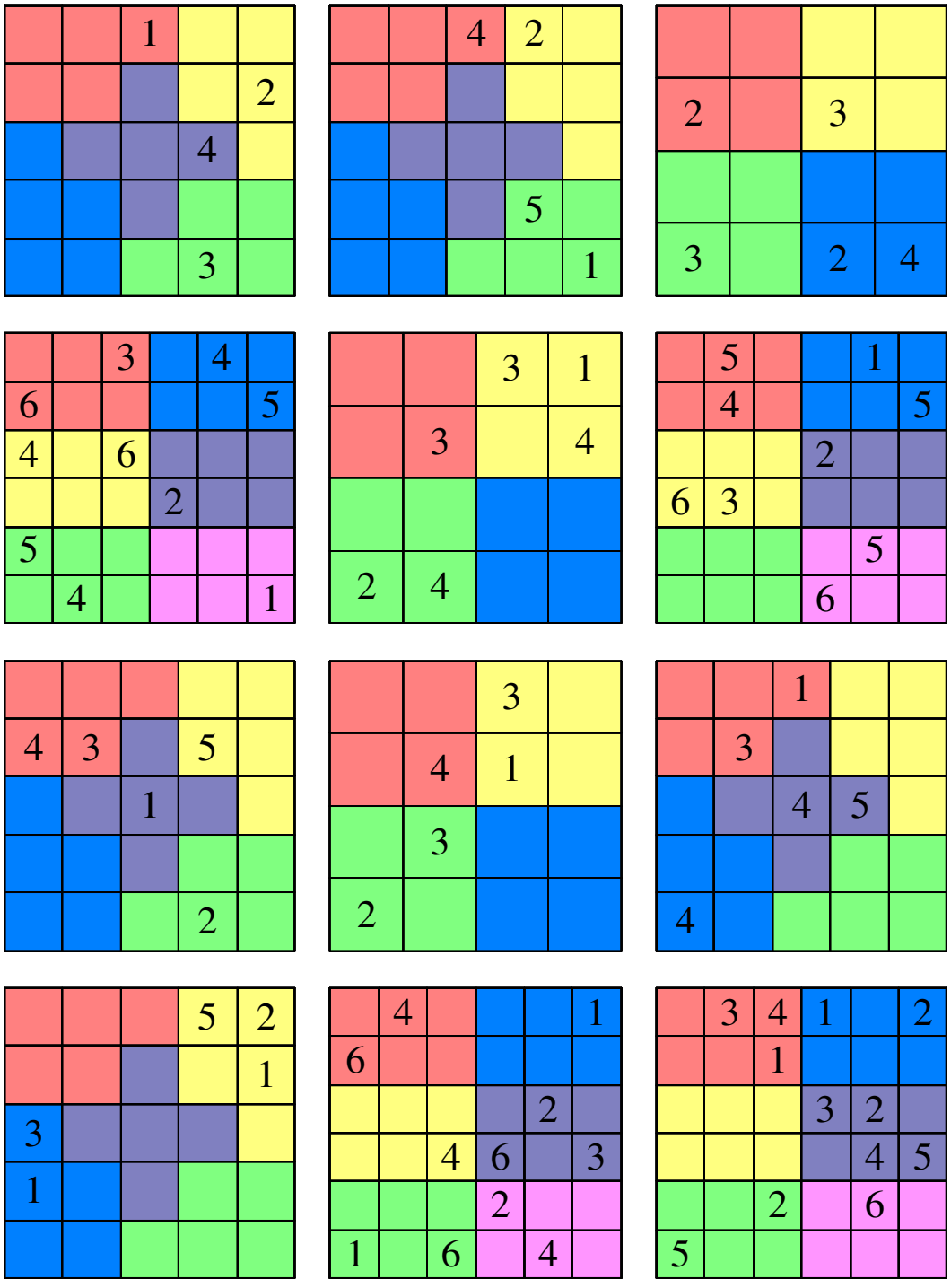
Barvni sudoku

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici, v vsakem stolpcu in v kvadratkih iste barve nastopalo vseh n števil.

1.



2.


1
2
4
3
4 2
5
1
2 3
3 2 4
3 4
6 5
4 6
2
5
4 1
3 1
3 4
2 4
5 1
4 5
2
6 3
5
6
3
4 1
2
4 3 5
1
2
3
4 1
3
2
1
3 4 5
4
5 2
1
3
1
6 4 1
6 2
4 6 3
2
1 6 4
3 4 1 2
1
3 2
4 5
2 6
5

Latinski kvadrati

V n × n kvadratkov moraš vpisati začetne številke 1, 2, 3, … tako, da bo v vsaki vrstici, v vsakem stolpcu nastopalo vseh n številk.

	2		3	
3		4		
	5	2		
1				5

				4
	2			
	1	4	2	
5				
2		1		

		1	3
		4	
3			
1			

2			5	
5				3
		4		
	1	3		

			1
	4		
1			2

	2		
3		4	
			1
			4

4				5
				2
		4		
5			1	
2	5		4	

	1	4		
			1	5
5	3		2	
		3		

2			1
	1		
4	3		

		2	4
		4	
	1		

			2	4
3		5		
	2			
			1	
				3

1	2		
		1	
4			2

Sudoku s črkami

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici, v vsakem stolpcu in v kvadratkih z isto črko nastopalo vseh n števil.

D	C	D	A 2
A 3	B	B	D 4
C	A	B	C
A	B	D	C

A	A	B	B
B	D	D	A
D	A	B	C 3
C 2	C	D	C 4

C	C 2	D 4	B
A	B	A	D
C	D	B	B 1
A	D	C	A

A	A 2	A	B
B	D	C	B
C 4	D	D	D
C 3	B	A	C

B	C 2	B	C
A	D	D	C
A 4	D	D	B
A	B 1	A	C

C	A	D	A
D	A	B	B 1
D 3	C	D	C
B 2	A	B	C

A	A	D 2	A
B	C	C	B
A	C 1	D 4	B
C	D	D	B

B	C	C 4	B
D	D	C	C
A	D	A 1	A
B	D 2	A	B

D	B 1	D 2	C 3
C	A	C	C
B	A	A	B
B	A	D	D

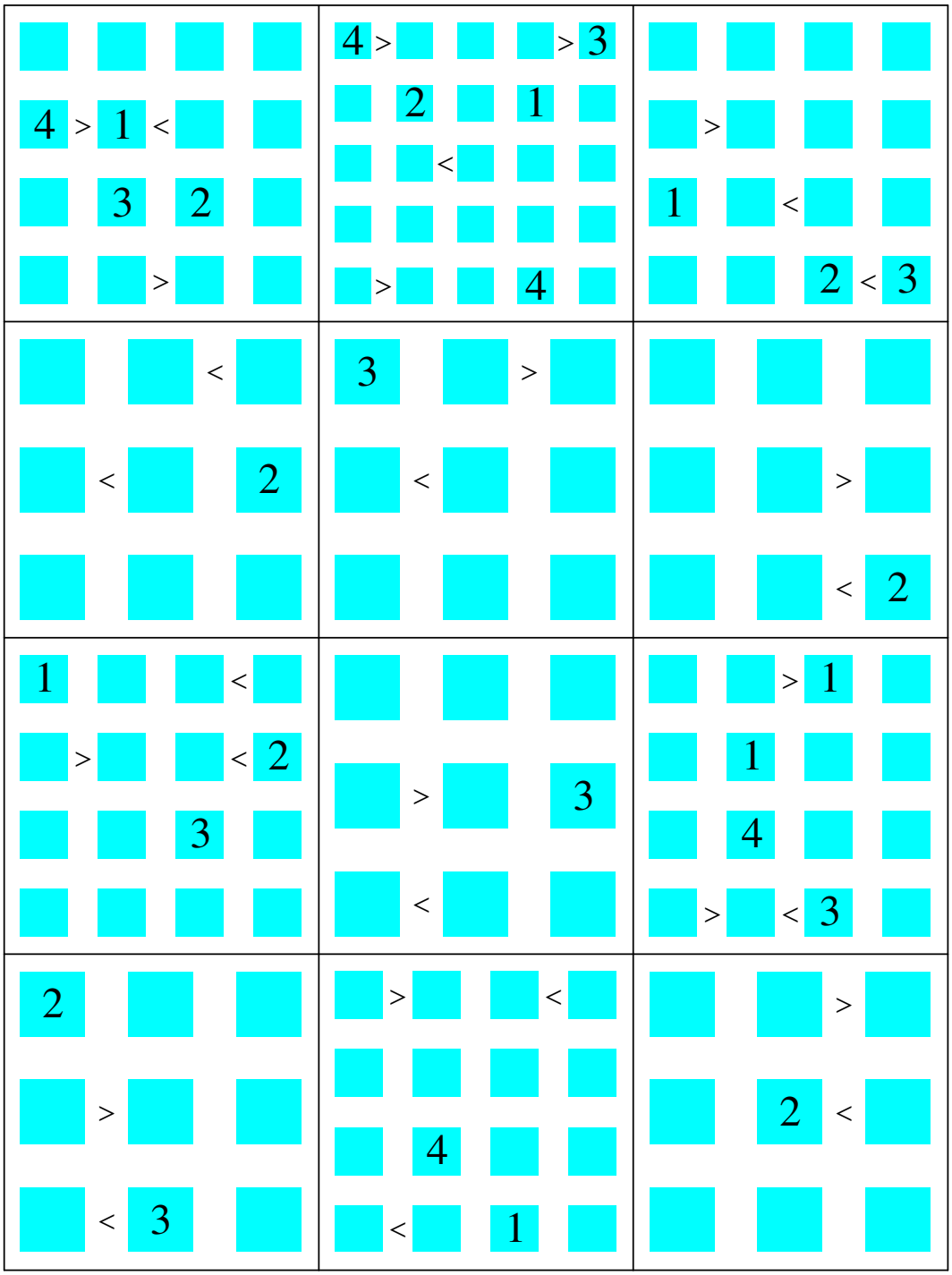
A	A 4	B	A 2
D 3	B	C	C
B	C	C	D
D	B	D	A

B	D	A	B
C	D	D	C
B 3	C	C 4	D
A 4	B 2	A	A

D	D	B 3	C
B	B	A	A
D	D 4	C 1	C
B	C	A 4	A

Futoshiki

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici in v vsakem stolpcu nastopalo vseh n števil ter da bodo izpolnjene vse relacije.



Rdeči kvadratki

Naloga reševalca je, da poišče vse skrite rdeče kvadratke in jih označi z R. Pri tem veljata naslednji pravili: a) Vsako število v preglednici pove, koliko sosednjih kvadratkov je rdečih. Kvadratek je soseden kvadratku, če imata skupno stranico ali oglišče. b) Kvadratki s številkami niso rdeči.

	1			1
			2	
	0			0
0			0	

	0			0
		2		
1				
	2		1	

	2	2		1
1	2			2
				1
0				1
		1		

			0	
1		1		
		0		
	1	1	0	

0			2	
			4	3
		3		
	1	2		2

1	2		1	
		1		
	1		0	
1				2
		2		

	1			
				1
		4	4	
1				1
0			2	

				0
	2			
			1	
2	3	2		0
	1			

	1			
	3	1		1
	3			
	2	1	2	
				1

	1		1	0
1	2			
	3		1	
	2			

1			1	
	4	1		
			0	
	1			

	1	0	0	
			1	
1				
	0	0	1	

Lastnosti lika

Ugotoviti moramo lastnosti lika. Lik ima obliko (trikotnik, kvadrat, petkotnik), velikost (majhen, srednji, velik), barvo (rumen, oranžen, moder) in debelino (tanek, debel). Lahko si izberemo tudi le nekaj prvih lastnosti. Dano je nekaj stavkov v simbolni obliki in njihova resničnostna vrednost (R za resničen in N za neresničen). Stavki so lahko enostavni, na primer, "Rumen" pomeni, da je lik rumen, ali sestavljeni, na primer, "Velik $\wedge$ Moder" pomeni, da je lik velik in moder; "Petkotnik $\vee$ Tanek", pomeni, da je lik petkotnik ali tanek;
"Debel $\veebar$ Oranžen" pomeni, da je lik ali debel ali oranžen; ; "Tanek $\Rightarrow$ Rumen" pomeni: če je lik tanek, potem je rumen; "Moder $\Leftrightarrow$ Velik" pomeni: lik je moder, če in samo če je velik).

Oranžen	N
Trikotnik $\wedge$ Oranžen	N
Kvadrat $\veebar$ Petkotnik	N
Rumen $\wedge$ Velik	R

oblika	
velikost	
barva	

Majhen	N
Srednji	N
Kvadrat $\veebar$ Velik	N

oblika	
velikost	

Kvadrat $\wedge$ Trikotnik	N
Majhen $\veebar$ Petkotnik	N
Srednji $\veebar$ Velik	N

oblika	
velikost	

Debel $\Leftrightarrow$ Trikotnik	N
Petkotnik $\Rightarrow$ Velik	R
Tanek $\Rightarrow$ Velik	N
Majhen $\wedge$ Oranžen	R
Velik $\Rightarrow$ Majhen	R

oblika	
velikost	
barva	
debelina	

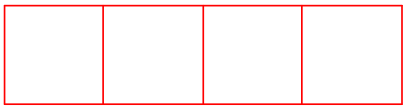
Določi razpored znakov



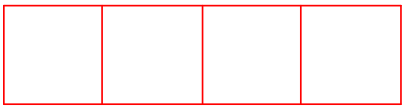
A NI LEVO OD C.
B JE SOSEDA OD C.
A JE SOSEDA OD C.



B JE SOSEDA OD C.
A NI SOSEDA OD B.
A NI LEVO OD C.



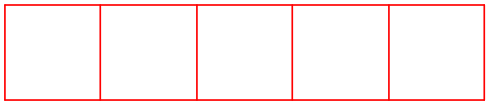
A NI LEVO OD D.
C NI SOSEDA OD D.
B NI DESNO OD C.
A NI DESNO OD B.



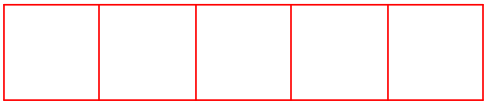
A NI SOSEDA OD D.
A JE LEVO OD B.
A NI LEVO OD D.
B NI SOSEDA OD C.



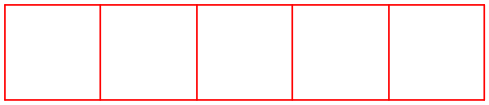
NI LEVO OD ♣.
NI SOSED OD .
NI SOSED OD .
NI LEVO OD .
JE LEVO OD ♣.



2 NI LEVO OD 5.
1 NI DESNO OD 5.
2 NI SOSEDA OD 5.
1 JE SOSEDA OD 4.
4 NI SOSEDA OD 5.



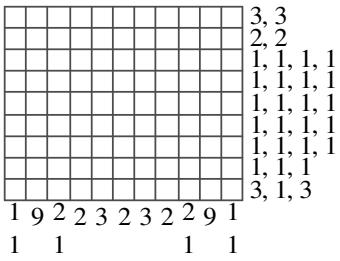
3 JE DESNO OD 4.
3 NI LEVO OD 4.
2 JE LEVO OD 4.
1 JE LEVO OD 5.
1 NI LEVO OD 3.
4 NI SOSEDA OD 5.

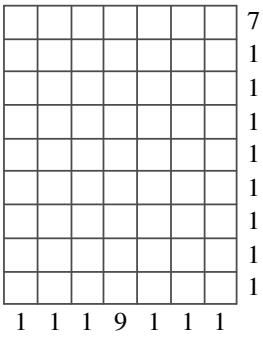


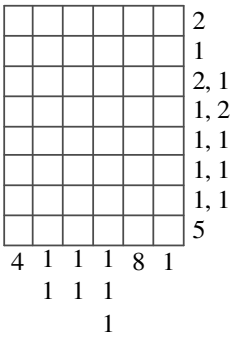
NI SOSED OD .
NI DESNO OD .
JE LEVO OD ♣.
NI SOSED OD ♣.
JE DESNO OD ♣.
NI LEVO OD ♣.

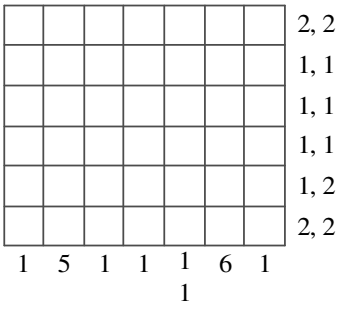
Gobelini

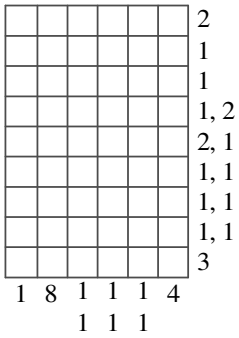
Kvadratke v razpredelnici moraš pobarvati sivo tako, da bo zaporedje sivih pasov v vrstici ustrezalo zaporedju števil na desni in da bo zaporedje sivih pasov v stolpcu ustrezalo zaporedju števil pod njim.

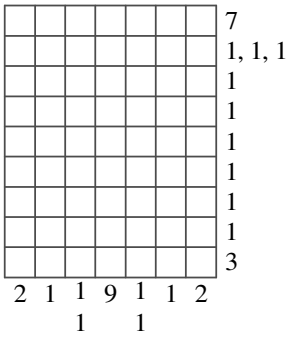


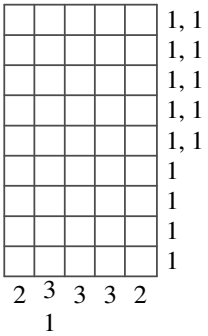


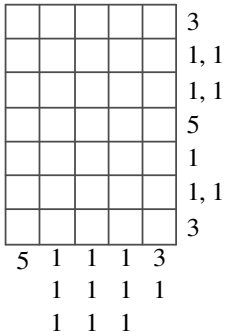


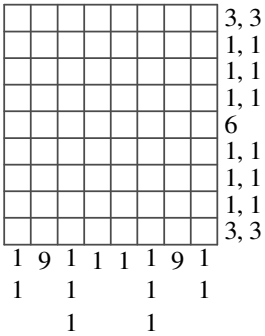


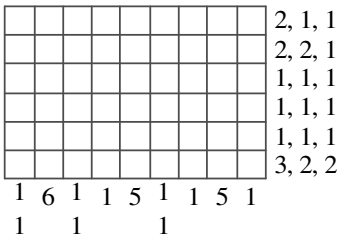


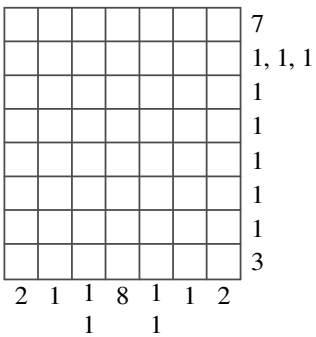


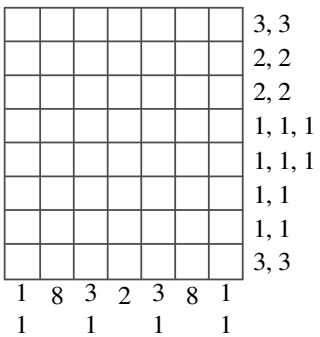






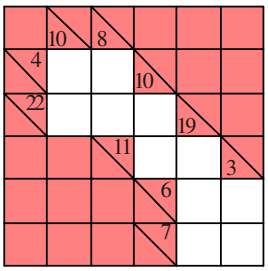


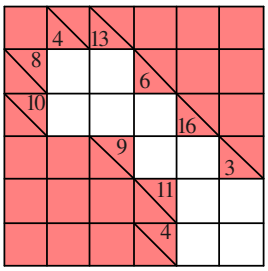


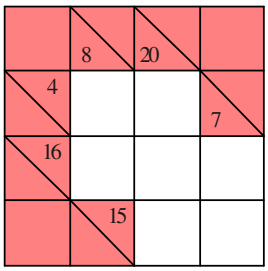


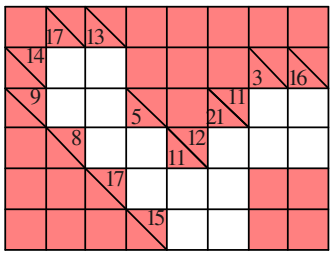
Križne vsote

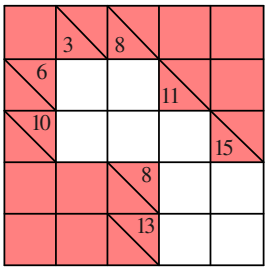
Naloga reševalca je, da izpolni bele kvadratke s števkami od 1 do 9 tako, da je vsota števk v zaporednih belih kvadratkih po vrsticah in stolpcih enaka številu, ki je zapisano v rdečem kvadratku na začetku vrstice (stolpca) nad (pod) diagonalo. Pri tem pa morajo biti vse števke v posamezni vrstici (stolpcu) različne.

