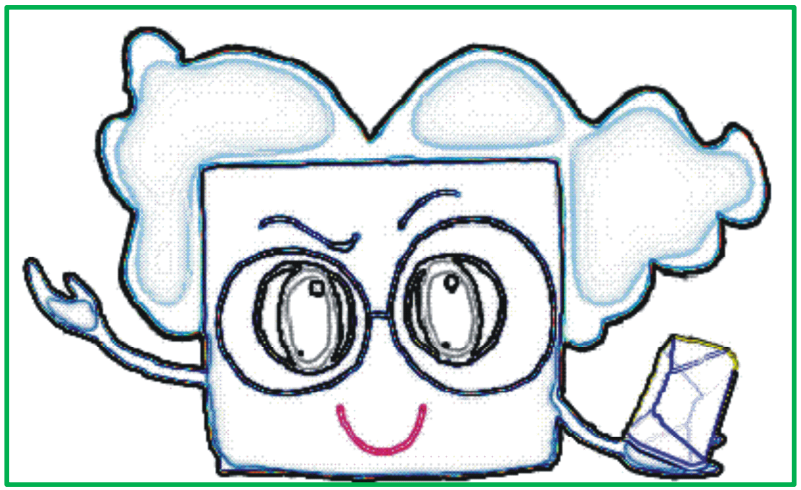
MATEMČEK

tekmovanje iz prostorske predstavljivosti



REŠITVE VAJ ZA TEKMOVANJE (2)

Za učenke in učence od 1. do 4. razreda

MATHEMA

PRIPOMOČKI

VEČ KOCK ENAKE VELIKOSTI
IGRALNA KOCKA
SVINČNIK IN PAPIR
ODPADNA EMBALAŽA IN ŠKARJE

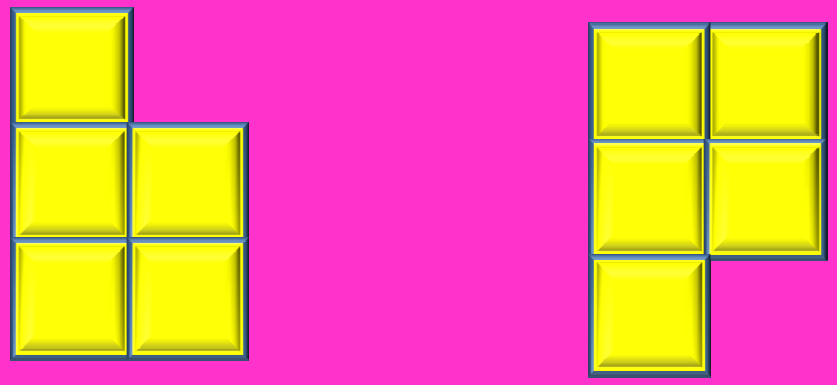
NALOGE SO V 4 ZAHTEVNOSTNIH STOPNJAH.

REŠITEV

1. STOPNJA

ALI STA OBLIKI ENAKI? LAHKO JU VRTIŠ, NE PA TUDI PRIVZDIGNEŠ IN OBRNEŠ (ZAMENJAŠ SPODNJO IN ZGORNJO STRAN).

NE

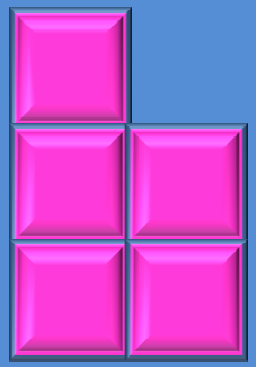


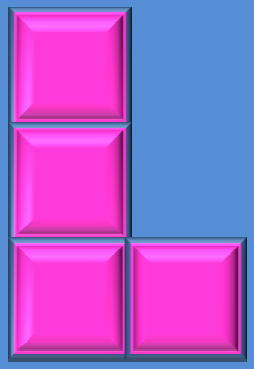
REŠITEV

1. STOPNJA

ALI LAHKO OBLIKI SESTAVIŠ V KVADRAT, TAKO DA SE NE PREKRIVATA IN MED NJIMA NI PRAZNEGA PROSTORA?

DA



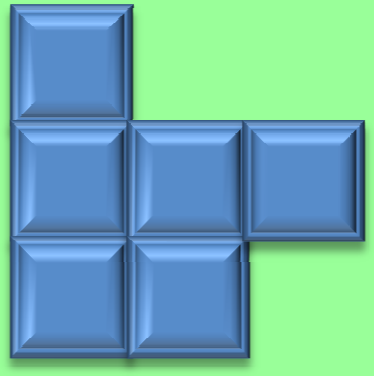


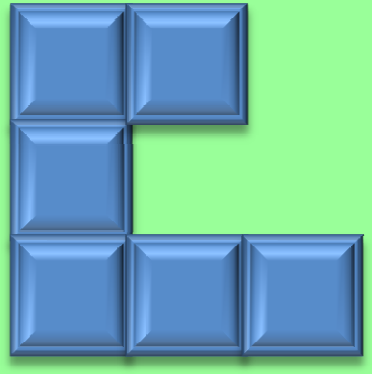
REŠITEV

1. STOPNJA

☆ ALI LAHKO OBLIKI SESTAVIŠ V KVADRAT, TAKO DA SE NE PREKRIVATA IN MED NJIMA NI PRAZNEGA PROSTORA?

NE

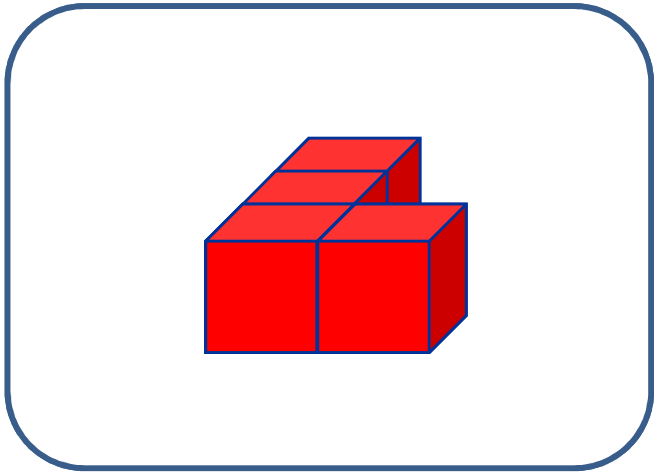


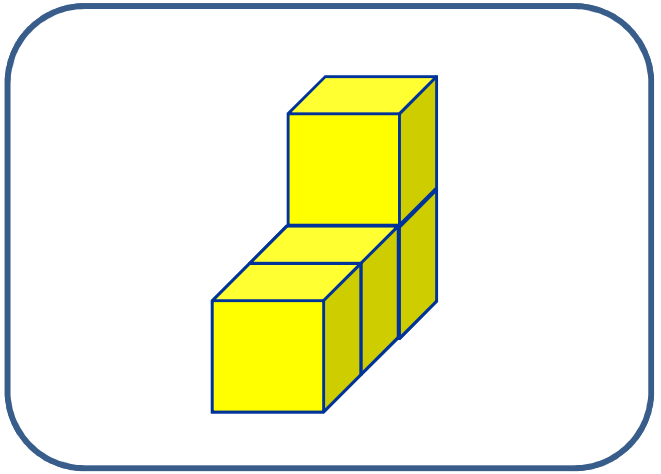


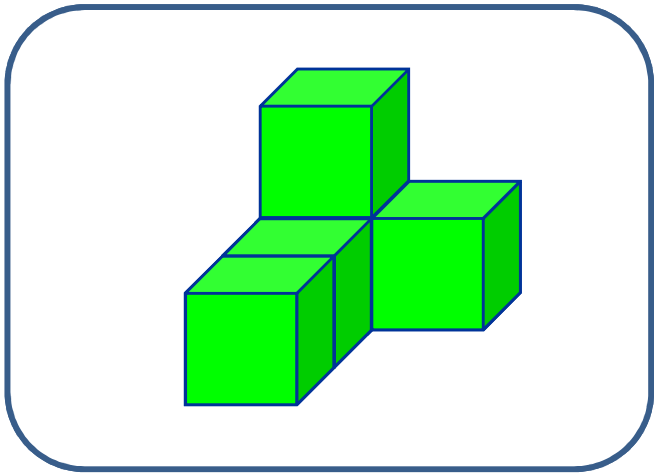
REŠITEV

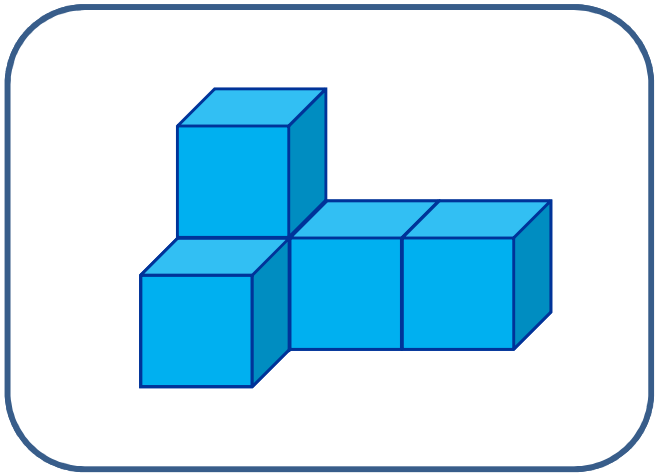
1. STOPNJA

SESTAVI IZ KOCK.









REŠITEV

1. STOPNJA

☆ ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.

DA

REŠITEV

1. STOPNJA

★ NARIŠI, KAKO VIDIŠ RDEČE TELO V TREH OGLEDALIH (LEVO, DESNO IN ZADAJ).

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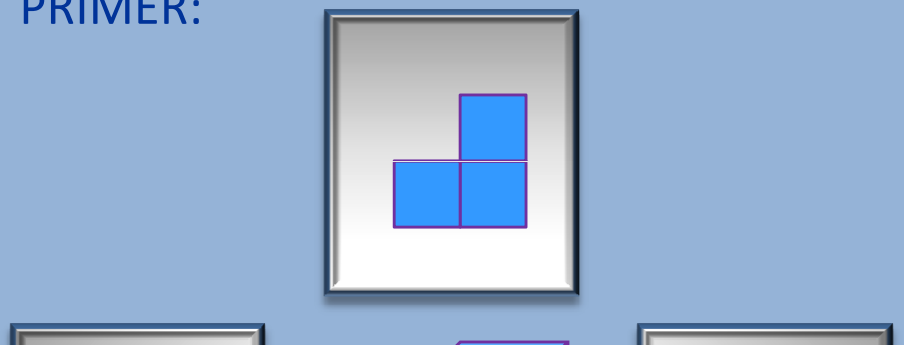

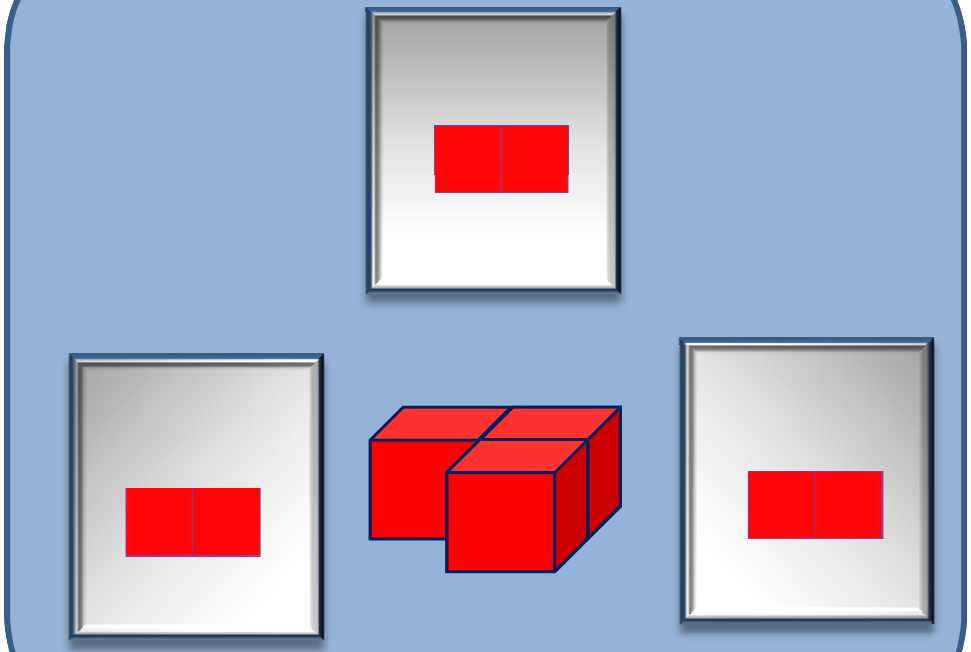

REŠITEV

1. STOPNJA

NARIŠI, KAKO VIDIŠ RUMENO TELO V TREH OGLEDALIH (LEVO, DESNO IN ZADAJ).

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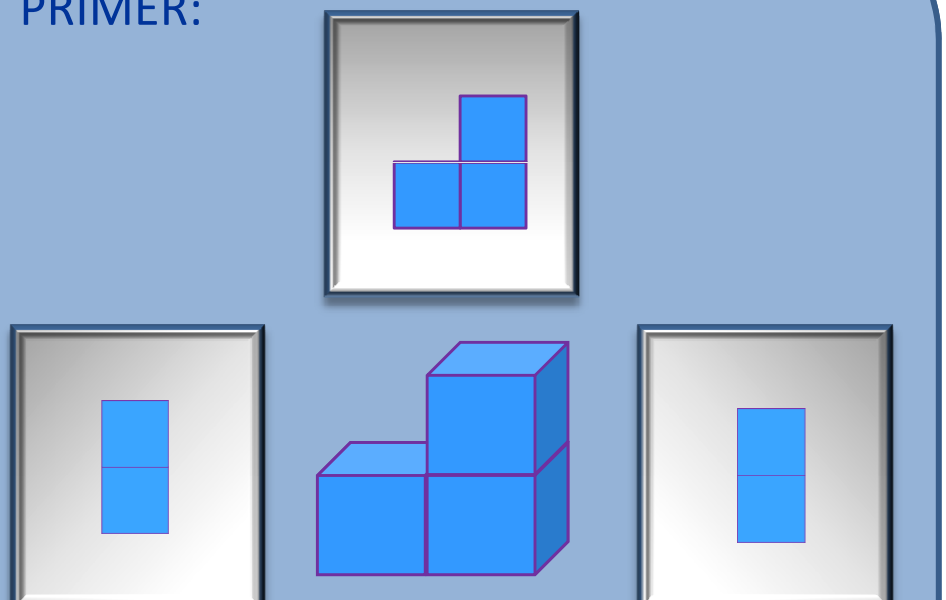

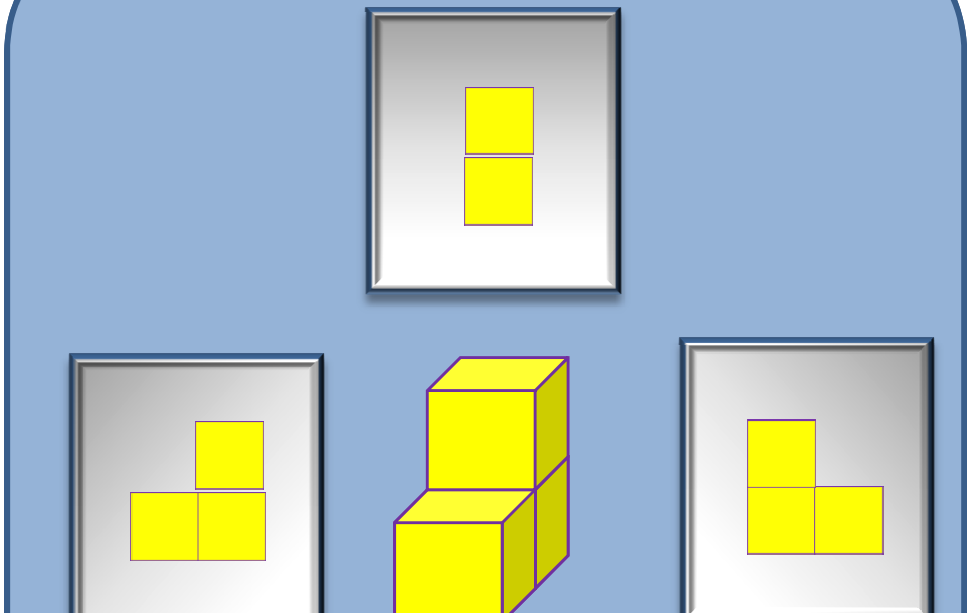

REŠITEV

1. STOPNJA

NARIŠI, KAKO VIDIŠ ROZA TELO V TREH OGLEDALIH (LEVO, DESNO IN ZADAJ).

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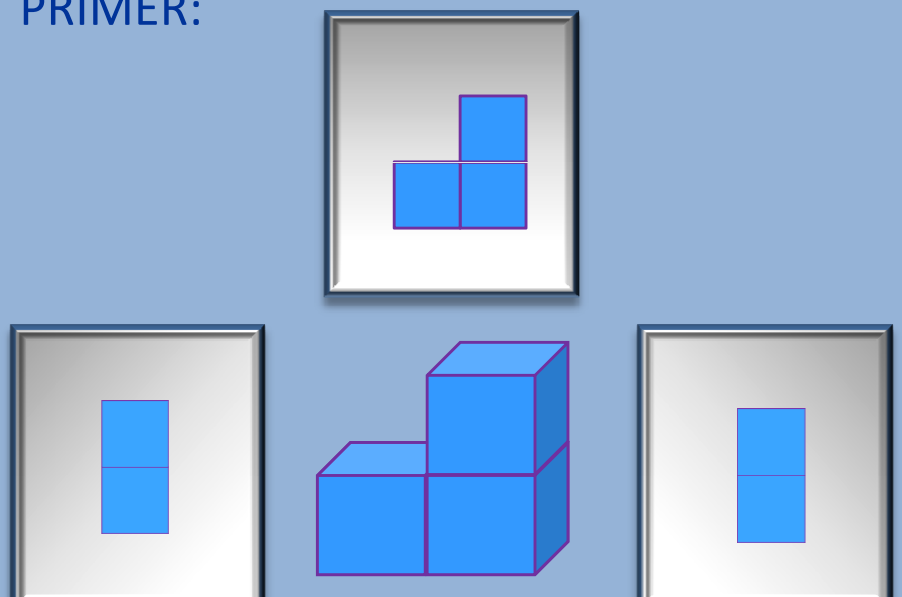

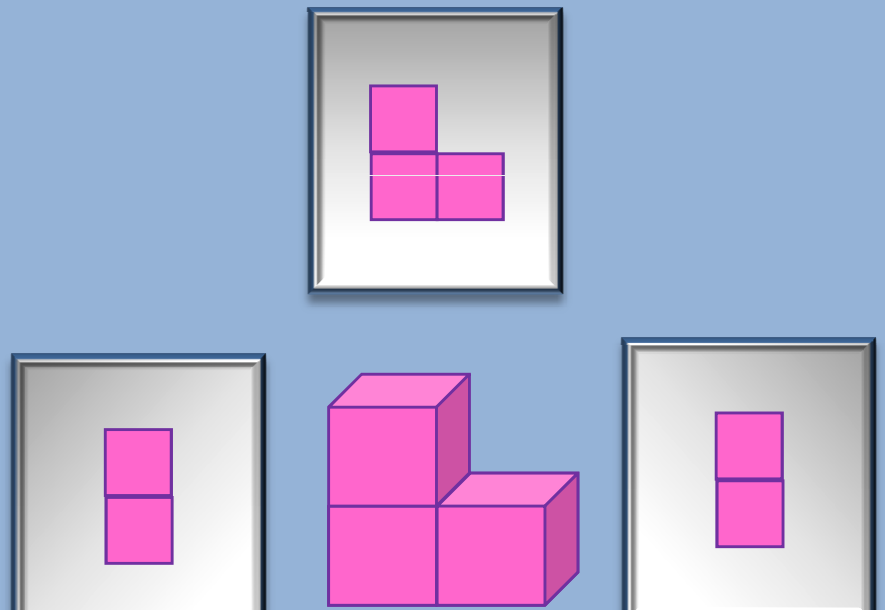

REŠITEV

1. STOPNJA

NARIŠI, KAKO VIDIŠ ORANŽNO TELO V TREH OGLEDALIH (LEVO, DESNO IN ZADAJ).

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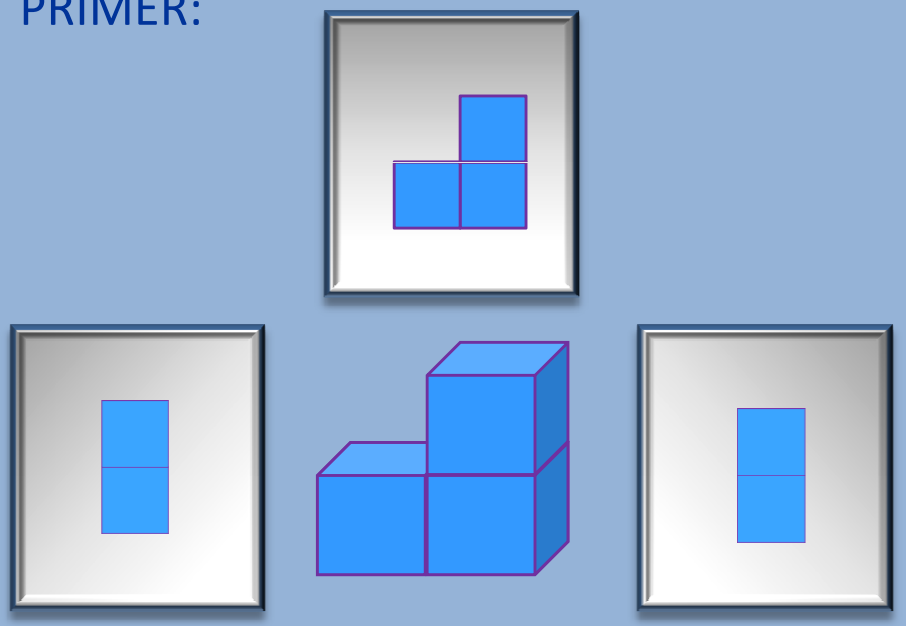
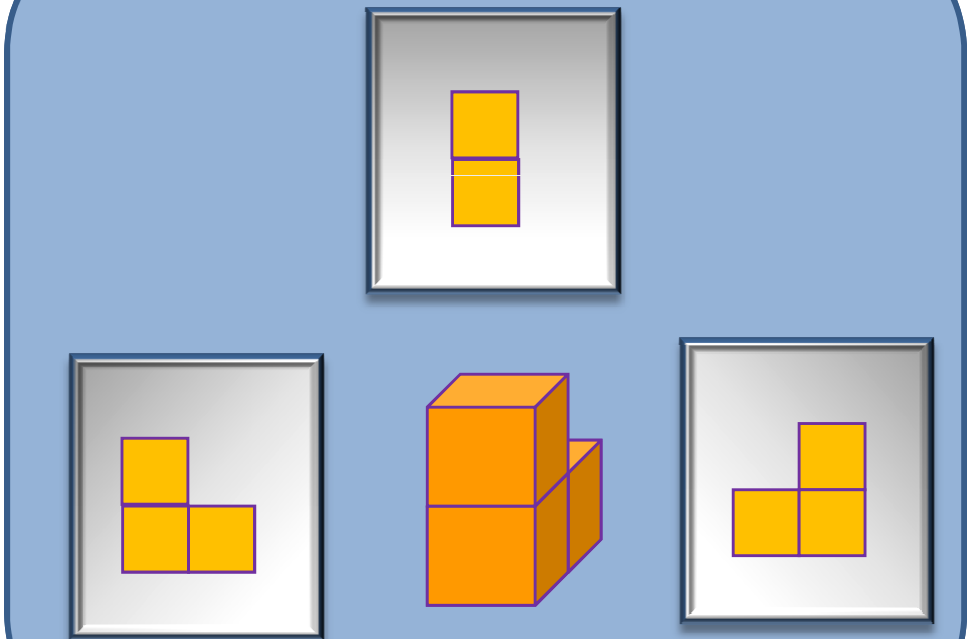
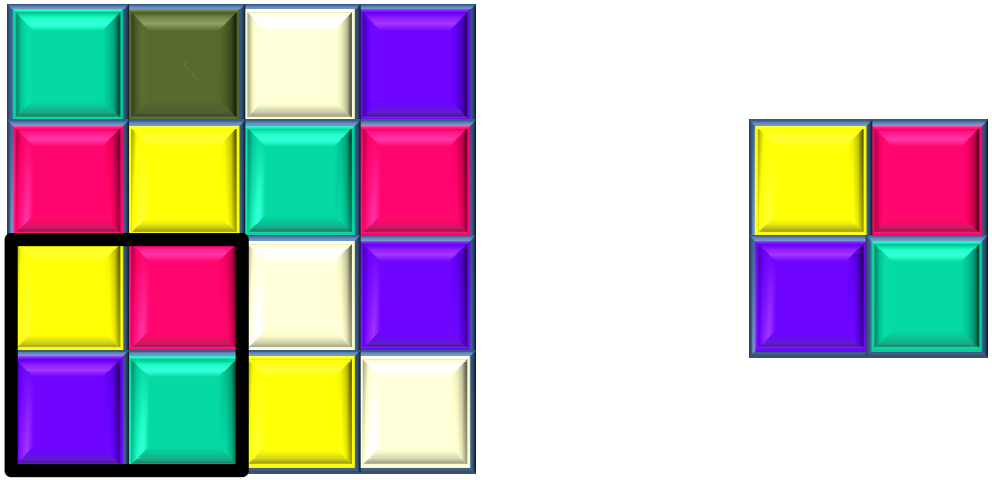




REŠITEV

1. STOPNJA

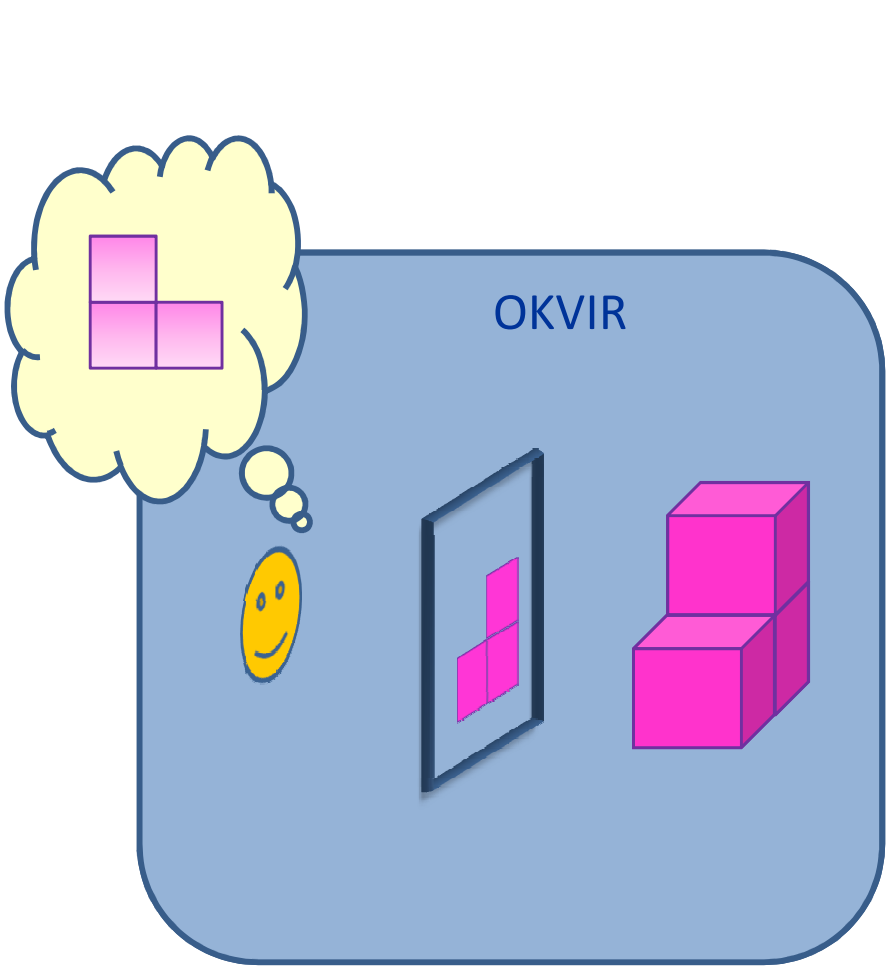
ALI NAJDEŠ DESNI BARVNI VZOREC V LEVEM?



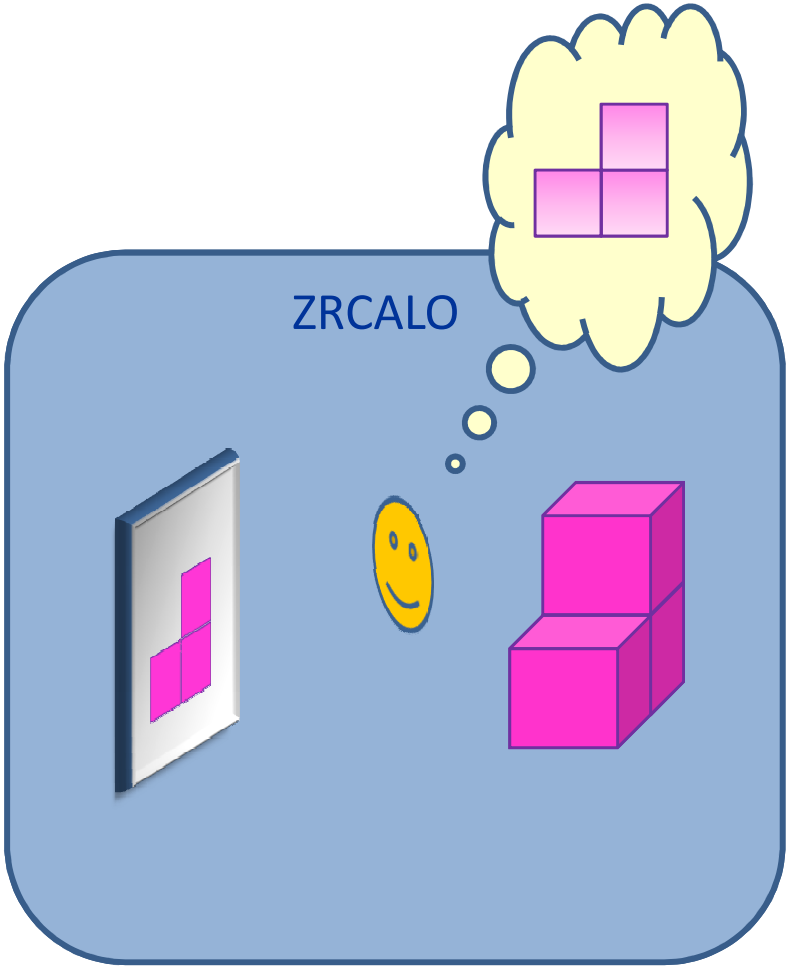
REŠITEV

1. STOPNJA

ALI STA OBE SLIKI PRAVILNI?
V PRVEM PRIMERU POGLEDAŠ TELO SKOZI OKVIR, V DRUGEM PA V ZRCALU.



PRAVILNA



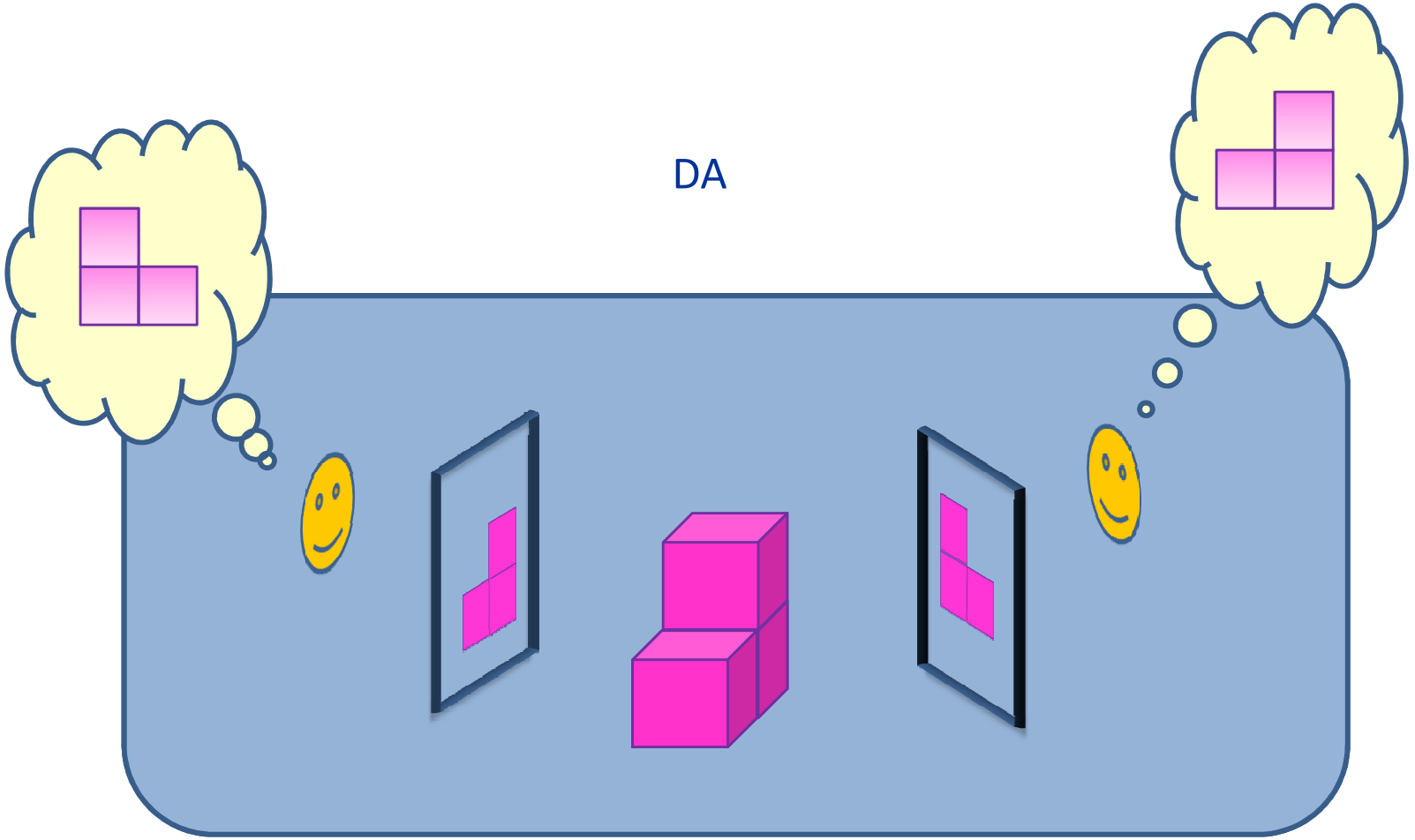
PRAVILNA

REŠITEV

1. STOPNJA

★ ALI STA OBE SLIKI TELESA NA SREDINI PRAVILNI? TELO GLEDAŠ SKOZI OKVIR.