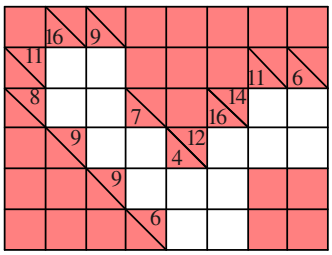


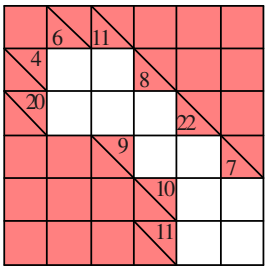


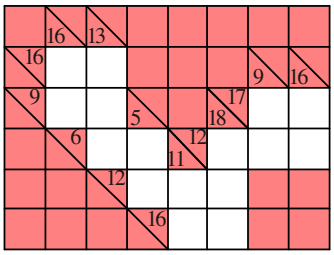


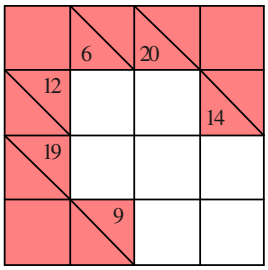


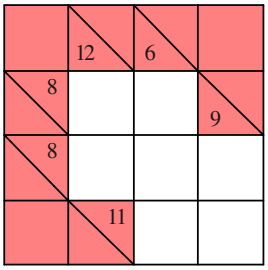


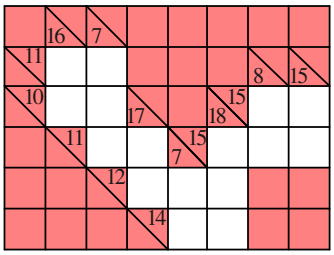


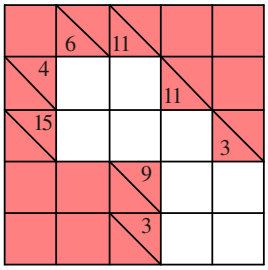






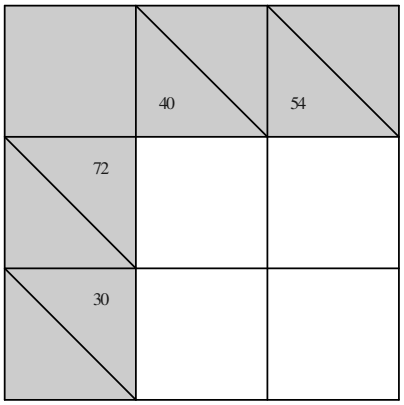


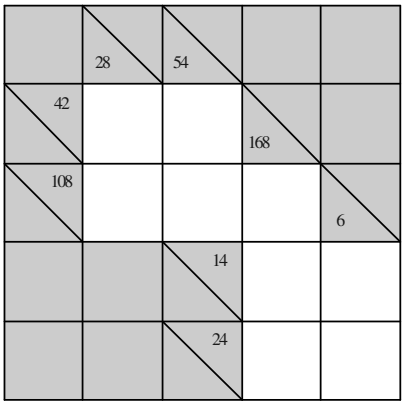


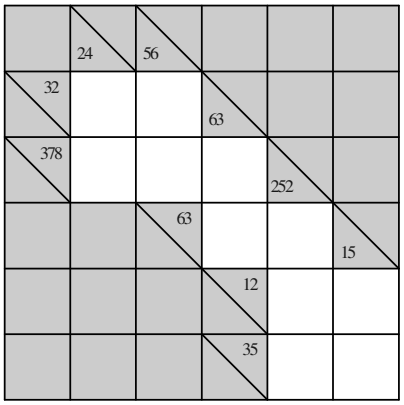


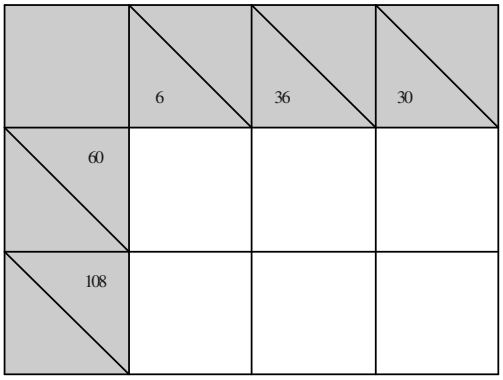
Križni produkti

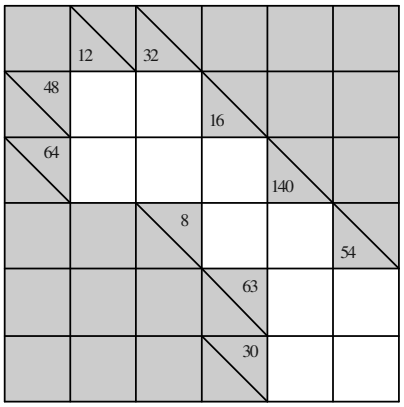
Naloga reševalca je, da izpolni bele kvadratke s števkami od 2 do 9 tako, da bo zmnožek števk v zaporednih belih kvadratkih po vrsticah in stolpcih enak številu, ki je zapisano v sivem kvadratku na začetku vrstice (stolpca) nad (pod) diagonalo. Pri tem pa morajo biti vse števke v posamezni vrstici (stolpcu) različne.

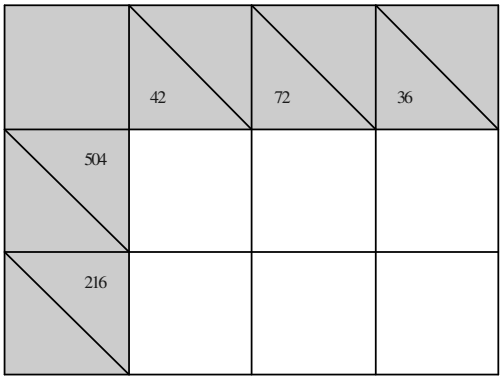






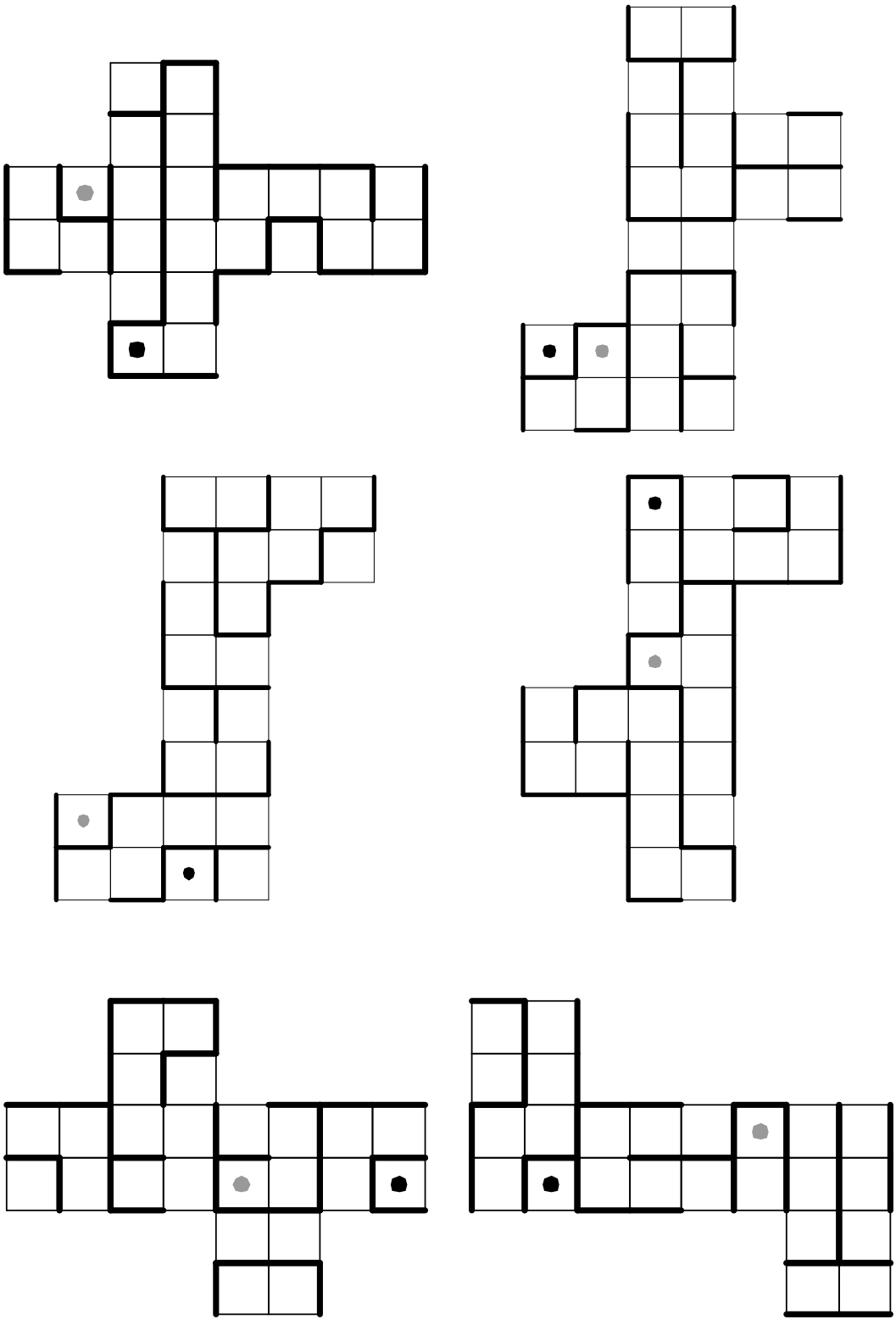






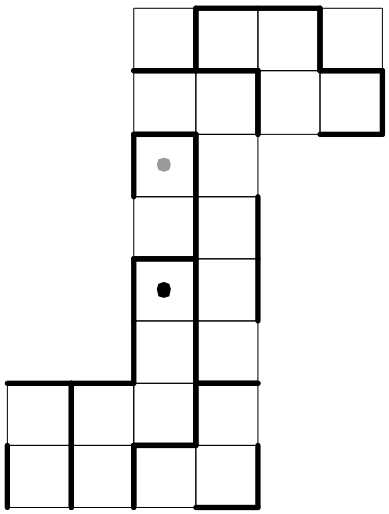
Labirint na kocki

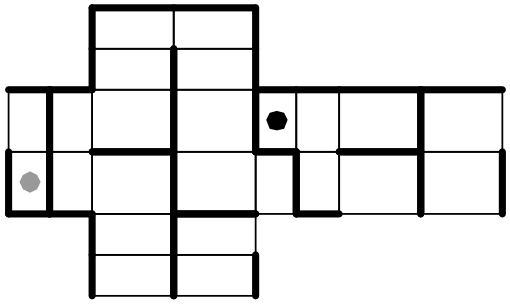
Poveži točki na kocki:

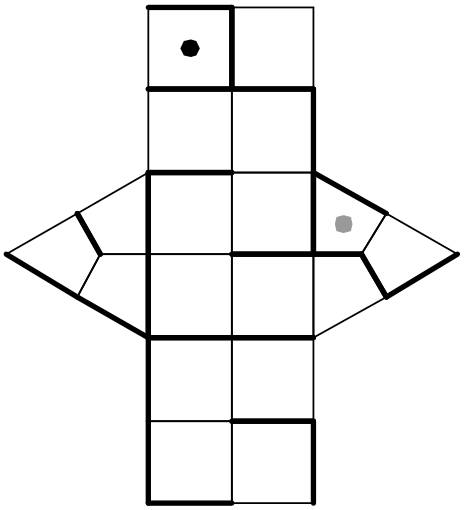


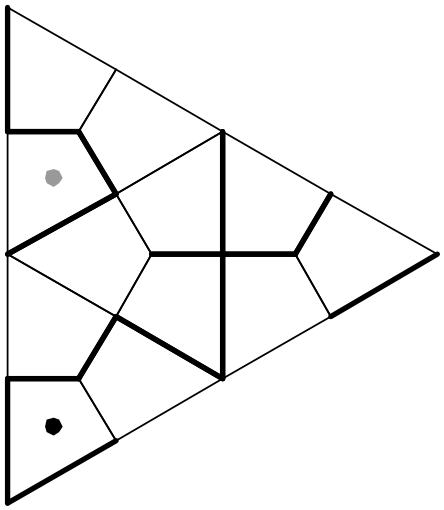
Labirinti na enostavnih poliedrih

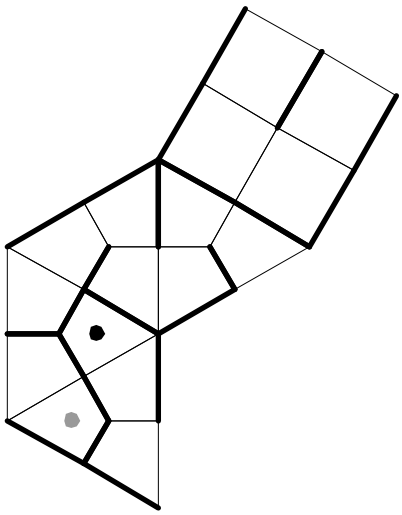
Poveži točki na poliedru:

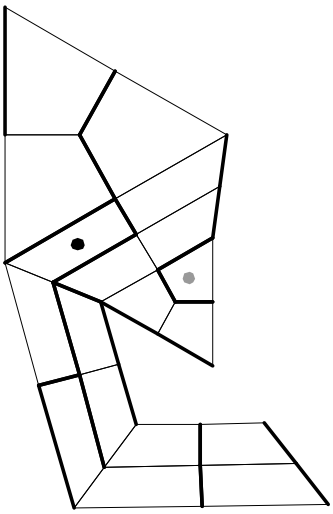




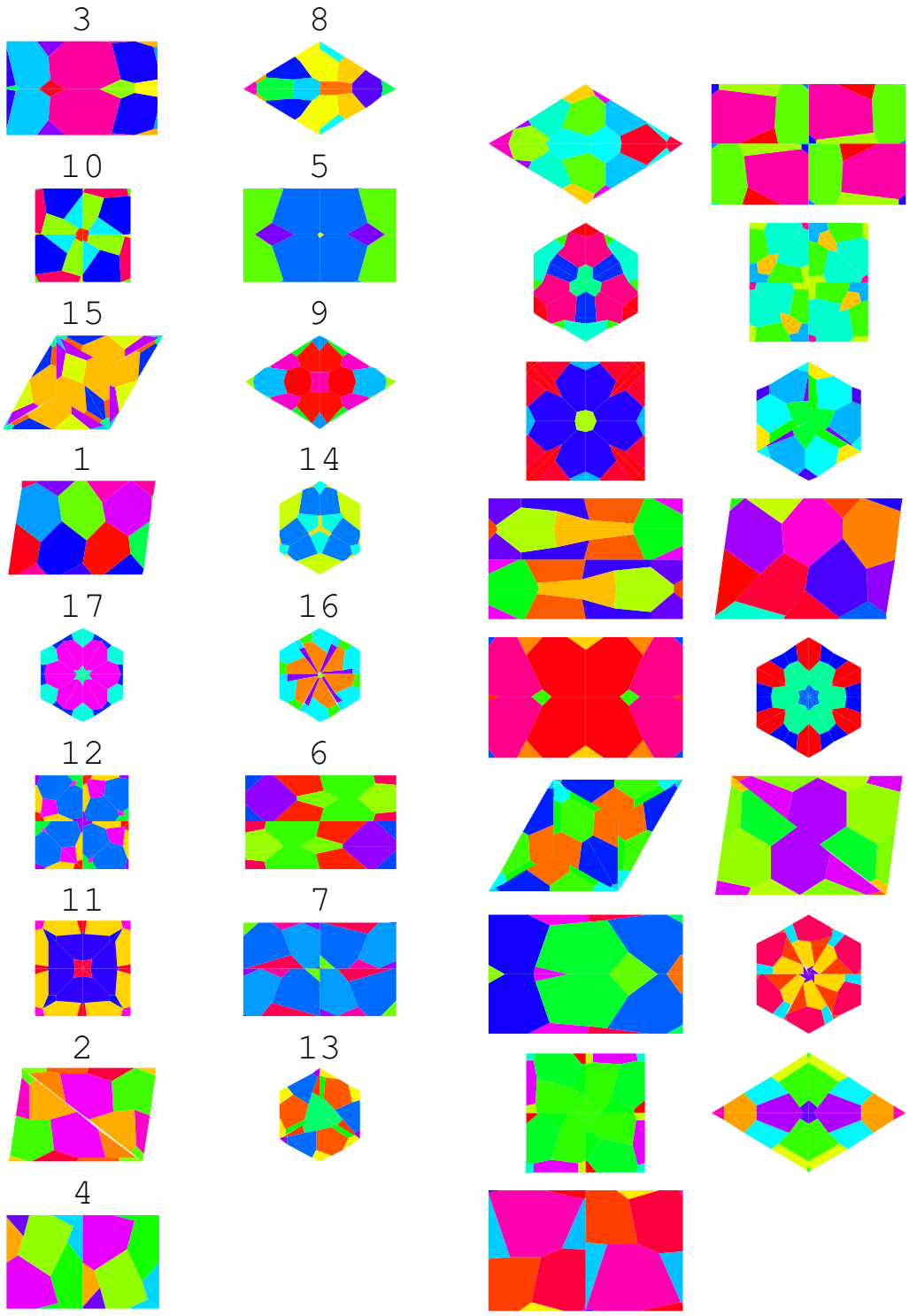






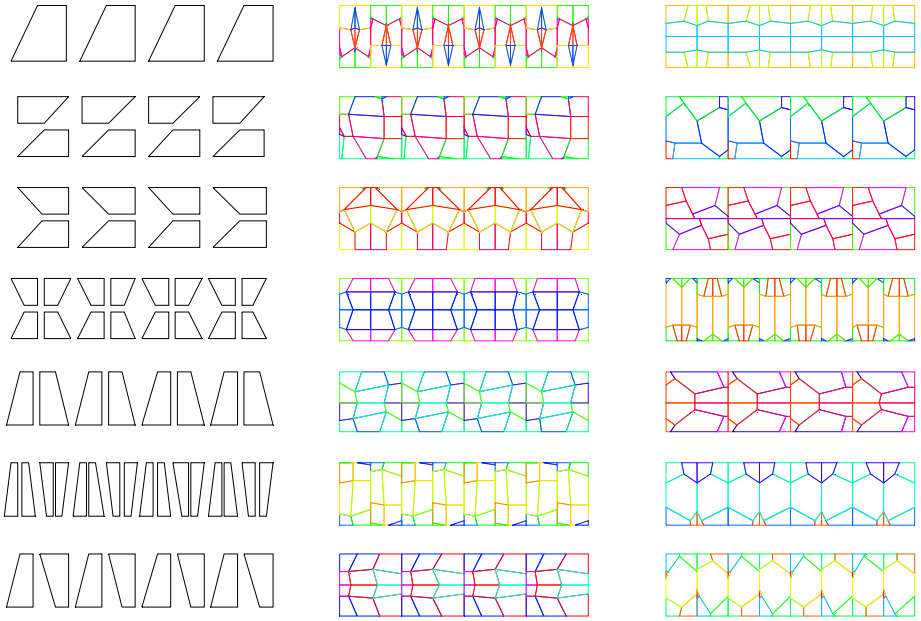


Poveži sličici, ki pripadata isti grupi

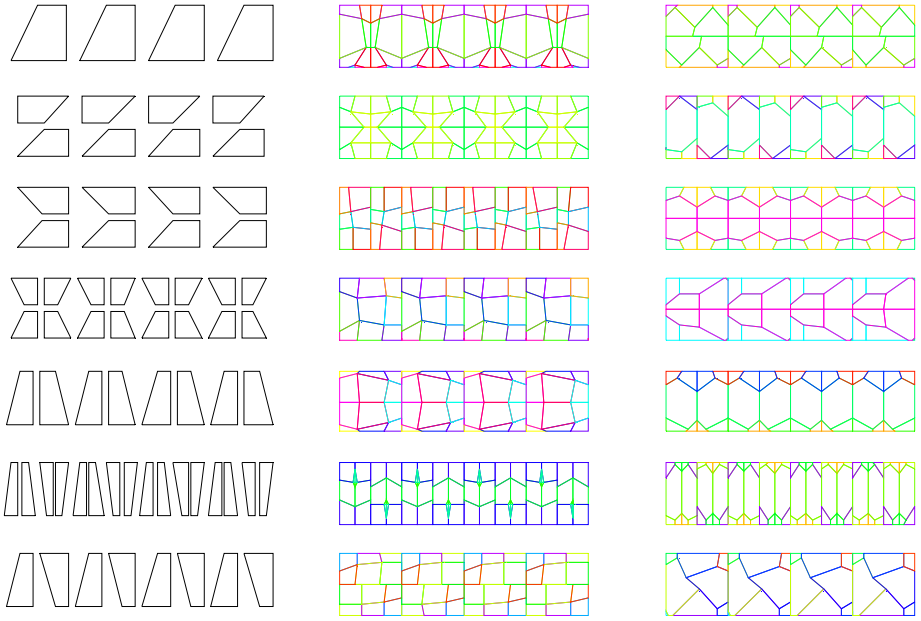


Poveži sličici, ki pripadata isti grupi

a)

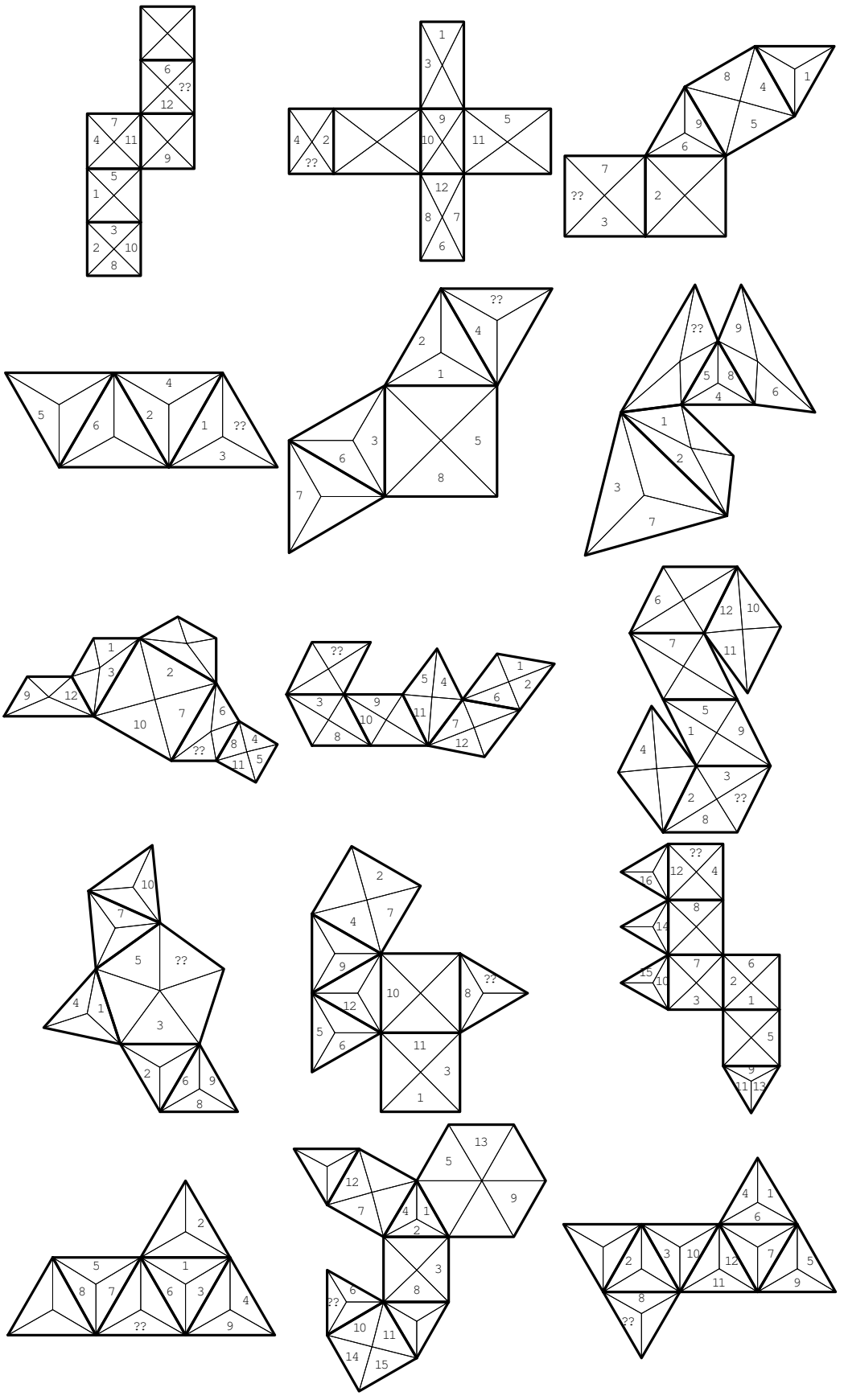


b)

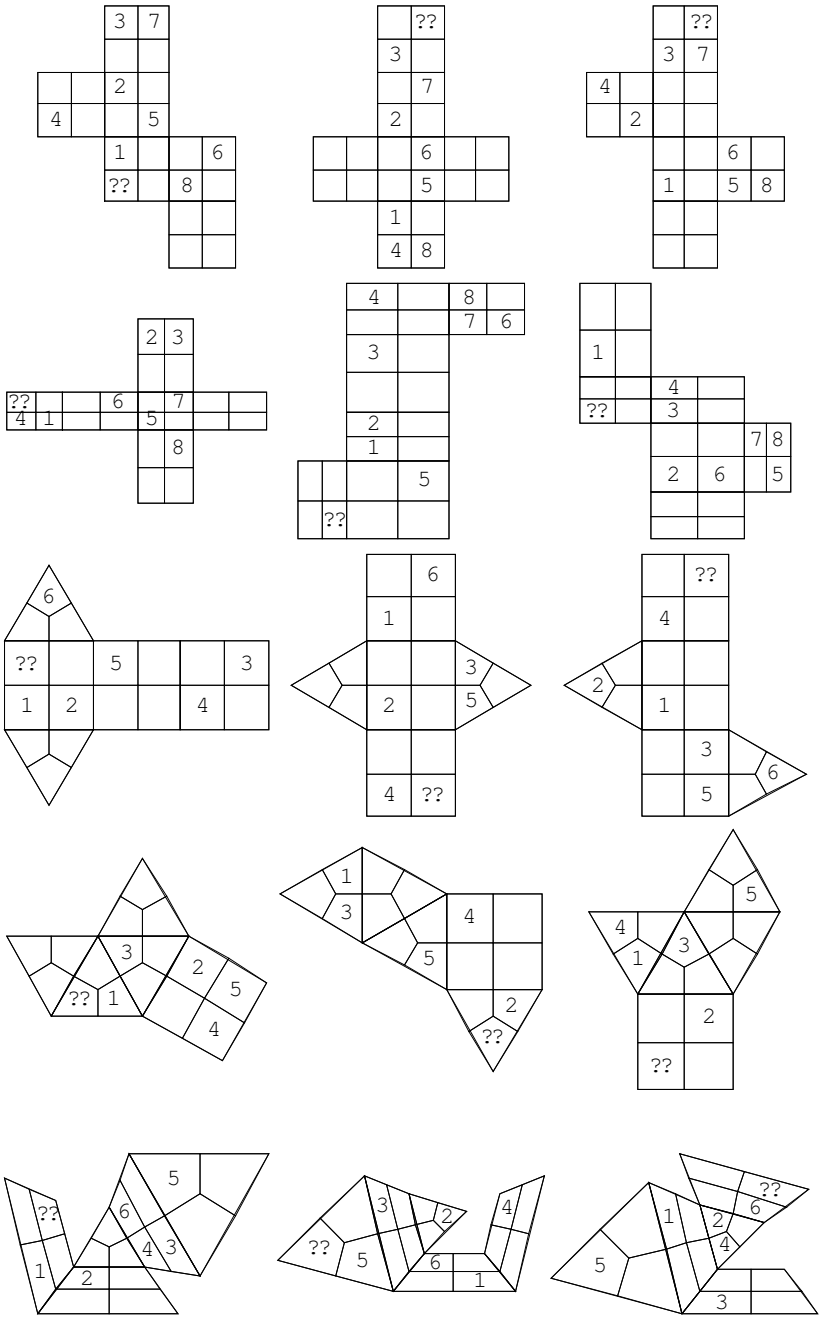


Prostorska predstavljivost

a) Katero število moramo vpisati na mesto znaka ??, da bosta stranici pripadali istemu robu poliedra?


6 ?? 12 7 4 11 9 5 1 3 2 10 8
1 3 4 2 ?? 9 10 5 11 12 8 7 6
8 4 1 9 5 6 7 ?? 2 3
4 5 6 2 1 ?? 3
?? 4 2 1 6 3 5 8 7
?? 9 5 8 4 6 1 2 3 7
1 3 2 12 10 6 7 11 5 1 9 4 3 2 ?? 8
9 12 1 3 2 10 7 6 ?? 8 4 11 5
?? 3 9 10 8 5 4 11 7 12 1 6 2
10 7 5 ?? 4 1 3 2 6 9 8
2 4 7 9 10 ?? 12 5 6 11 3 1
?? 16 12 4 8 14 7 6 15 10 2 3 1 5 9 11 13
5 13 12 7 4 1 2 9 3 6 ?? 8 10 11 14 15
4 1 6 2 3 10 12 7 5 11 9 8 ??
2 5 1 8 7 6 3 4 ?? 9

b) Katero številko moramo vpisati na mesto znaka ??, da bosta oglišči pripadali istemu oglišču poliedra?

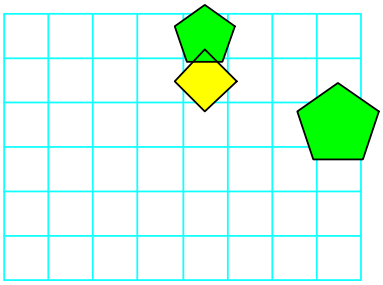


Imena likov

Dane so resničnostne vrednosti stavkov (R ali N). Poiskati je treba imena likov, ki so začetne črke v zaporedju A, B, C, D, E, …Liki so treh oblik (trikotnik, kvadrat, petkotnik), treh velikosti (majhen, srednji, velik) in treh barv (oranžen, zelen ali rumen).

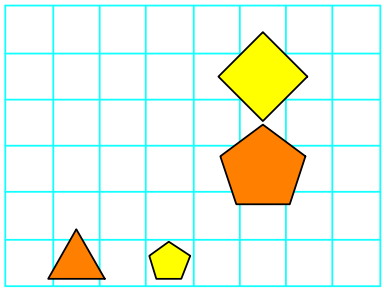
1.

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



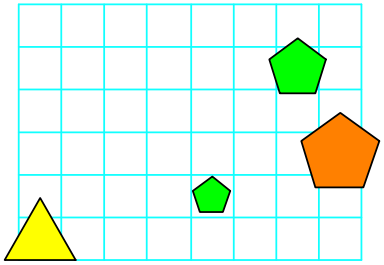
1. Lik C ni velik.	N
2. Lik B je manjši kot C.	R
3. Lik C je oranžen ali lik A ni kvadrat.	N

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



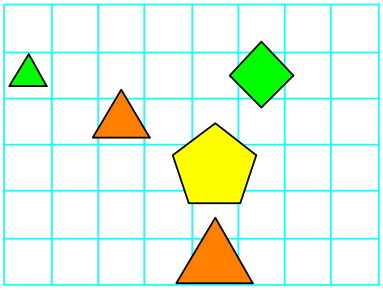
1. Lik C ni rumen.	R
2. Lik A je nad B.	N
3. Ali je lik A trikotnik ali je lik C velik.	R
4. Lik B je oranžen in lik D ni petkotnik.	R

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



1. Lik C ni oranžen.	N
2. Lik A je nad C.	R
3. Lik B je nad D.	R
4. Lik C je srednje velikosti ali lik D ni majhen.	R

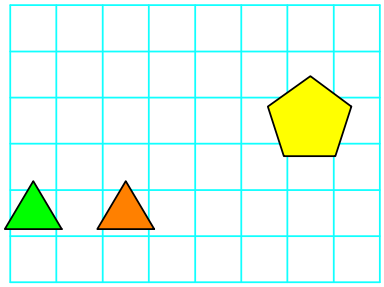
Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



1. Lik E ni oranžen.	N
2. Lik D je desno od E.	R
3. Lik A je pod D.	N
4. Ali je lik C zelen ali lik D ni majhen.	N
5. Lik D ni oranžen ali lik B ni srednje velikosti.	N

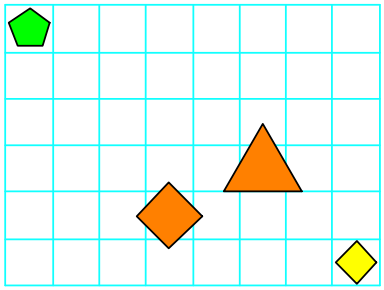
2.

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



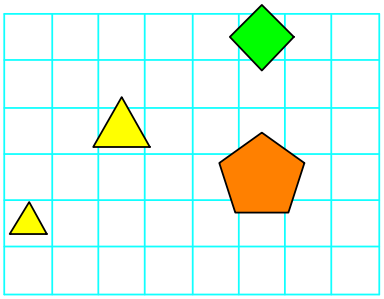
1. Zelen (B)	N
2. Nad (A, C)	R
3. Majhen (A) ⇔ Majhen (B)	R

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



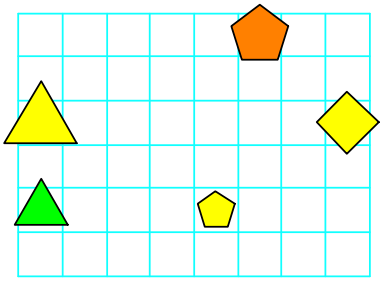
1. ¬Majhen (B)	N
2. Desno od (C, D)	R
3. ¬Trikotnik (B) ∧ ¬Kvadrat (B)	R
4. ¬Trikotnik (A) ⊻ ¬Velik (C)	N

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



1. Zelen (C)	R
2. Pod (B, D)	N
3. Manjši kot (A, C)	R
4. ¬Majhen (A) ⇒ ¬Majhen (C)	R

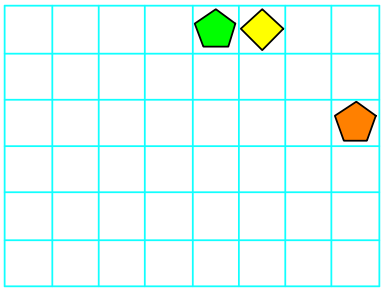
Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



1. ¬Zelen (E)	R
2. Manjši kot (A, C)	N
3. Večji kot (B, E)	R
4. ¬Trikotnik (D) ⇔ ¬Srednje v. (B)	N
5. Kvadrat (D) ∧ ¬Trikotnik (C)	R

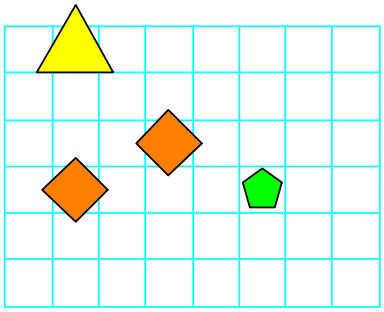
3.

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



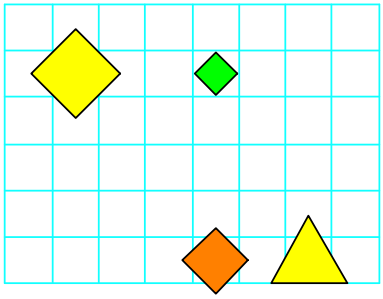
1. Rumen (A)	R
2. Večji kot (A, C)	N
3. Nad (A, C)	N

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



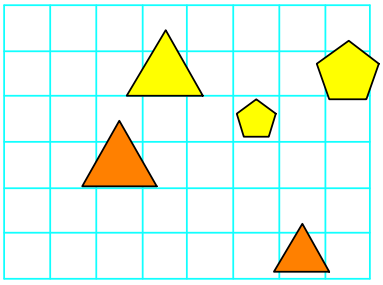
1. Srednje v. (D)	N
2. Večji kot (B, D)	R
3. Pod (A, C)	R
4. Srednje v. (B) $\veebar$ ¬Majhen (A)	R

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !



1. ¬Kvadrat (C)	R
2. Večji kot (C, D)	R
3. Manjši kot (B, D)	R
4. Večji kot (C, D)	R

Določi razpored objekov in poišči najnižji stavek , ki je odvisen od ostalih !

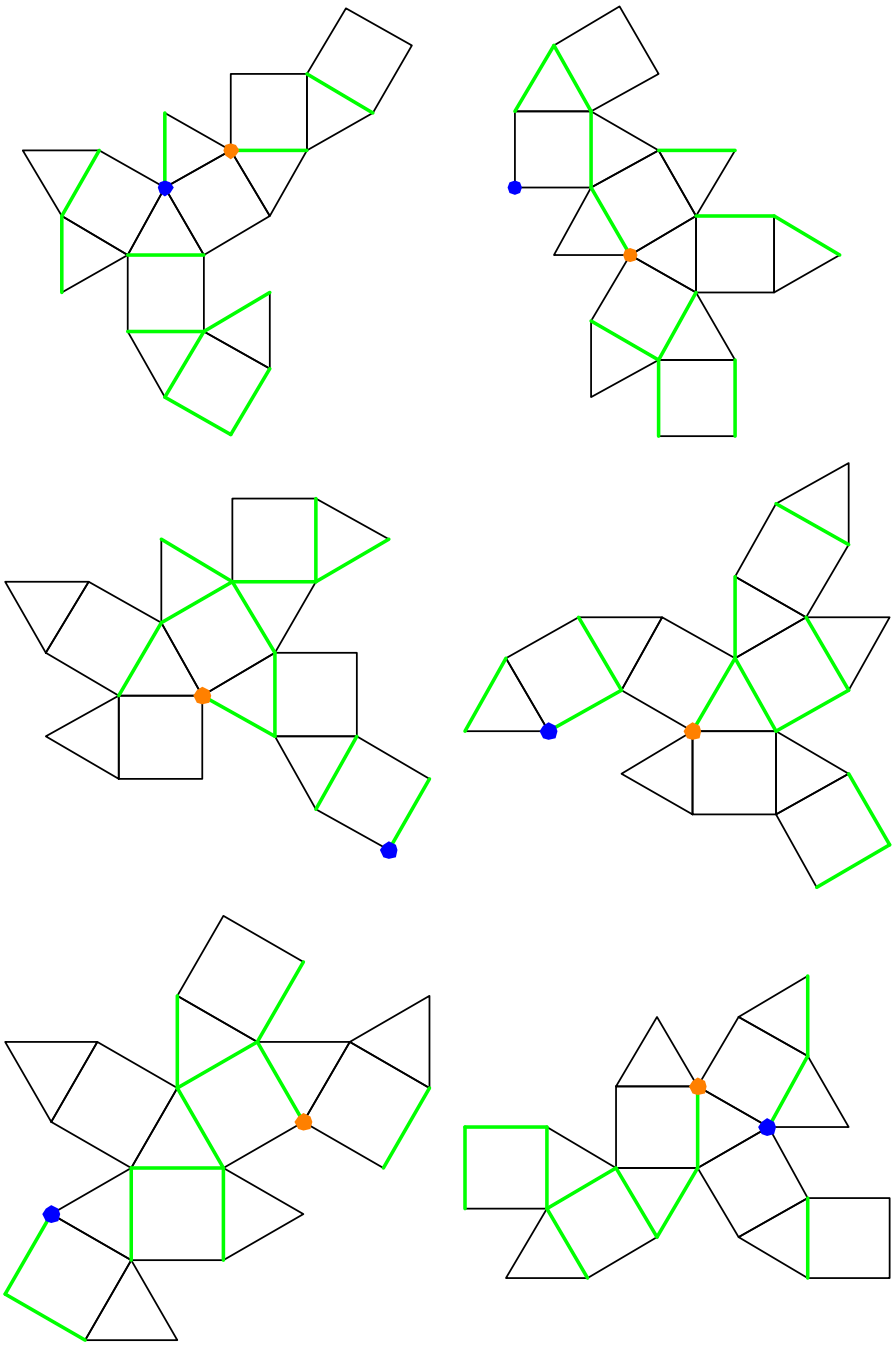


1. Srednje v. (D)	R
2. Manjši kot (A, E)	N
3. Manjši kot (B, C)	N
4. Večji kot (A, E)	N
5. ¬Trikotnik (B) $\wedge$ ¬Rumen (E)	R

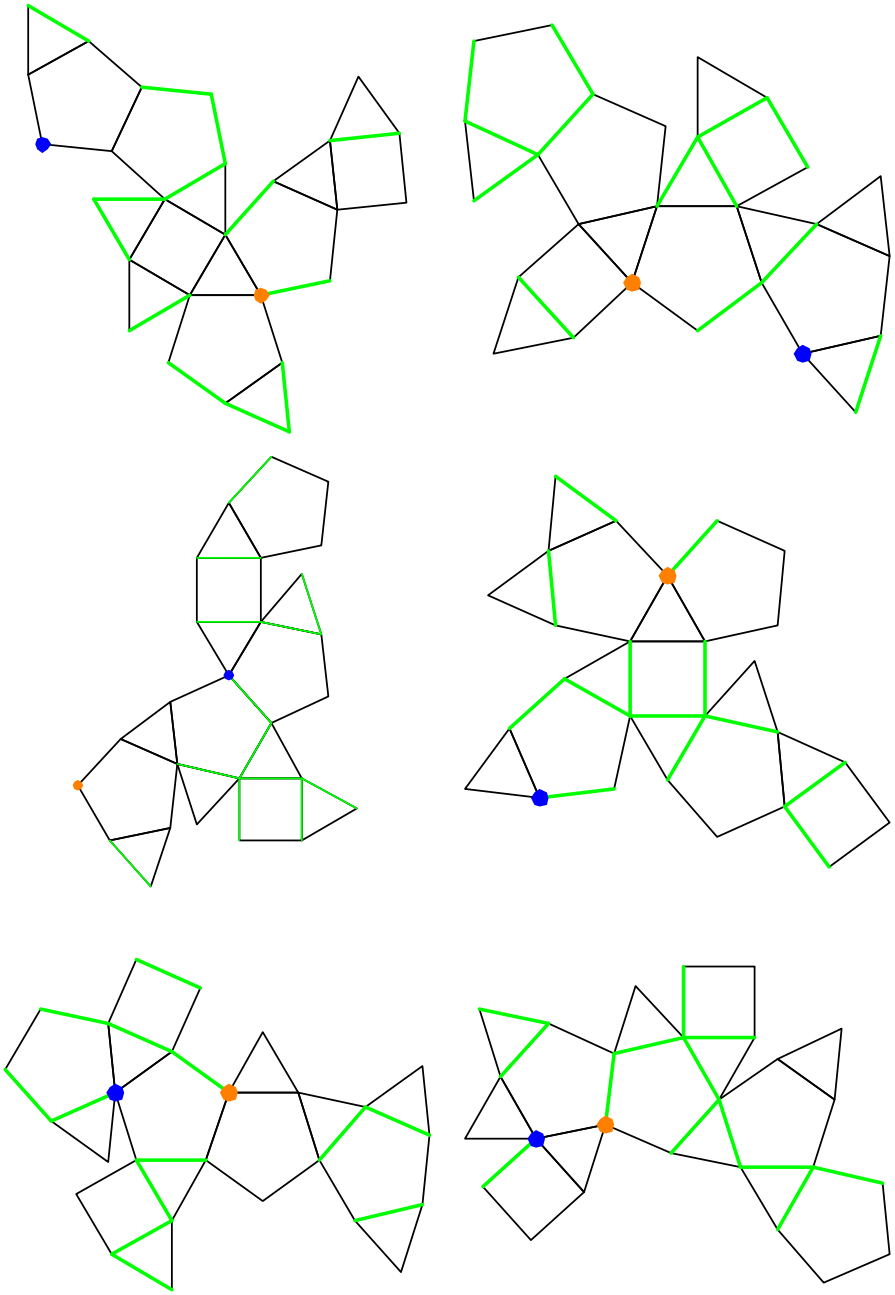
Labirinti na robovih poliedra

V naslednjih nalogah moramo povezati dve oglišči poliedra, ki je podan z mrežo. Poiskati moramo pot od modre do oranžne točke. Iz ene točke lahko gremo do druge točke, če je med njima zelena črta ali pa točki predstavljata isto oglišče poliedra.