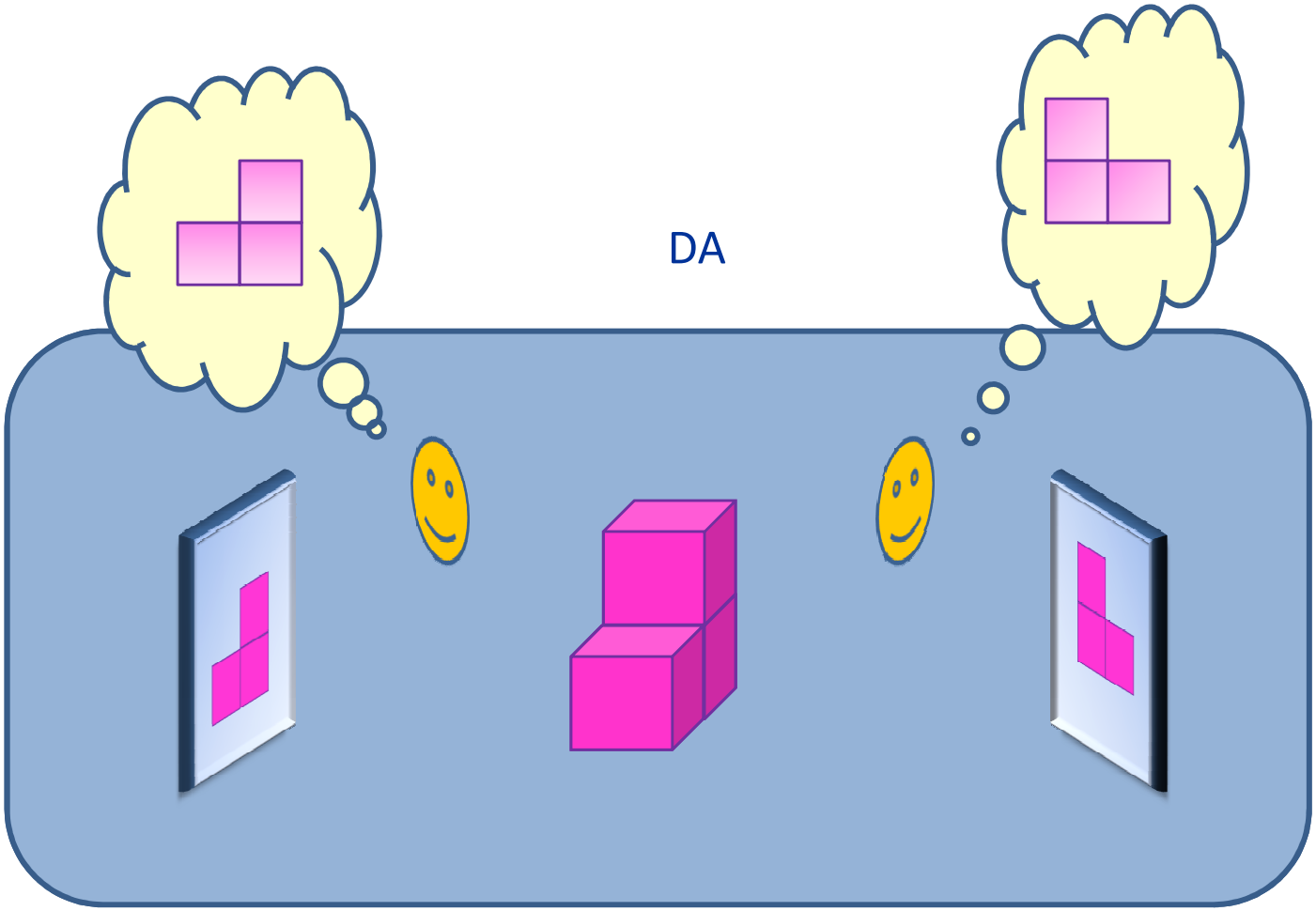
DA



REŠITEV

1. STOPNJA

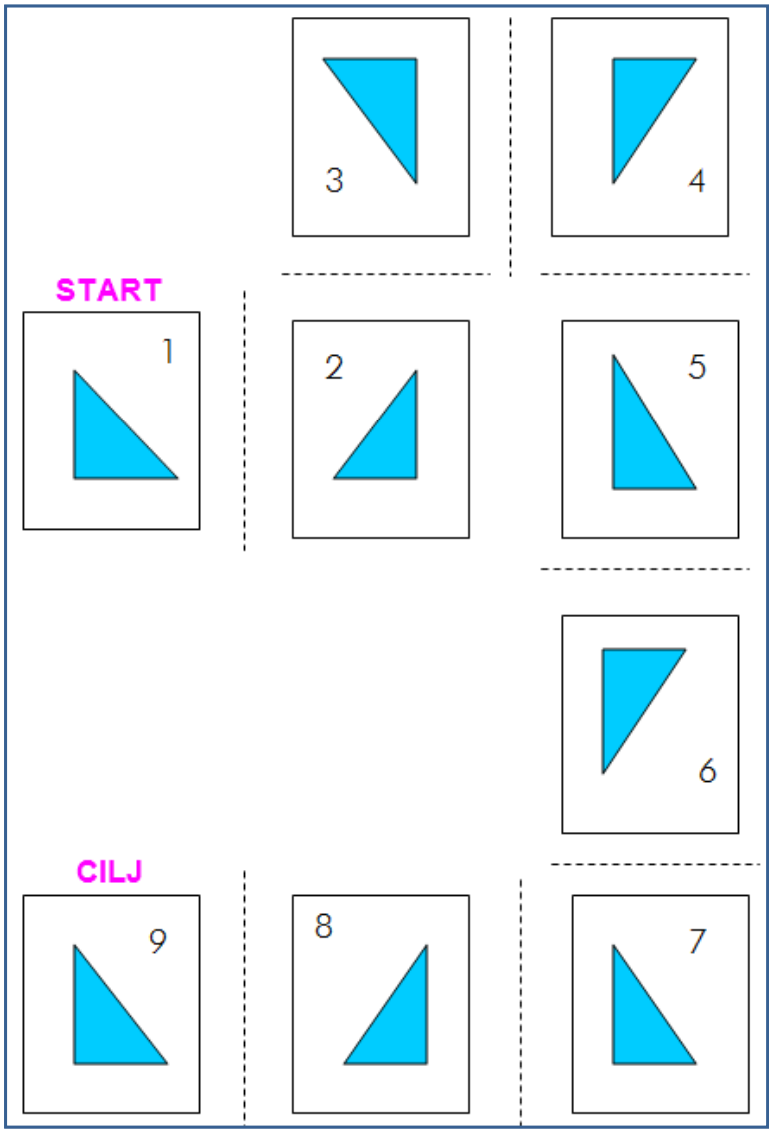
★ ALI STA OBE SLIKI TELESA PRAVILNI? TELO GLEDAŠ V OGLEDALU.

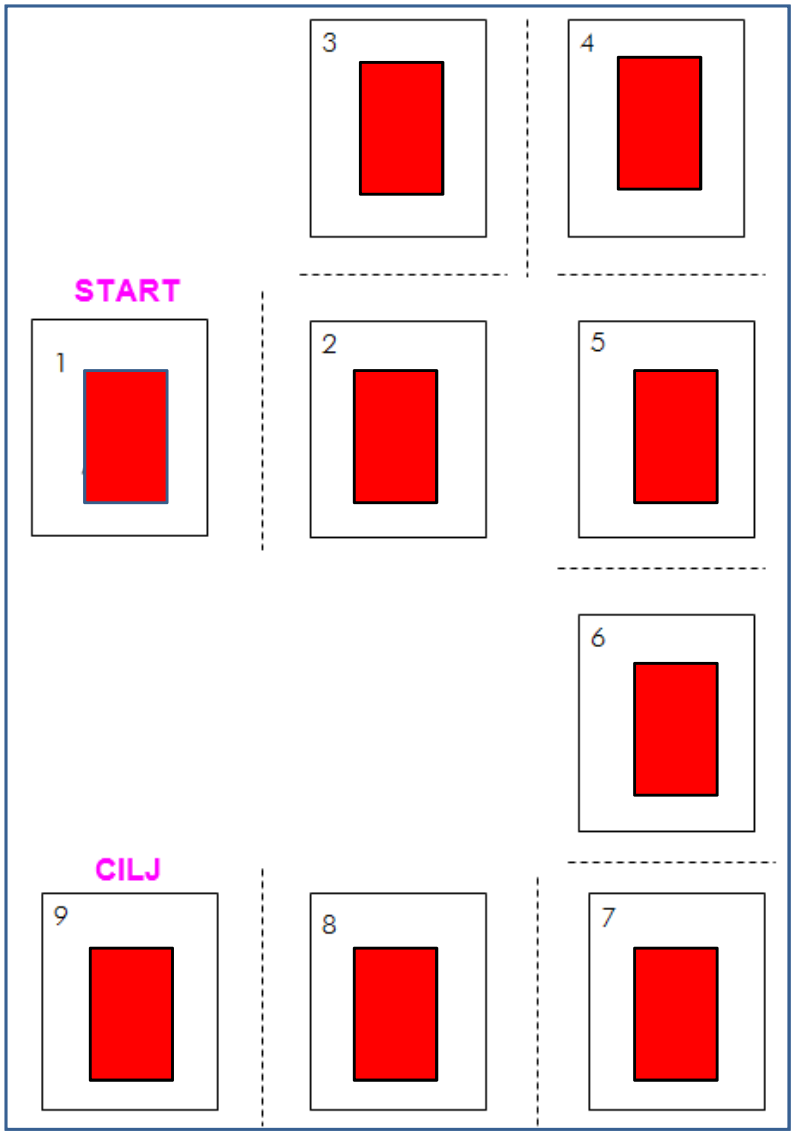


REŠITEV

1. STOPNJA

LIK NA DESNI ZRCALI PO ZGLEDU LEVO.

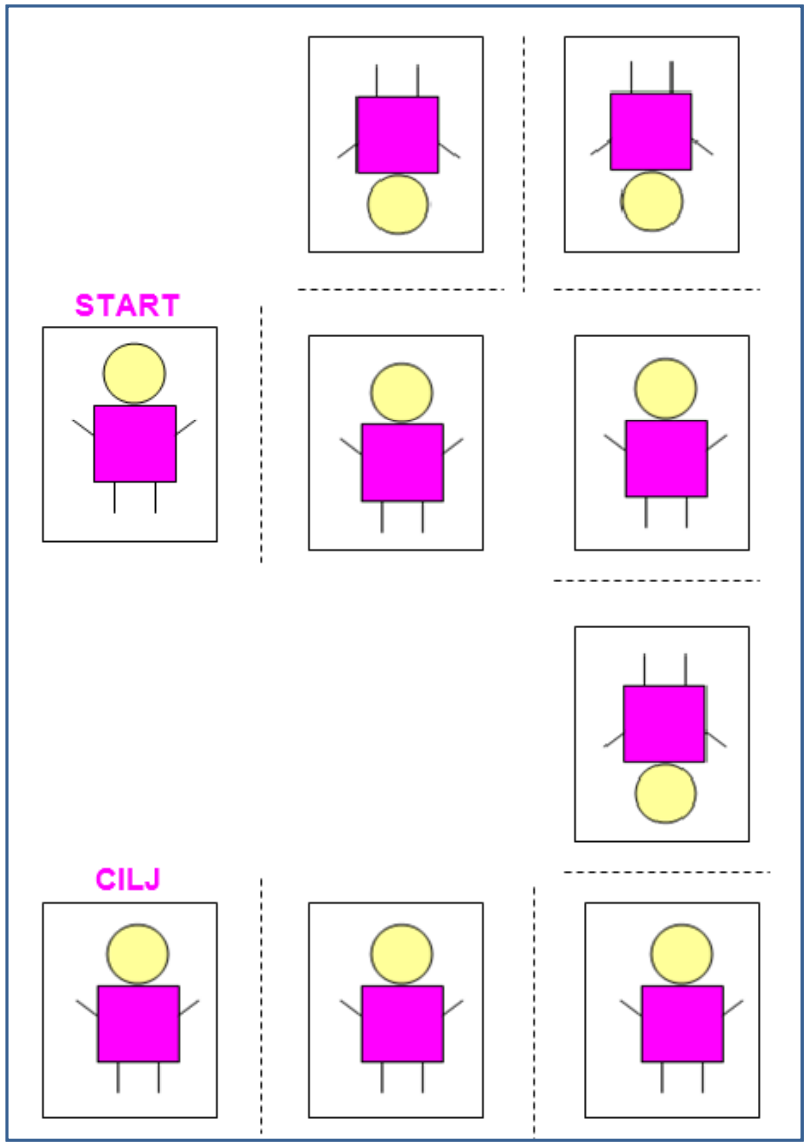




REŠITEV

1. STOPNJA

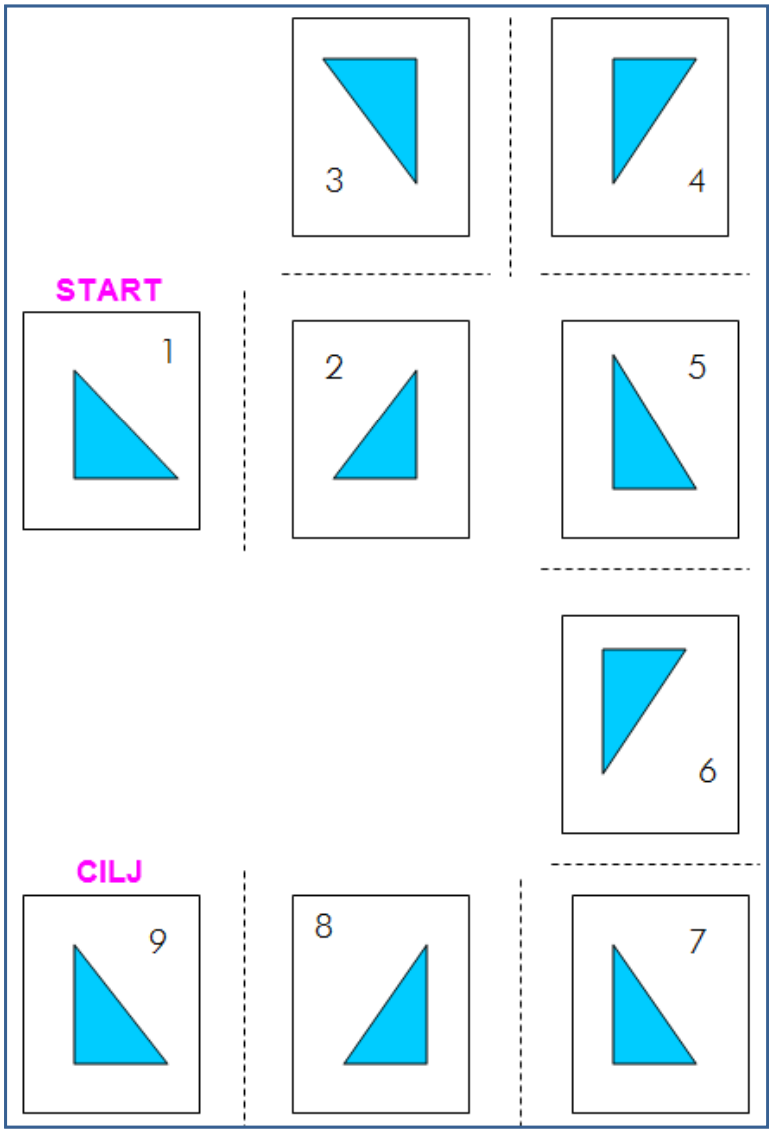
ZRCALI PO PREJŠNJEM ZGLEDU.

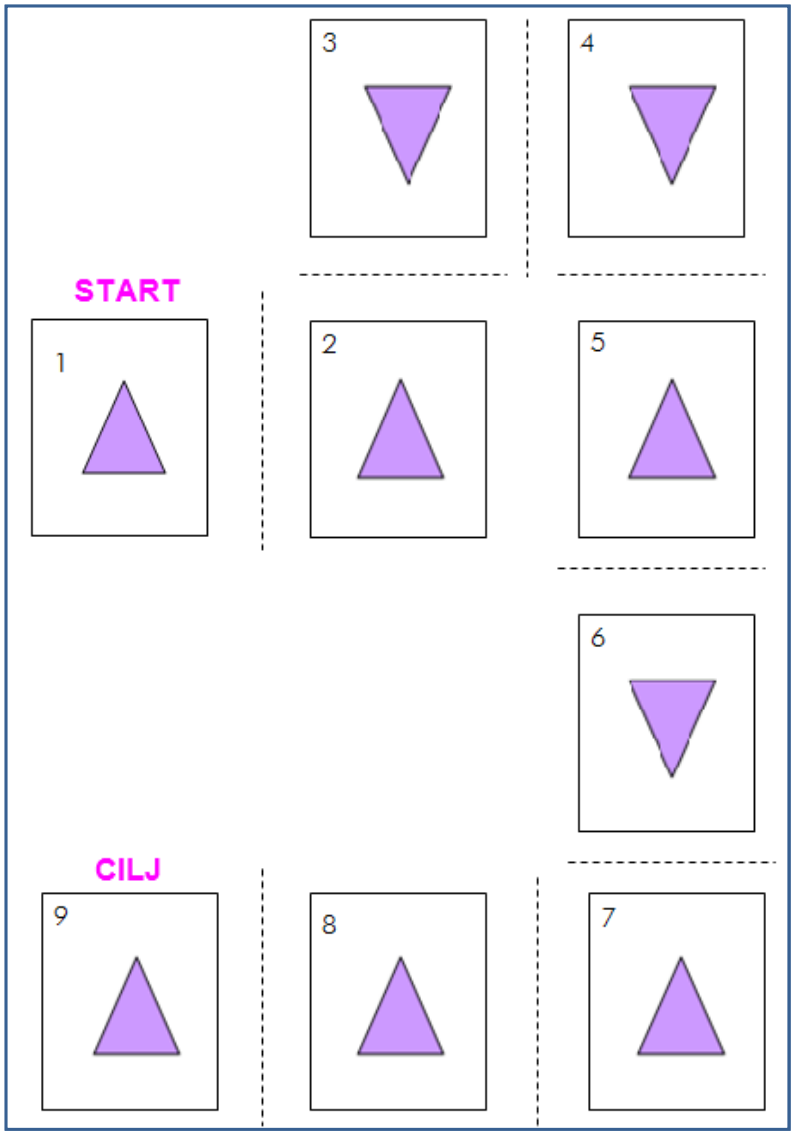


REŠITEV

1. STOPNJA

LIK NA DESNI ZRCALI PO ZGLEDU LEVO.

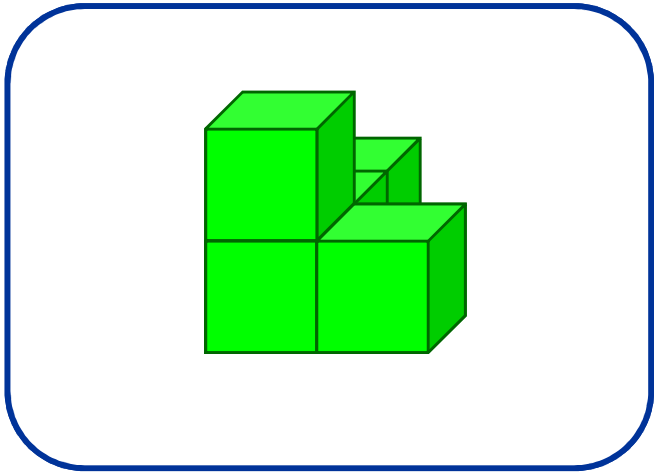


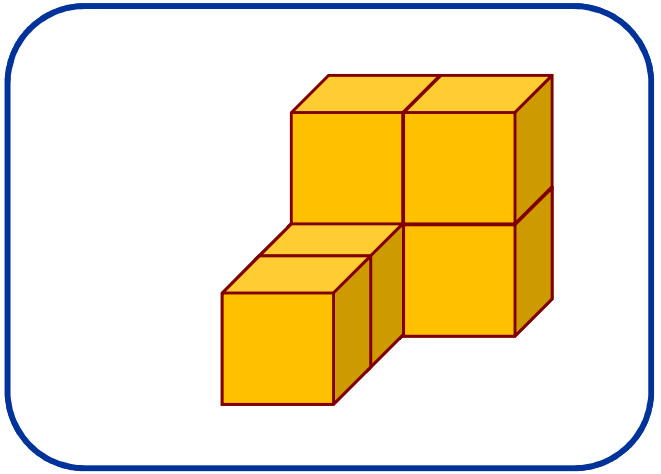


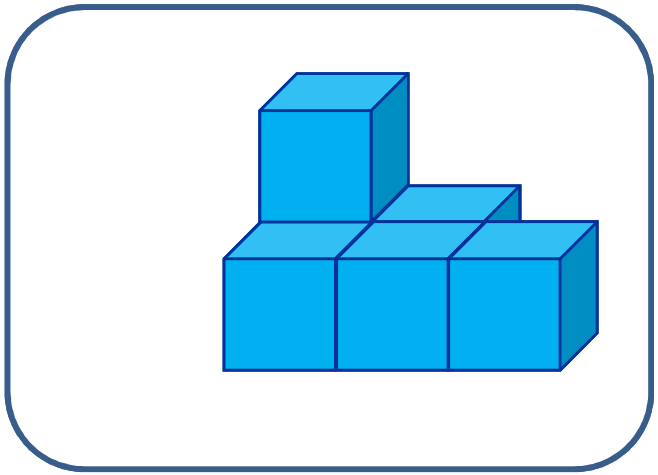
REŠITEV

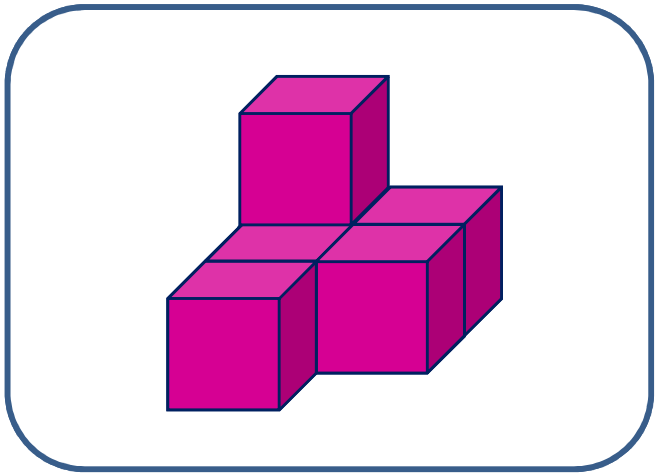
1. STOPNJA

SESTAVI IZ KOCK.









REŠITEV

1. STOPNJA

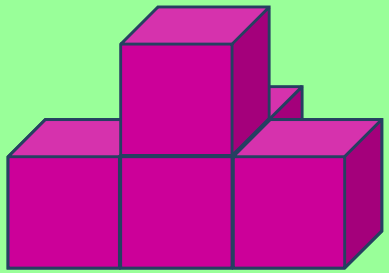
JE VRVICA V OBEH PRIMERIH ENAKO ZAVOZLANA?

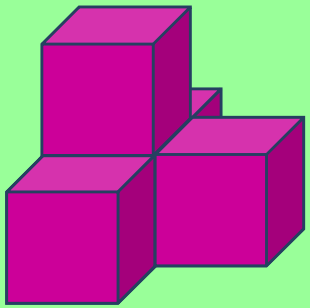
NE

REŠITEV

1. STOPNJA

☆ ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.



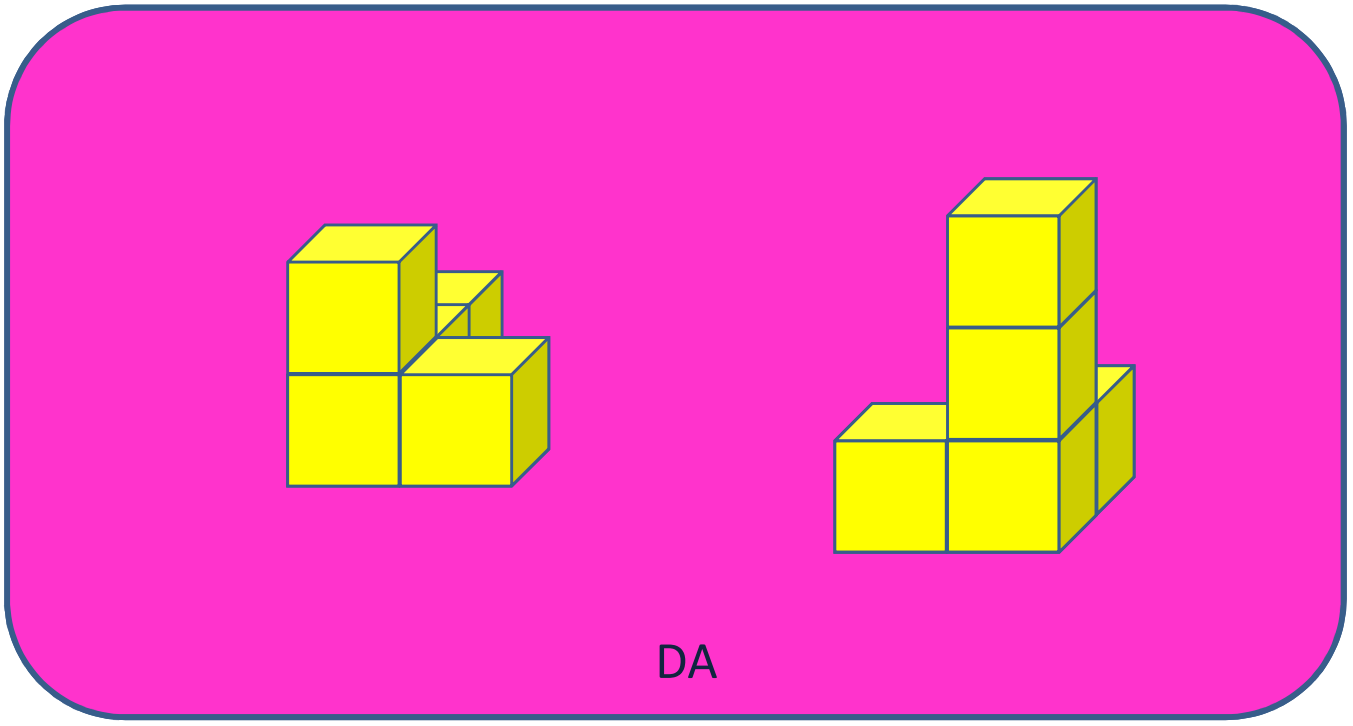


DA

REŠITEV

1. STOPNJA

☆ ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.

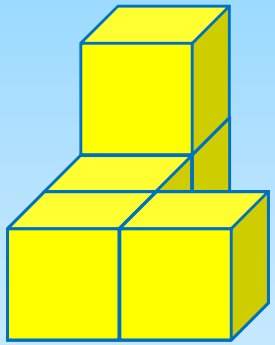


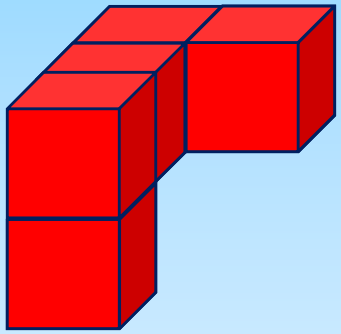
DA

REŠITEV

1. STOPNJA

☆ ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.





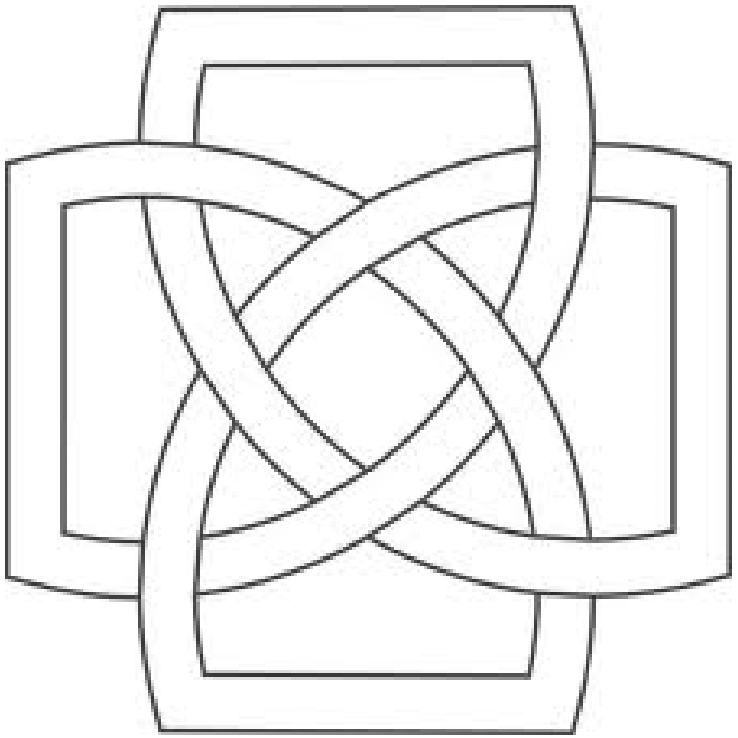
DA

REŠITEV

1. STOPNJA

★ ALI LAHKO SESTAVIŠ VOZEL IZ ENE SAME VRVICE, KI JO LE ENKRAT ZAVEŽEŠ?

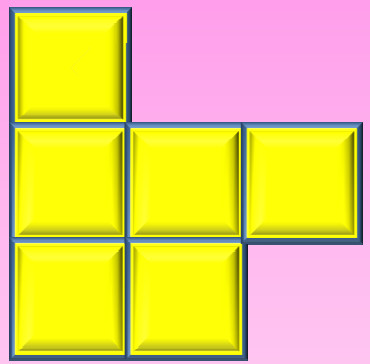
DA

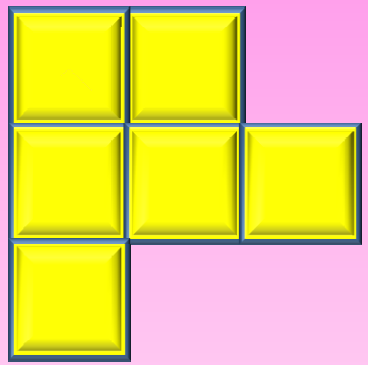


REŠITEV

2. STOPNJA

☆ ALI STA OBLIKI ENAKI? LAHKO JU VRTIŠ, NE PA TUDI PRIVZDIGNEŠ IN OBRNEŠ.