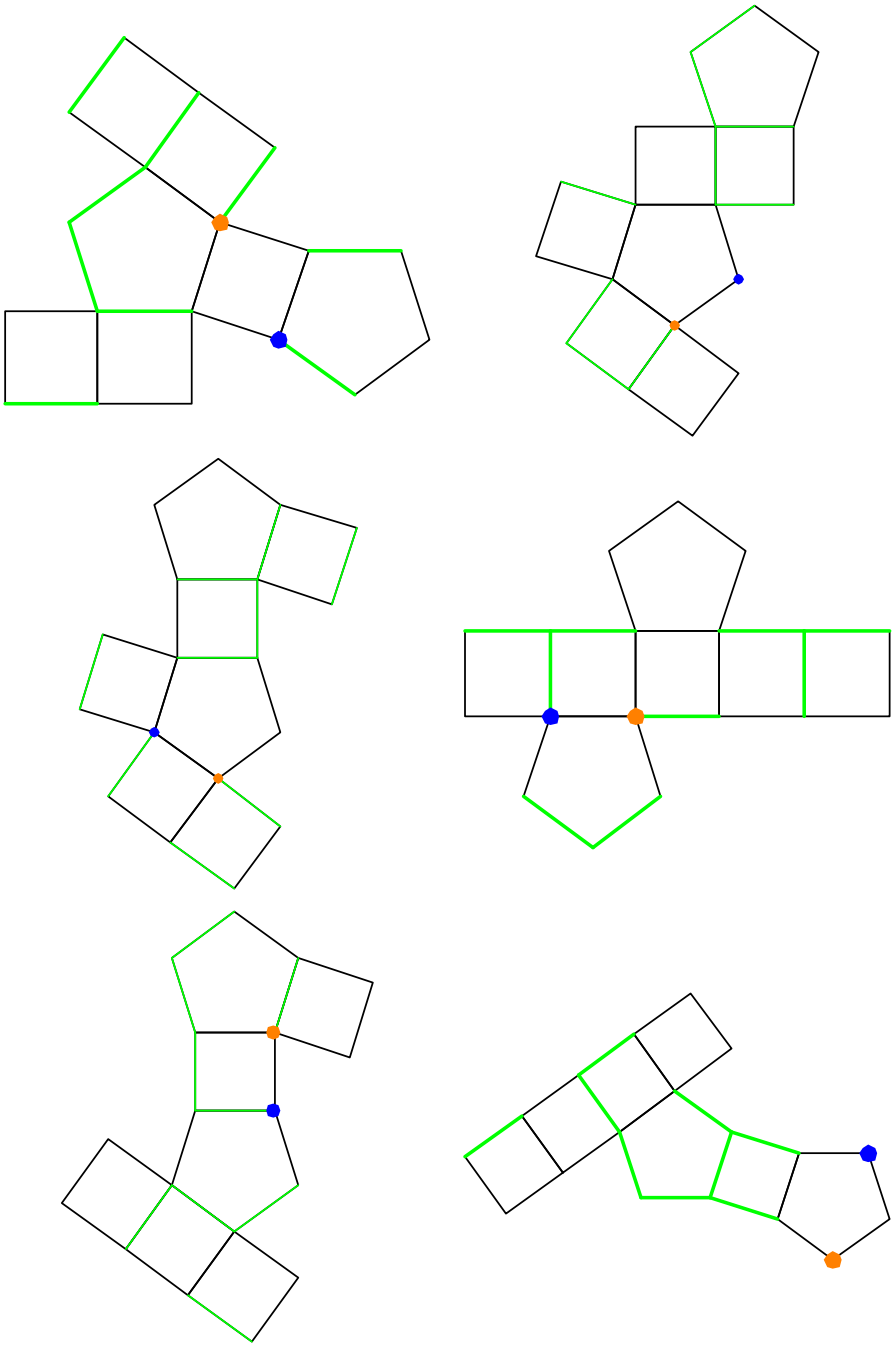
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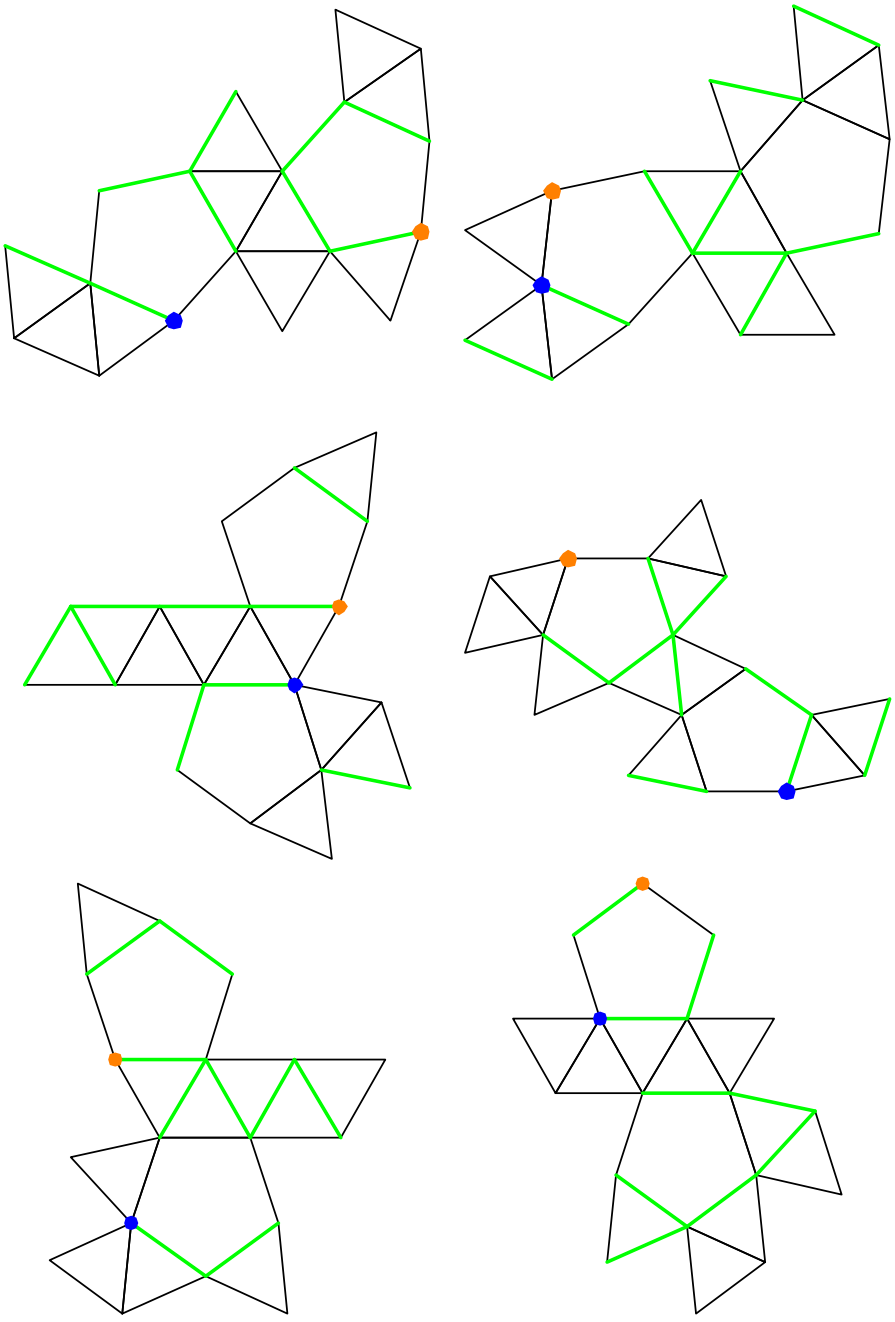
2.



3.

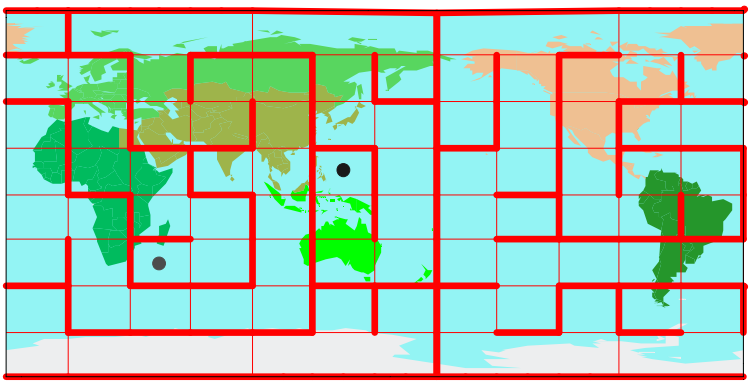


4.

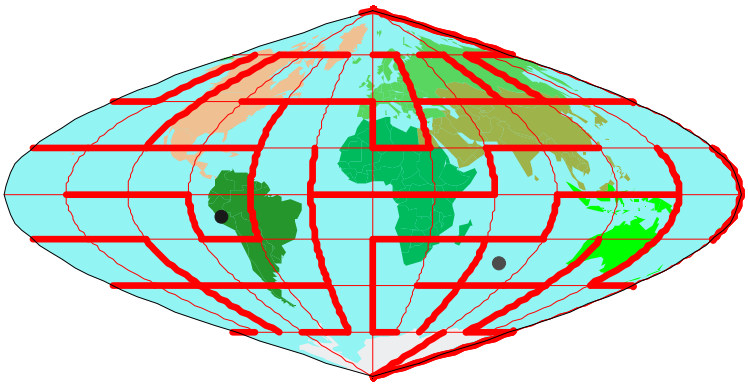


Labirinti na zemljevidu

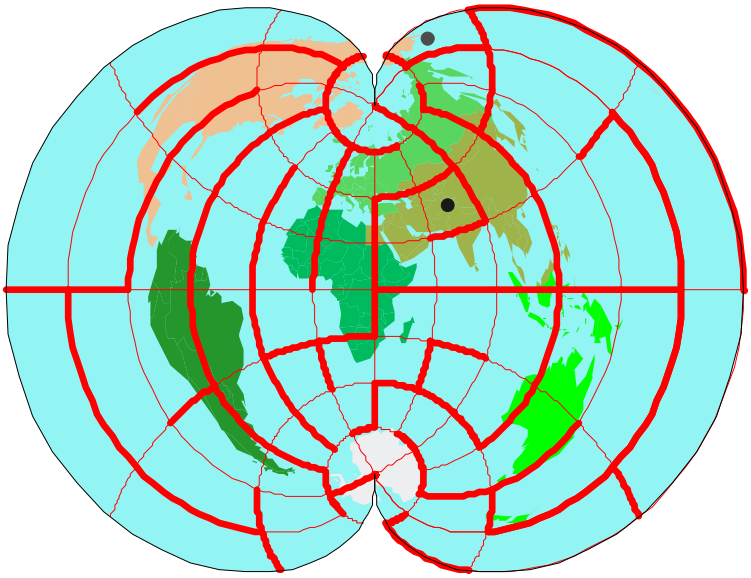
1.



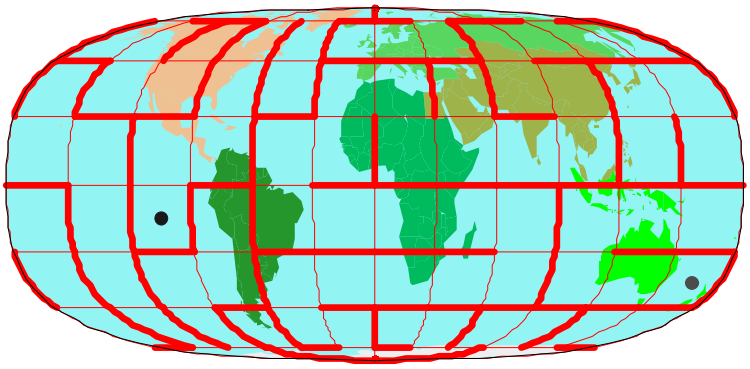
2.



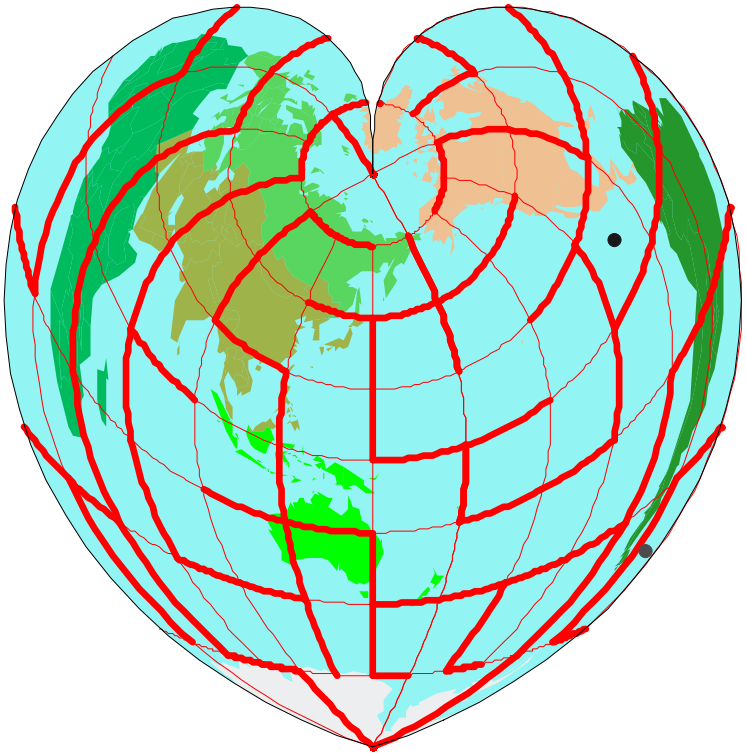
3.



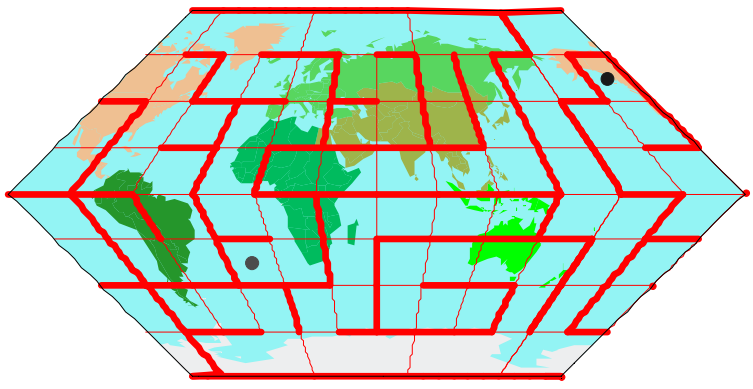
4.



5.

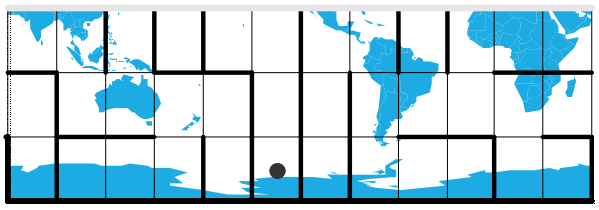


6.



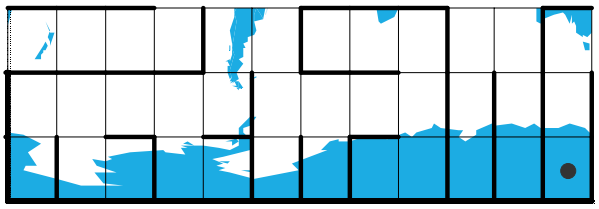
Večdelni labirinti na zemljevidu

1.



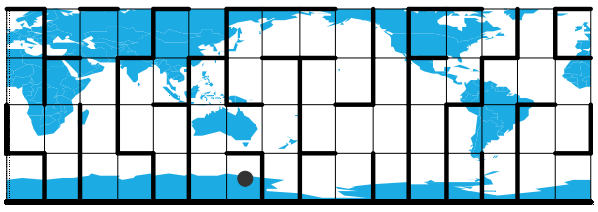


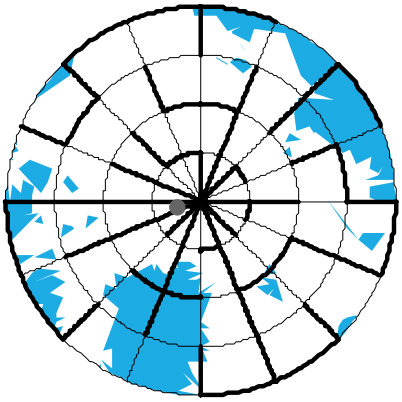
2.



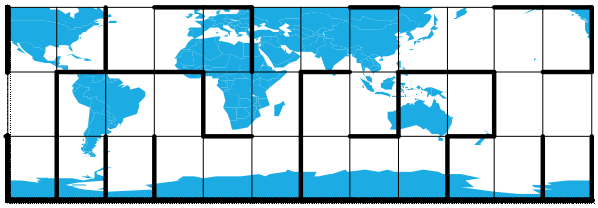


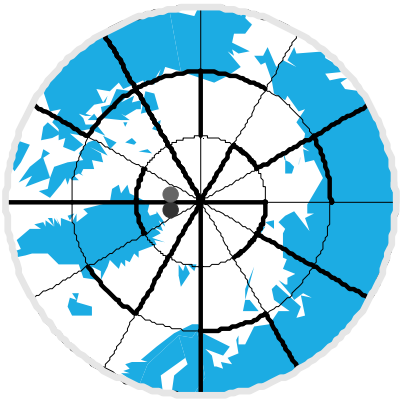
3.



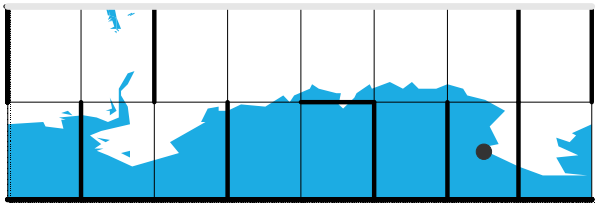


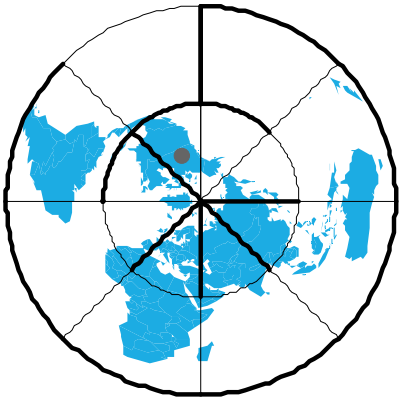
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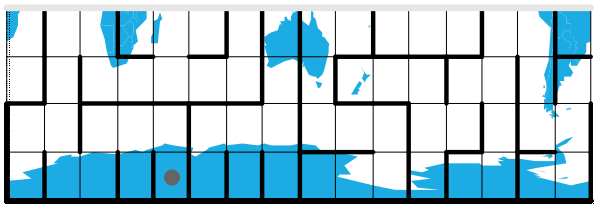


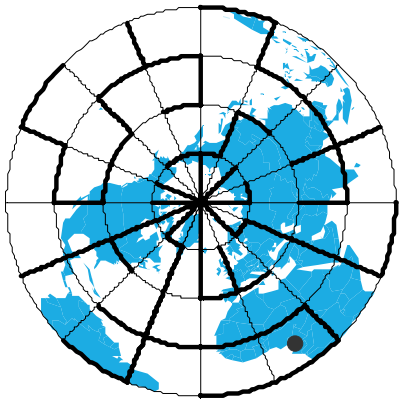
5.