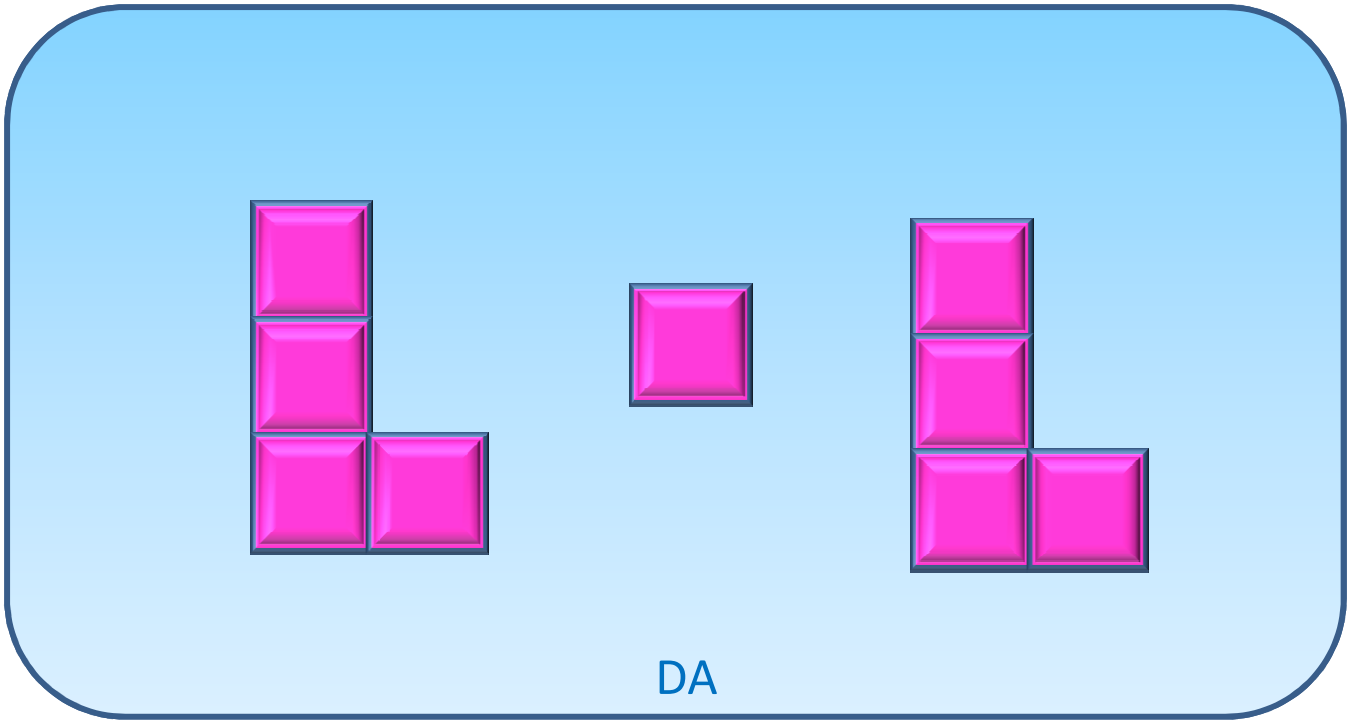


NE

REŠITEV

2. STOPNJA

ALI LAHKO OBLIKE SESTAVIŠ V KVADRAT, TAKO DA SE NE PREKRIVAJO IN MED NJIMI NI PRAZNEGA PROSTORA?

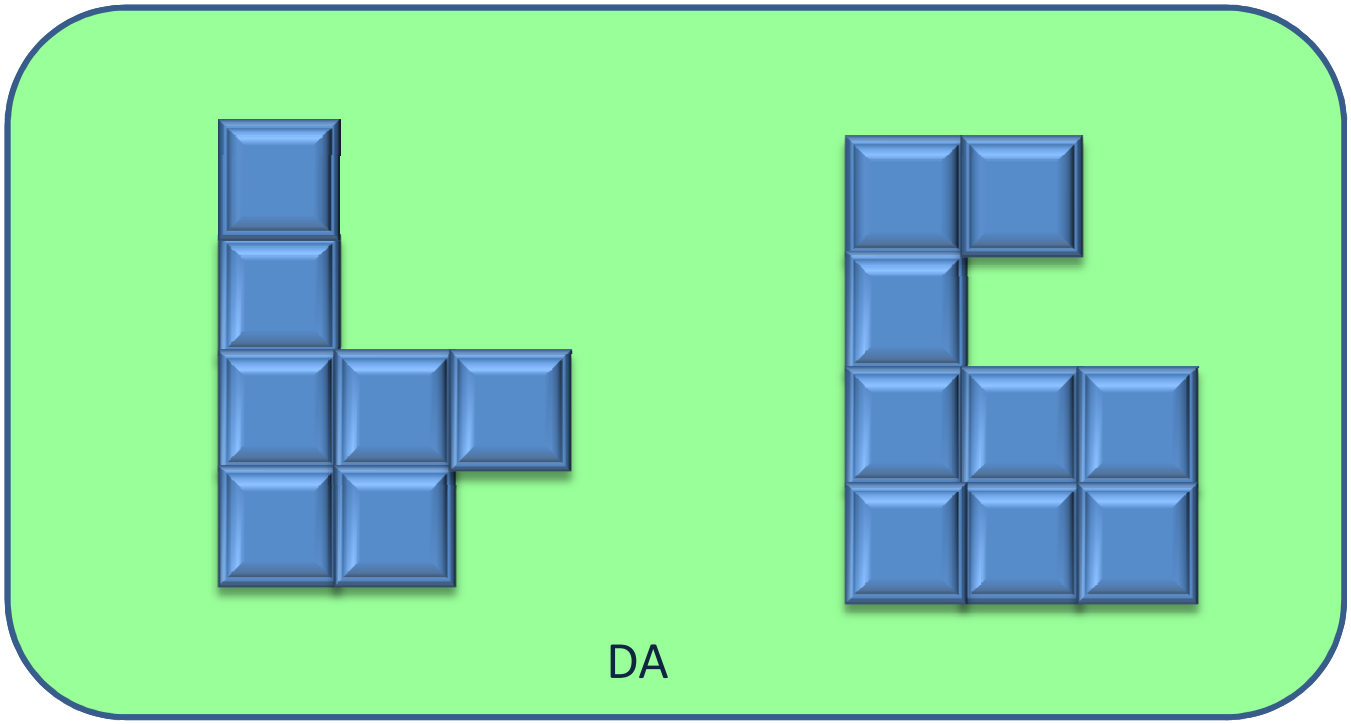


DA

REŠITEV

2. STOPNJA

ALI LAHKO OBLIKI SESTAVIŠ V KVADRAT, TAKO DA SE NE PREKRIVATA IN MED NJIMA NI PRAZNEGA PROSTORA?

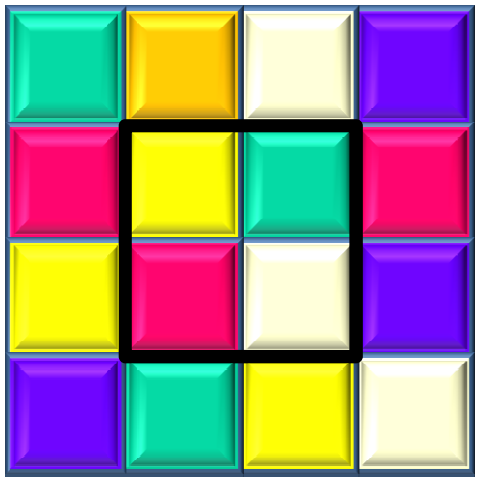


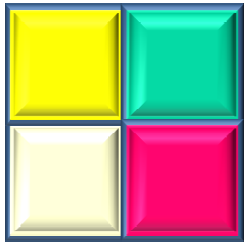
DA

REŠITEV

2. STOPNJA

ALI NAJDEŠ DESNI BARVNI VZOREC V LEVEM? DESNI VZOREC LAHKO VRTIŠ.

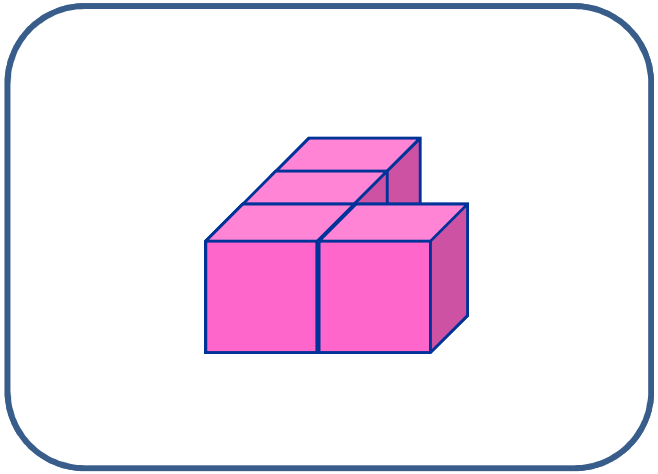


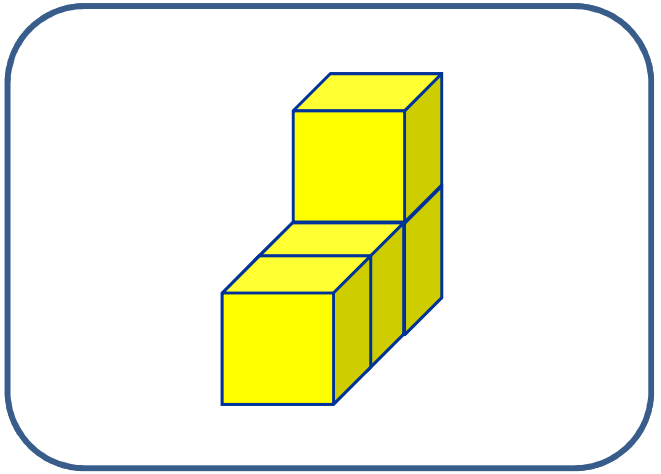


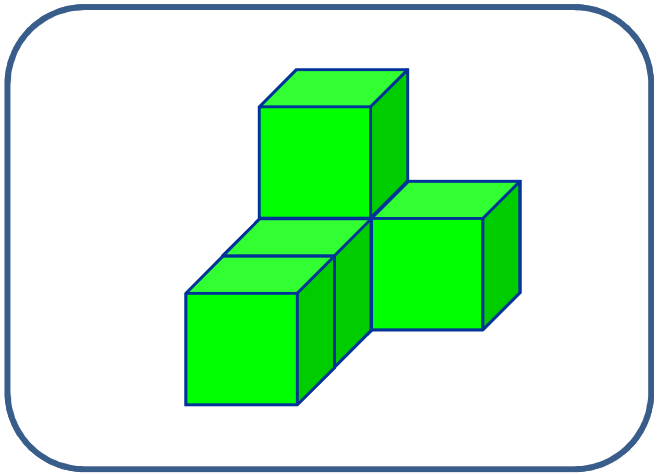
REŠITEV

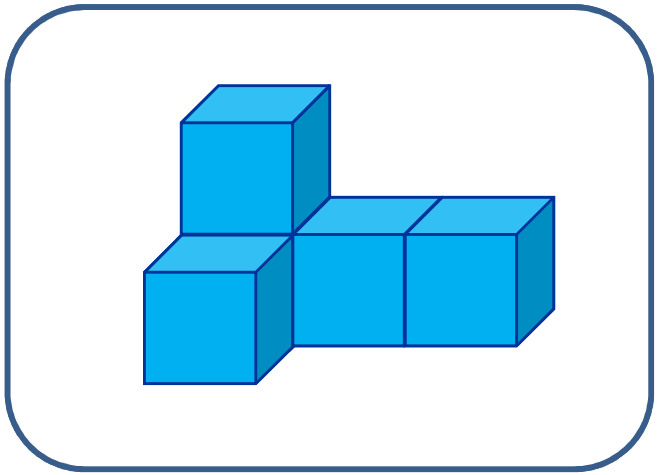
2. STOPNJA

SESTAVI IZ KOCK.





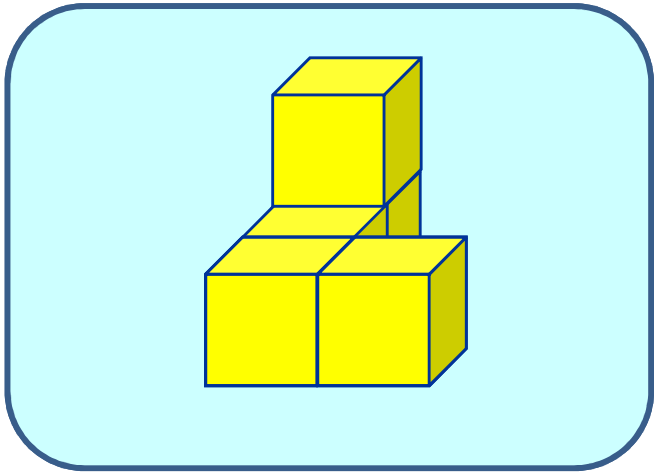


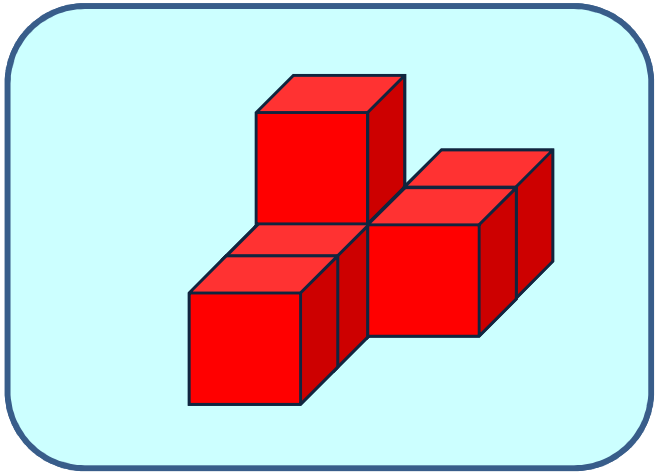


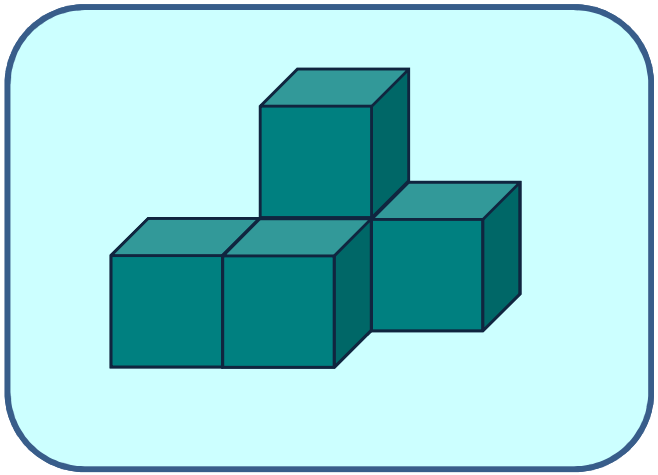
REŠITEV

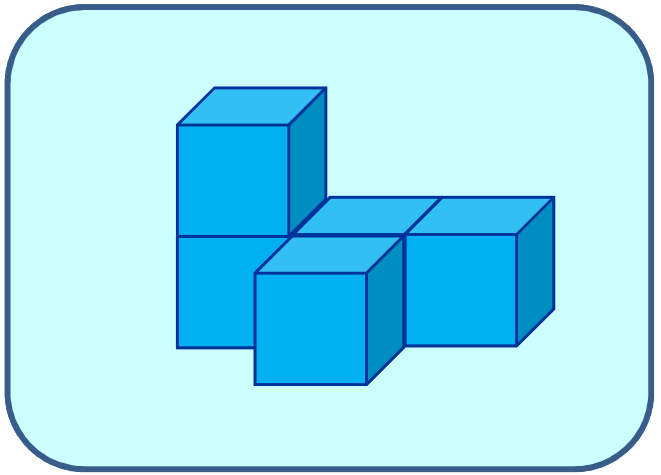
2. STOPNJA

SESTAVI IZ KOCK.





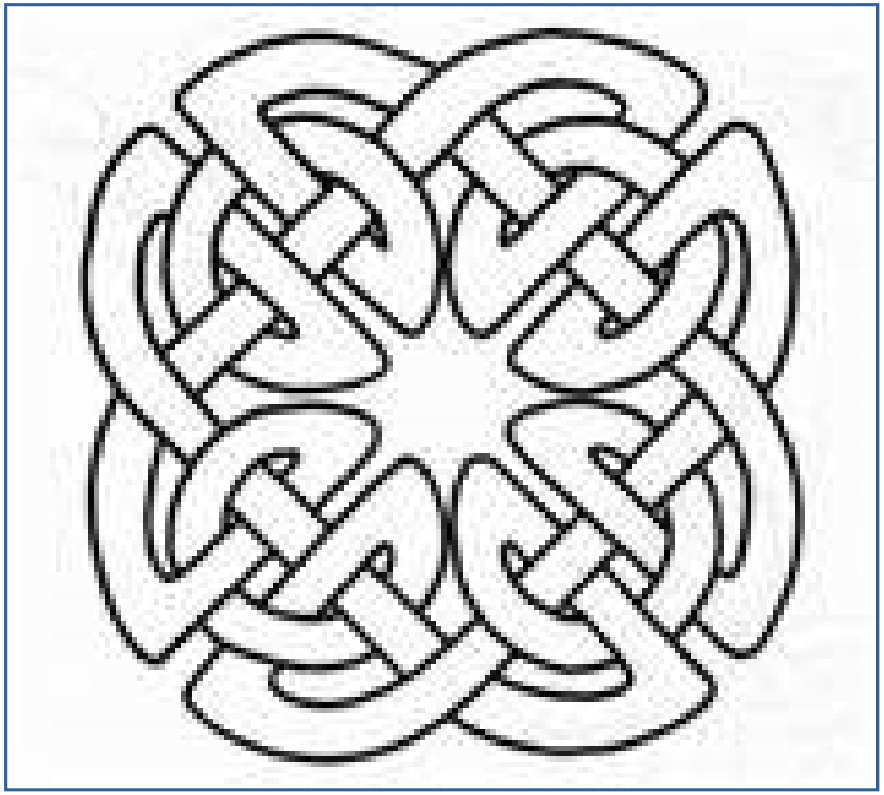




REŠITEV

2. STOPNJA

ALI JE VOZEL SESTAVLJEN IZ ENE ALI VEČ ZANK?

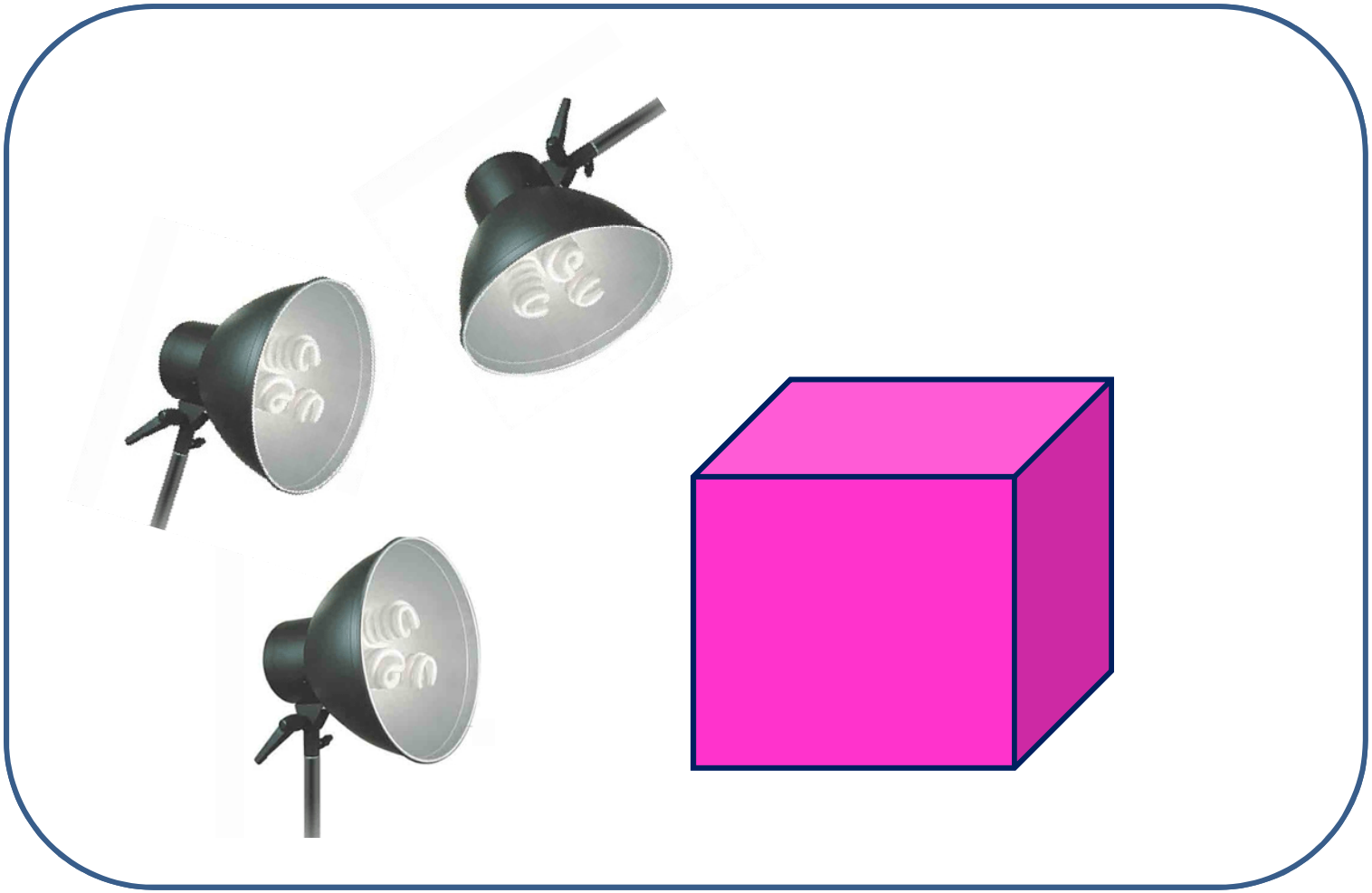


SESTAVLJEN JE IZ 2 ZANK.

REŠITEV

2. STOPNJA

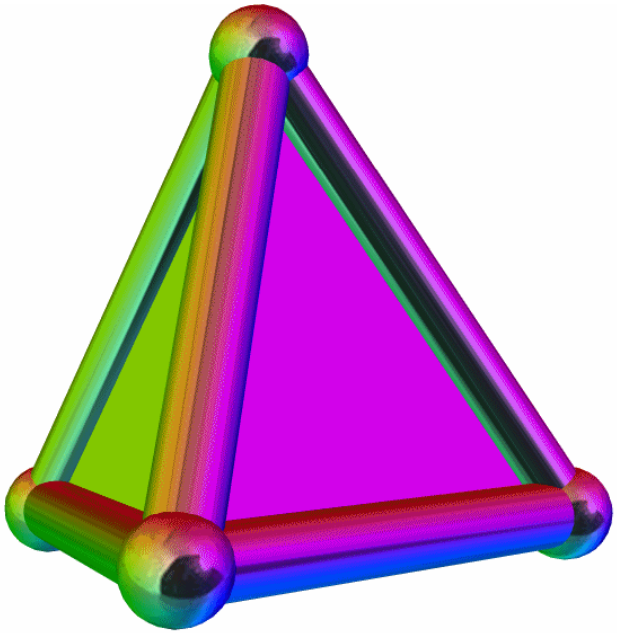
KATERIH OBLIK SO SENCE KOCKE, KO JO OSVETLJUJEMO IZ RAZLIČNIH SMERI?



REŠITEV

2. STOPNJA

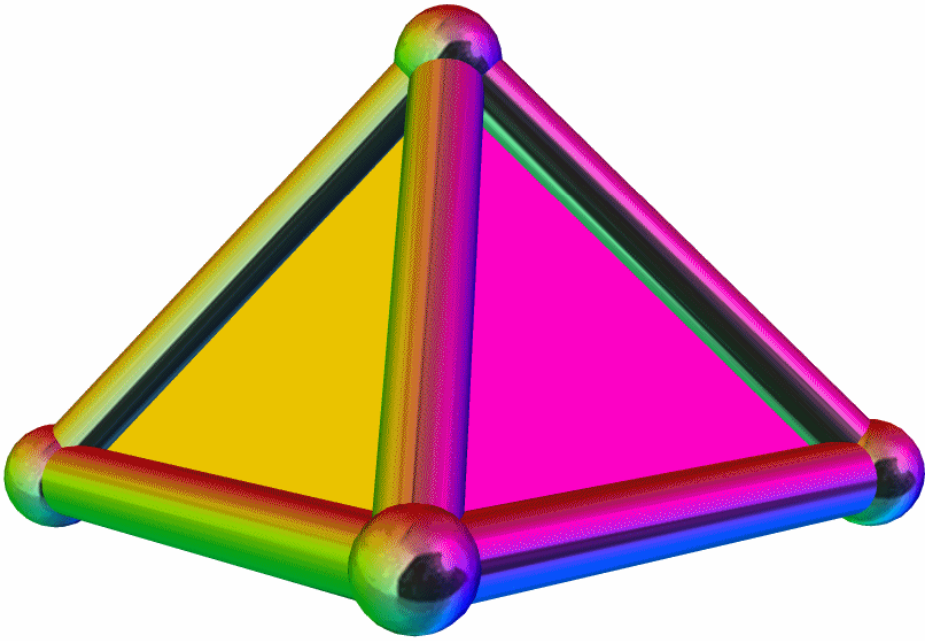
KATERIH OBLIK SO SENCE PIRAMIDE, KO JO OSVETLJUJEMO IZ RAZLIČNIH SMERI? SPODNJA PLOSKEV JE TRIKOTNIK.



REŠITEV

2. STOPNJA

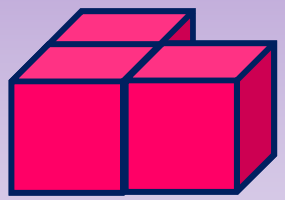
KATERIH OBLIK SO SENCE PIRAMIDE, KO JO OSVETLJUJEMO IZ RAZLIČNIH SMERI? SPODNJA PLOSKEV JE KVADRAT.

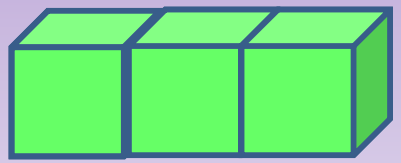


REŠITEV

2. STOPNJA

ALI BI ZA OBE TELESI POTREBOVALI ENAKO ŠTEVILO KVADRATOV, DA BI JU SESTAVILI?



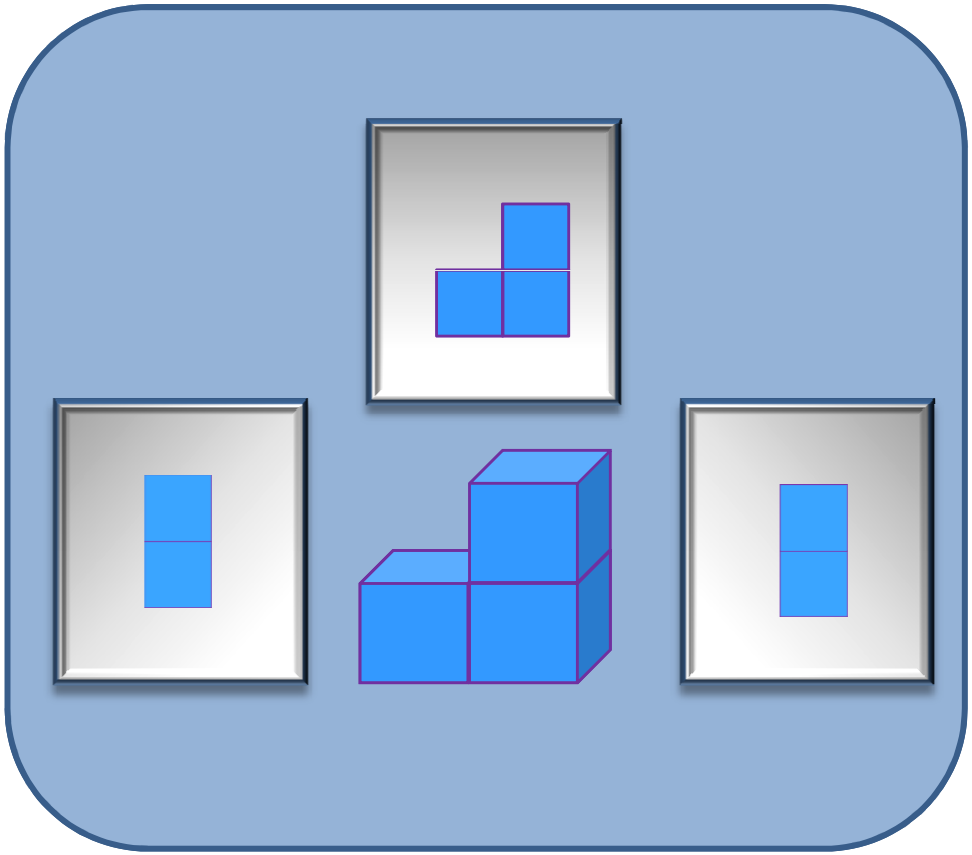


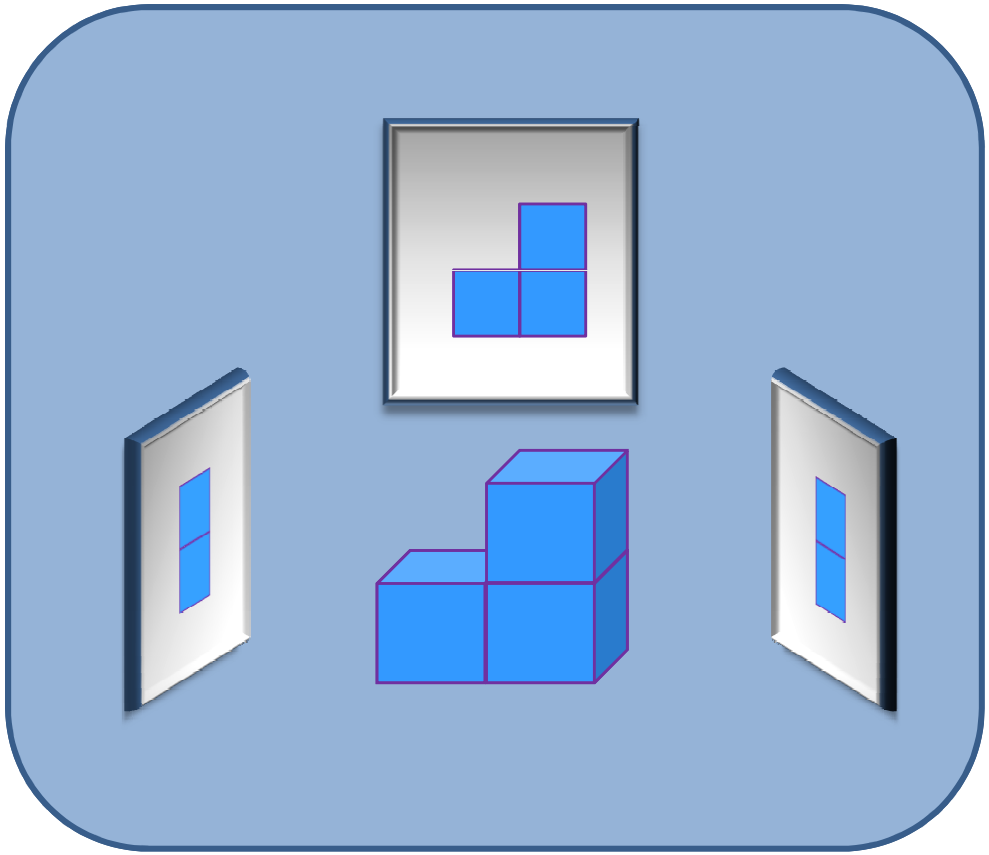
DA

REŠITEV

2. STOPNJA

SPODAJ STA DVA PRIMERA, KAKO LAHKO NARIŠEŠ TELO, KI GA VIDIŠ V OGLEDALU.

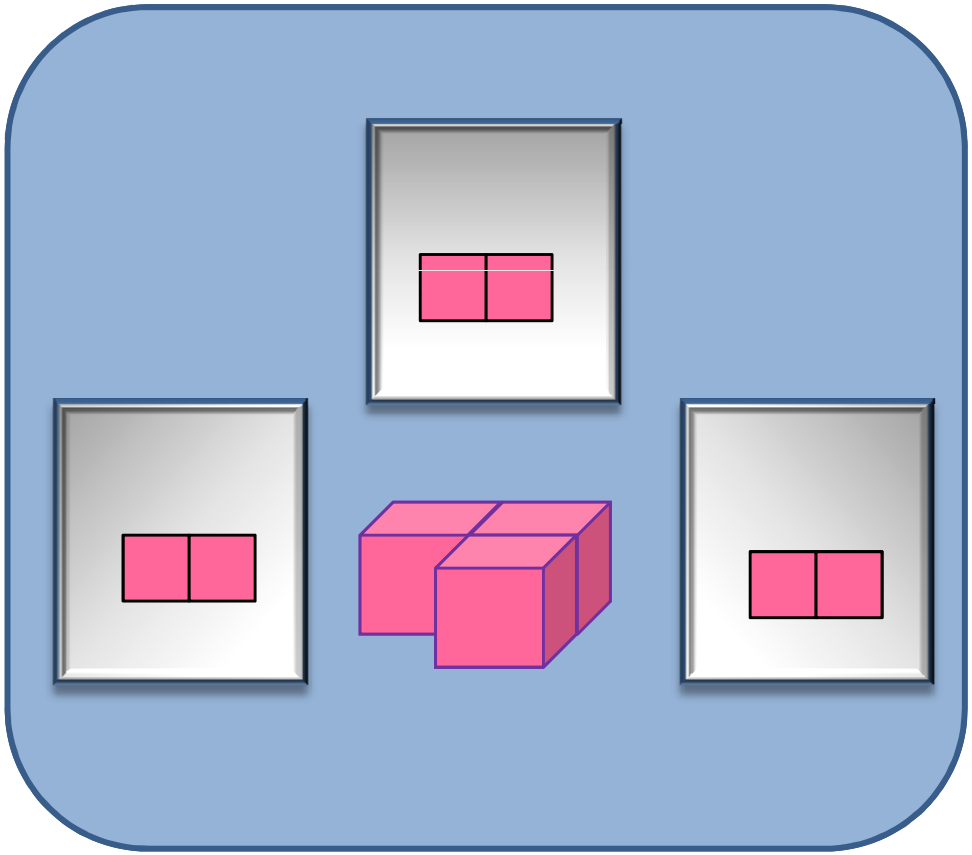


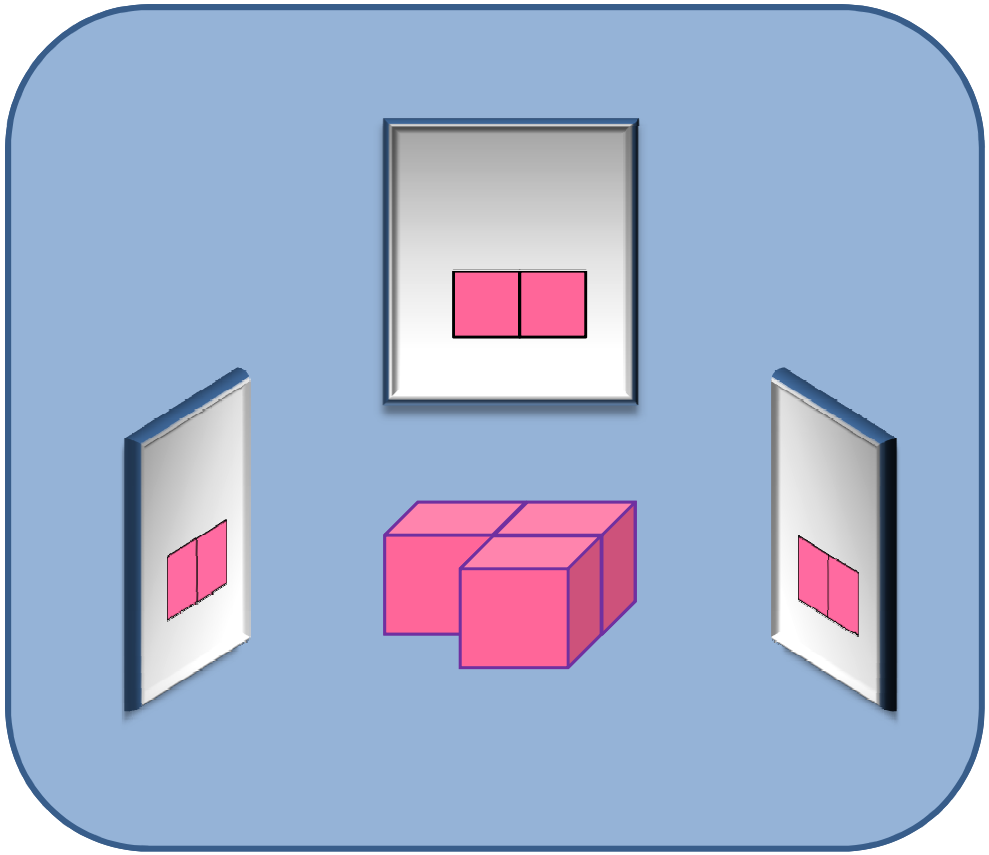


REŠITEV

2. STOPNJA

NARIŠI SLIKO TELESA V OGLEDALIH (NA LEVI ALI NA DESNI SLIKI).

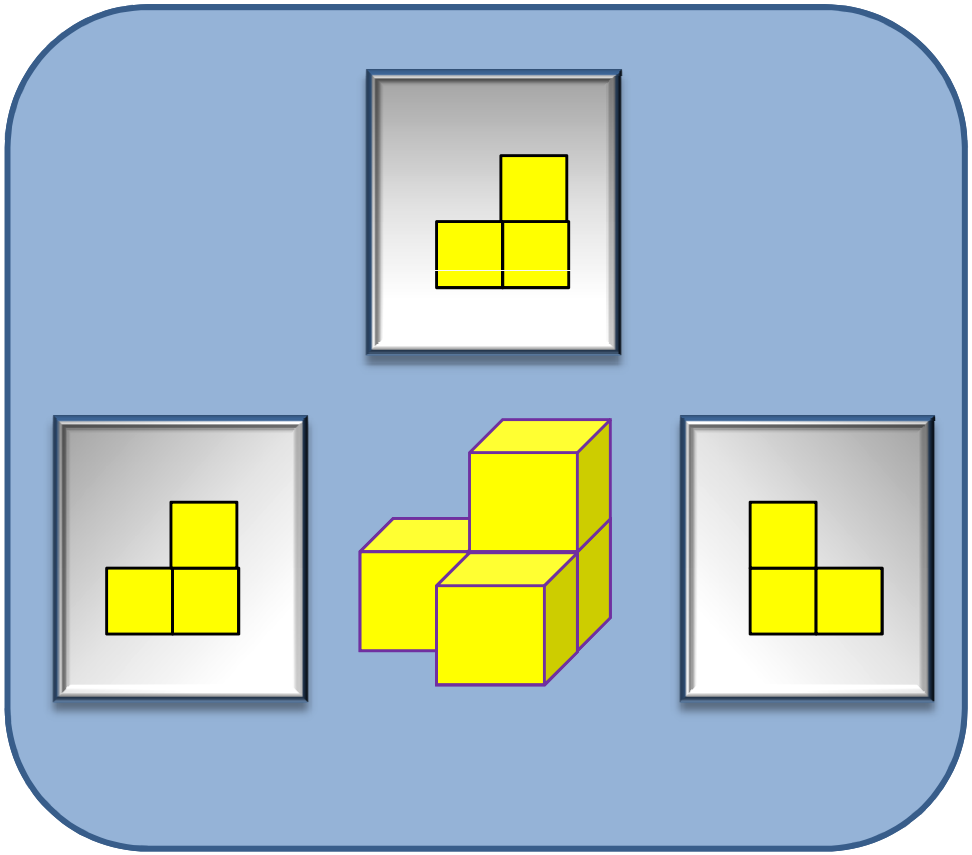


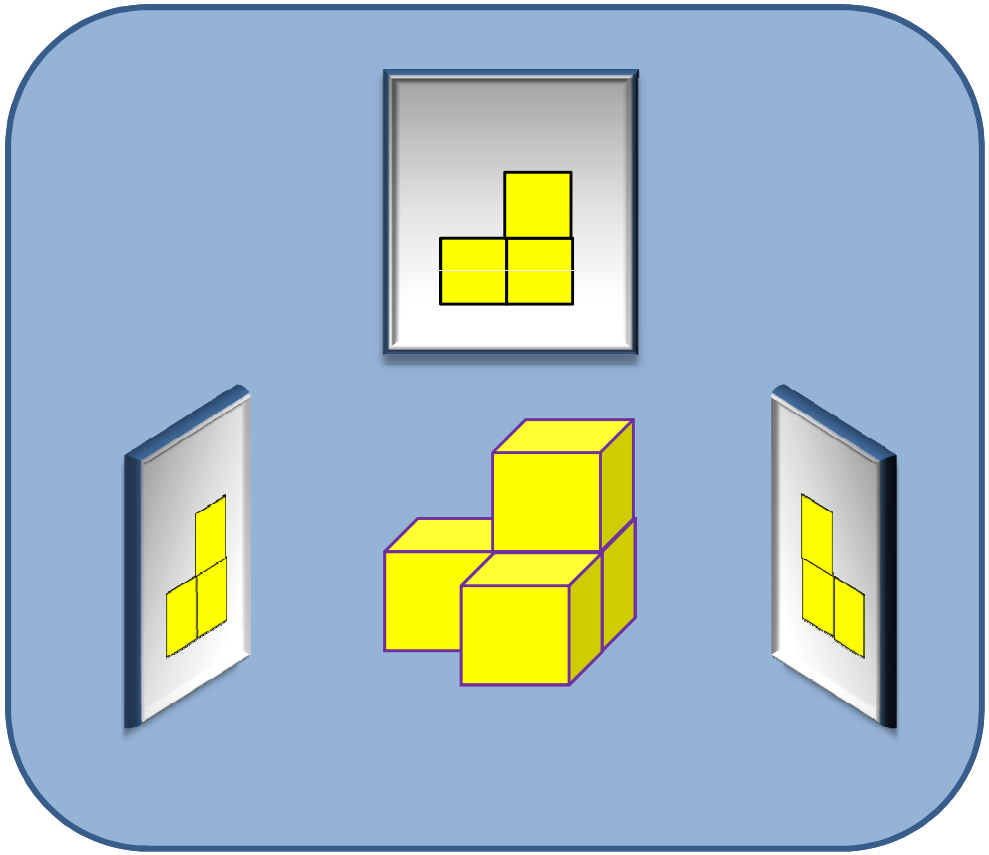


REŠITEV

2. STOPNJA

NARIŠI SLIKO TELESA V OGLEDALIH (NA LEVI ALI NA DESNI SLIKI).

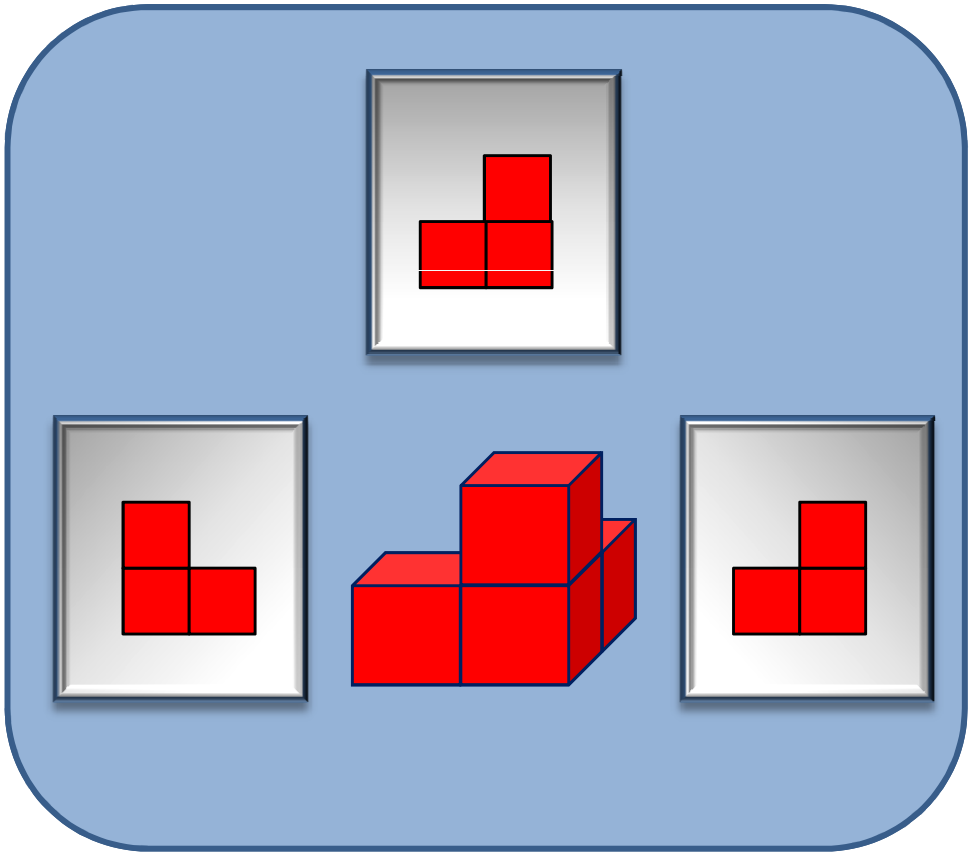


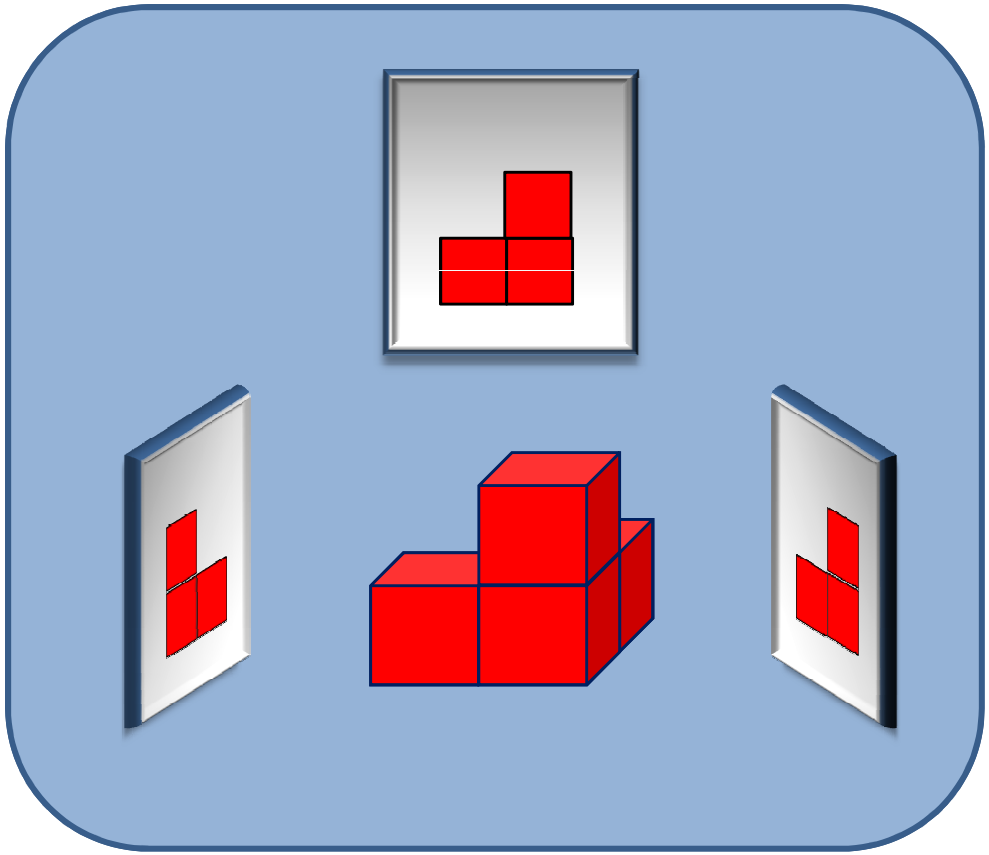


REŠITEV

2. STOPNJA

NARIŠI SLIKO TELESA V OGLEDALIH (NA LEVI ALI NA DESNI SLIKI).

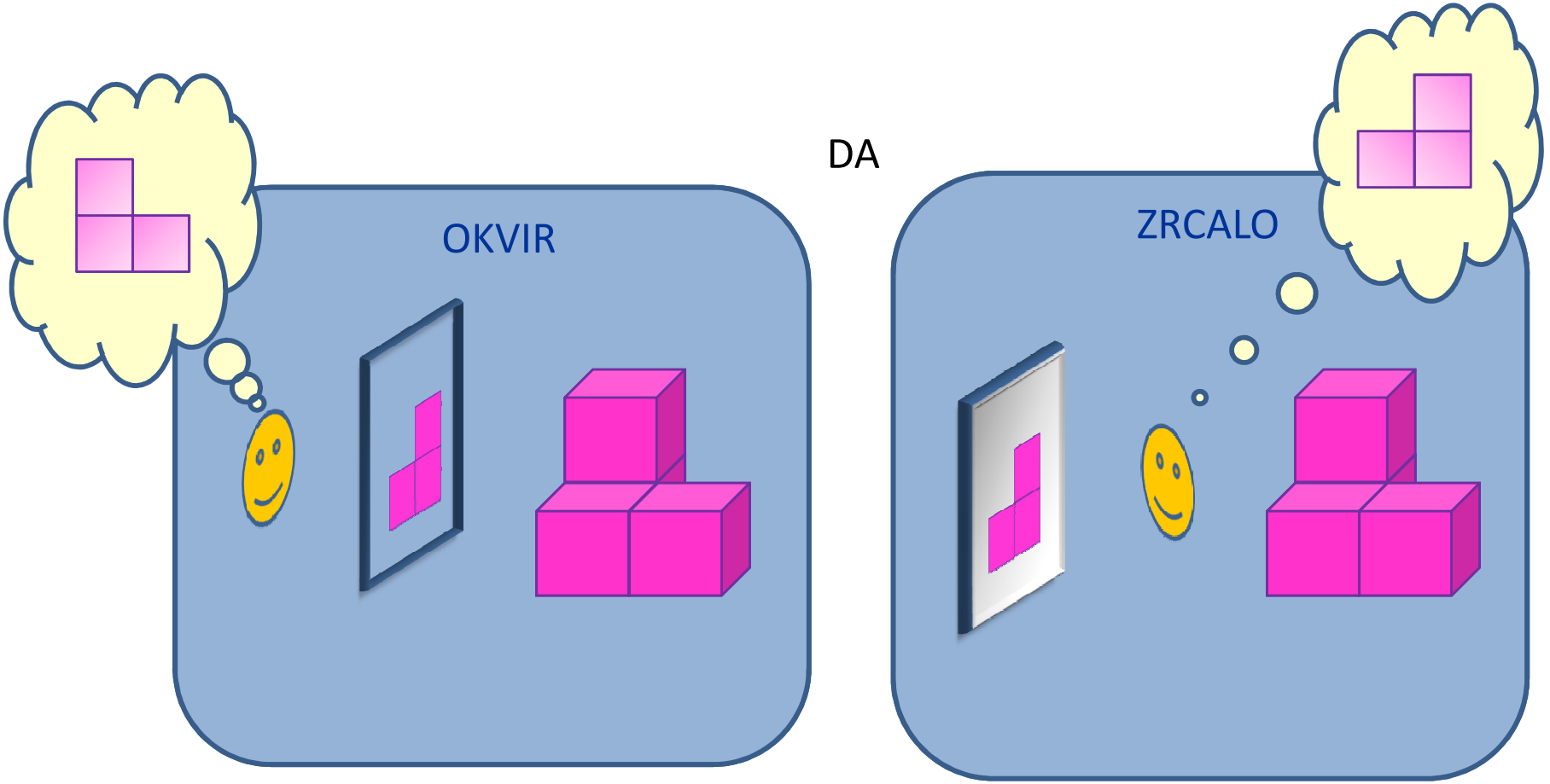




REŠITEV

2. STOPNJA

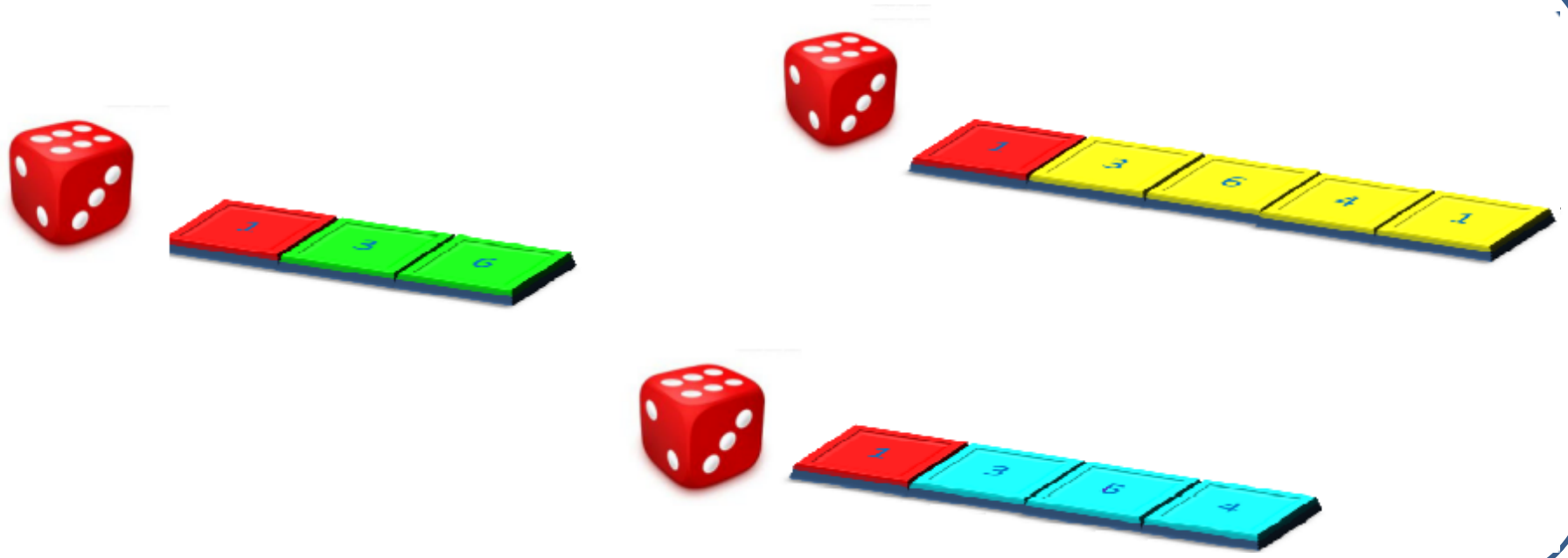
ALI STA OBE SLIKI PRAVILNI?
V PRVEM PRIMERU POGLEDAŠ TELO SKOZI OKVIR, V DRUGEM PA V ZRCALO.



REŠITEV

2. STOPNJA

KOCKA SE PREKO ROBA KOTALI PO TRAKOVIH RAZLIČNIH DOLŽIN. NA VSAKEM POLJU TRAKU PUSTI ZA SEBOJ ODTIS ENE OD SVOJIH MEJNIH PLOSKEV. VELIKOST POLJA JE ENAKA VELIKOSTI MEJNE PLOSKVE KOCKE.
NA KATEREM OD TRAKOV SE BO KATERI OD ODTISOV DVAKRAT PONOVIL?



REŠITEV

2. STOPNJA

ČRKE PREZRCALI PREKO OZNAČENE ČRTE.

A B C Č D E F G H I J K L M

N O P R S Š T U V Z Ž X Y Q

REŠITEV

2. STOPNJA

ČRKE PREZRCALI PREKO OZNAČENE ČRTE.

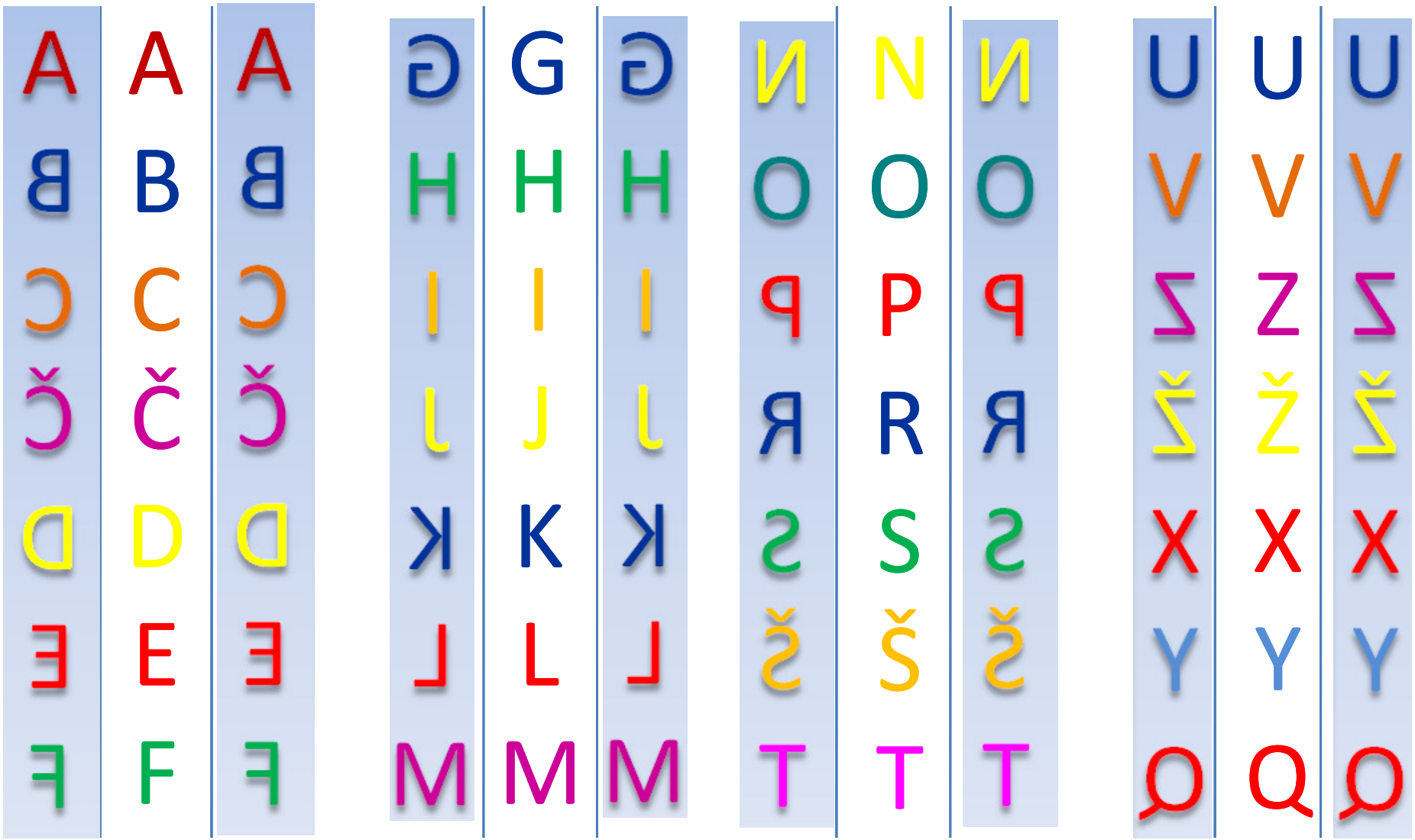
A B C Č D E F G H I J K L M

N O P R S Š T U V Z Ž X Y Q

REŠITEV

2. STOPNJA

VSAKO ČRKO PREZRCALI LEVO IN DESNO PREKO OZNAČENE ČRTE.

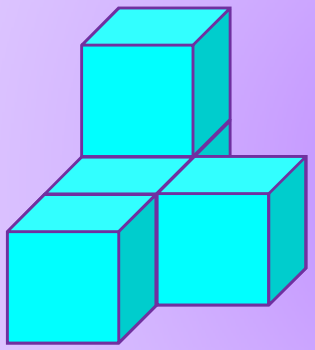


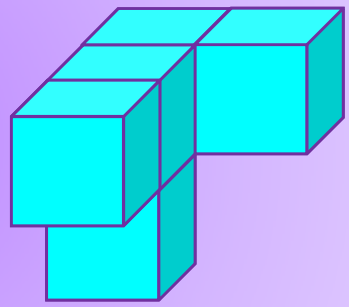
REŠITEV

2. STOPNJA

ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.

DA



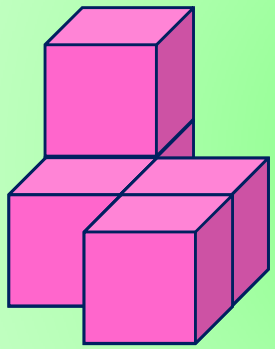


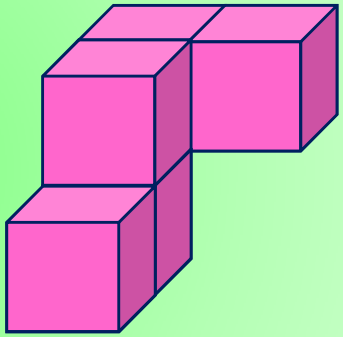
REŠITEV

2. STOPNJA

ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.

DA



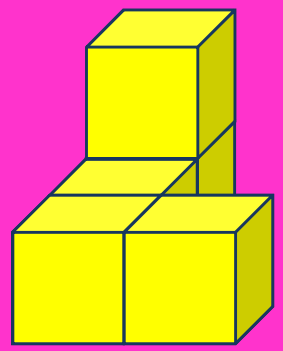


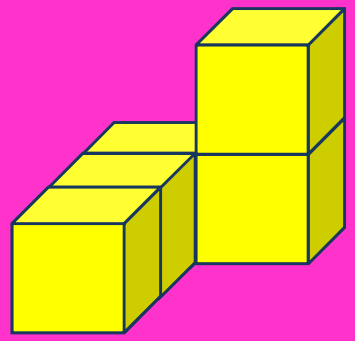
REŠITEV

2. STOPNJA

ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.

NE



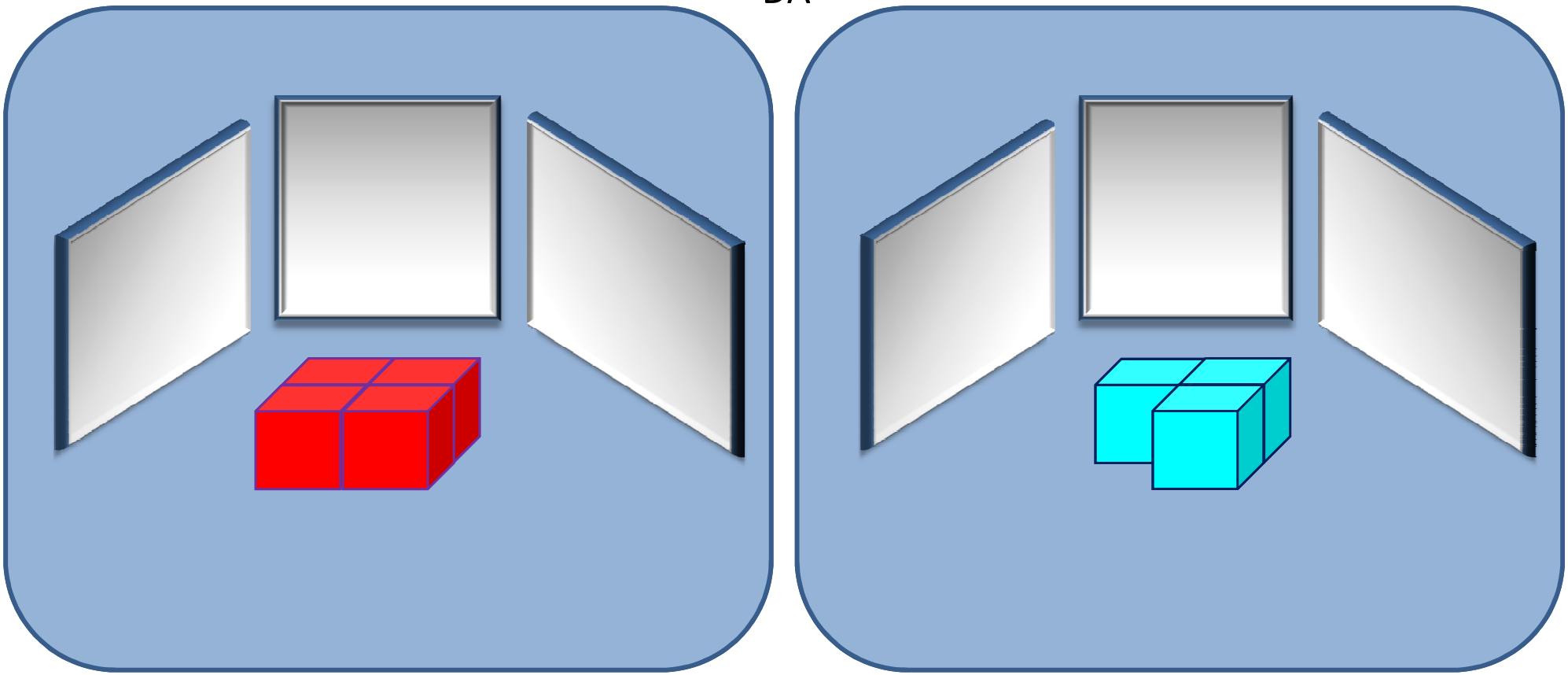


REŠITEV

2. STOPNJA

ALI IMATA TELESI V VSEH TREH OGLEDALIH ENAKE SLIKE?

DA

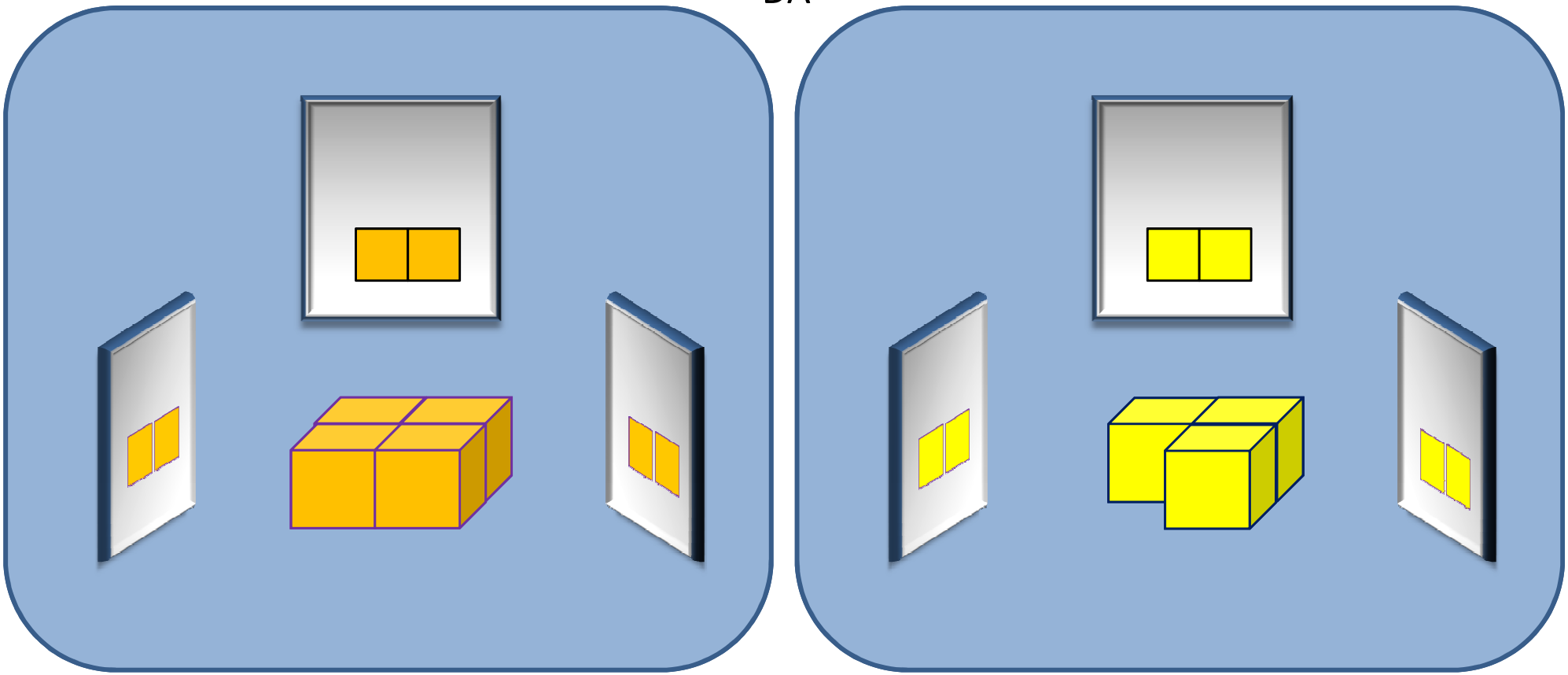


REŠITEV

2. STOPNJA

ALI IMATA TELESI V VSEH TREH OGLEDALIH ENAKE SLIKE?