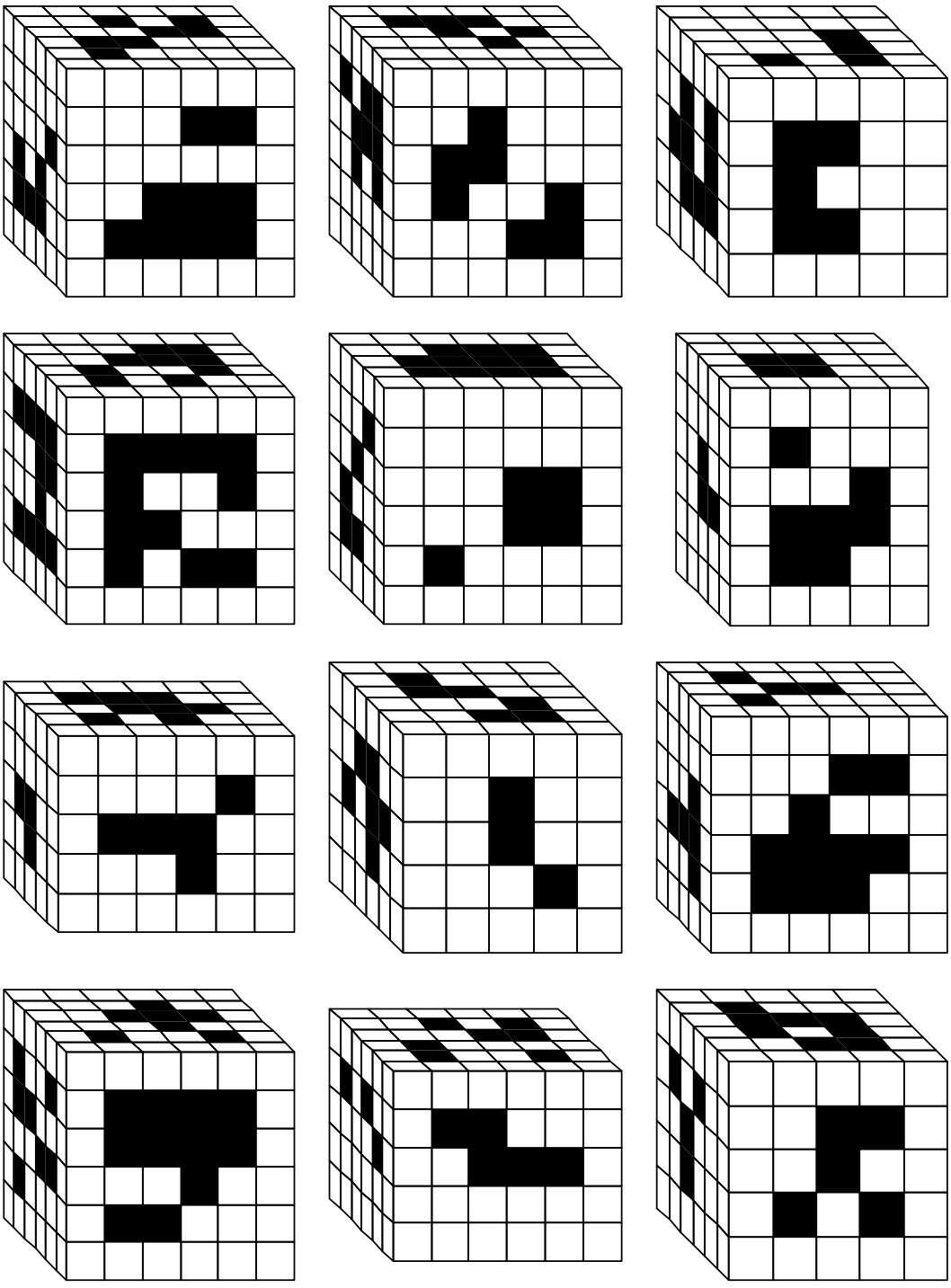
6.





Odstranjene kocke

Dan je kvader, ki sestoji iz kockic. Odstranimo vse kocke, ki so zaznamovane črno od vrha do dna, od leve do desne in od spredaj do zadaj. Koliko kock smo odstranili?



Nagradna logična naloga

Pet prijateljev (Miha, Miro, Marko, Jure, Tine) z raznimi priimki (Hribar, Planinc, Vodovnik, Grilj, Kranjc) so raznih poklicev (kuhar, optik, trgovec, ekonomist, sodnik).
Za vsakega ugotovi ime, priimek in poklic.

1. Grilj ni po poklicu ekonomist.
2. Jure ni sodnik.
3. Grilj ni ne optik ne trgovec.
4. Kranjc ni ne optik ne trgovec.
5. Hribar ni ne kuhar ne trgovec.
6. Jure se ne piše ne Vodovnik ne Kranjc.
7. Marko se ne piše ne Grilj ne Vodovnik.
8. Miro se ne piše Grilj.
9. Miha se piše Planinc.
10. Vodovnik ni po poklicu kuhar.
11. Kranjc ni po poklicu kuhar.
12. Grilj ni po poklicu kuhar.

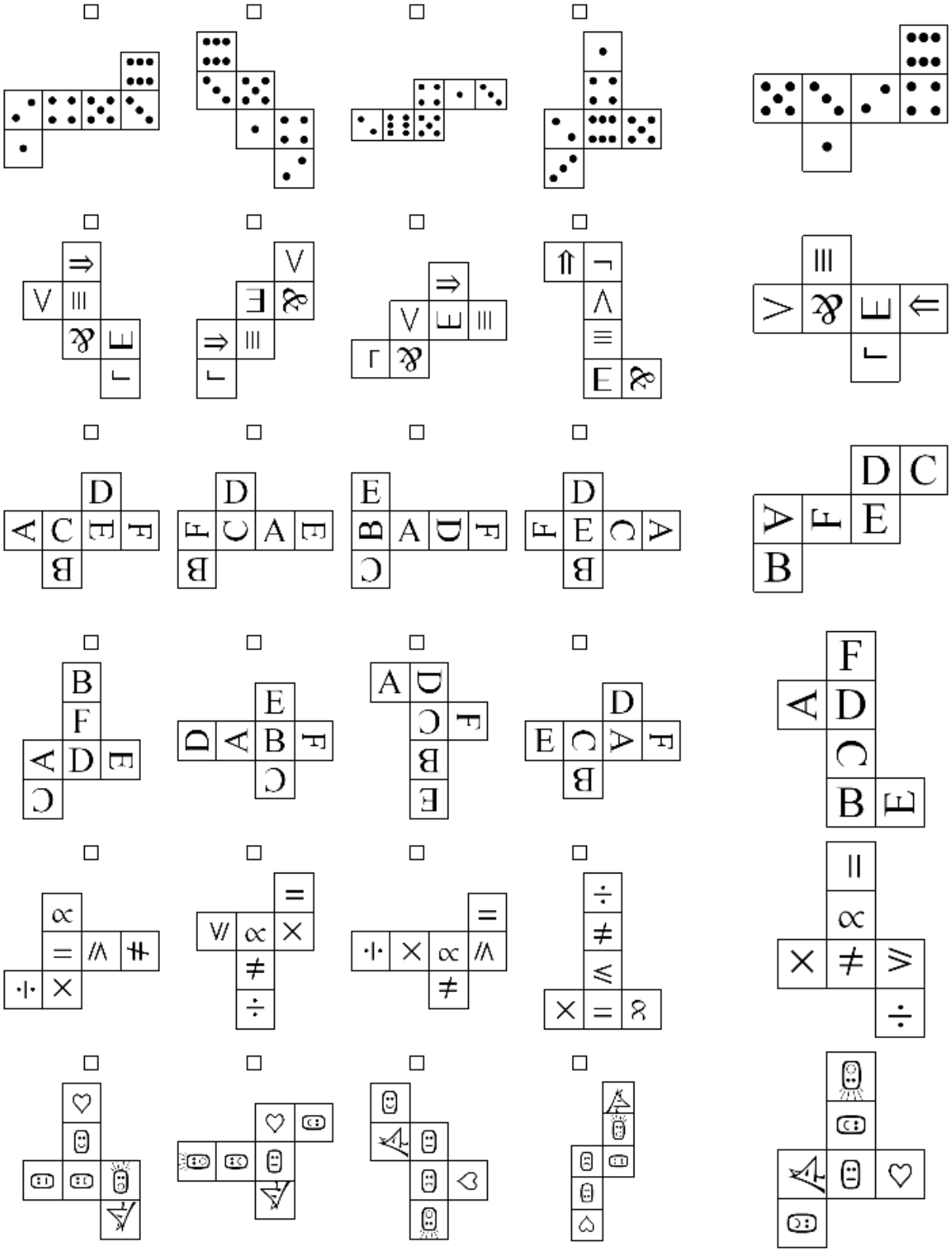
	Hribar	Planinc	Vodovnik	Grilj	Kranjc	kuhar	optik	trgovec	ekonomist	sodnik
Miha										
Miro										
Marko										
Jure										
Tine										
kuhar										
optik										
trgovec										
ekonomist										
sodnik										

ime	priimek	poklic
Miha		
Miro		
Marko		
Jure		
Tine		

Rešitev nagradne uganke pošljite do 1.9.2016 na naslov Logika d.o.o., Svetčeva pot 11, 1241 Kamnik, s pripisom »Nagradna uganka«.
Naslednji reševalci nagradne uganke iz 4. številke bodo prejeli poševno prizmo: E.K., ILIRSKA BISTRICA, A.N., PREM, M., P., L., OŠ ŠMARJE-SAP.

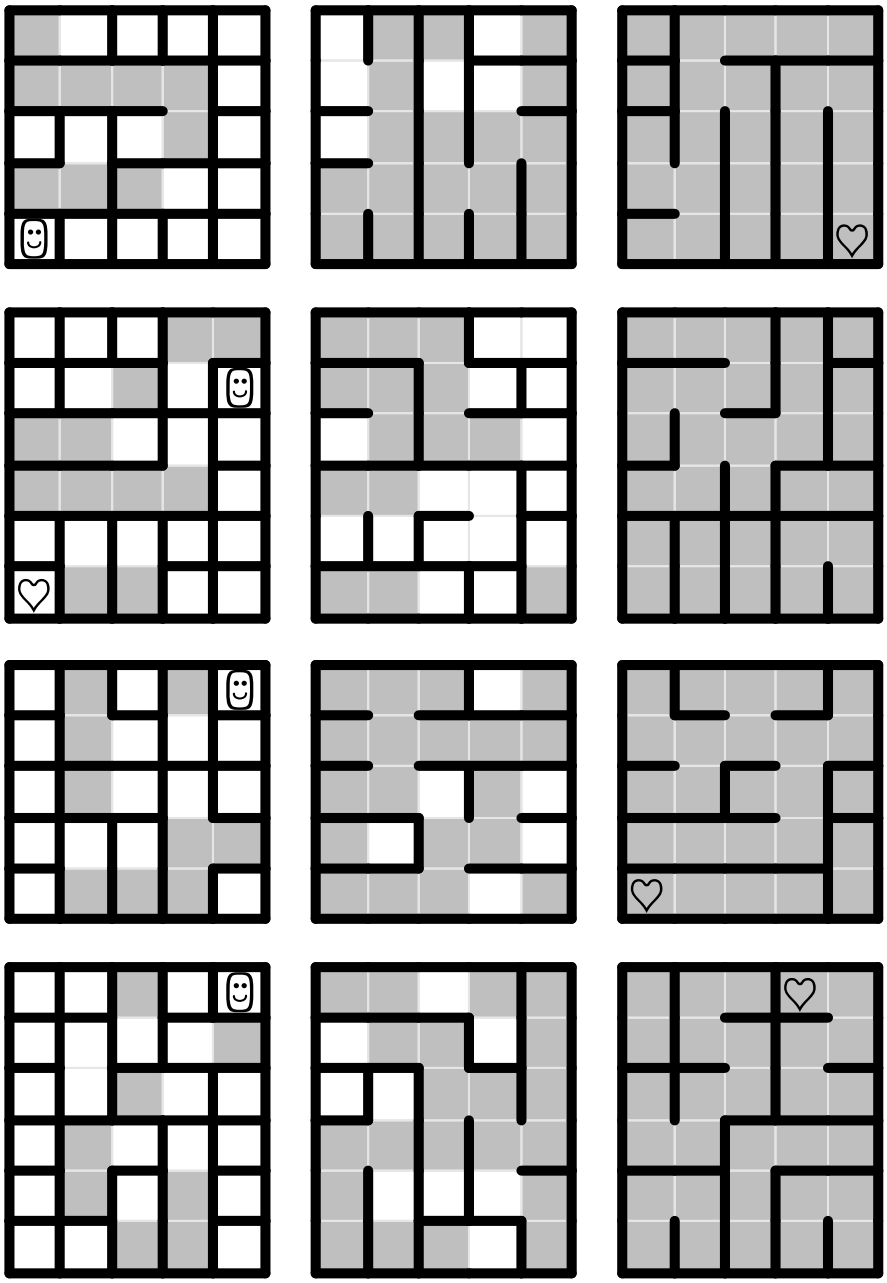
Kocki določi mrežo

Vsaki mreži na desni (večja mreža) določi mrežo iste kocke na levi.



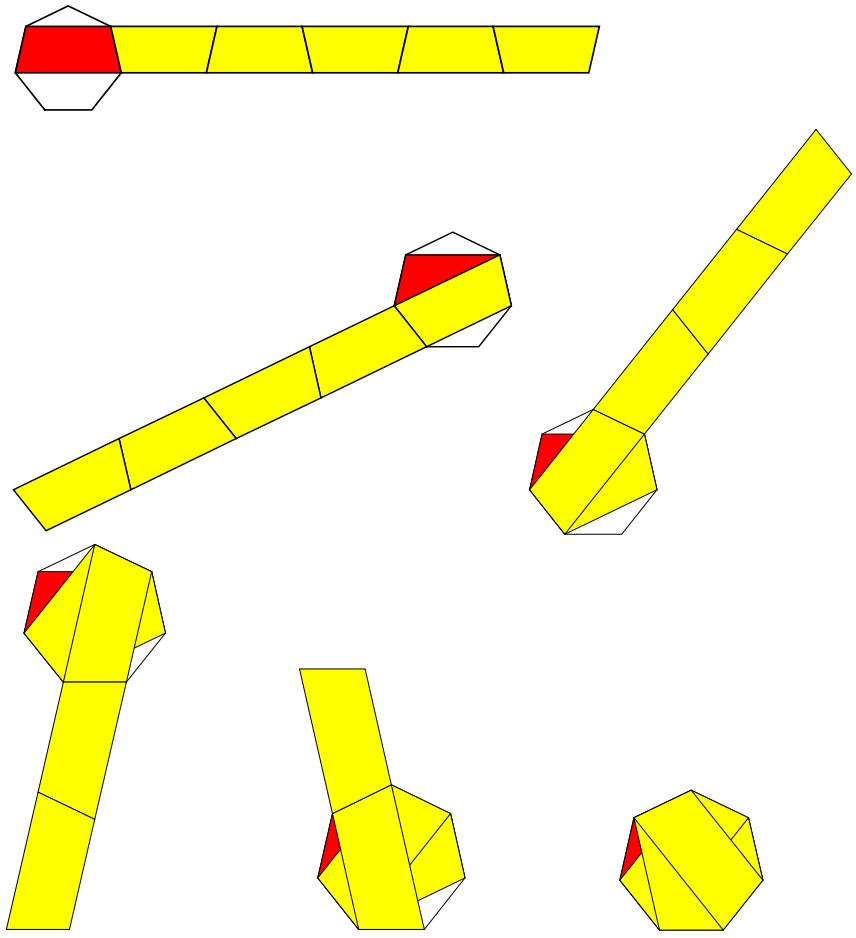
Labirint v kvadru

Kvader sestoji iz vodoravnih slojev kockastih oddelkov (zgornji, srednji in spodnji sloj so dani od leve proti desni). Odebeljene črte preprečujejo prehajanje med sosednjima oddelkoma istega sloja. Med oddelkom in oddelkom neposredno pod njim lahko prehajamo, če in samo če je prvi pobarvan belo.
Poišči najkrajšo pot od oddelka s smeškom do oddelka s srcem! Pot označi z zaporednimi naravnimi števili tako, da oddelek s smeškom označiš z 1, vsak naslednji sosednji oddelek (kocko) pa z številom, večjim za 1.



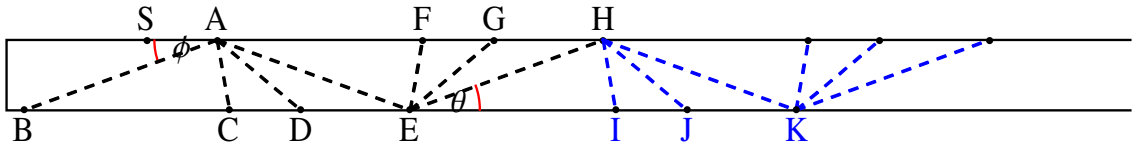
Pokritje pravilnega n-kotnika z lihim številom stranic

Kot primer vzemimo pravilni sedemkotnik in največji enakokraki trapez, ki je včrtan vanj. Če imamo papirnati trak takih trapezov, ga lahko zgibamo v ta mnogokotnik.



Podobno lahko naredimo z vsakim pravilnim mnogokotnikom z lihim številom stranic. Zastavlja pa se vprašanje, ali lahko te trapeze dobimo s pregibanjem papirnatega traku.Odgovor je pritrdilen, saj smo v prejšnjem poglavju pokazali, da lahko konstruiramo kot pri osnovnici manjšega trapeza (tvorijo ga sosedne stranice). Kot pri večjem trapezu pa je 3/2 kota manjšega trapeza.

Postopek prepogni-zavihaj



Na zgornji sliki je uporabljen postopek:
Začetek: poljubno prepogni navzgor, nato zravnaj (dobili smo črto AB).
Prepogni navzdol, tako da se zgornji desni del traku delno ujema z AB. To pomeni bisekcijo kota BAF. Nato trak zravnaj.
Prepogni navzdol (bisekcija kota FAC).
Prepogni navzdol (bisekcija kota DAF). Dobili smo točko E.
Zdaj pa prepognemo navzgor (dobimo točko F).
Spet prepognemo navzgor (dobimo točko G).
In še enkrat navzgor (dobimo točko H).
V točki H ponovimo postopek bisekcije enak kot v točki A….
Na zgornjem delu traku dobimo enakomarno raporejene točke A, H, …

Recimo, da uporabimo postopek m krat navzdol, n krat navzgor, …, in da pri tem dobimo skladne paralelograme. Torej je kot φ enak kotu θ. Računajmo brez oznak za stopinje.
Označimo $(180-\varphi)/2^m=\alpha$ (kot AED, ki je enak kotu EAD) in $\beta=(180-\alpha)/2^n$. Toda $(180-\beta)/2^m=\alpha$, saj naj bi se pri H stvar ponovila. Sledi $2^m\alpha=180-\beta$, $2^{m+n}\alpha=180x2^n-(180-\alpha)$.
Dobimo $\alpha=180\ (2^n-1)/(2^{m+n}-1)$. Podobno je $\beta=180\ (2^m-1)/(2^{n+m}-1)$.
Recimo, da želimo s tem trakom konstruirati pravilni p-kotnik s polovičnim zunanjim kotom $\alpha=180/p$. Potem je $p=(2^{m+n}-1)/(2^n-1)$ in mora biti celo število.

Enačbe, podobne kemijskim, z enim atomom

Dana je kemijska enačba in pripadajoča diofantska enačba *ax+by=cz*, ki jo obravnavamo kot Fröbeniusovo enačbo *ax+by=e*, to je, iščemo nenegativne rešitve te enačbe. Naravni števili *a* in *b* sta tuji. Največje število, za katerega enačba *ax+by=e* nima nenegativnih rešitev, je ab-a-b, in se imenuje Fröbeniusovo število. Seveda pa se lahko zgodi, da ima enačba nenegativne rešitve tudi pri številih, ki so manjša od Fröbeniusovega števila (*f*). Zato je najlaže enačbo rešiti s tabeliranjem izraza *ax+by*. Dovolj je, da to naredimo samo do vrednosti *ab*. Pri kemijskih enačbah iščemo najmanjše število *z*. Poiščemo prvi večkratnik števila c, za katerega ima enačba nenegativne rešitve. Če je *c>ab-a-b*, je *z*=1.

$xA_5 + yA_7 = zA_{12}$

$5x + 7y = 12z$

f=23

{x, y}	z
{{1, 1}}	1
{{2, 2}}	2

5x+7y

x↓y	0	1	2	3	4	5
0	0	7	14	21	28	35
1	5	12	19	26	33	40
2	10	17	24	31	38	45
3	15	22	29	36	43	50
4	20	27	34	41	48	55
5	25	32	39	46	53	60
6	30	37	44	51	58	65
7	35	42	49	56	63	70

$xA_5 + yA_7 = zA_9$

$5x + 7y = 9z$

f=23

{x, y}	z
{}	1
{}	2
{{4, 1}}	3

5x+7y

x↓y	0	1	2	3	4	5
0	0	7	14	21	28	35
1	5	12	19	26	33	40
2	10	17	24	31	38	45
3	15	22	29	36	43	50
4	20	27	34	41	48	55
5	25	32	39	46	53	60
6	30	37	44	51	58	65
7	35	42	49	56	63	70

$xA_9 + yA_{20} = zA_{25}$

$9x + 20y = 25z$

f=151

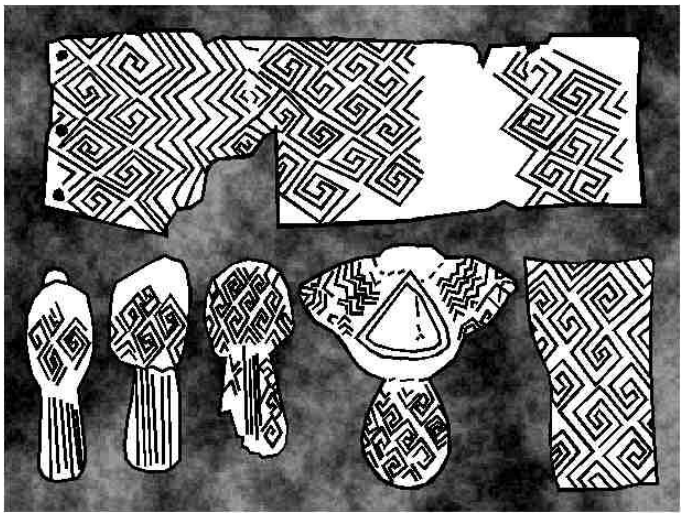
{x, y}	z
{}	1
{}	2
{}	3
{{0, 5}}	4
{{5, 4}}	5
{{10, 3}}	6
{{15, 2}}	7

9x+20y

x↓y	0	1	2	3	4	5	6	7	8	9
0	0	20	40	60	80	100	120	140	160	180
1	9	29	49	69	89	109	129	149	169	189
2	18	38	58	78	98	118	138	158	178	198
3	27	47	67	87	107	127	147	167	187	207
4	36	56	76	96	116	136	156	176	196	216
5	45	65	85	105	125	145	165	185	205	225
6	54	74	94	114	134	154	174	194	214	234
7	63	83	103	123	143	163	183	203	223	243
8	72	92	112	132	152	172	192	212	232	252
9	81	101	121	141	161	181	201	221	241	261
10	90	110	130	150	170	190	210	230	250	270
11	99	119	139	159	179	199	219	239	259	279
12	108	128	148	168	188	208	228	248	268	288
13	117	137	157	177	197	217	237	257	277	297
14	126	146	166	186	206	226	246	266	286	306
15	135	155	175	195	215	235	255	275	295	315
16	144	164	184	204	224	244	264	284	304	324
17	153	173	193	213	233	253	273	293	313	333
18	162	182	202	222	242	262	282	302	322	342
19	171	191	211	231	251	271	291	311	331	351
20	180	200	220	240	260	280	300	320	340	360

"Balancing Abstract Chemical Equations with One Kind of Atom"
http://demonstrations.wolfram.com/BalancingAbstractChemicalEquationsWithOneKindOfAtom/

Paleolitska umetnost in moderna moda



S. Jablan (1952-2015) je v monografiji "Theory of Symmetry and Ornament" (Teorija simetrije in ornamentov) [2] rekonstruiral ostanke paleolitskih ornamentov. Najstarejše primere ključnih vzorcev je našel v paleolitski umetnosti (23000 pr.n.š., Mezin, Ukraina). Ti se razlikujejo od vseh do zdaj znanih vzorcev tistega časa in predstavljajo nepričakovan dosežek. Vzorci iz Mezina so sistematičen študij možnosti izpeljave različnih vzorcev iz dveh osnovnih oblik: kvadrata z nekaj črtami, ki so vzporedne diagonalama.



Pozneje v neolitiku najdemo podobne vzorce na več krajih (Vinča (Srbija), Tisza (Madžarska), Vadastra (Romunija)) [1].

V podjetju Draž pletenine so sprejeli pobudo zavoda Mathema za izdelavo nekaterih modelov kolekcije jesen zima 2016-2017 na osnovi teh vzorcev. Moderna tehnologija sicer omogoča izdelavo pletenine s precejšnjo natančnostjo, vendar pa ne do te mere, da bi lahko avtomatsko krojili blago po neki shemi za različno oblikovana telesa. V resnici

vsaka oblika potrebuje svoje blago. Veliko težavo predstavljajo rokavi, saj se mora vzorec nadaljevati od ramen in pravilno zaokrožiti roki. Spodnja fotografija [Foto: Jure Makovec] z Ljubljanskega tedna mode, april, 2016, prikazuje, da so bili v tem primeru zelo uspešni. Več fotografij najdete na [3].

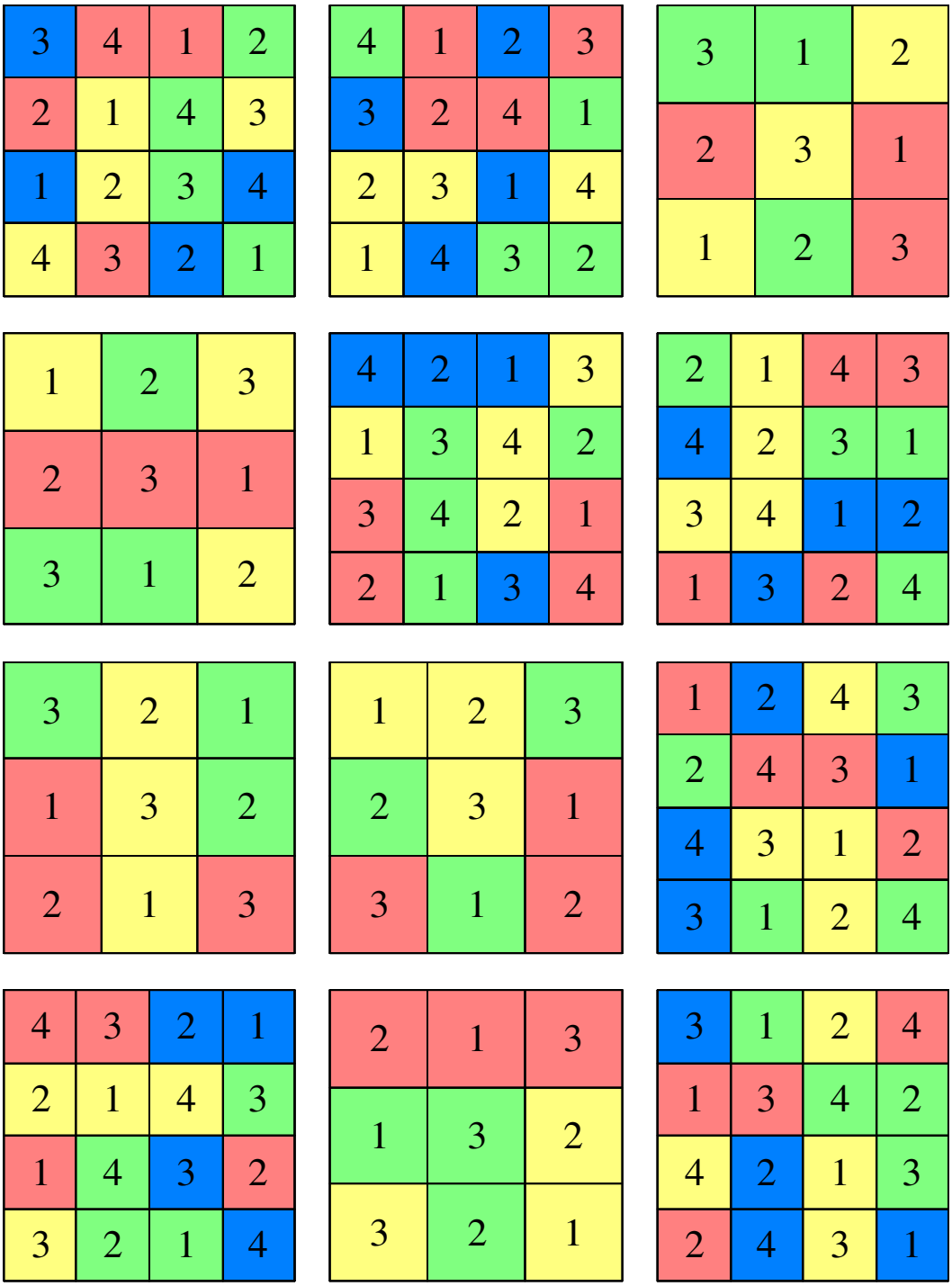


Reference:
[1] S. Jablan, http://www.mi.sanu.ac.rs/~jablans/text.htm
[2] S.V.Jablan, Theory of Symmetry and Ornament, Mathematical Institute, Belgrade, 1996.
[3] Draž pletenine, https://www.facebook.com/urskadraztomaz/

Rešitve

Barvni sudoku

1.



2.

2	3	1	5	4
4	5	3	1	2
5	1	2	4	3
3	4	5	2	1
1	2	4	3	5

5	1	4	2	3
3	2	5	1	4
1	4	2	3	5
4	3	1	5	2
2	5	3	4	1

1	3	4	2
2	4	3	1
4	2	1	3
3	1	2	4

2	5	3	1	4	6
6	1	4	3	2	5
4	2	6	5	1	3
1	3	5	2	6	4
5	6	1	4	3	2
3	4	2	6	5	1

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1	3	2	4
3	1	4	2
2	4	1	3

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3	6	4	1	5	2
5	2	1	6	3	4

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3	5	1	4	2
2	4	3	1	5
5	1	4	2	3

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3	4	1	2
4	3	2	1
2	1	4	3

2	4	1	3	5
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4	2	5	1	3

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1	2	3	4	5
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3	4	2	5	6	1
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4	3	5	2	1	6
1	2	6	3	4	5

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1	2	3	6	4	5
3	1	2	5	6	4
5	4	6	2	1	3

Latinski kvadrati

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1	4	3	2	5

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1	4	3	2

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2	5	1	4	3

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4	1	3	2

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2	4	1	5	3

1	2	4	3
2	3	1	4
4	1	3	2
3	4	2	1

Sudoku s črkami

1 D	4 C	3 D	2 A
3 A	2 B	1 B	4 D
2 C	1 A	4 B	3 C
4 A	3 B	2 D	1 C

4 A	3 A	1 B	2 B
3 B	4 D	2 D	1 A
1 D	2 A	4 B	3 C
2 C	1 C	3 D	4 C

1 C	2 C	4 D	3 B
3 A	4 B	1 A	2 D
4 C	3 D	2 B	1 B
2 A	1 D	3 C	4 A

1 A	2 A	3 A	4 B
2 B	4 D	1 C	3 B
4 C	3 D	2 D	1 D
3 C	1 B	4 A	2 C

3 B	2 C	4 B	1 C
1 A	4 D	2 D	3 C
4 A	3 D	1 D	2 B
2 A	1 B	3 A	4 C

1 C	3 A	2 D	4 A
4 D	2 A	3 B	1 B
3 D	4 C	1 D	2 C
2 B	1 A	4 B	3 C

3 A	4 A	2 D	1 A
1 B	2 C	3 C	4 B
2 A	1 C	4 D	3 B
4 C	3 D	1 D	2 B

3 B	1 C	4 C	2 B
1 D	4 D	2 C	3 C
2 A	3 D	1 A	4 A
4 B	2 D	3 A	1 B

4 D	1 B	2 D	3 C
1 C	3 A	4 C	2 C
3 B	2 A	1 A	4 B
2 B	4 A	3 D	1 D

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3 D	2 B	1 C	4 C
4 B	3 C	2 C	1 D
2 D	1 B	4 D	3 A

1 B	3 D	2 A	4 B
2 C	4 D	1 D	3 C
3 B	1 C	4 C	2 D
4 A	2 B	3 A	1 A

1 D	2 D	3 B	4 C
4 B	1 B	2 A	3 A
3 D	4 D	1 C	2 C
2 B	3 C	4 A	1 A

Futoširi

3 2 1 4 4 1 3 > 2 2 3 < 4 1 1 4 2 < 3	5 > 1 2 3 4 3 5 > 4 1 2 2 3 5 4 1 4 2 > 1 5 3 1 4 3 2 < 5	4 2 1 < 3 2 4 3 1 1 < 3 2 < 4 3 1 4 2
5 1 3 < 4 2 3 2 > 1 5 4 2 5 > 4 > 3 1 4 3 2 1 5 1 4 5 2 3	1 3 2 2 1 < 3 3 > 2 1	1 3 5 4 > 2 3 5 1 2 4 2 > 1 4 5 > 3 4 2 < 3 1 5 5 4 2 3 1
1 2 < 3 4 3 1 4 2 4 > 3 > 2 1 2 4 1 3	5 > 2 1 4 3 2 > 1 4 3 5 3 5 > 2 1 4 1 < 4 3 5 2 4 3 5 2 1	3 1 5 2 < 4 5 2 1 4 > 3 4 > 3 2 > 1 5 2 5 4 3 1 1 4 3 5 2
4 2 < 3 1 1 < 4 2 3 3 1 4 > 2 2 3 1 4	1 2 3 2 < 3 1 3 > 1 2	4 2 1 3 1 < 3 2 4 3 > 1 4 2 2 < 4 3 1

Rdeči kvadratki

	1	R	R	1
			2	
	0			0
0			0	

	0			0
		2		
1	R	R		
	2		1	

R	2	2	R	1
1	2	R		2
			R	1
0		R		1
		1		

	R		0	
1		1		
		0		
	1	1	0	
	R			

0			2	R
		R	4	3
	R	3	R	R
	1	2		2

1	2	R	1	
R		1		
	1		0	
1				2
	R	2	R	R

	1			
		R	R	1
R		4	4	
1		R	R	1
0			2	

				0
	2			
	R	R	1	
2	3	2		0
R	1			

	1			R
R	3	1		1
R	3	R		
	2	1	2	R
				1

	1	R	1	0
1	2	R		
R	3		1	
R	2			

1			1	
R		R		
R	4	1		
R			0	
	1			

	1	0	0	
R			1	
1				R
	0	0	1	

Lastnosti lika

Oranžen	N
Trikotnik ∧ Oranžen	N
Kvadrat ⊻ Petkotnik	N
Rumen ∧ Velik	R

oblika	Trikotnik
velikost	Velik
barva	Rumen

Majhen	N
Srednji	N
Kvadrat ⊻ Velik	N

oblika	Kvadrat
velikost	Velik

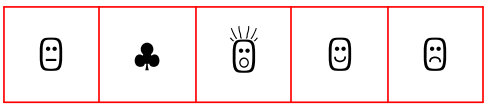
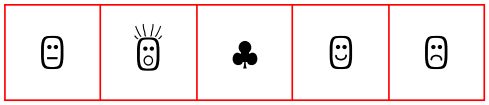
Kvadrat ∧ Trikotnik	N
Majhen ⊻ Petkotnik	N
Srednji ⊻ Velik	N

oblika	Petkotnik
velikost	Majhen

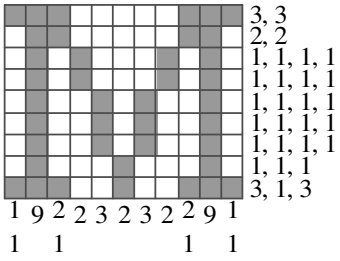
Debel ⇔ Trikotnik	N
Petkotnik ⇒ Velik	R
Tanek ⇒ Velik	N
Majhen ⋀ Oranžen	R
Velik ⇒ Majhen	R

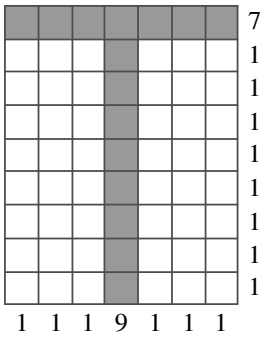
oblika	Trikotnik
velikost	Majhen
barva	Oranžen
debelina	Tanek

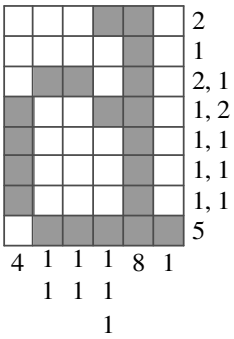
Določi razpored znakov

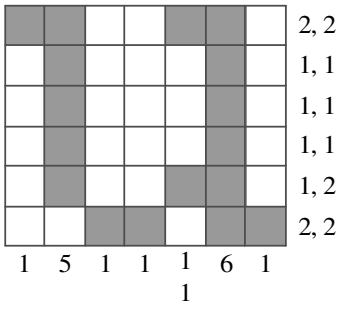
B C A Stavki so neodvisni.	B C A Stavek številka 1 je odvisen od ostalih.
D A B C Stavek številka 2 je odvisen od ostalih.	D C A B Stavek številka 4 je odvisen od ostalih.
 Stavki so neodvisni.	4 1 5 3 2 Stavki so neodvisni.
2 4 3 1 5 Stavek številka 6 je odvisen od ostalih.	 Stavek številka 6 je odvisen od ostalih.

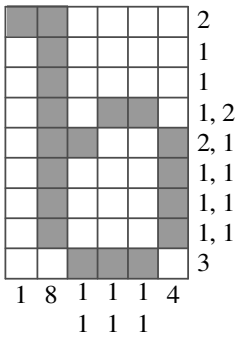
Gobelini

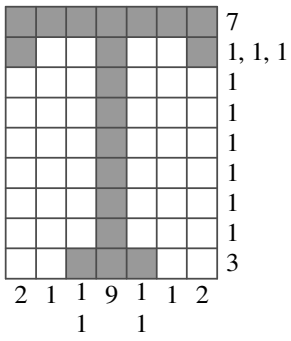

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1, 1, 1, 1
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1 1 1 1

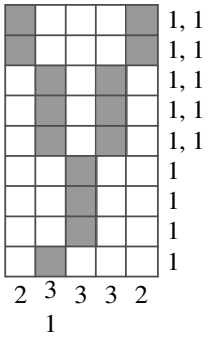

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1
1
1
1
1 1 1 9 1 1 1

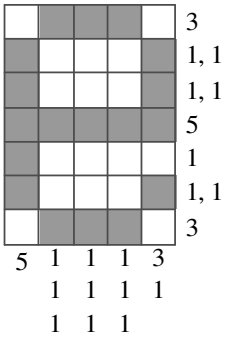

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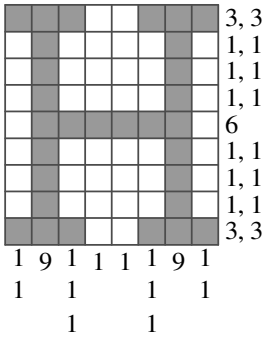

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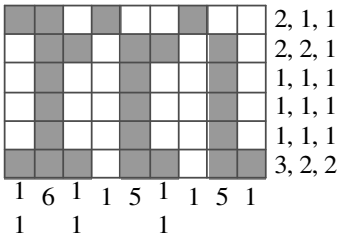

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1 1 1

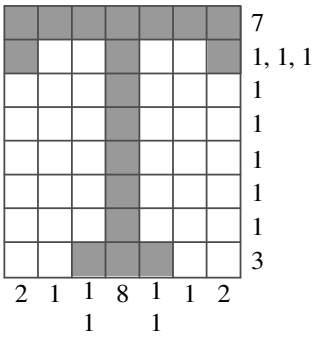

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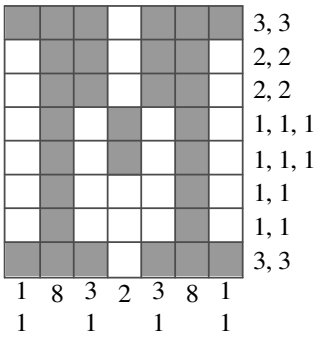

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1 1 1

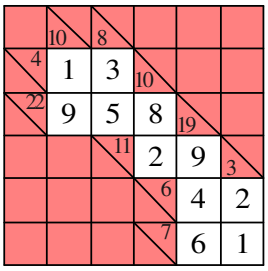

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1 1 1 1 1

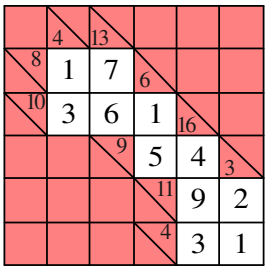

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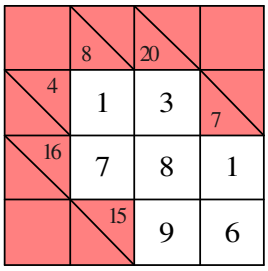

7
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1
1
1
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1
1
3
2 1 1 8 1 1 2
1 1

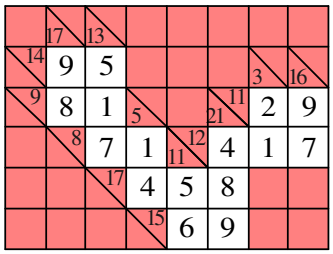

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2, 2
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1, 1
1, 1
3, 3
1 8 3 2 3 8 1
1 1 1 1

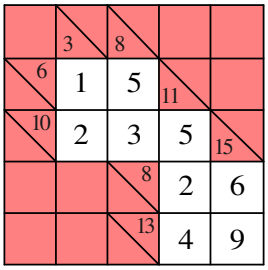
Križne vsote

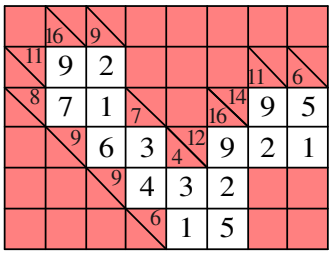


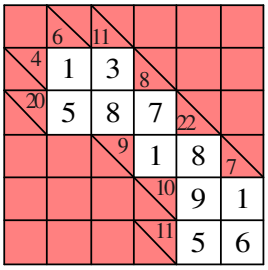


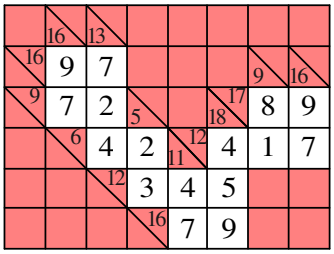


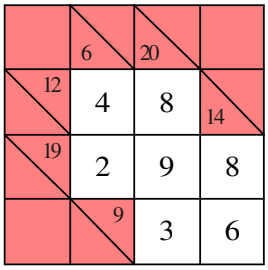


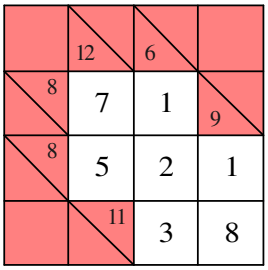


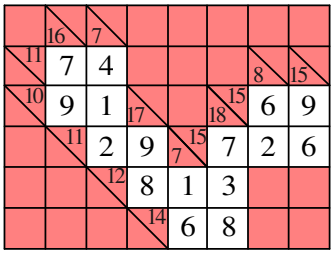


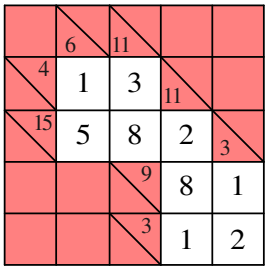












Križni produkti

	40	54
72	8	9
30	5	6

	28	54		
42	7	6	168	
108	4	9	3	6
		14	7	2
		24	8	3

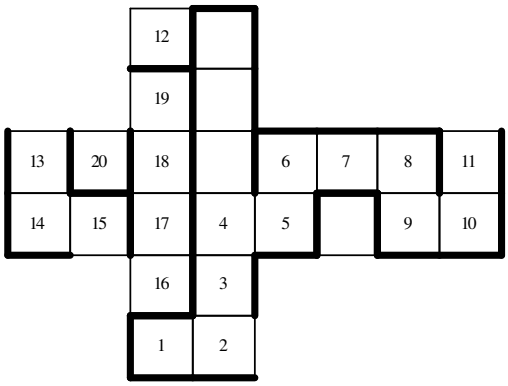
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		63	7	9	15
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			35	7	5