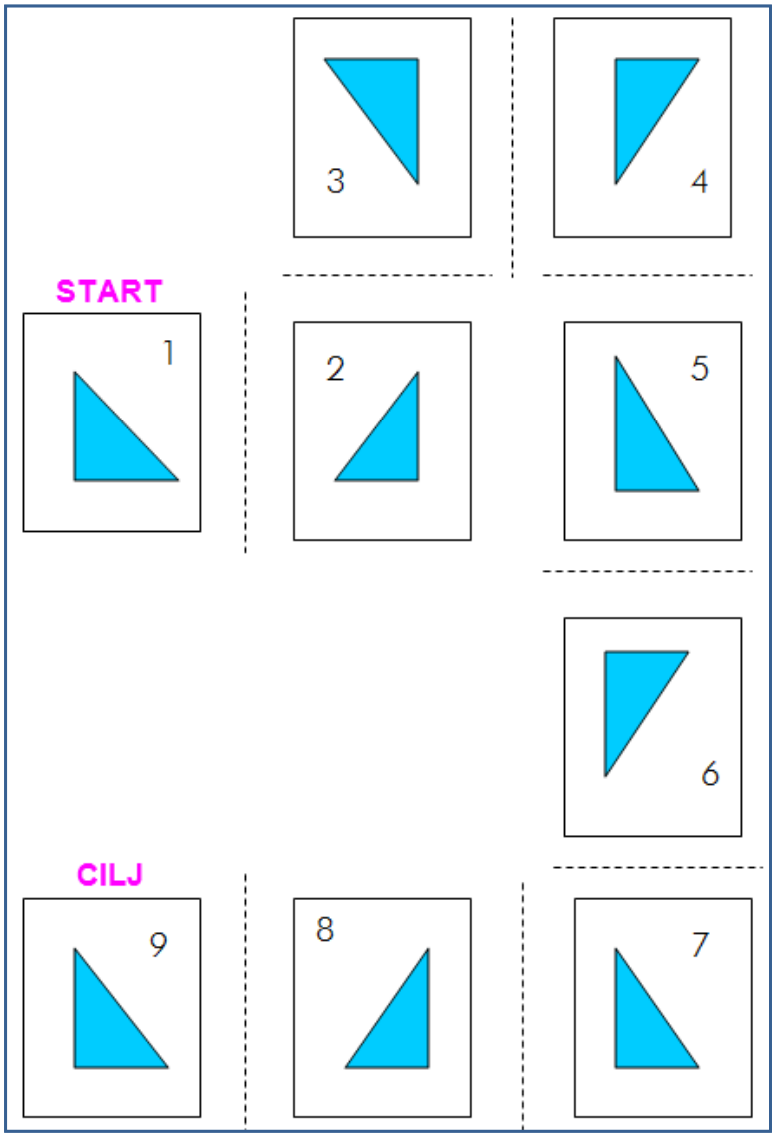
DA

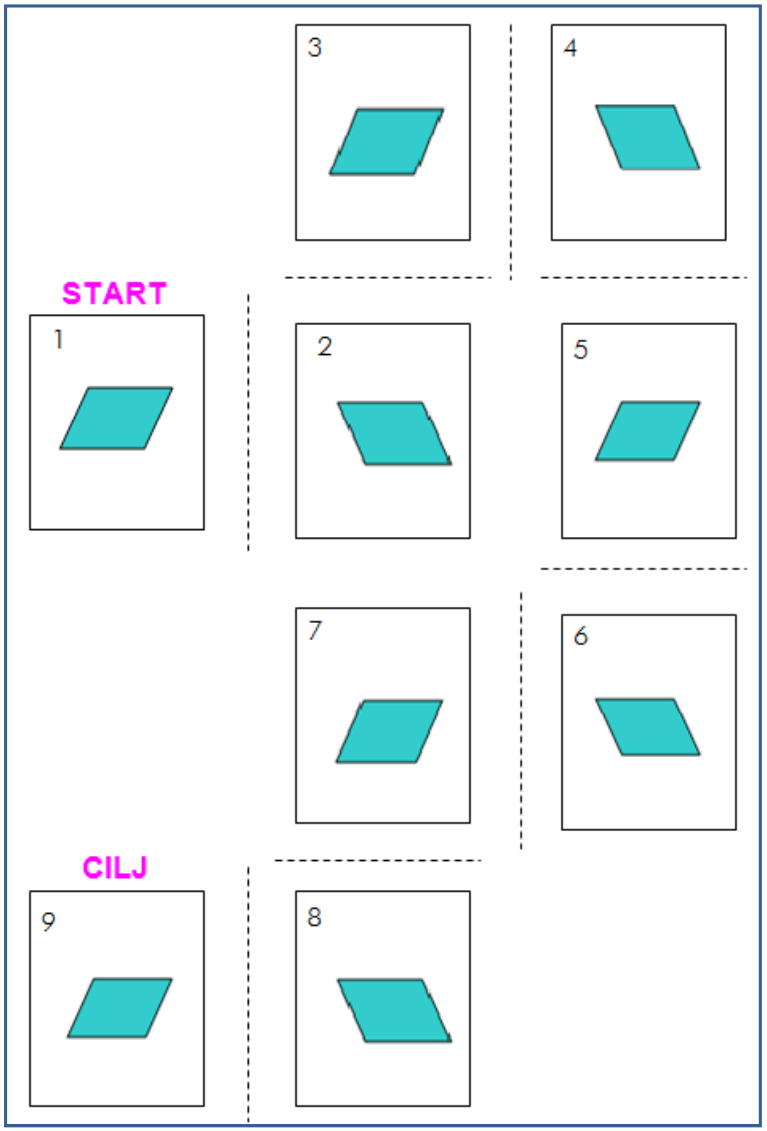


REŠITEV

2. STOPNJA

LIK NA DESNI ZRCALI PO ZGLEDU LEVO.

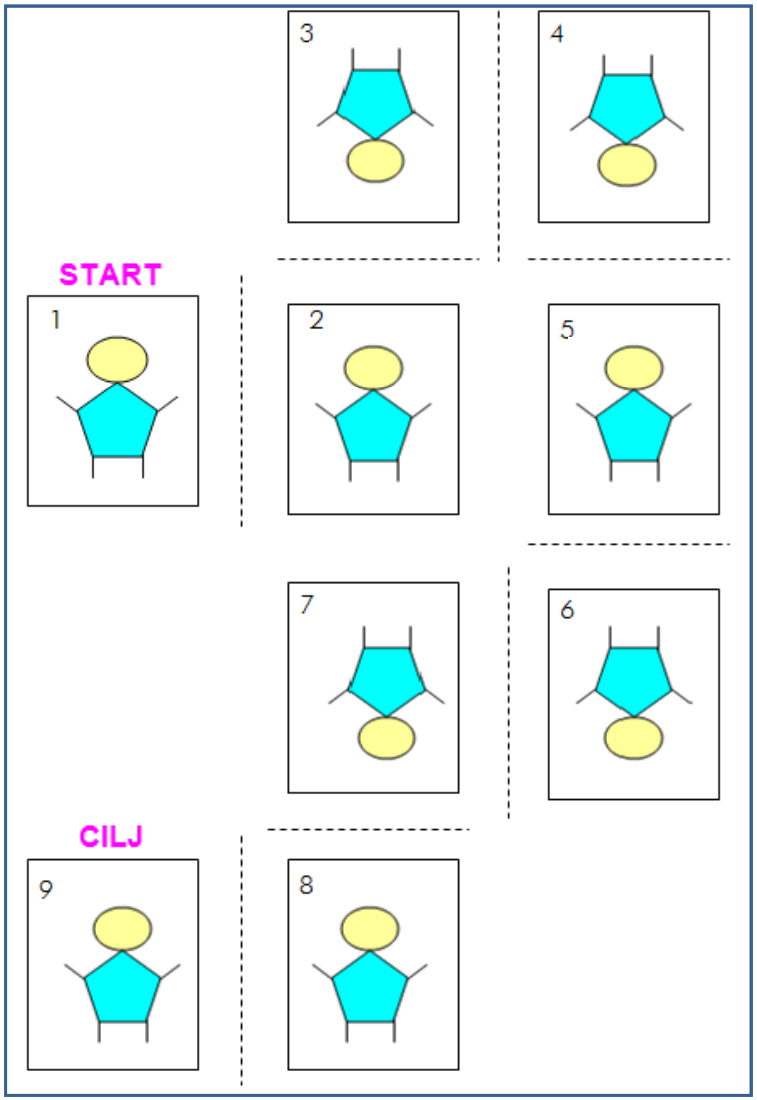




REŠITEV

2. STOPNJA

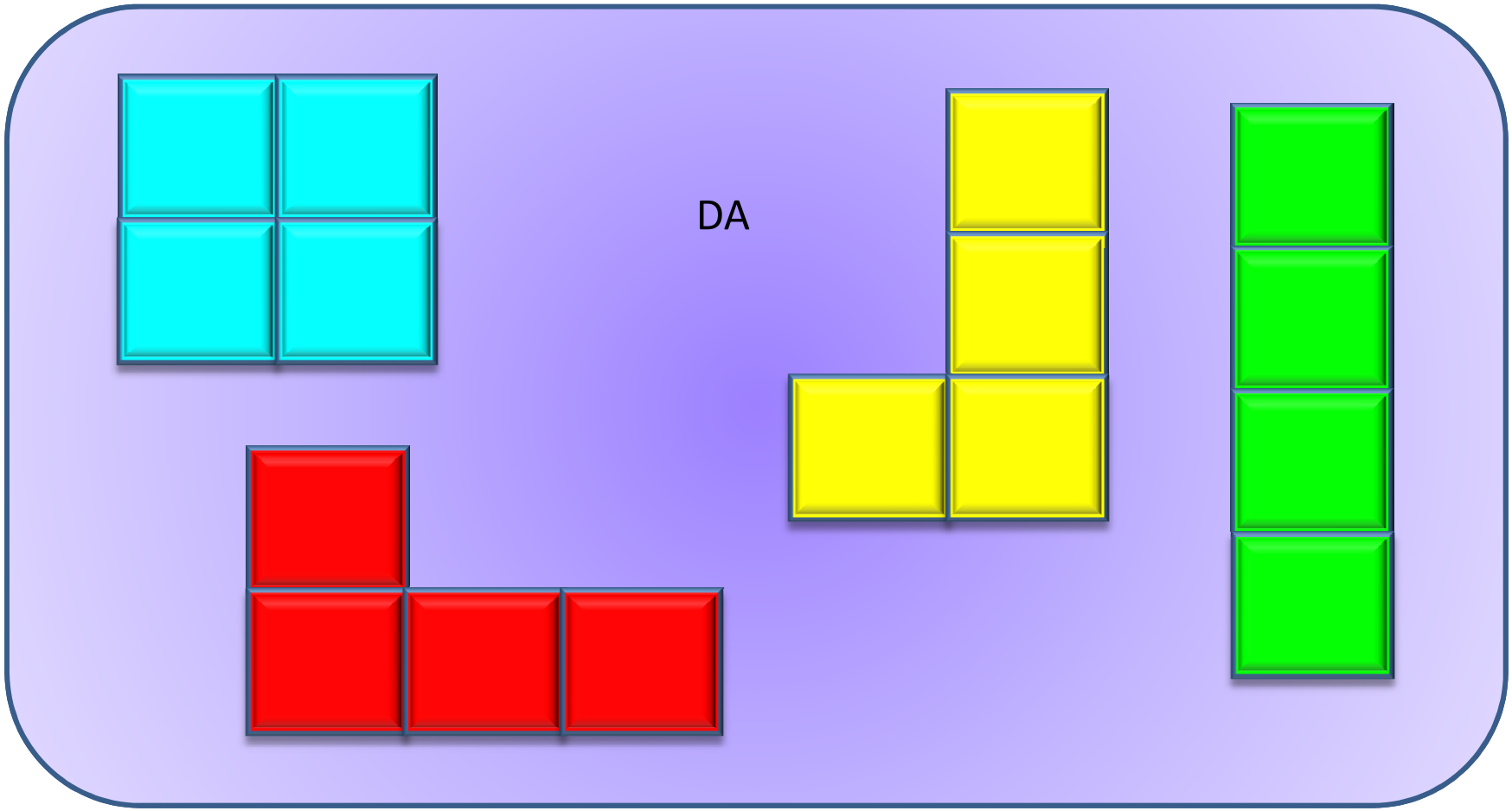
KOLIKOKRAT BO PUNČKA PRI ZRZCALJENJU PREKO ČRTE POSTAVLJENA NA GLAVO? PUNČKO ZRCALIŠ PO ZGLEDU S PREJŠNJE STRANI.



REŠITEV

2. STOPNJA

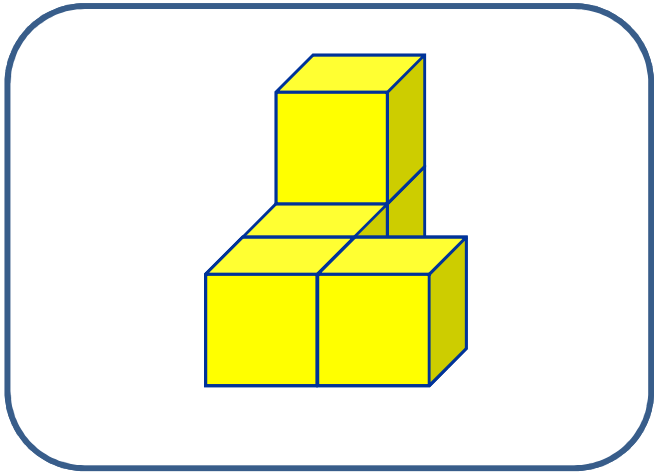
ALI LAHKO SPODNJE OBLIKE SESTAVIŠ V KVADRAT? OBLIKE SE NE PREKRIVAJO IN MED NJIMI NI PRAZNEGA PROSTORA.

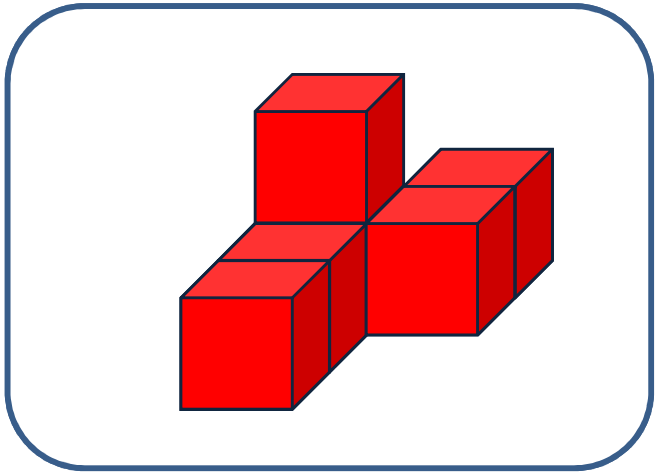


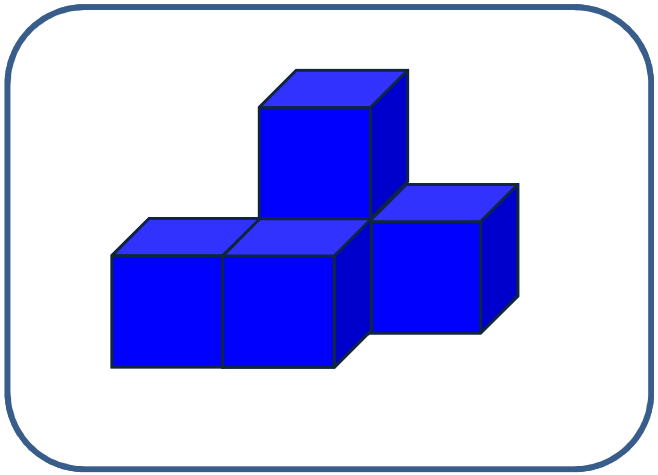
REŠITEV

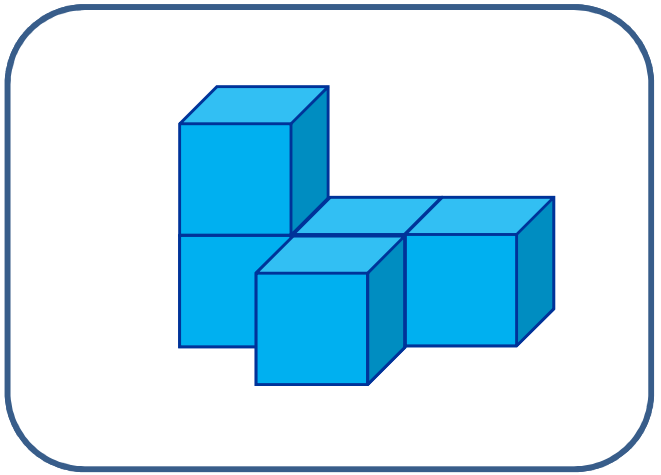
2. STOPNJA

SESTAVI IZ KOCK.





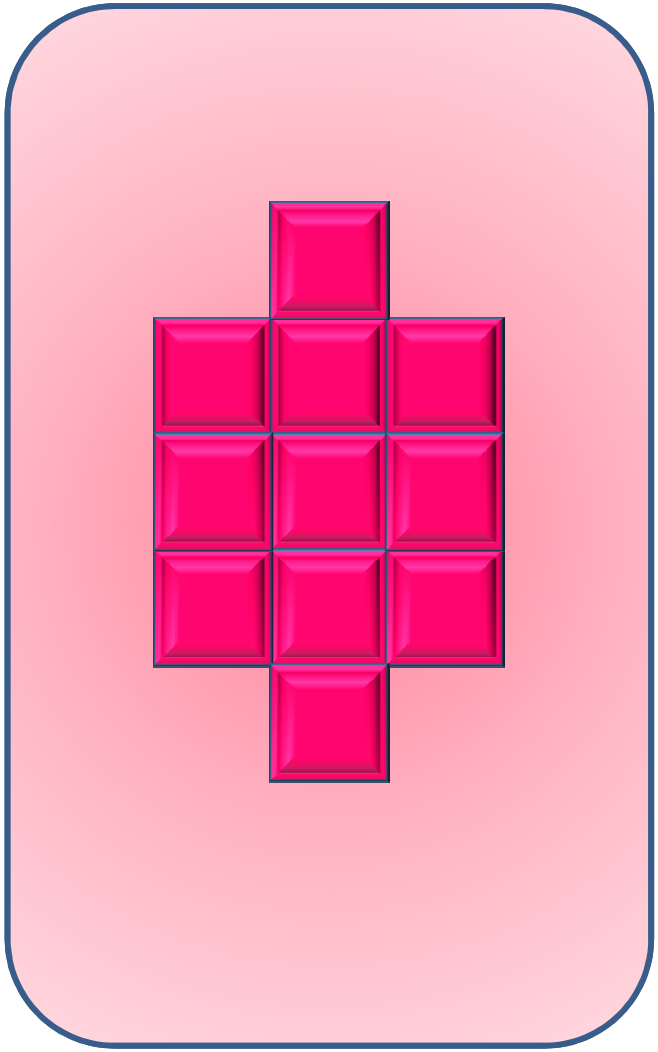


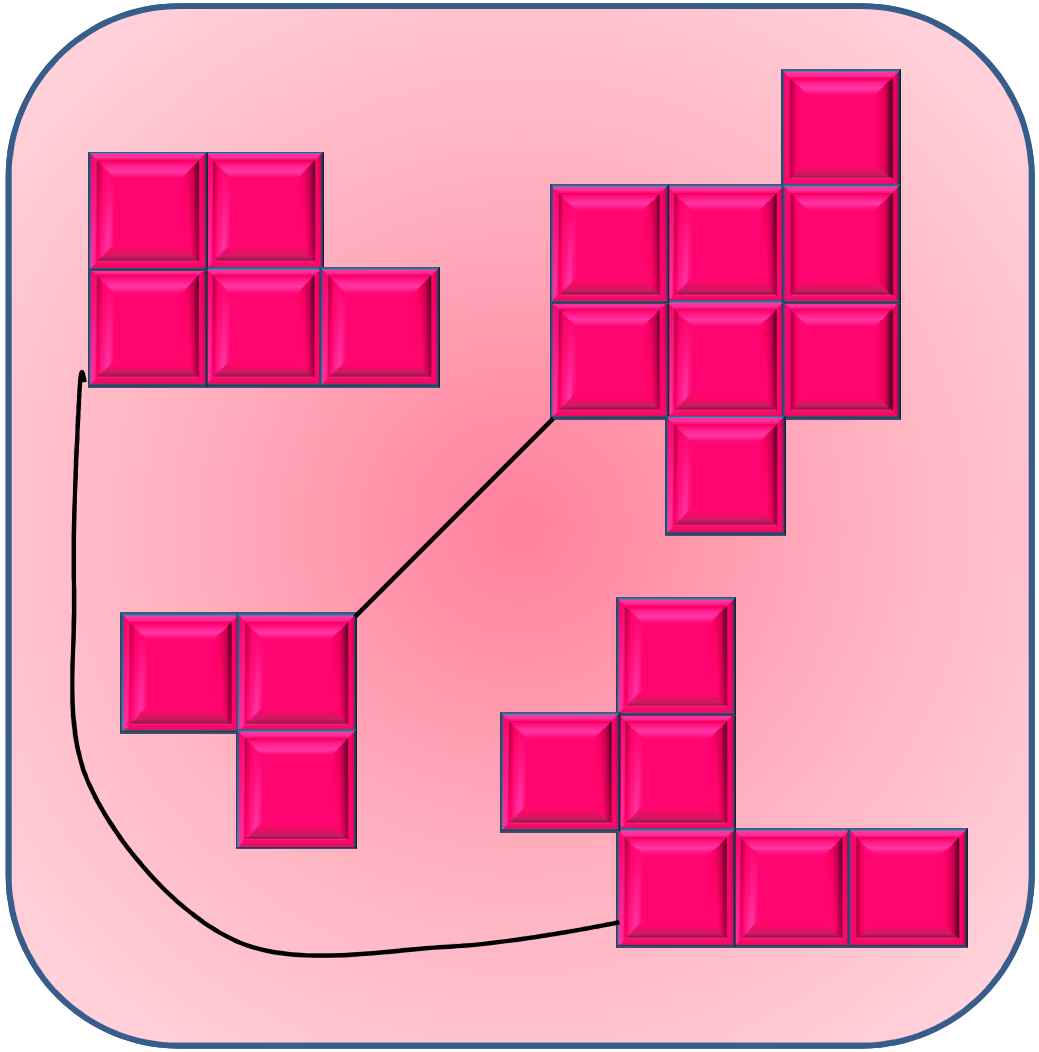


REŠITEV

3. STOPNJA

Kateri dve obliki desno sestavljata obliko na levi.

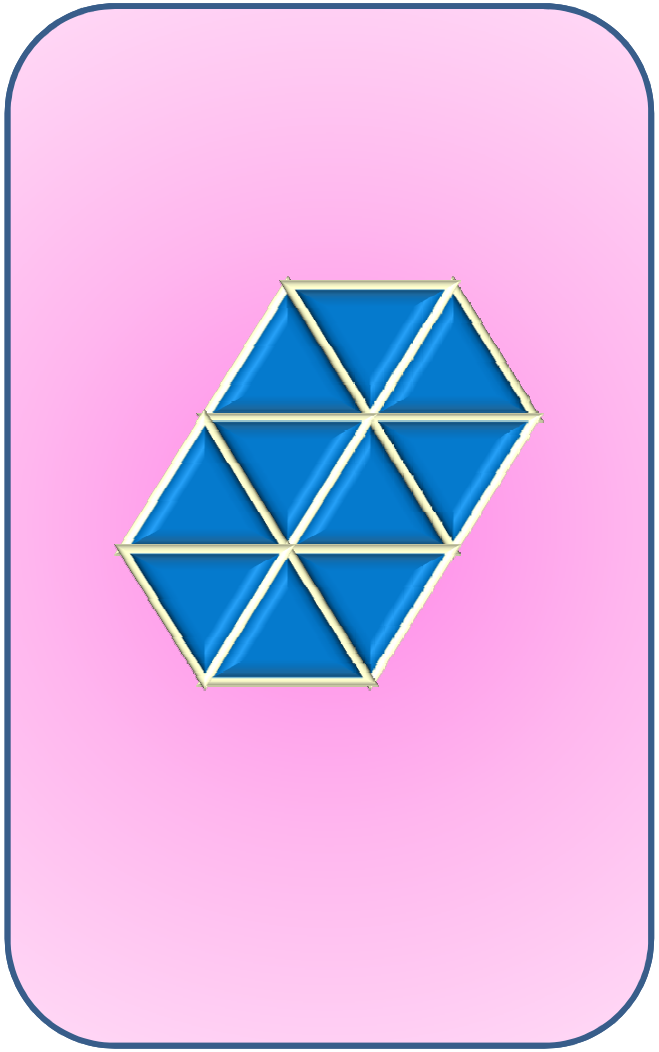


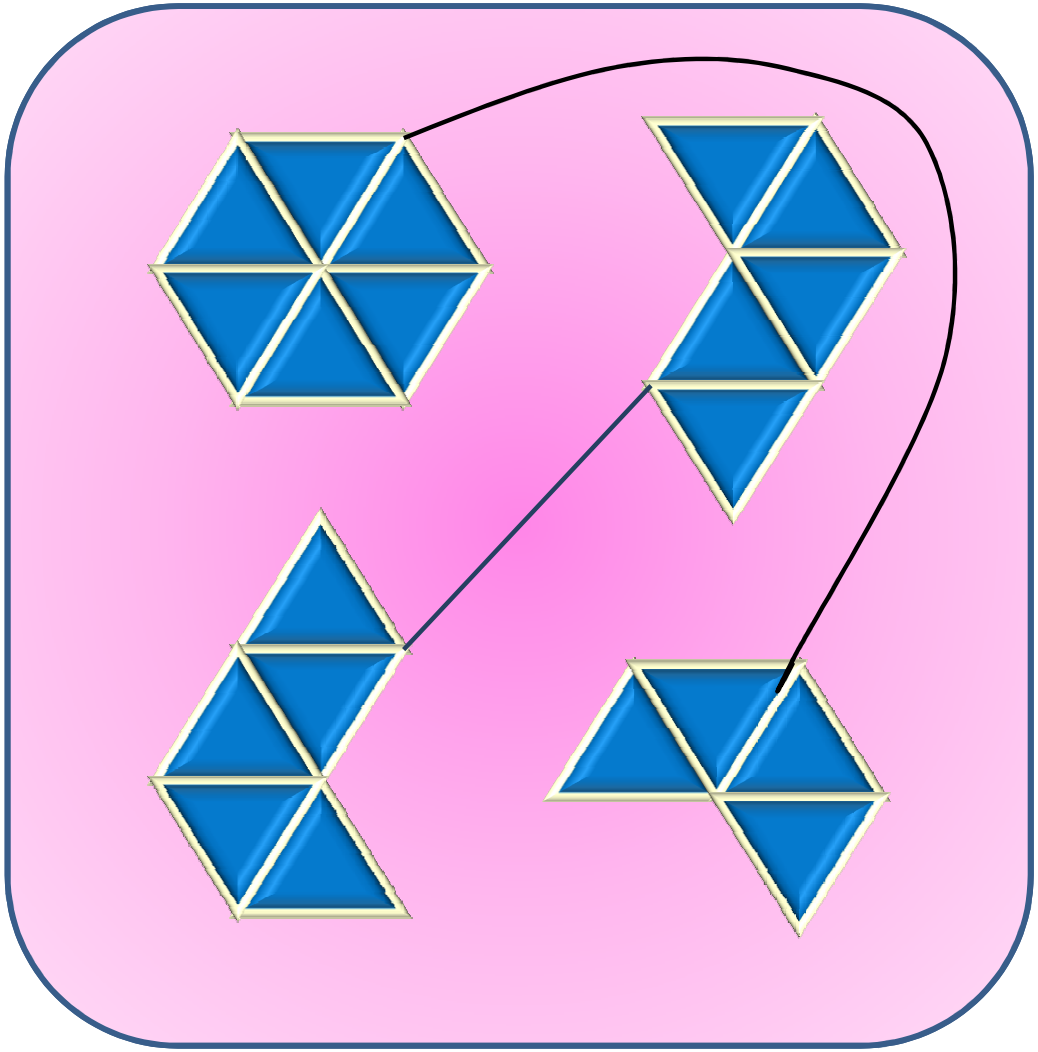


REŠITEV

3. STOPNJA

Kateri dve obliki desno sestavljata lik na levi.

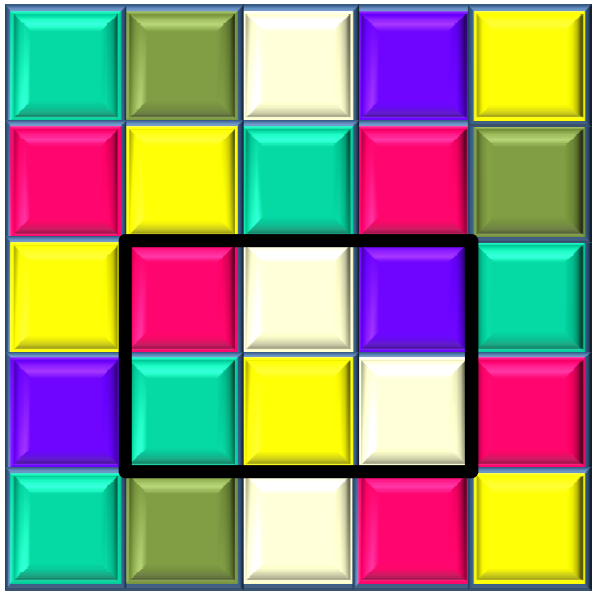


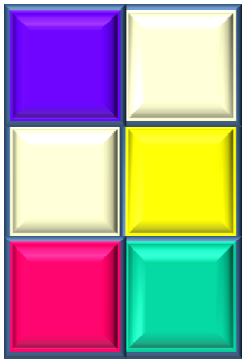


REŠITEV

3. STOPNJA

Ali najdeš desni barvni vzorec v levem. Desnega smeš vrteti.

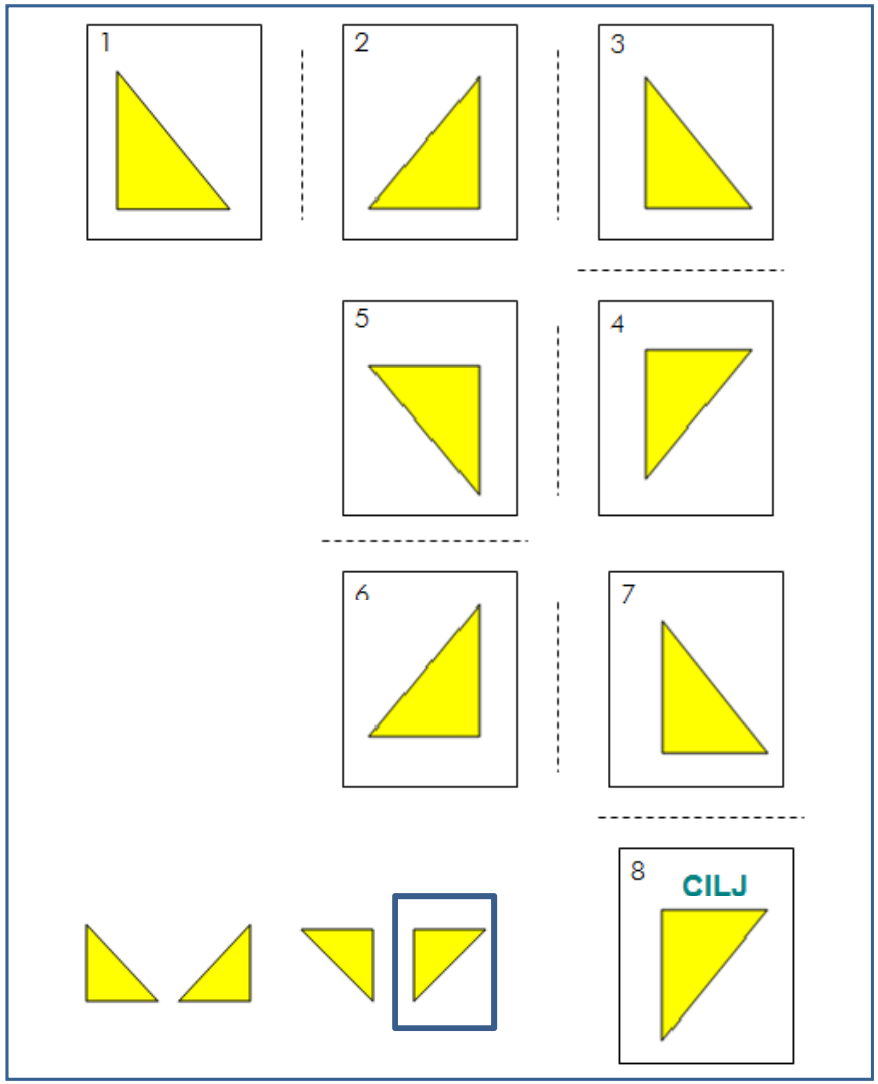




REŠITEV

3. STOPNJA

Rumen lik s polja 1 zrcališ preko črte na polja 2 do 8. Kako bo lik obrnjen na cilju?

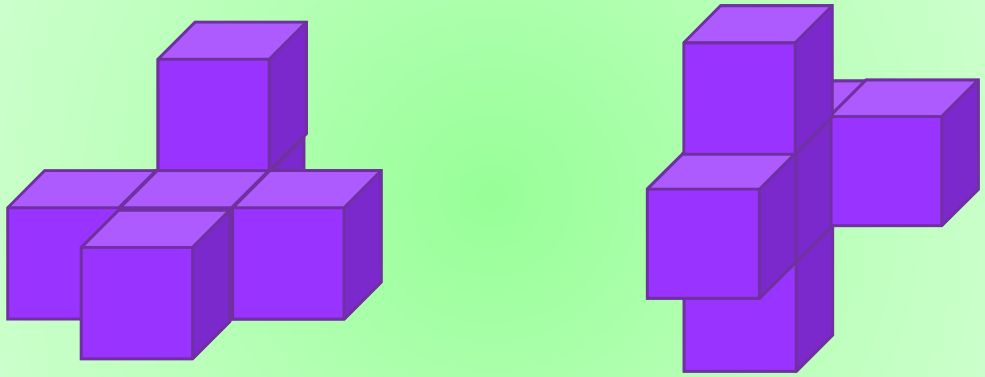


REŠITEV

3. STOPNJA

Ali sta telesi na spodnji sliki enake oblike? Telesi lahko obračaš v vse smeri.

DA

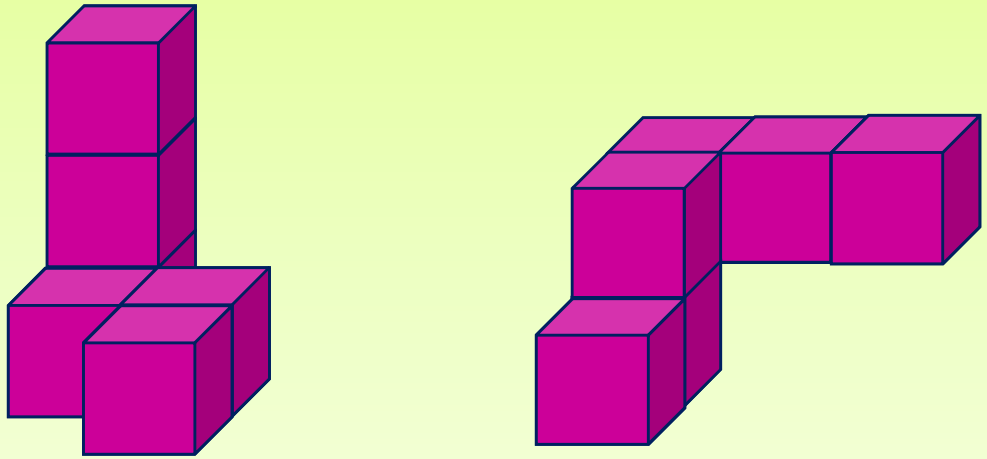


REŠITEV

3. STOPNJA

Ali sta telesi na spodnji sliki enake oblike? Telesi lahko obračaš v vse smeri.

DA

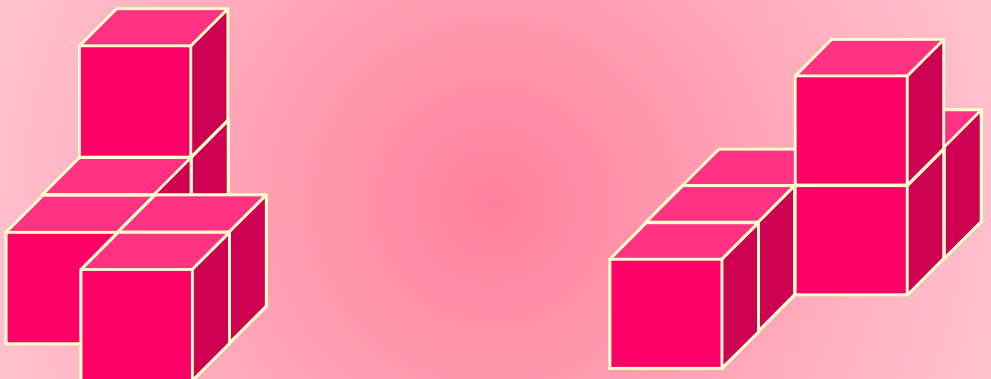


REŠITEV

3. STOPNJA

Ali sta telesi na spodnji sliki enake oblike? Telesi lahko obračaš v vse smeri.

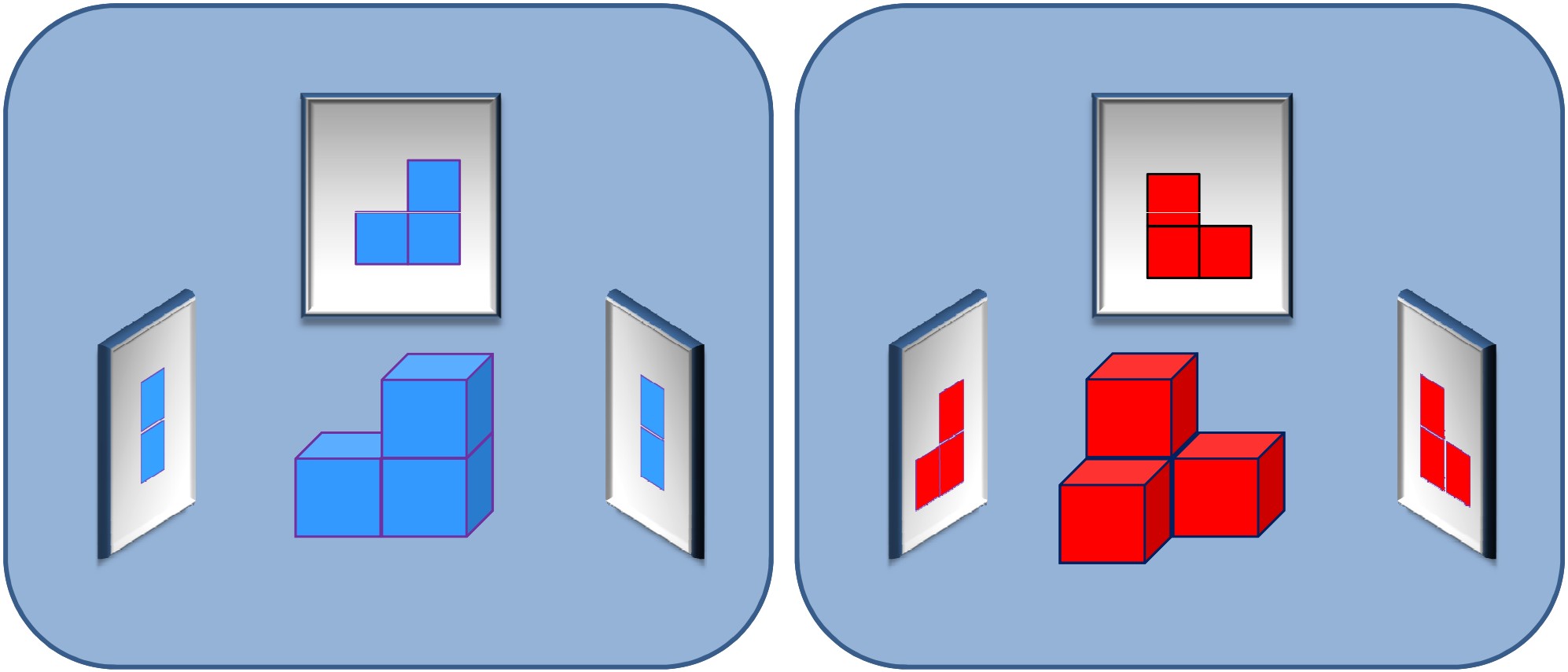
NE



REŠITEV

3. STOPNJA

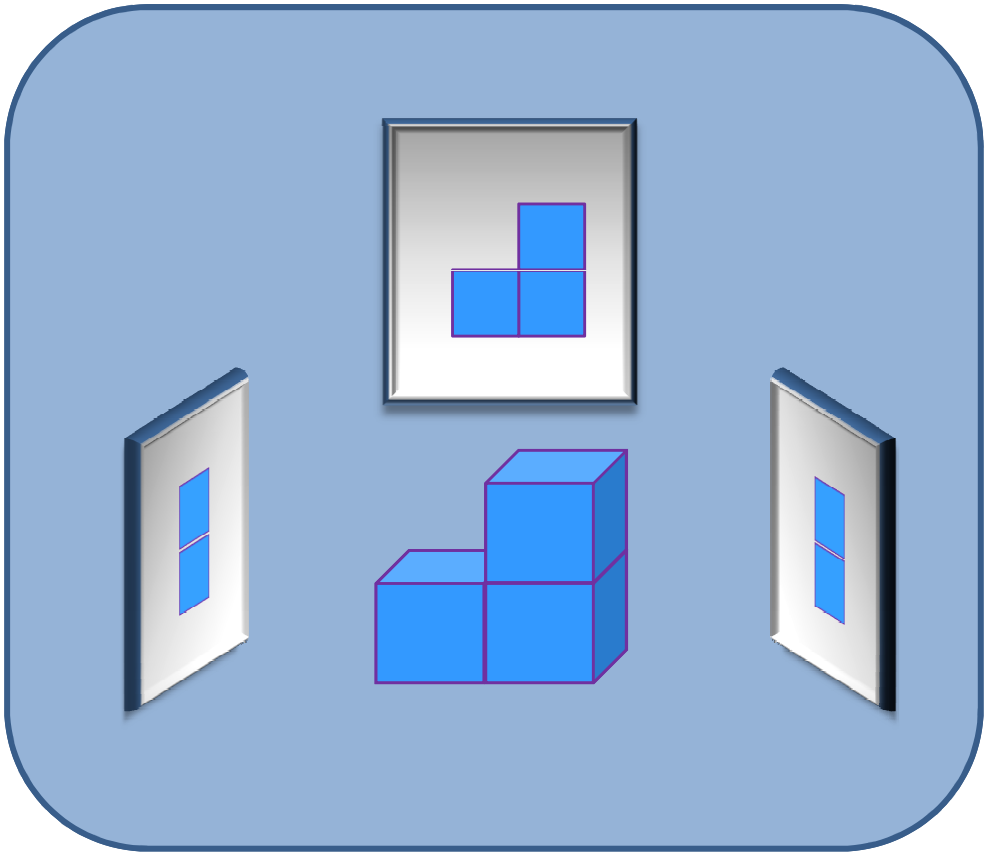
Po zgledu levo nariši sliko rdečega telesa v treh ogledalih.

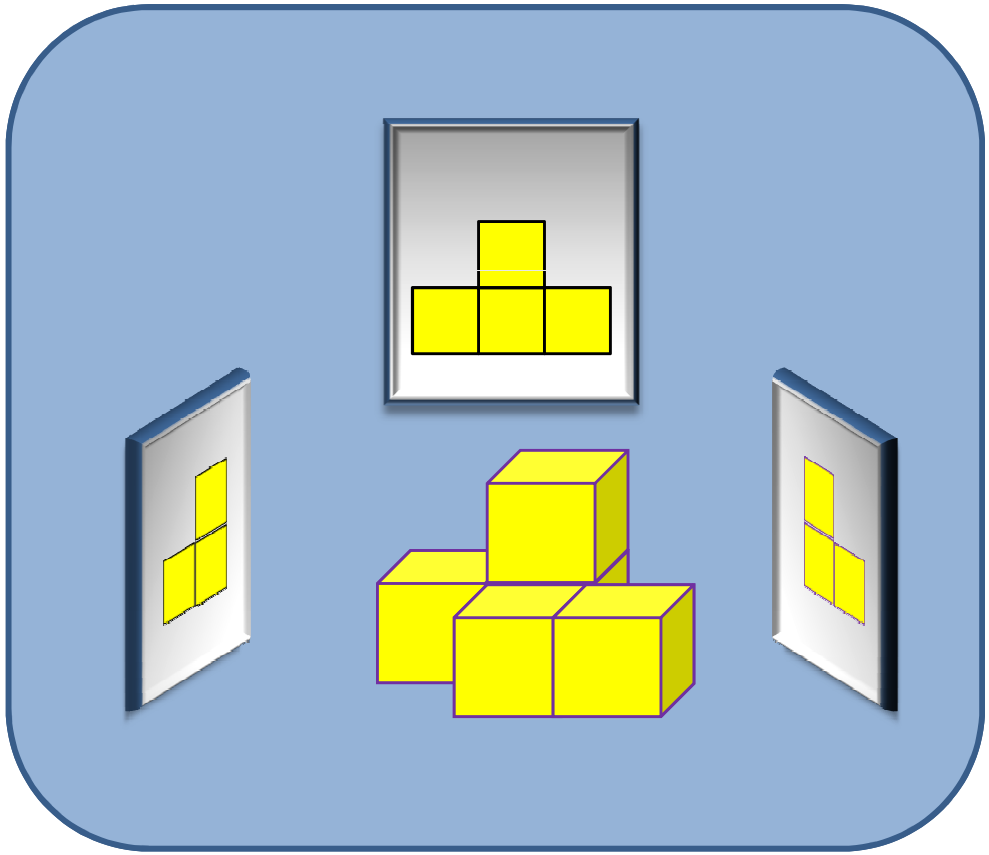


REŠITEV

3. STOPNJA

Po zgledu levo nariši sliko rdečega telesa v treh ogledalih.





REŠITEV

3. STOPNJA

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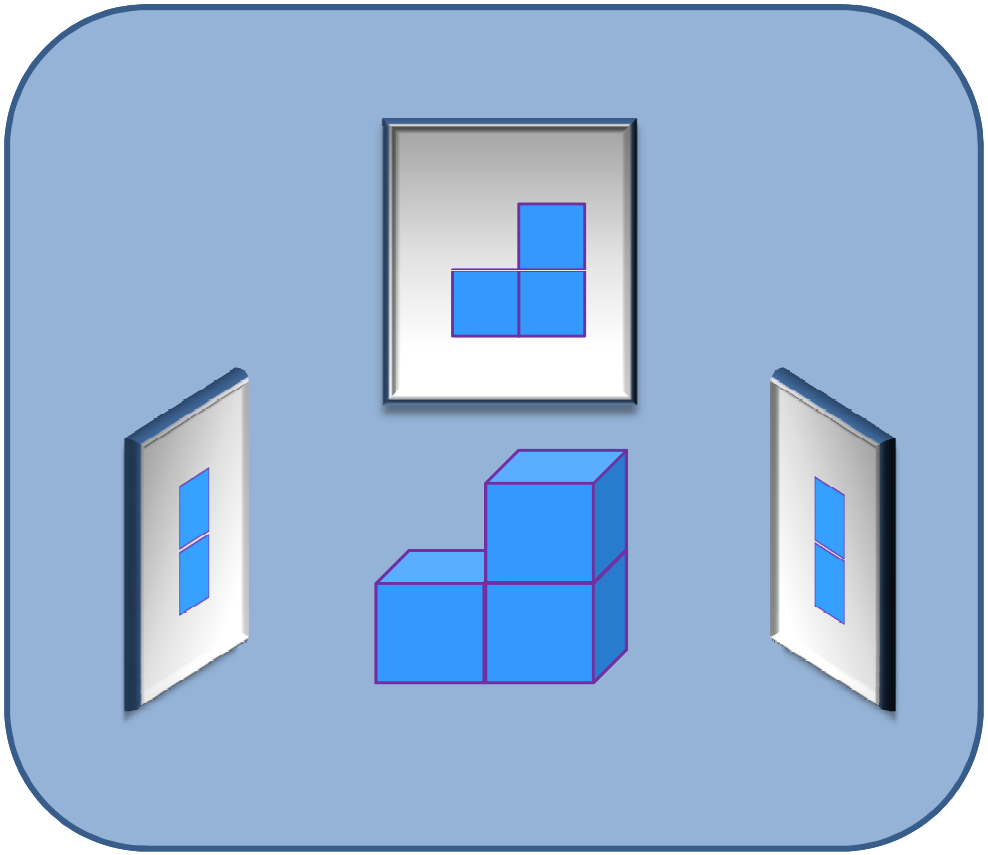
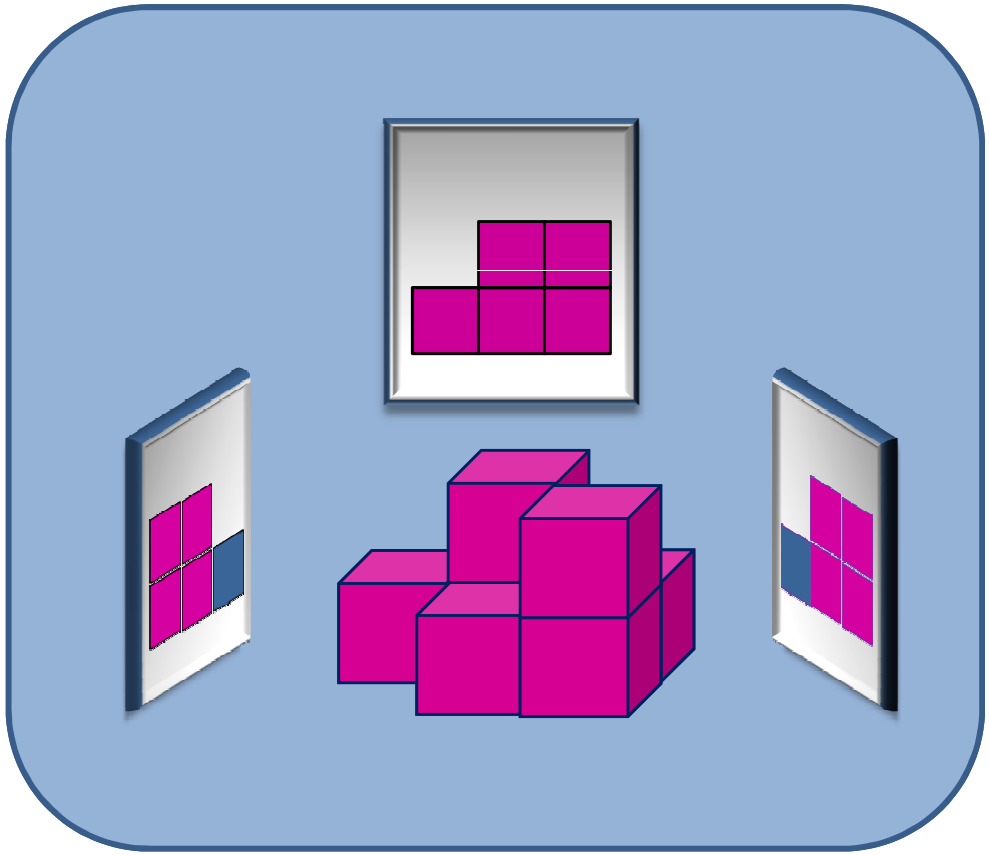


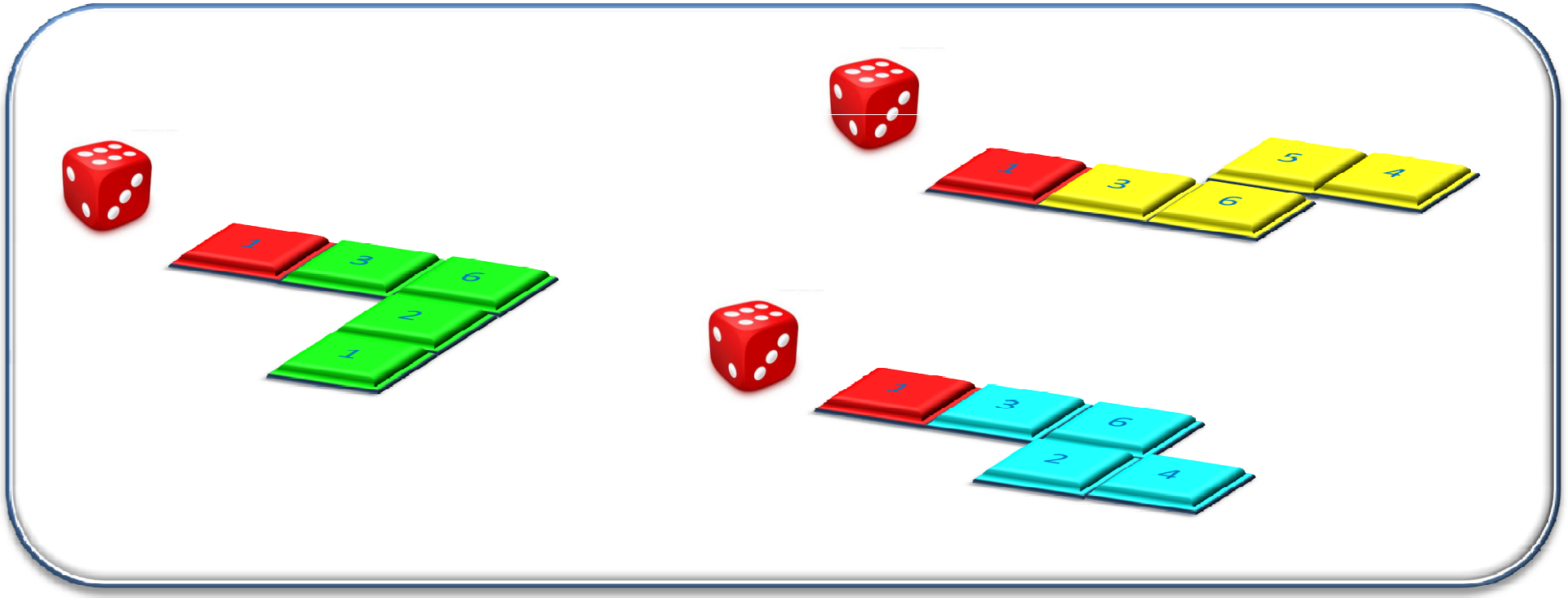


NA LEVI IN DESNI SLIKI JE MOŽNA ŠE REŠITEV Z DODATNO, SKRITO KOCKO (MODER KVADRAT)

REŠITEV

3. STOPNJA

Kocka se preko roba kotali po trakovih različnih dolžin in oblik. Na vsakem polju za seboj pusti odtis ene od svojih mejnih ploskev. Velikost polja je enaka velikosti mejne ploskve kocke.
Na katerem od trakov se bo kateri od odtisov dvakrat ponovil?



REŠITEV

3. STOPNJA

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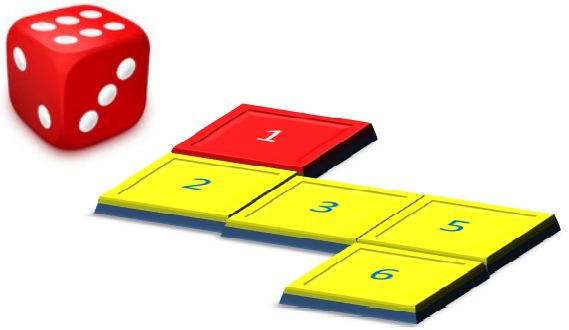
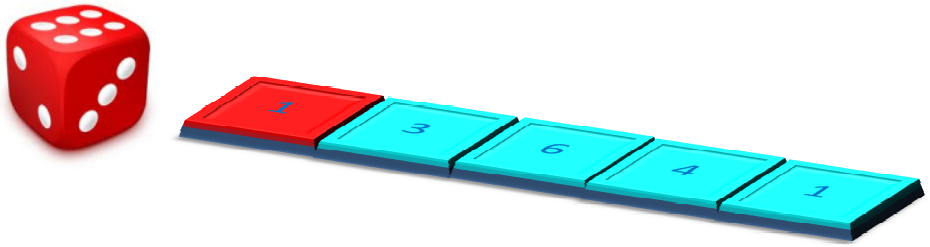
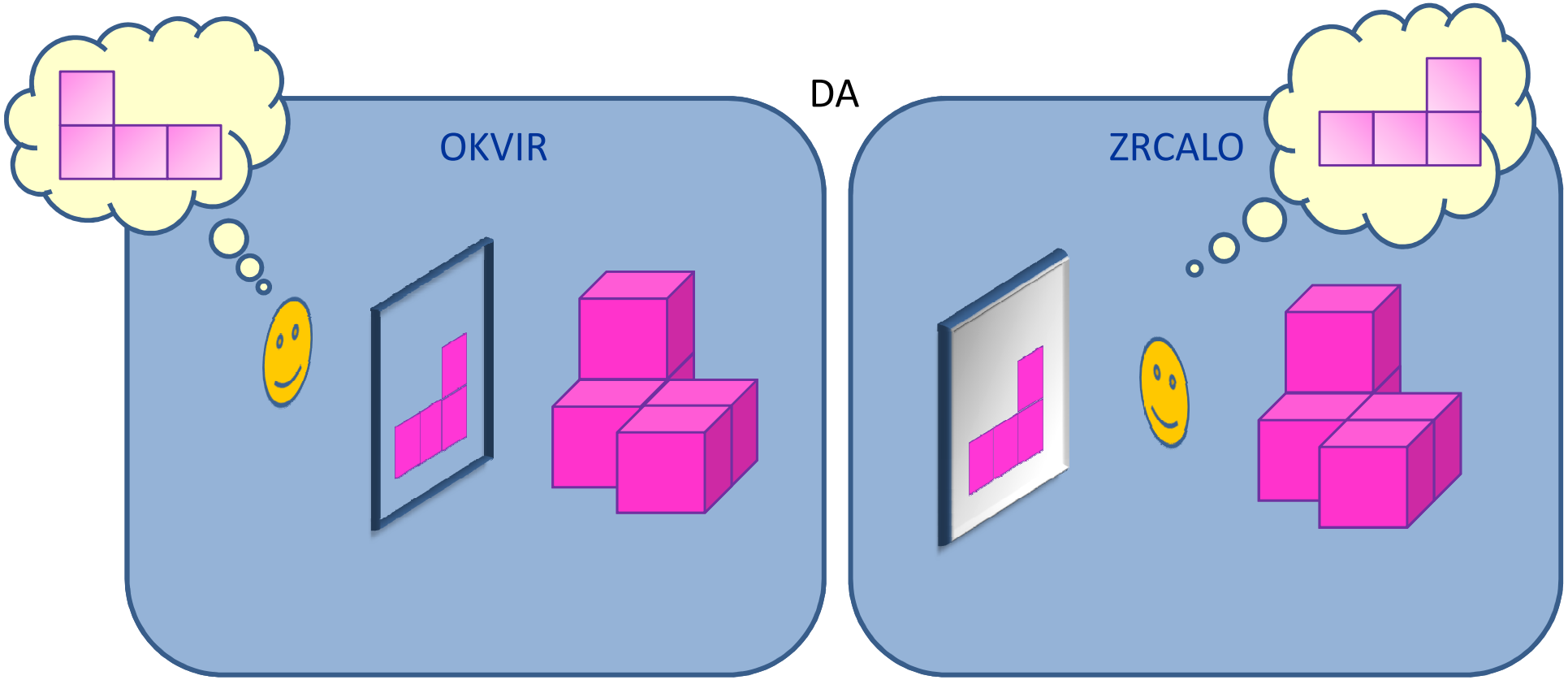




REŠITEV

3. STOPNJA

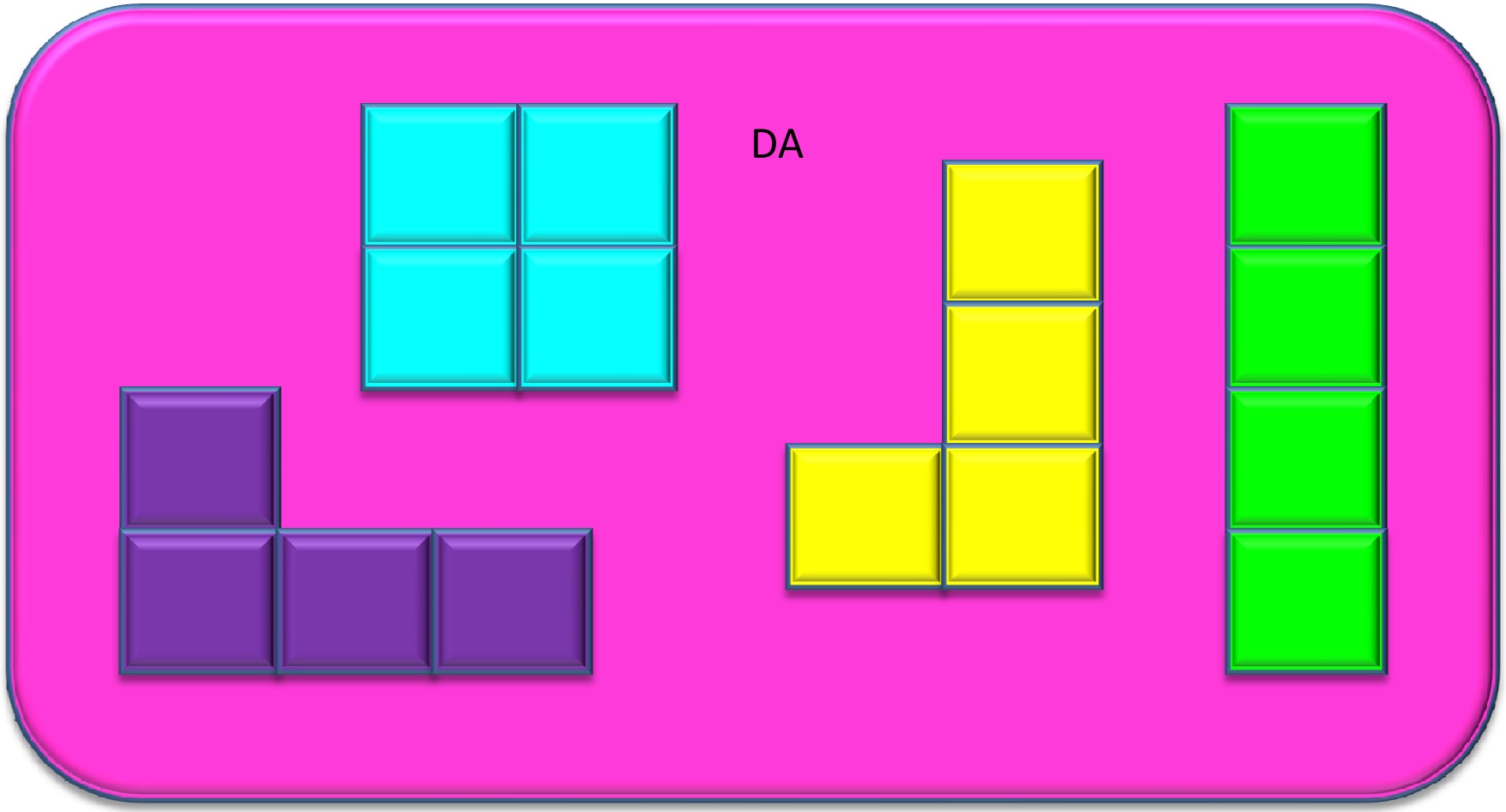
Ali sta obe sliki pravilni?
V prvem primeru pogledaš telo skozi okvir v drugem pa v zrcalo.



REŠITEV

3. STOPNJA

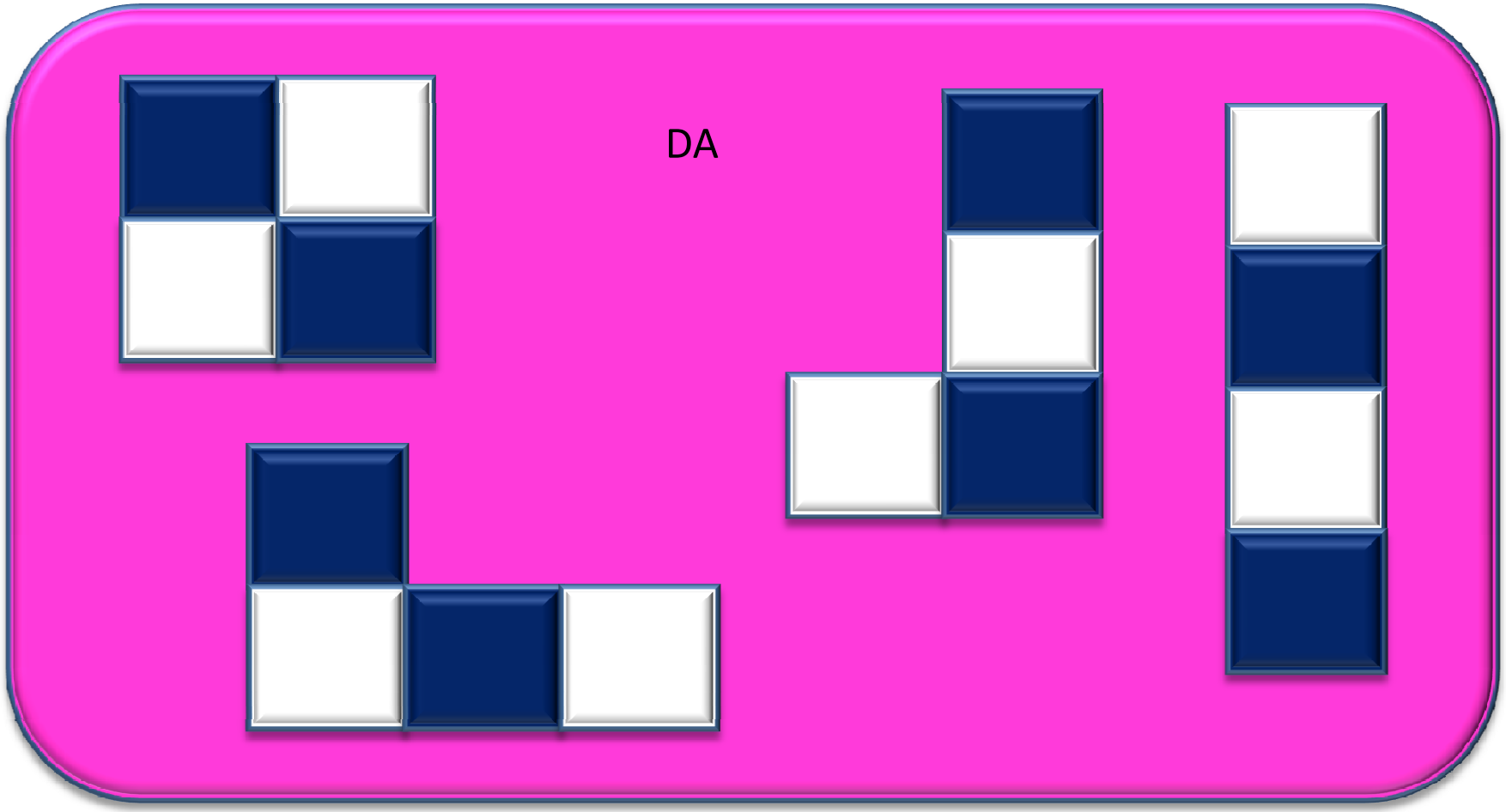
Ali lahko iz spodnjih oblik sestaviš kvadrat?