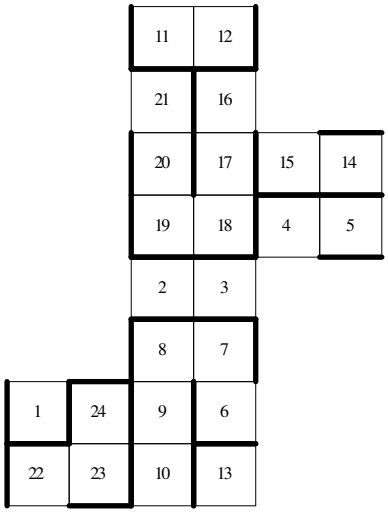
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60	3	4	5
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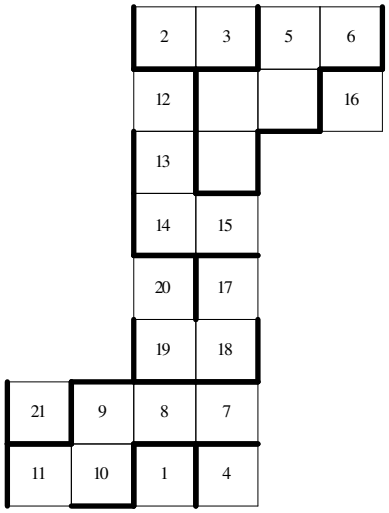
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		8	2	4	54
			63	7	9
			30	5	6

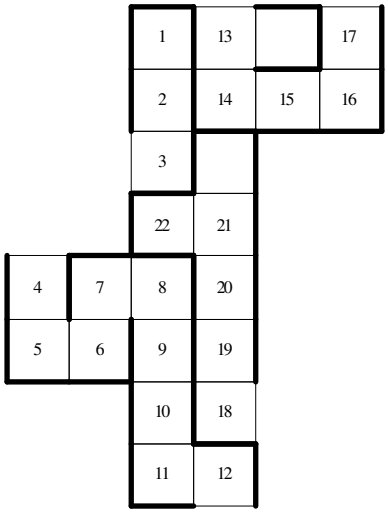
	42	72	36
504	7	8	9
216	6	9	4

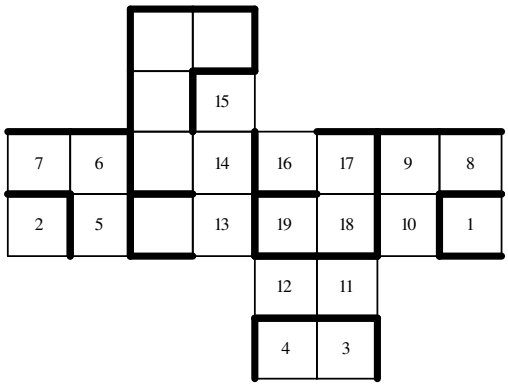
Labirint na kocki

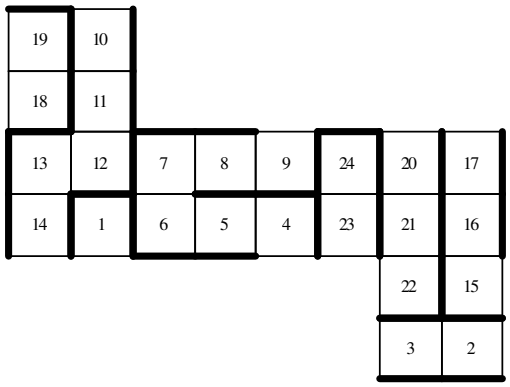




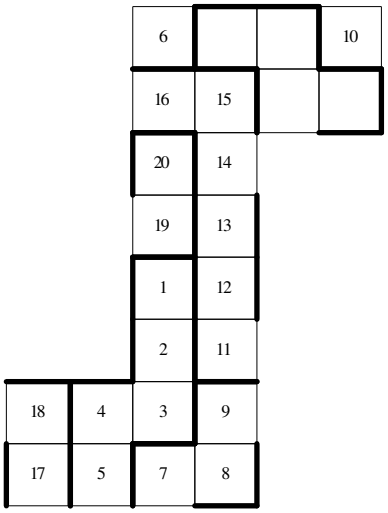


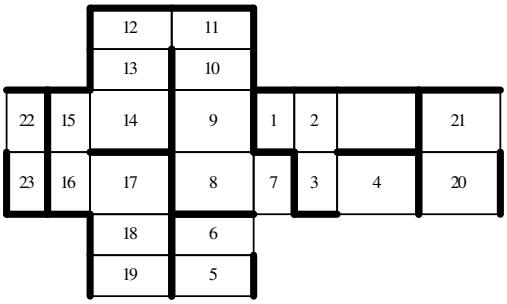


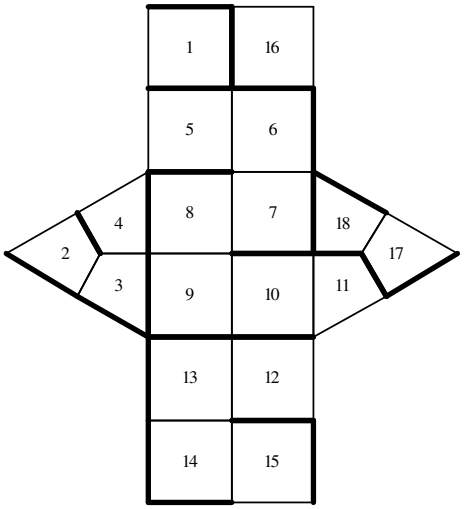


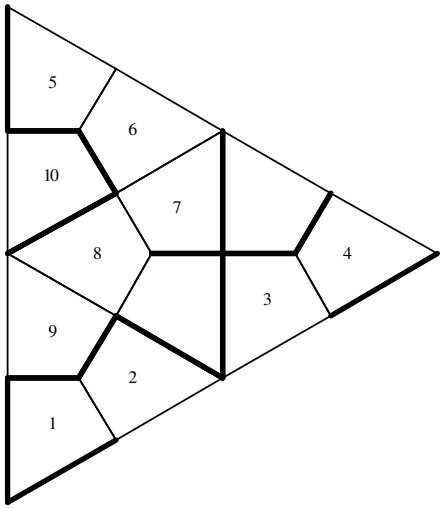


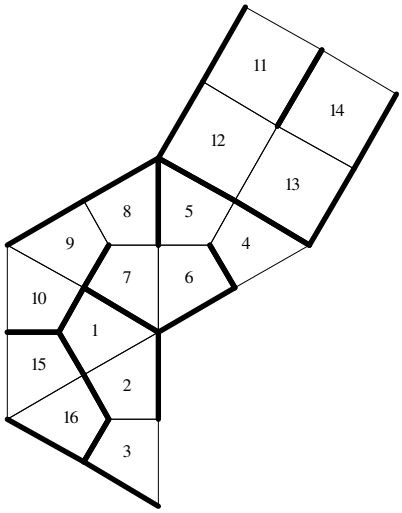
Labirinti na enostavnih poliedrih

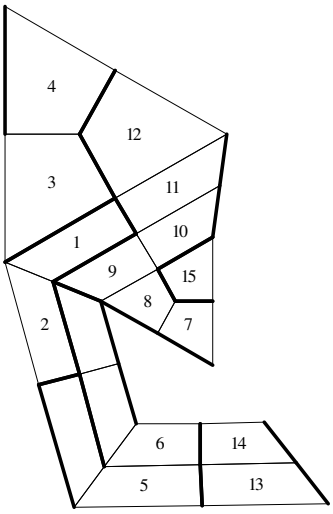












Grupe

Sličice na drugi sliki moramo zaporedoma označiti:
{2, 14, 8, 11, 13, 16, 12, 7, 4, 9, 5, 15, 1, 10, 3, 6, 17}
Linearne grupe:
a) {2, 5, 7, 4, 3, 1, 6}, {2, 3, 5, 1, 6, 4, 7}
b) {4, 7, 5, 2, 1, 6, 3}, {7, 1, 4, 3, 5, 6, 2}

Prostorska predstavljivost

a)

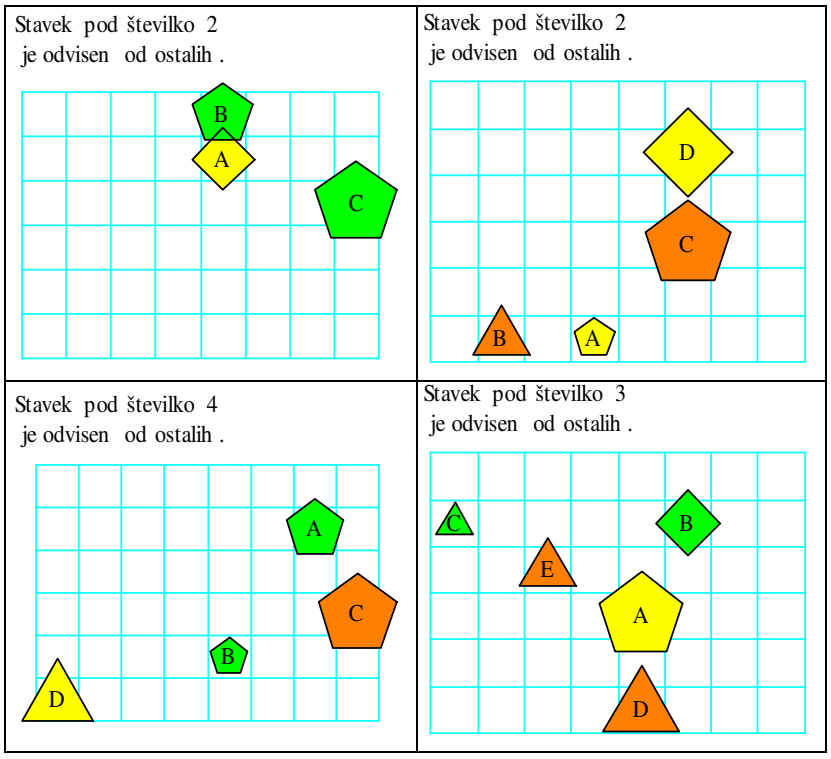
	1	2	3
1	8	6	8
2	5	7	9
3	9	5	10
4	10	2	5
5	9	7	9

b)

	1	2	3
1	4	8	8
2	3	4	2
3	3	6	5
4	4	3	4
5	6	1	5

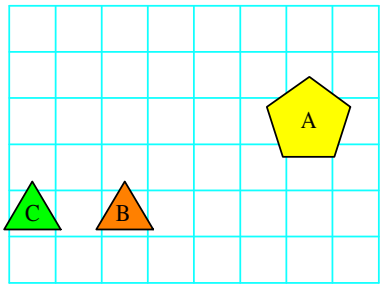
Imena likov

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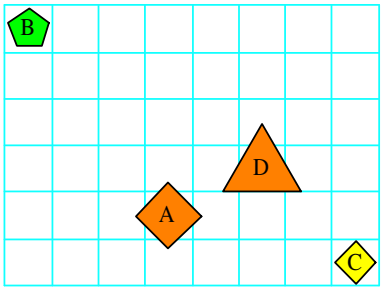


2.

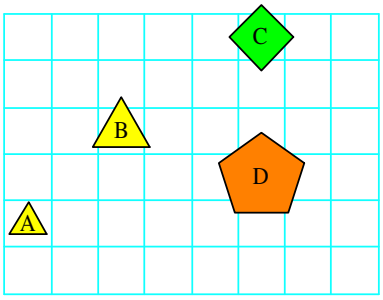
Stavek pod številko 3
je odvisen od ostalih .



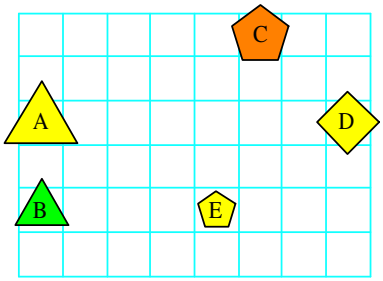
Stavek pod številko 3
je odvisen od ostalih .



Stavek pod številko 4
je odvisen od ostalih .

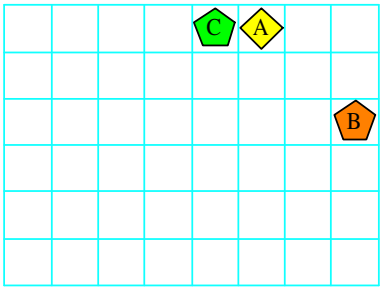


Stavek pod številko 2
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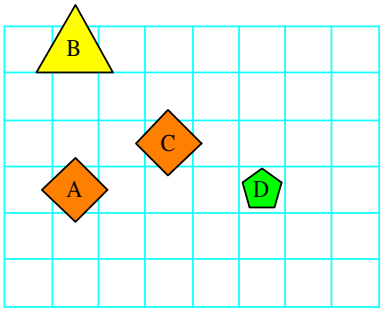


3.

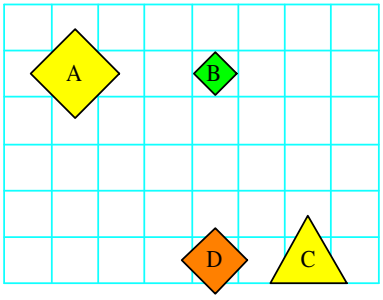
Stavek pod številko 2
je odvisen od ostalih .



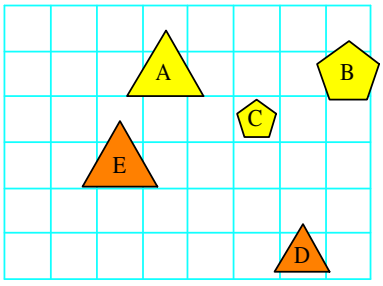
Stavek pod številko 1
je odvisen od ostalih .



Stavek pod številko 4
je odvisen od ostalih .

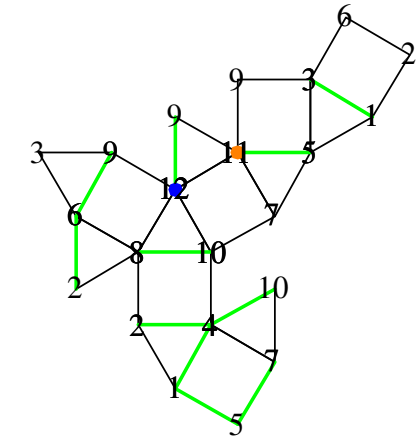


Stavek pod številko 4
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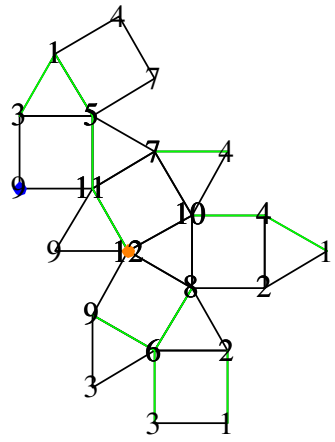


Labirinti na robovih poliedra

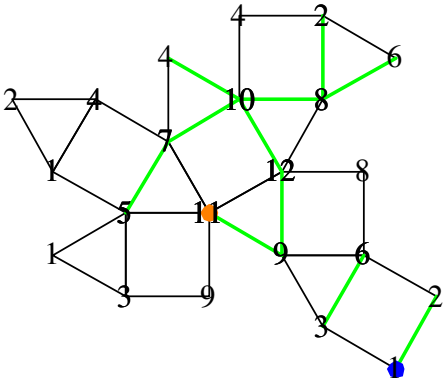
1.



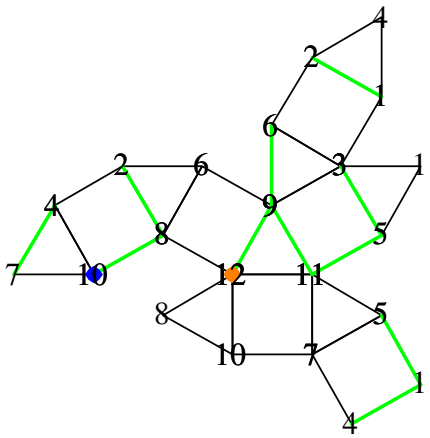
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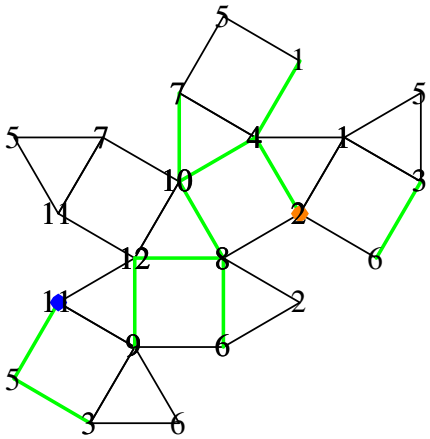
{9, 6, 3, 1, 5, 11, 12}



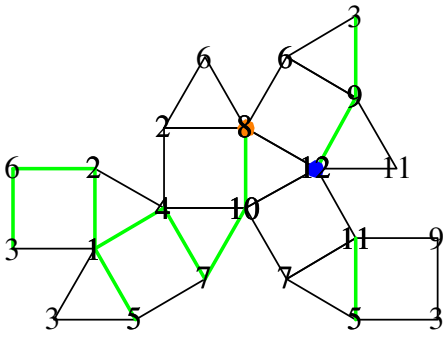
{1, 2, 8, 10, 12, 9, 11}



{10, 8, 2, 1, 5, 11, 9, 12}

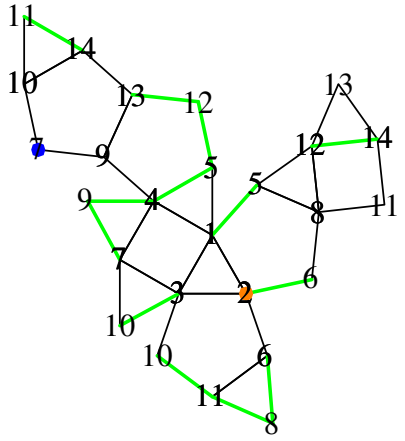


{11, 5, 3, 6, 8, 10, 4, 2}

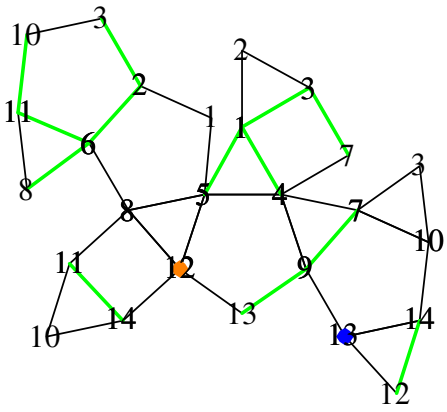


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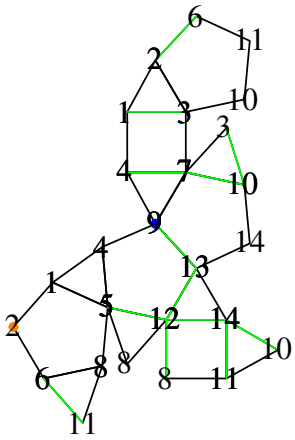
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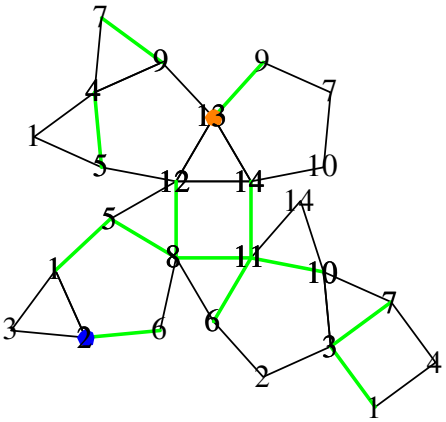
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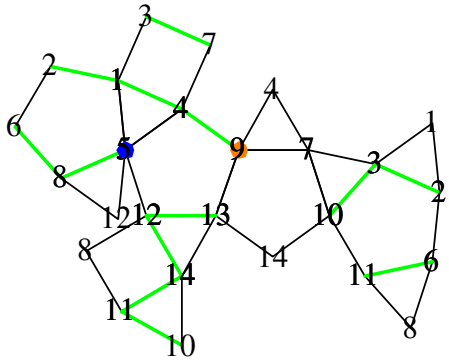
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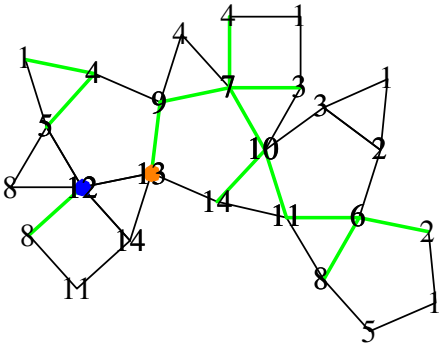
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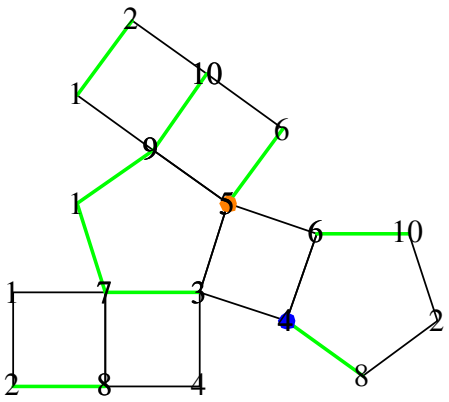