REŠITEV

3. STOPNJA

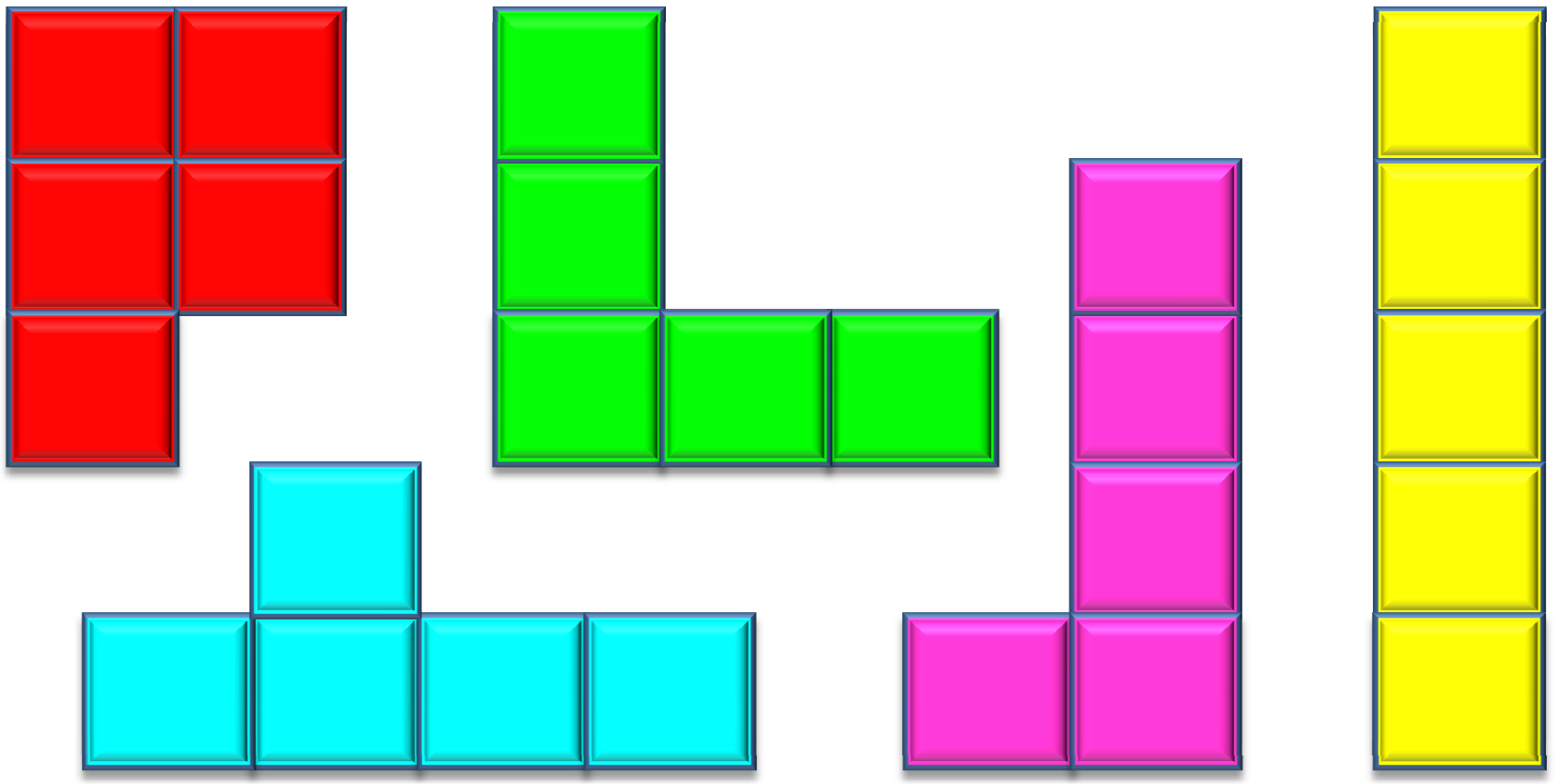
Ali lahko iz spodnjih delov sestaviš šahovnico kvadratne oblike?



REŠITEV

3. STOPNJA

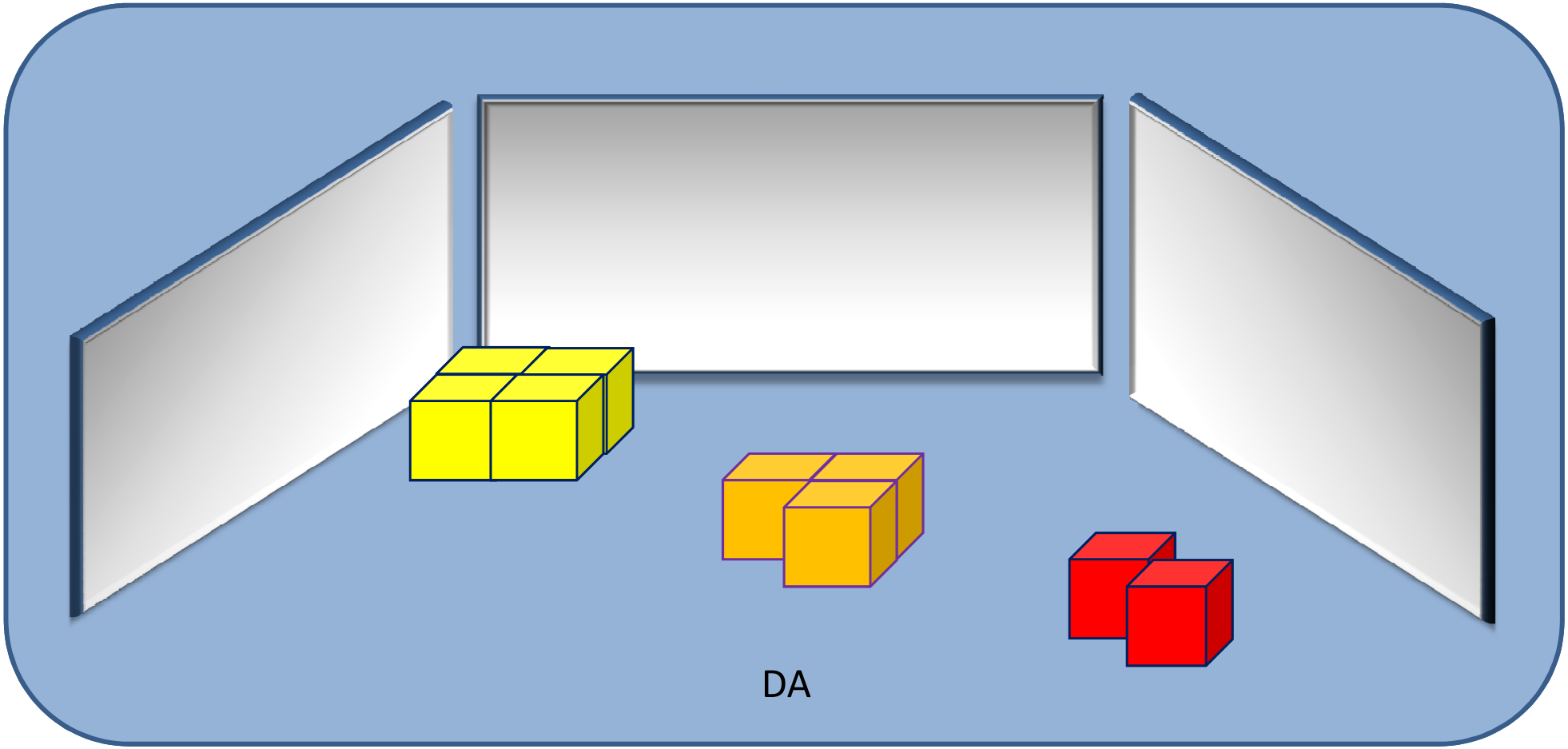
Ali lahko iz spodnjih delov sestaviš kvadrat?



REŠITEV

3. STOPNJA

Ali imajo vsa tri telesa v vsakem od ogledal enake slike?

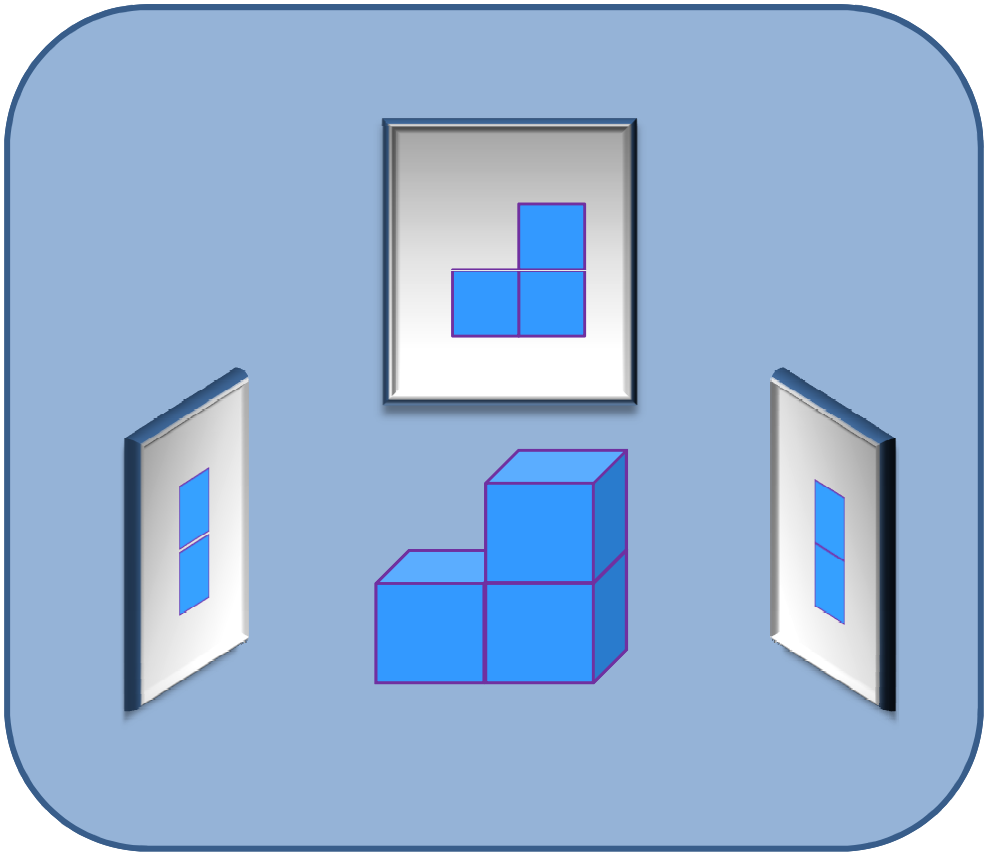


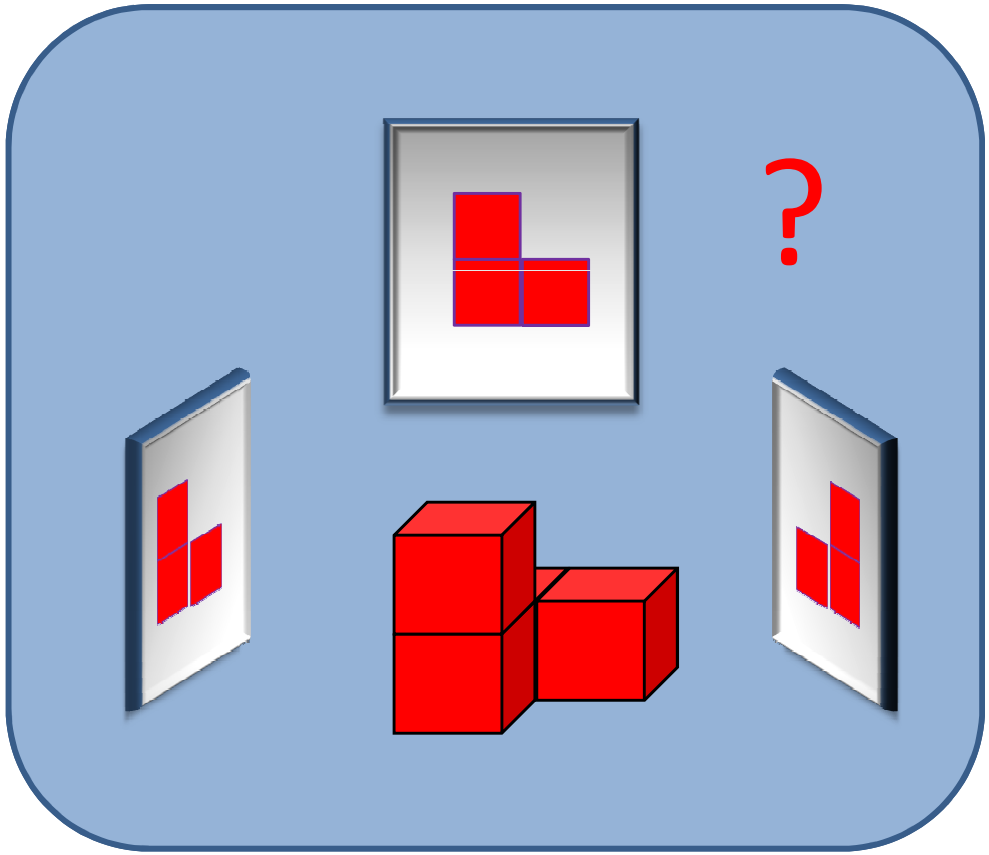
DA

REŠITEV

3. STOPNJA

Iz kock sestavi telo, ki ga vidiš v ogledalu z leve, z desne in od zadaj. Možnih je več rešitev.



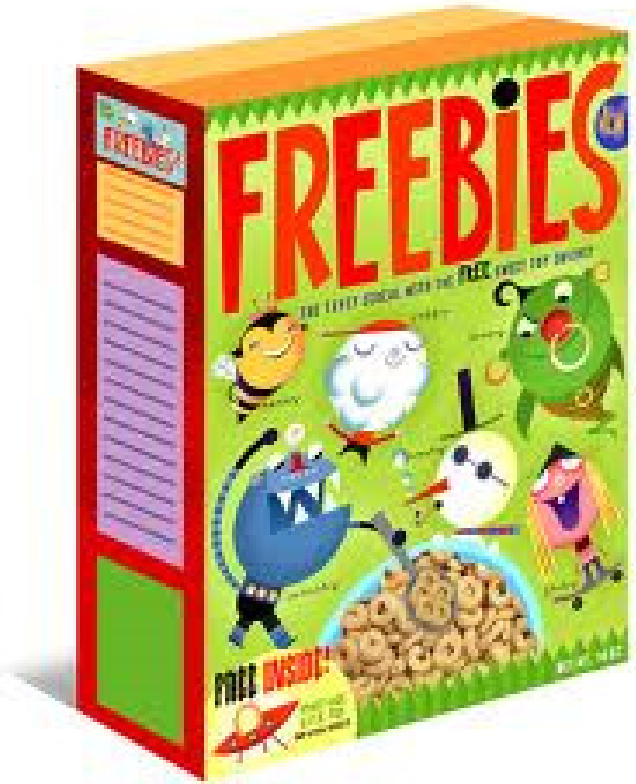


ENA IZMED MOŽNIH REŠITEV

REŠITEV

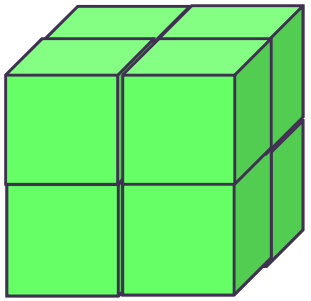
3. STOPNJA

Katerih oblik so sence škatle, ko jo osvetljuješ iz različnih smeri?



REŠITEV

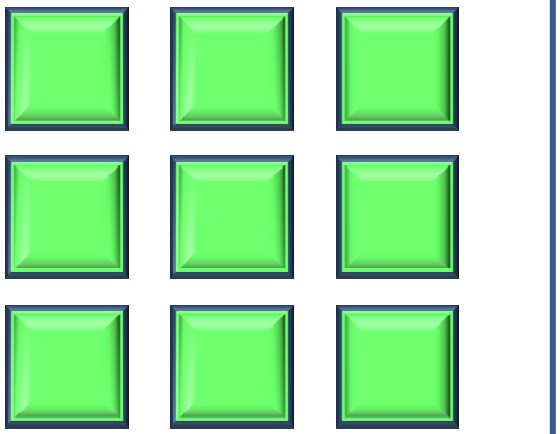
3. STOPNJA



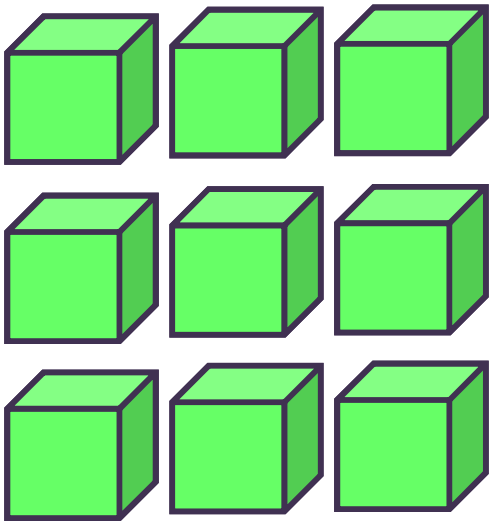
Kocko sestavljamo na dva načina:

- iz kvadratov (slika na levi),
- iz manjših kock, ki jih sestavimo iz kvadratov in iz njih sestavi večjo kocko (slika na desni).

Koliko kvadratov in koliko kock potrebujemo, da sestavimo kocko?



24

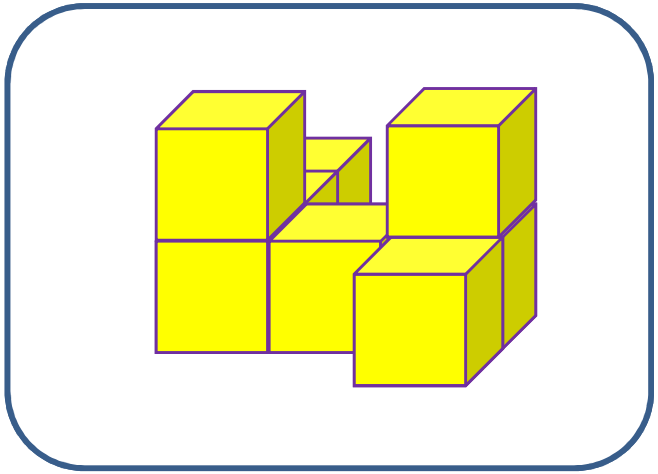


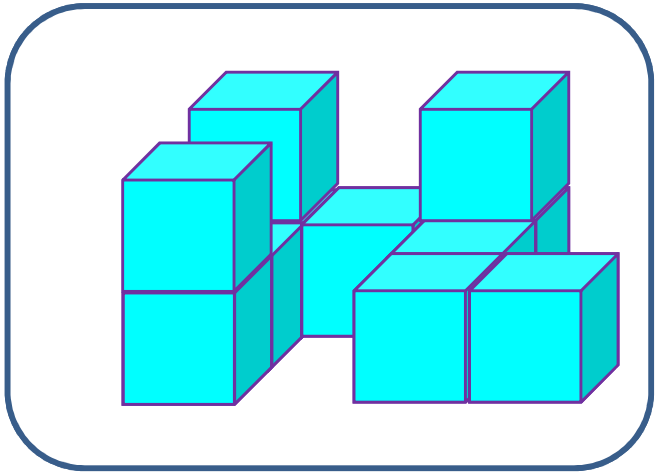
8

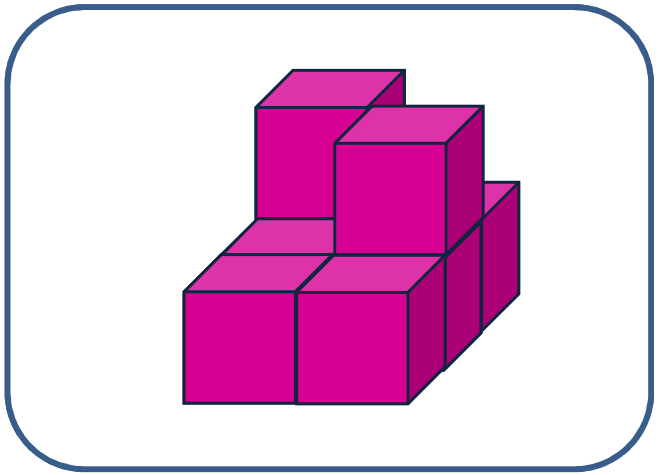
REŠITEV

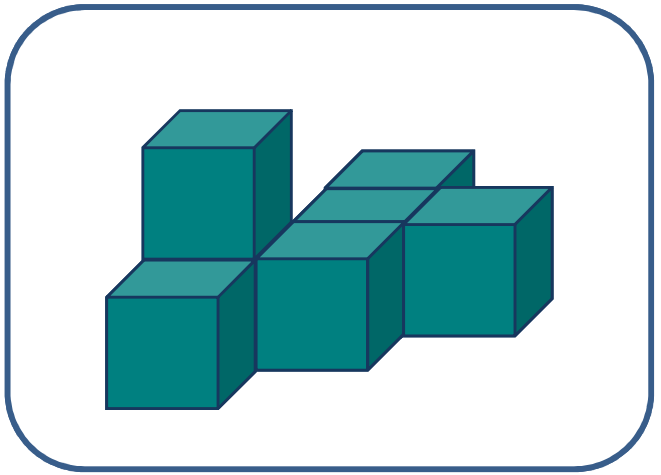
4. STOPNJA

Sestavi iz kock.





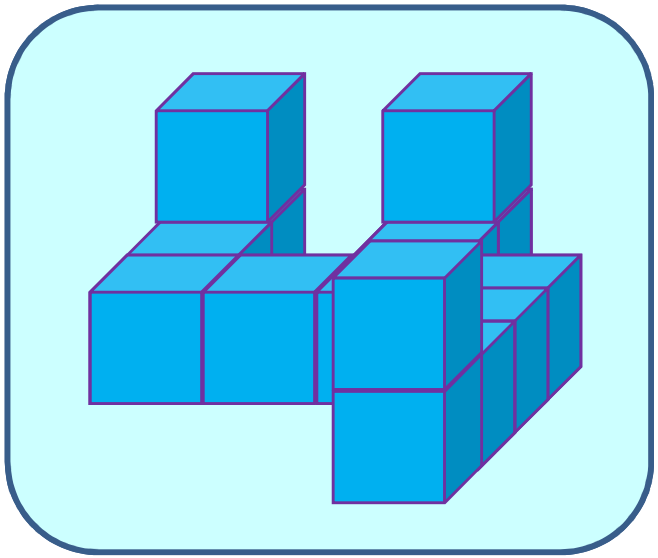


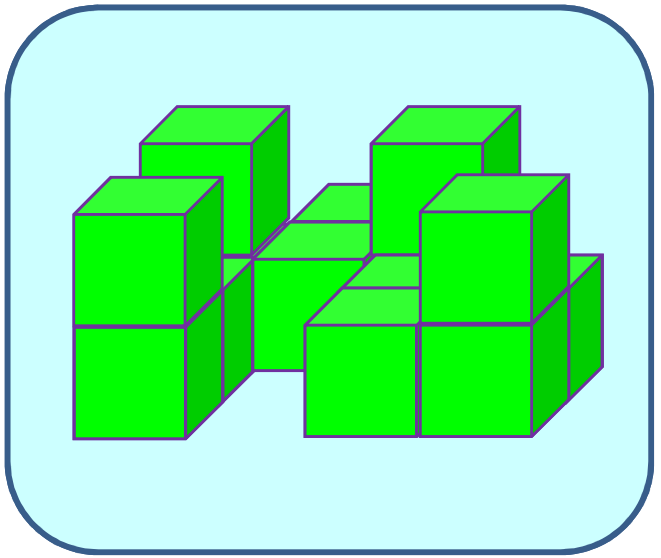


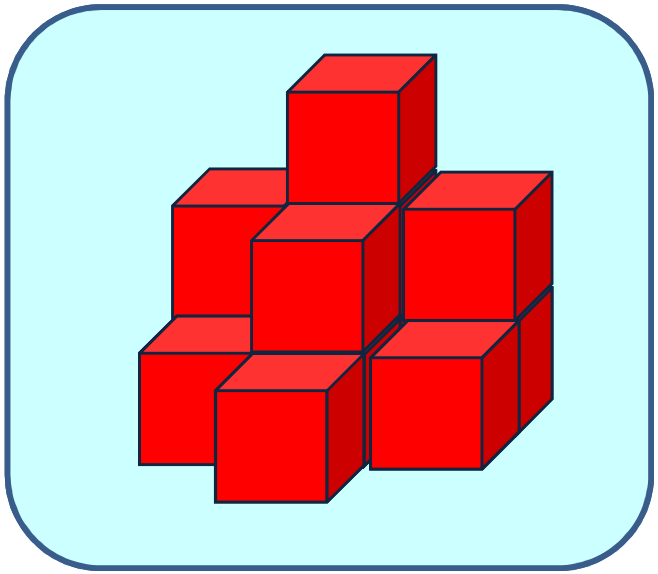
REŠITEV

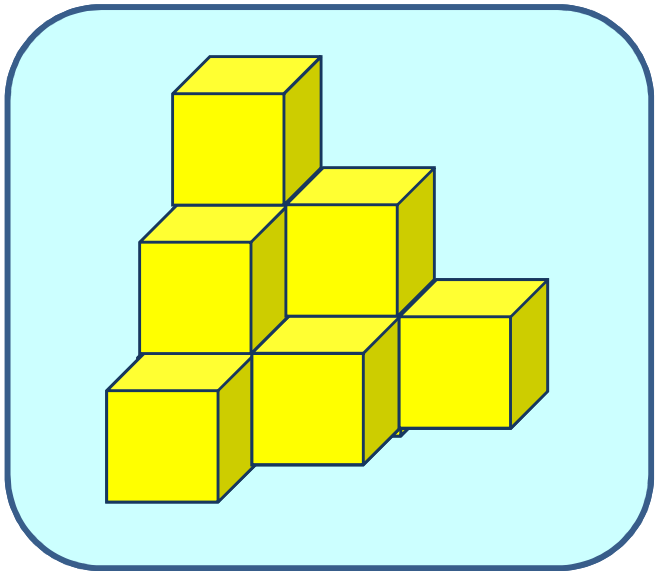
4. STOPNJA

Slike spodnjih teles vidiš v ogledalu. Iz kock sestavi njihove zrcalne podobe.









REŠITEV

4. STOPNJA

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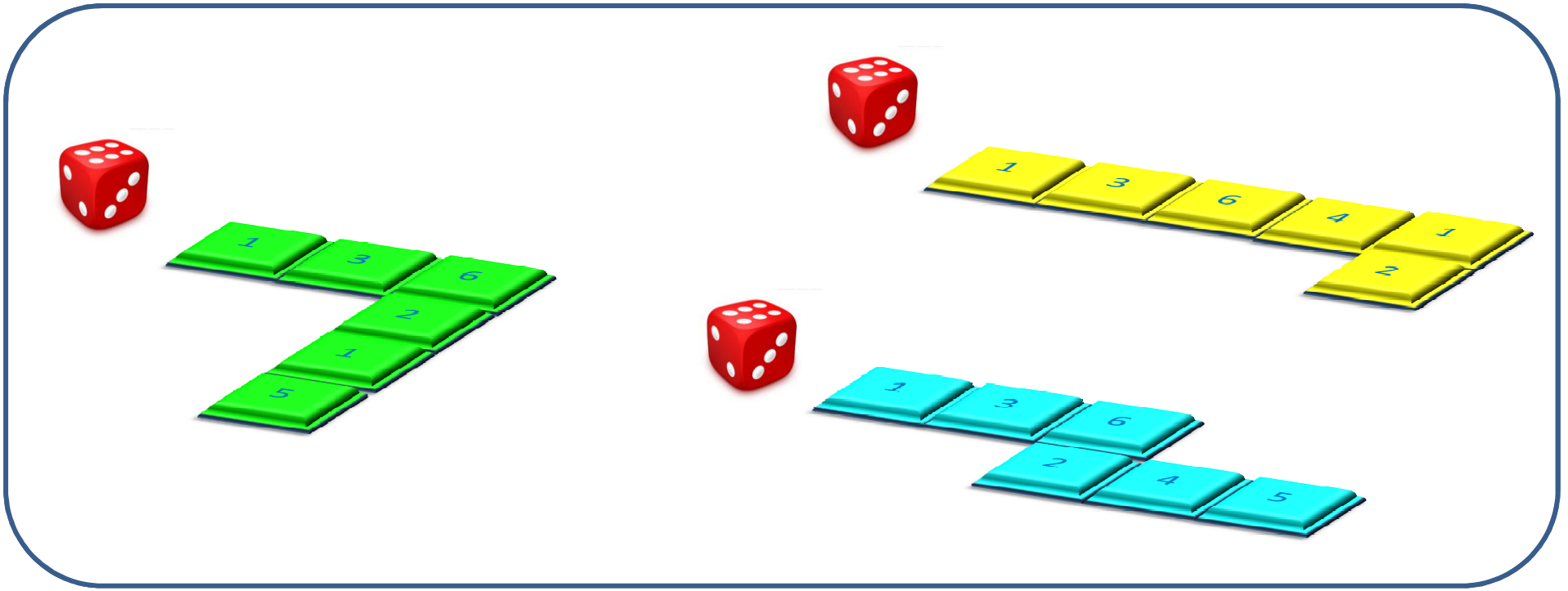
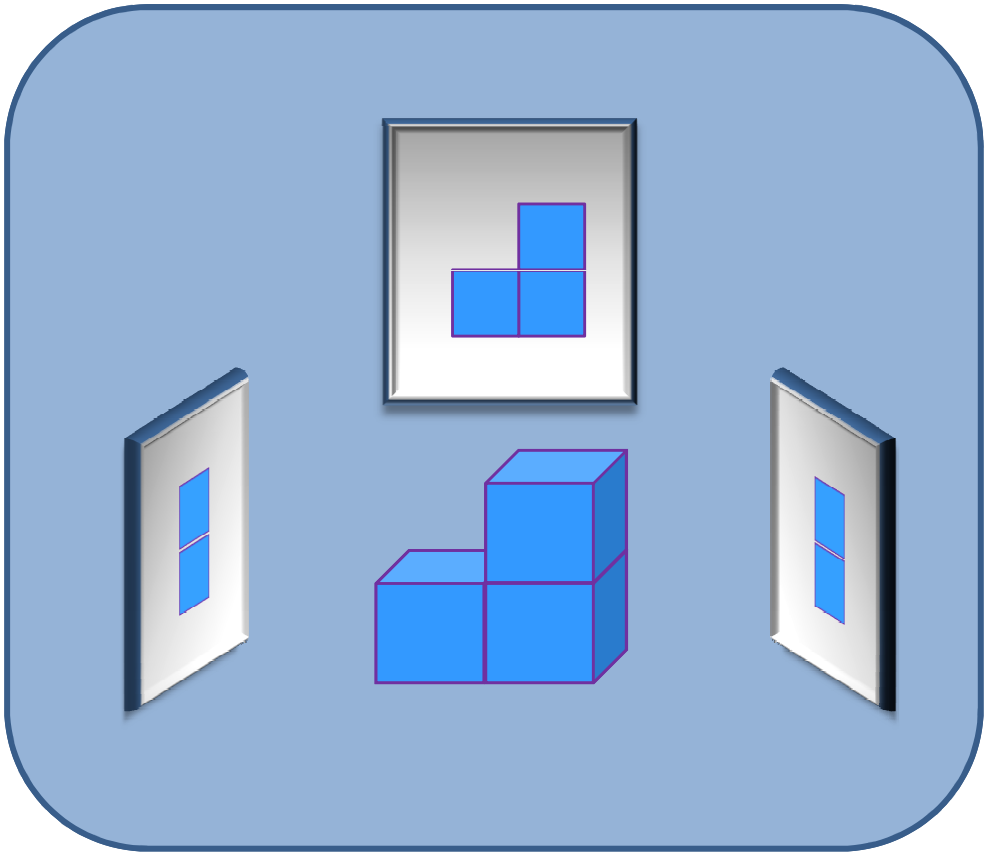
Na katerem od trakov se bodo zapisal odtisi vseh mejnih ploskev kocke?