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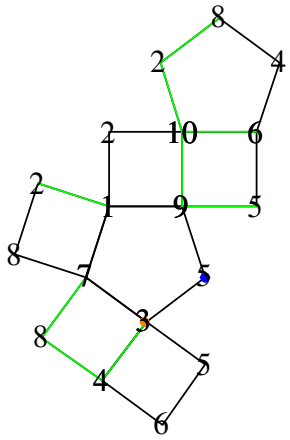


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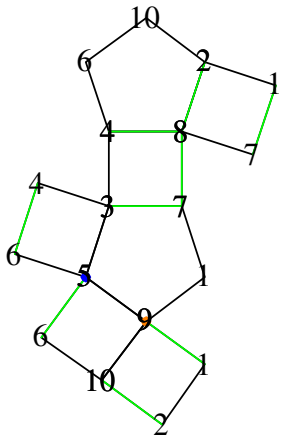
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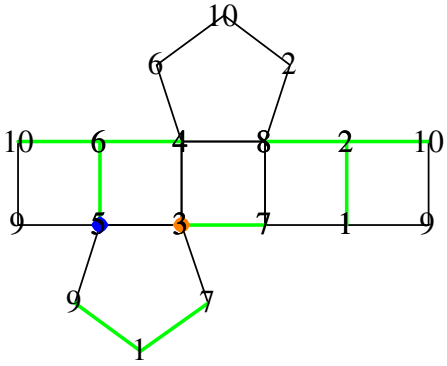
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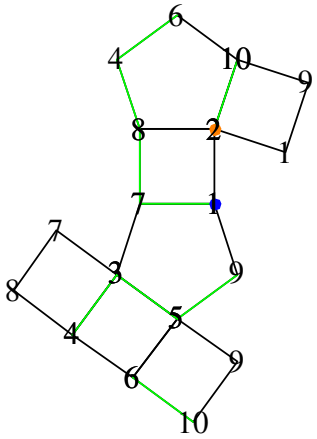
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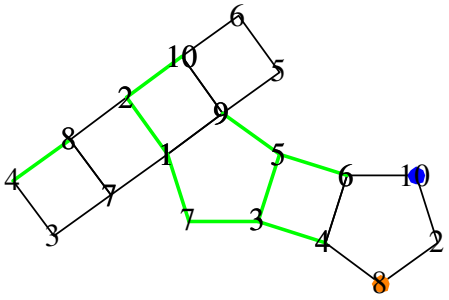
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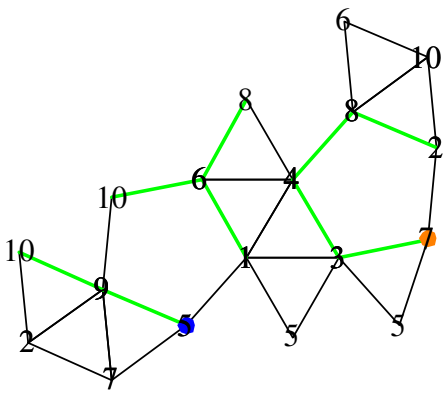


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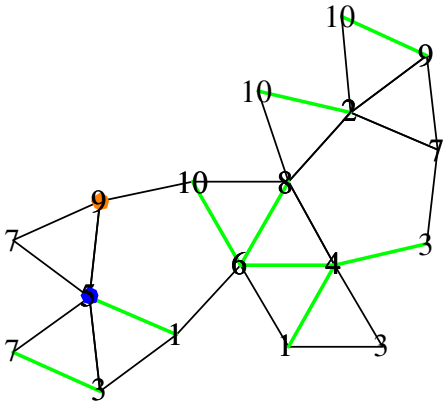


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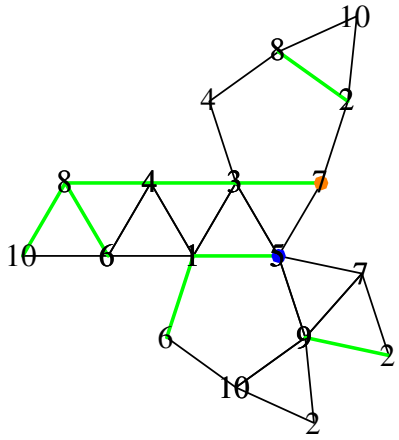
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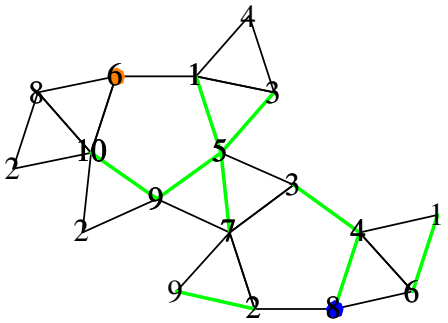
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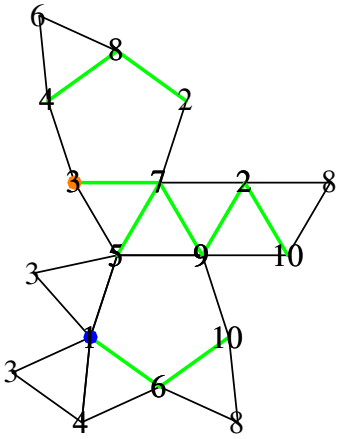
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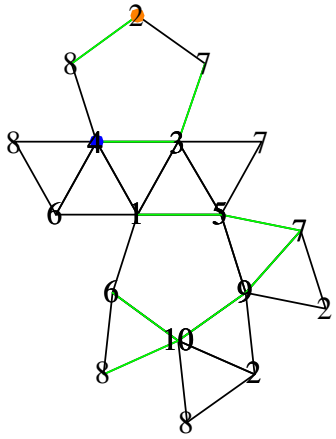
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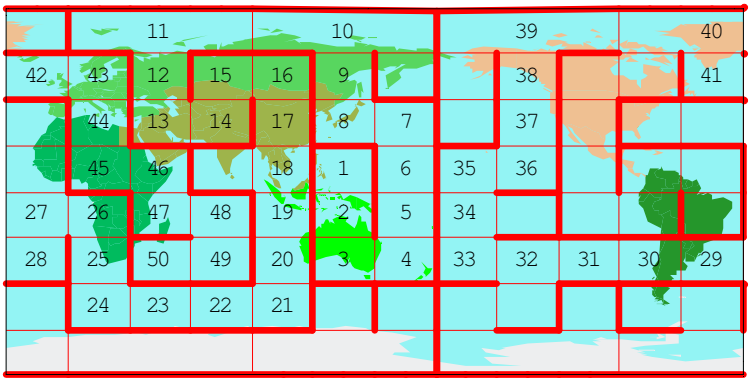
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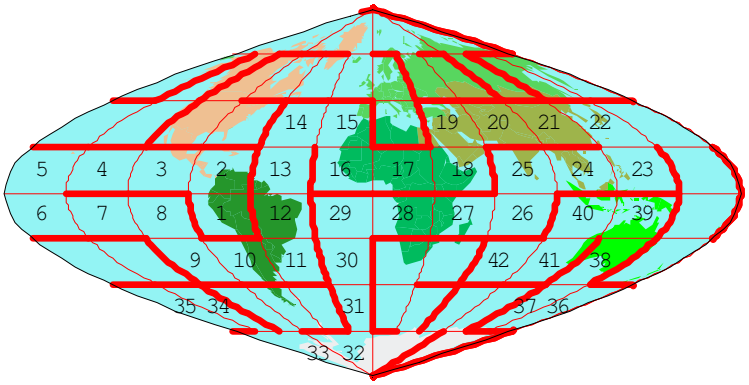
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Labirinti na zemljevidu

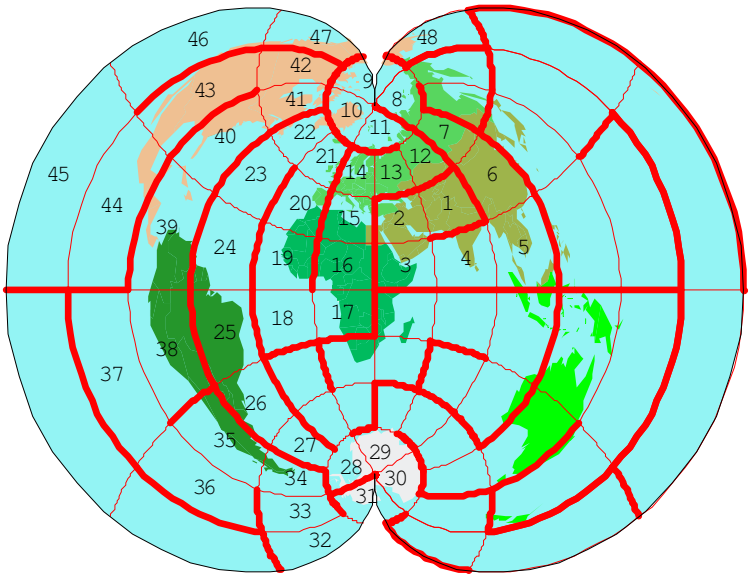
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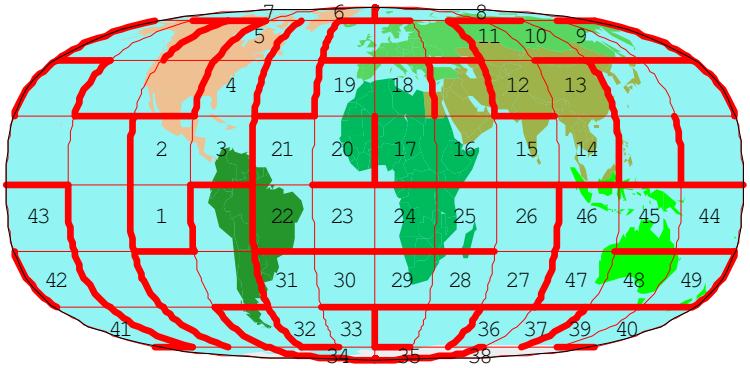
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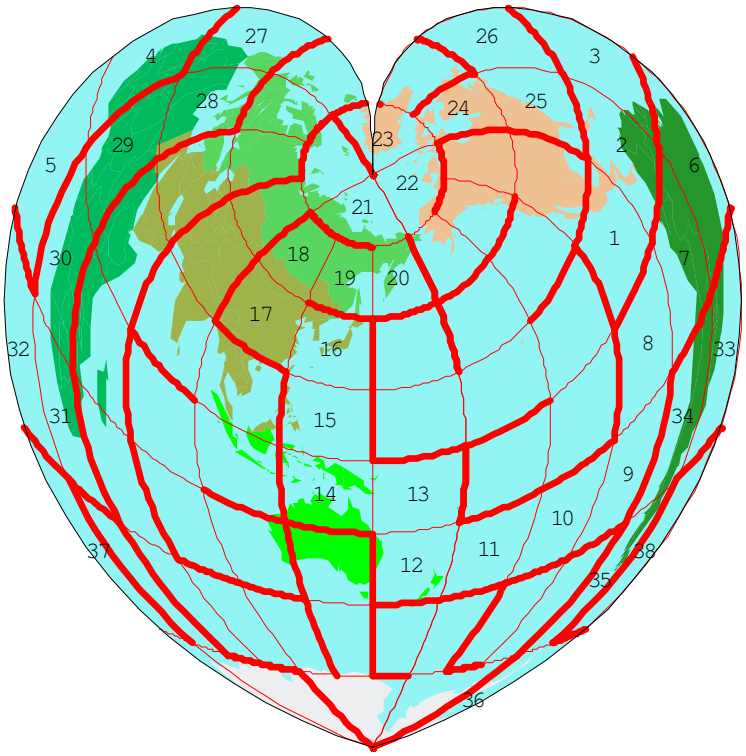
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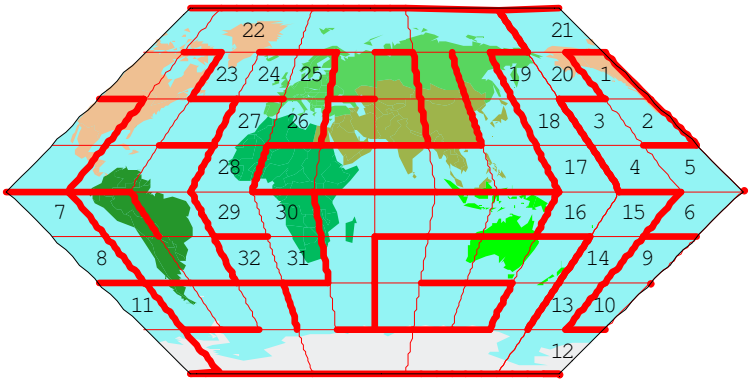
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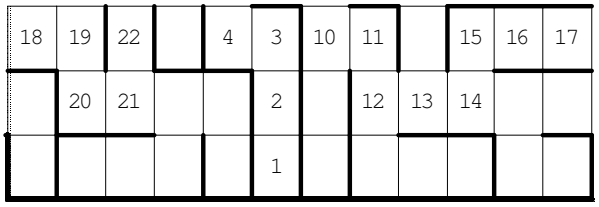

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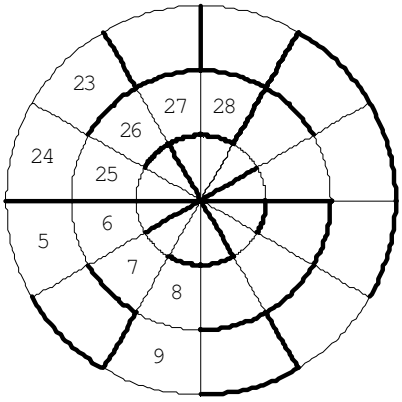
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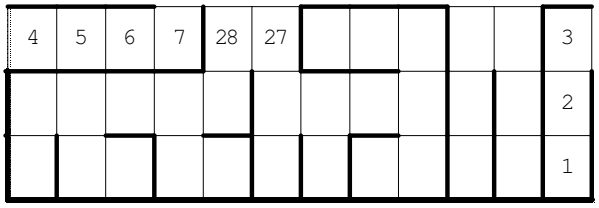
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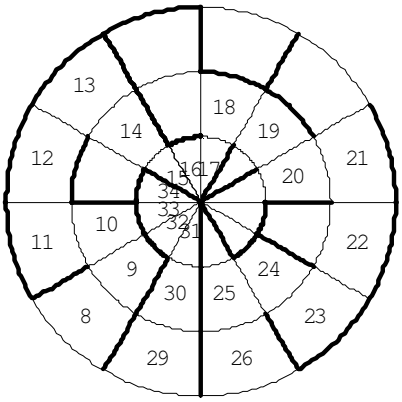
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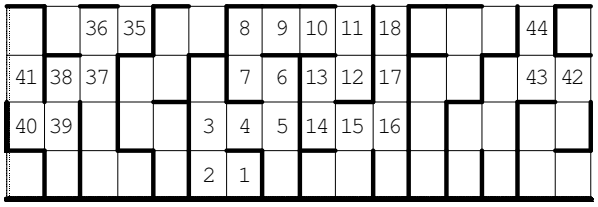


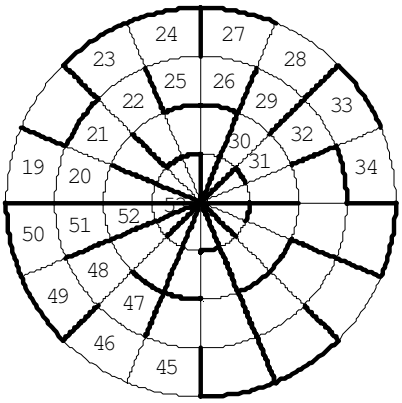
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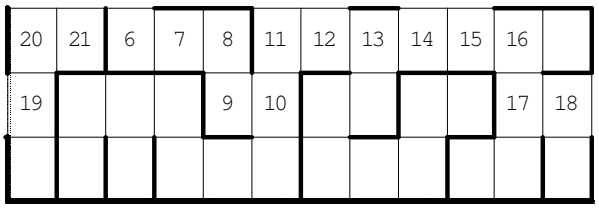


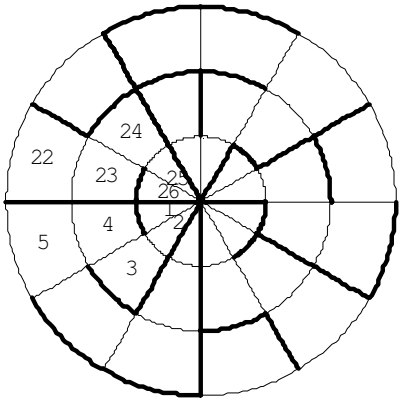
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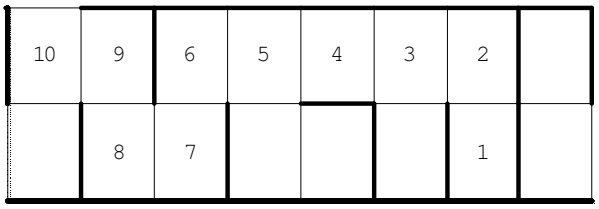


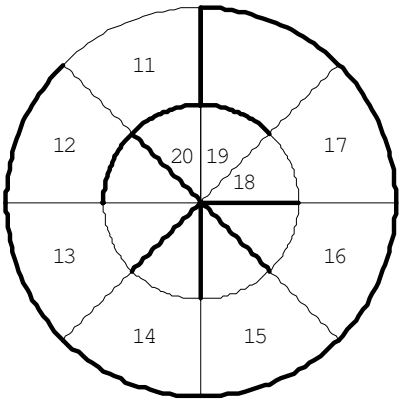
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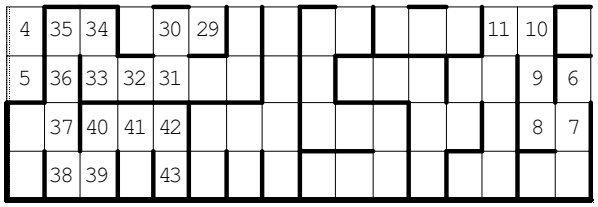


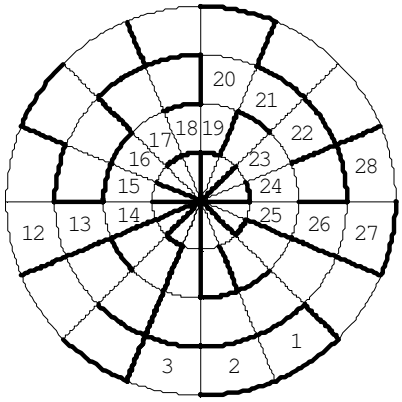
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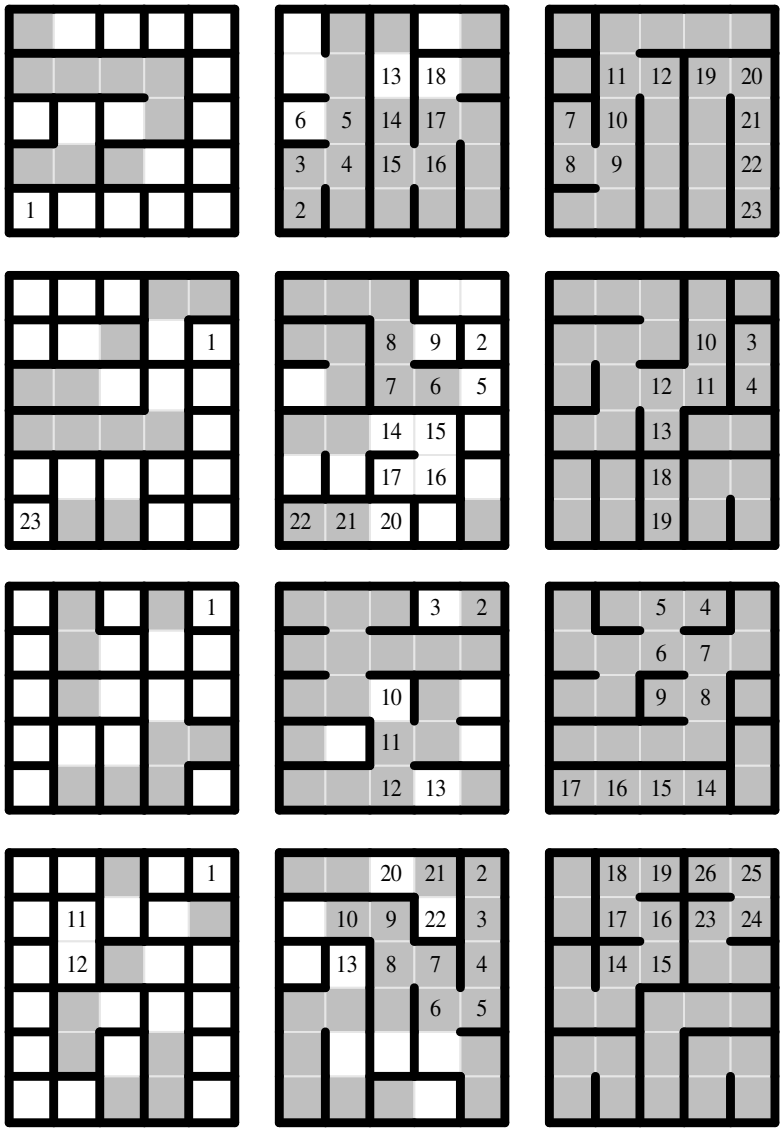


6.





Labirint v kvadru



Odstranjene kockice

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124 88 55
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108 66 65

Kocki določi mreži

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Spletna stran: **http://www.logika.si**.
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