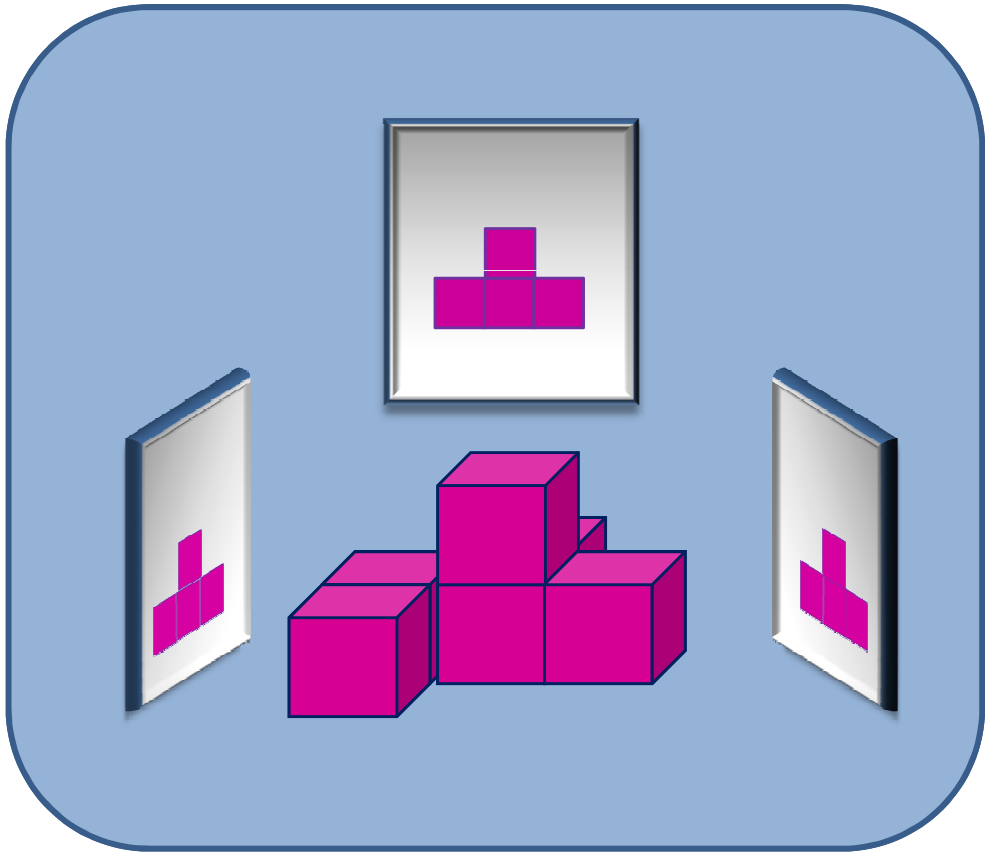


REŠITEV

4. STOPNJA

Po zgledu levo nariši sliko vijoličnega telesa v treh ogledalih.

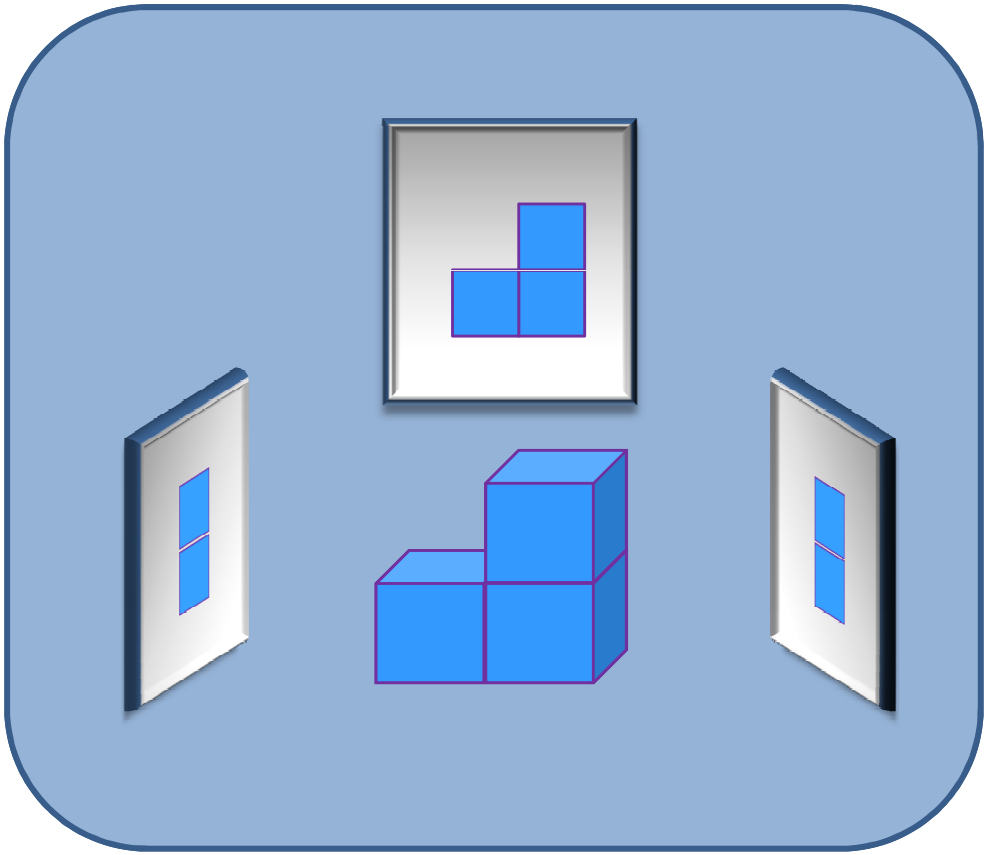


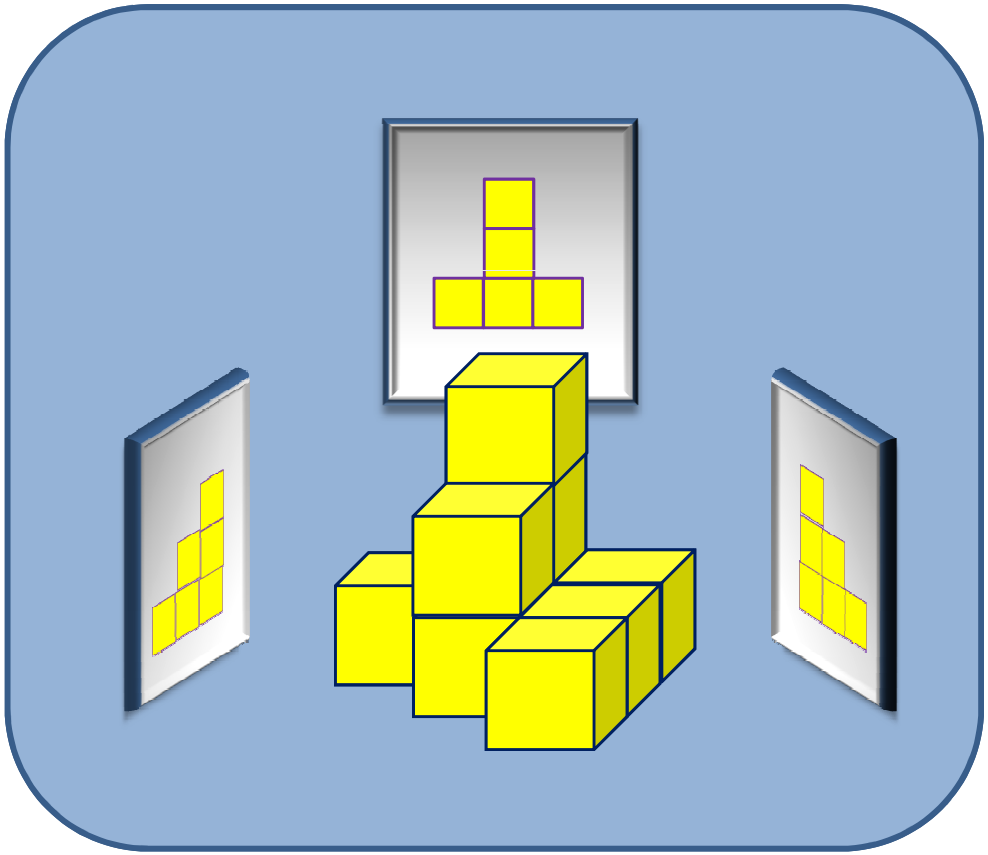


REŠITEV

4. STOPNJA

Po zgledu levo nariši sliko rumenega telesa v ogledalu.

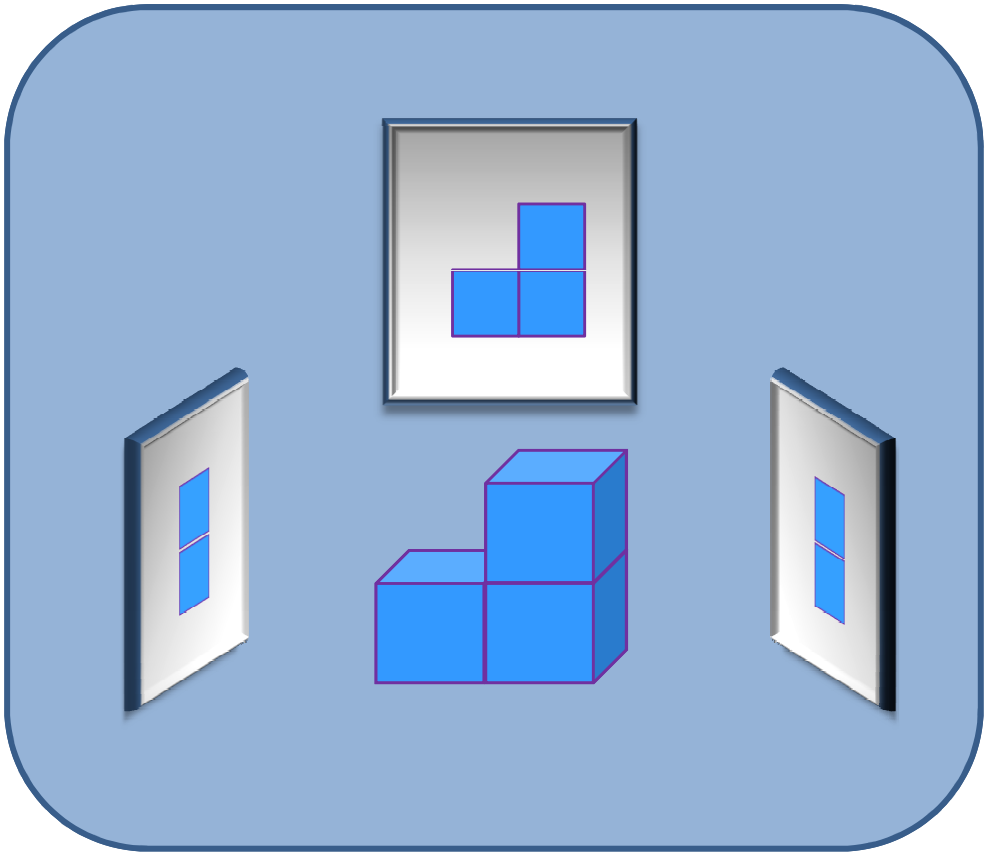


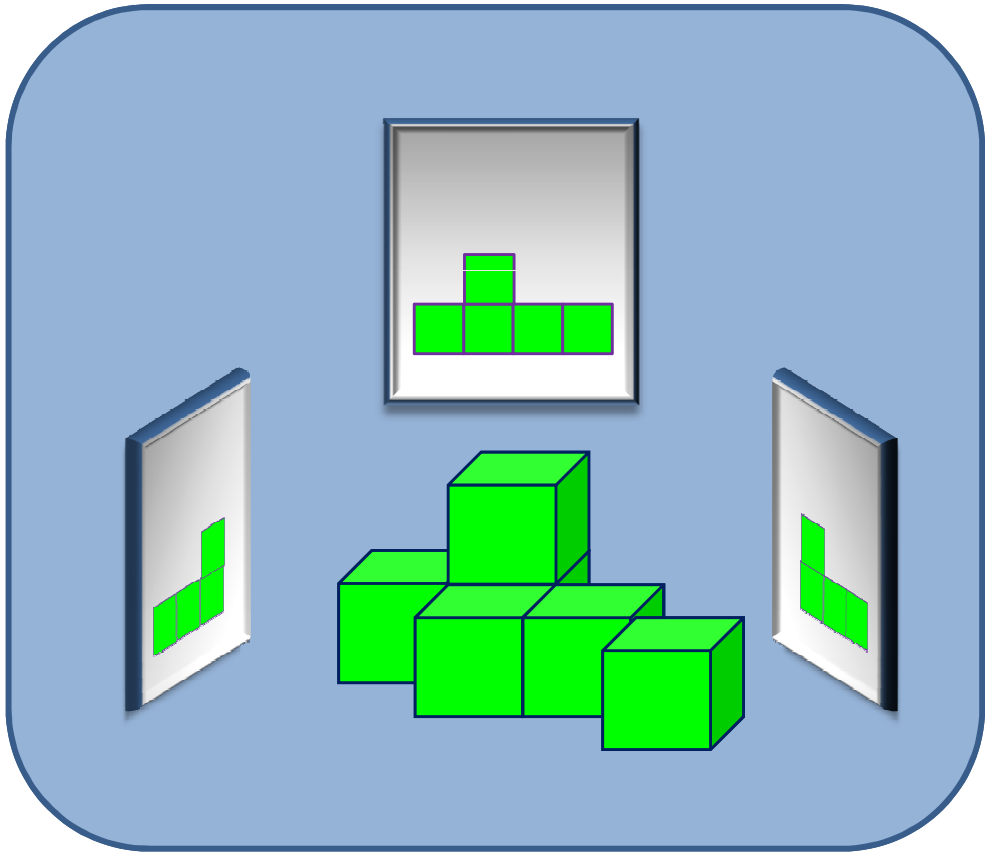


REŠITEV

4. STOPNJA

Po zgledu levo nariši sliko zelenega telesa v ogledalu.

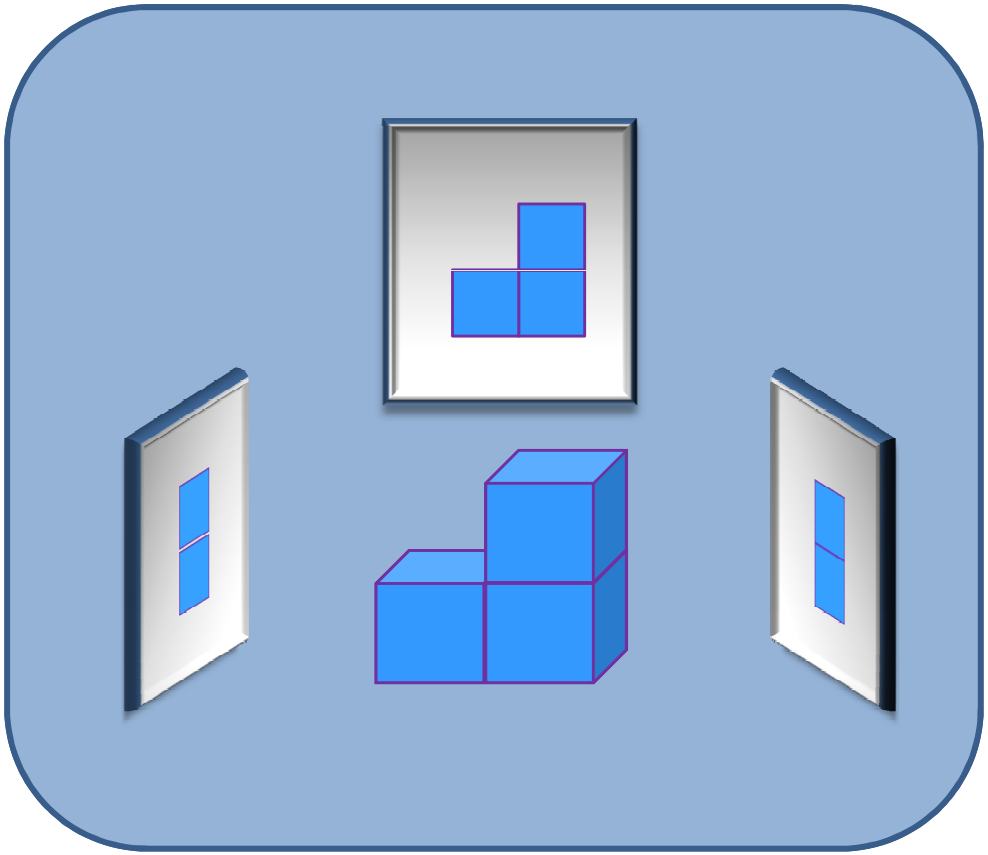


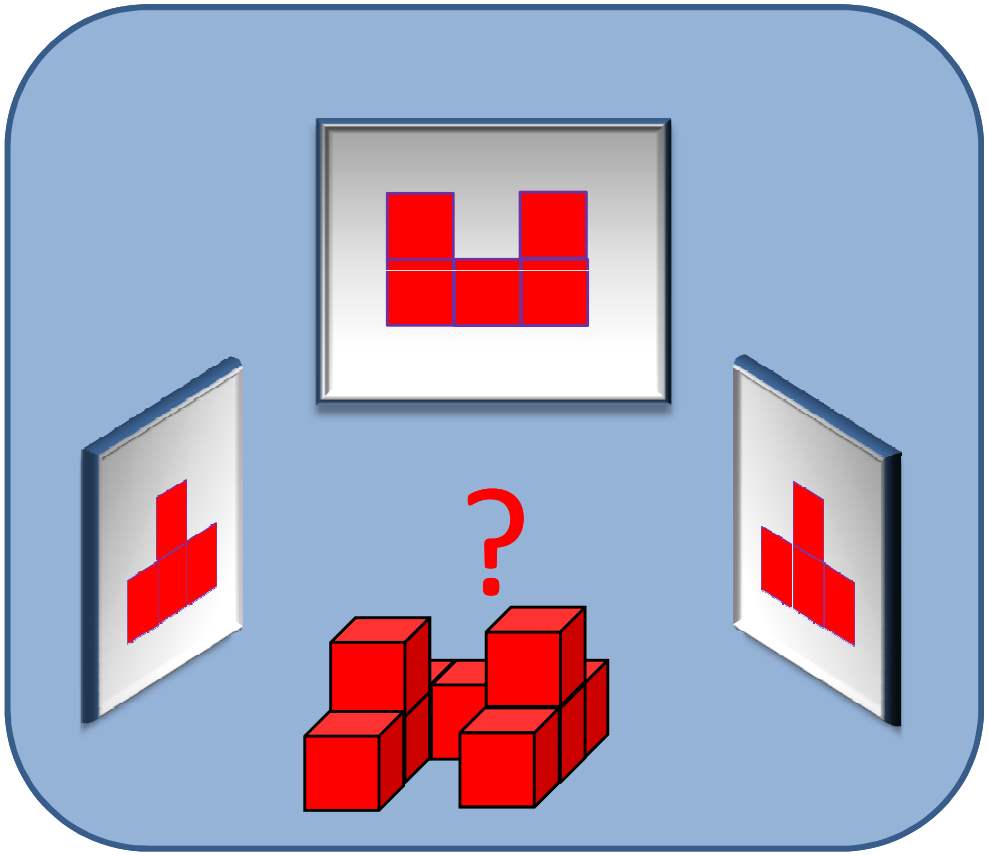


REŠITEV

4. STOPNJA

Iz kock sestavi telo, ki ga vidiš v ogledalu z leve, z desne in od zadaj. Možnih je več rešitev.





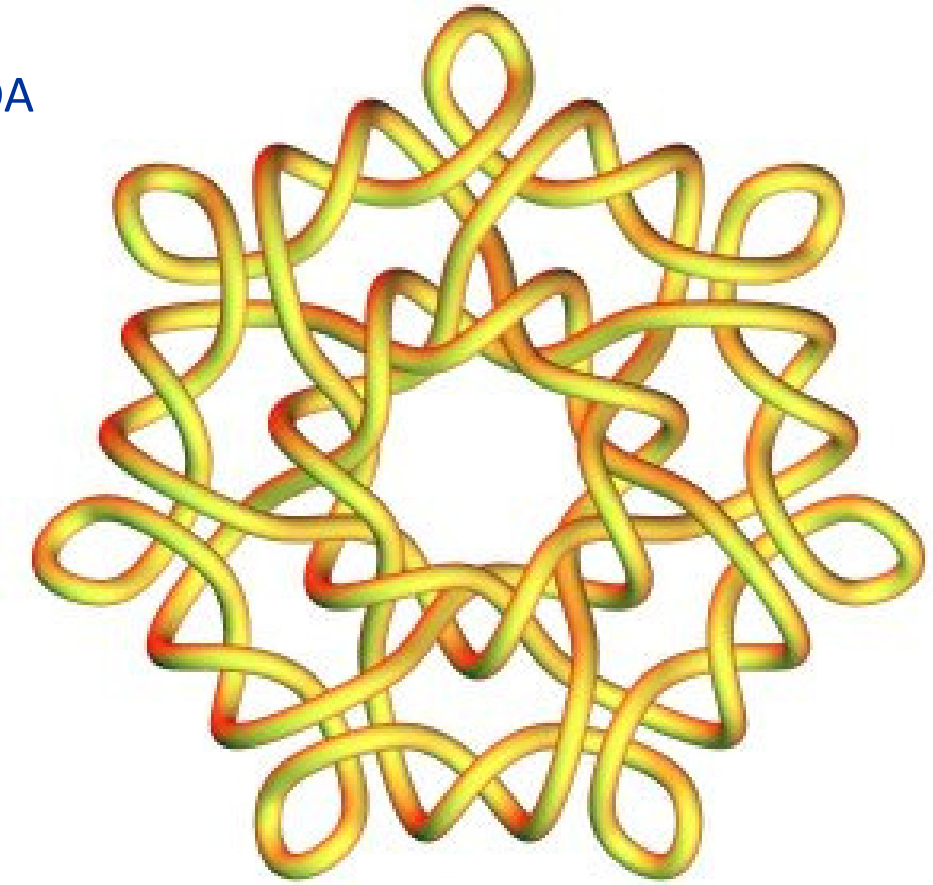
ENA OD MOŽNOSTI

REŠITEV

4. STOPNJA

Je vozel na sliki sestavljen iz ene ali več vrvic (zank)?

DA

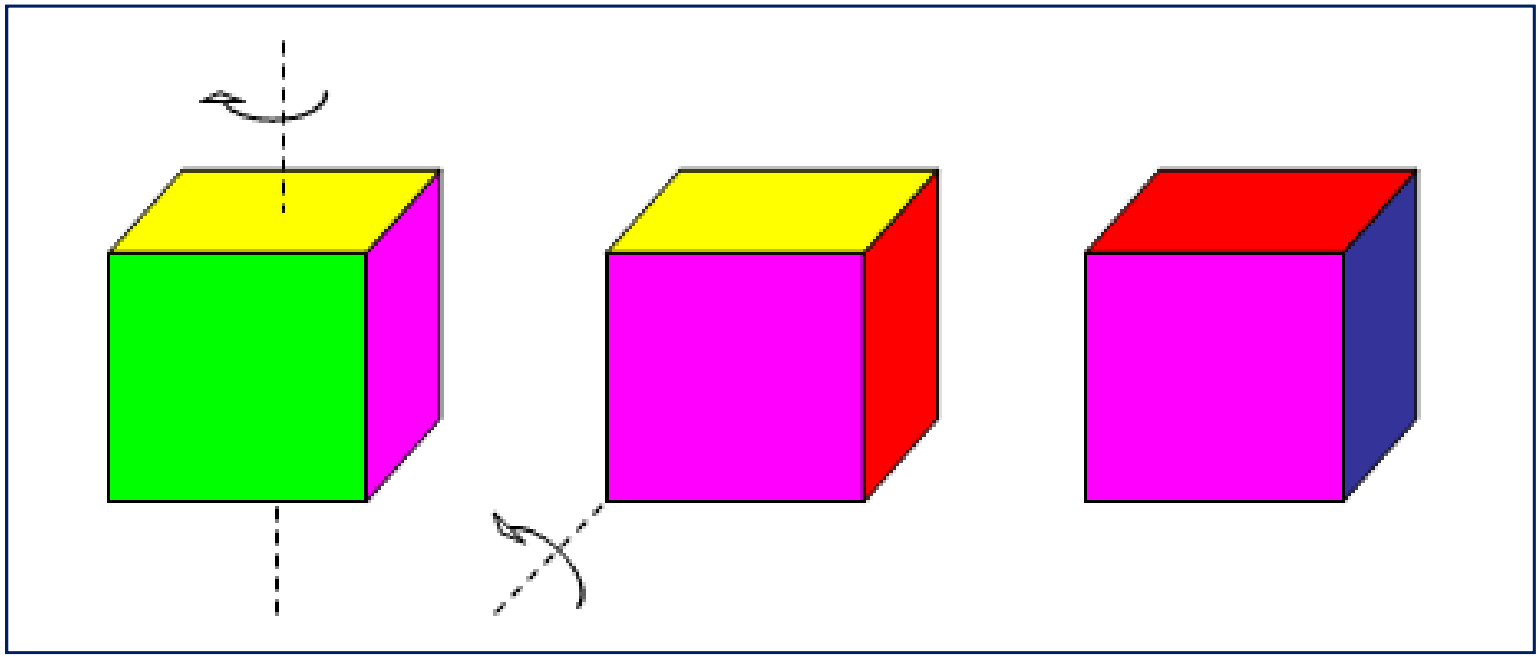


Vir slike: internet

REŠITEV

4. STOPNJA

Kateri barvi sta na nasprotnih mejnih ploskvah spodnje kocke?



MODRA – RUMENA

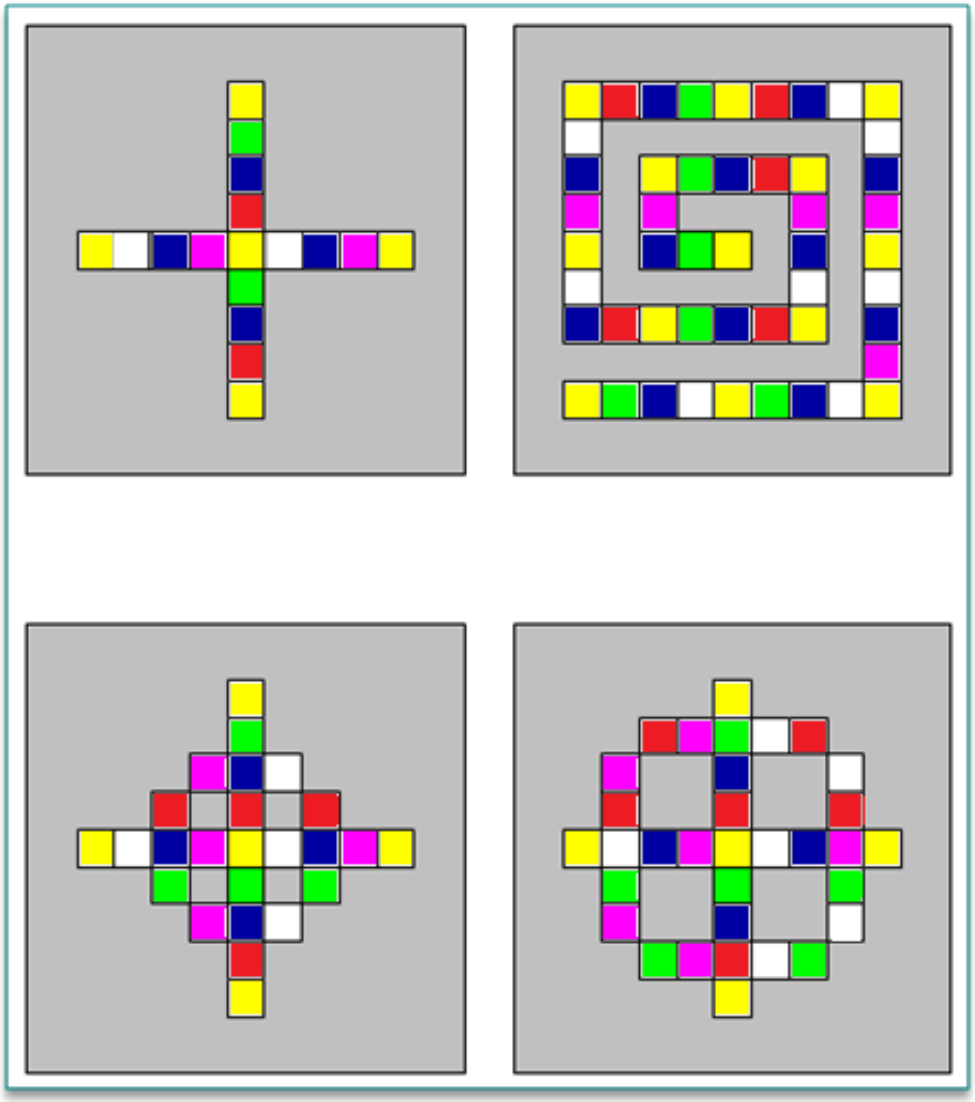
ZELENA – RDEČA

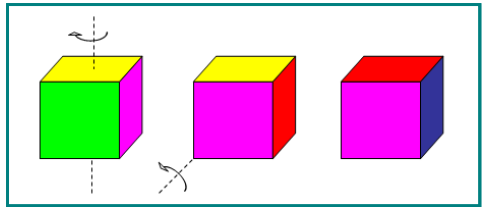
ROZA - ? (BARVE NE POZNAMO)

REŠITEV

4. STOPNJA

Kocka (v desnem spodnjem kotu) se kotali po različnih vzorcih in trakovih in pušča barvne sledi spodnje ploskve. S pravimi barvami pobarvaj bela polja na spodnjih vzorcih.

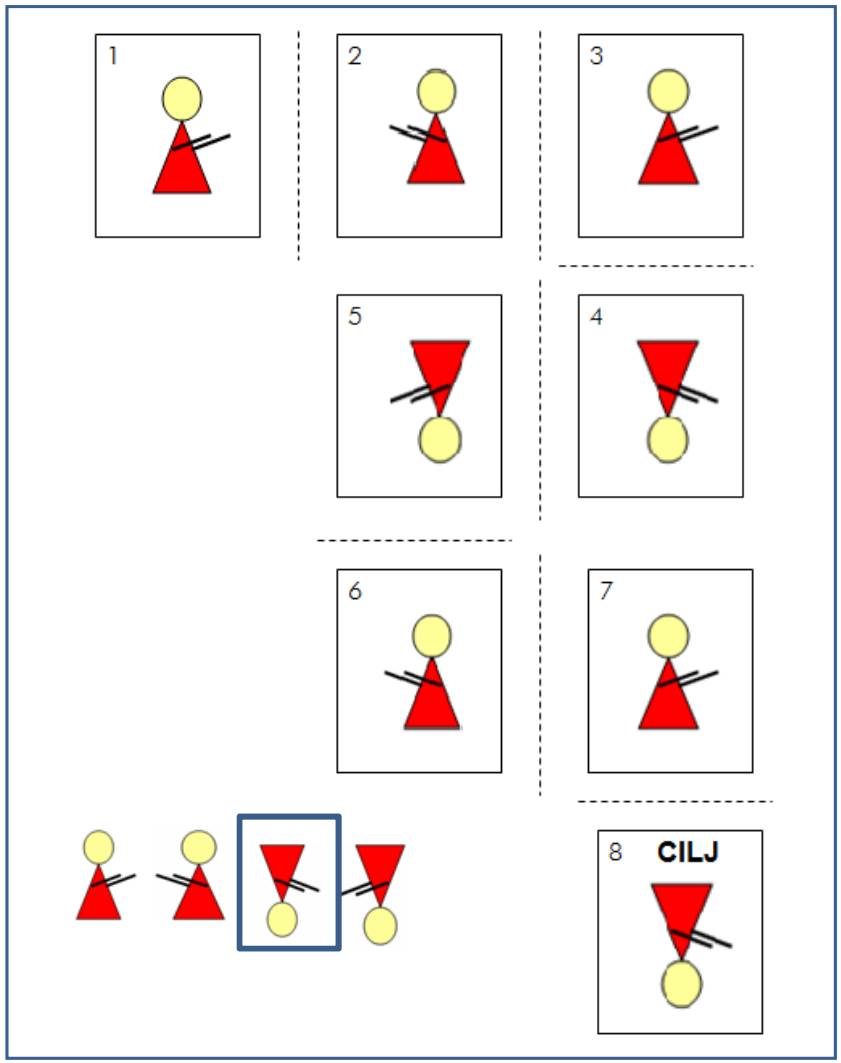




REŠITEV

4. STOPNJA

Katera od spodnjih štirih možnosti predstavlja pravilno obrnejo sliko na polju št. 8, ki jo dobiš po zrcaljenju slike v polju št. 1.

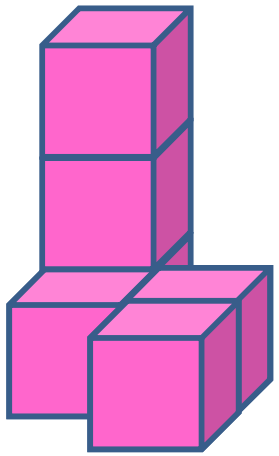


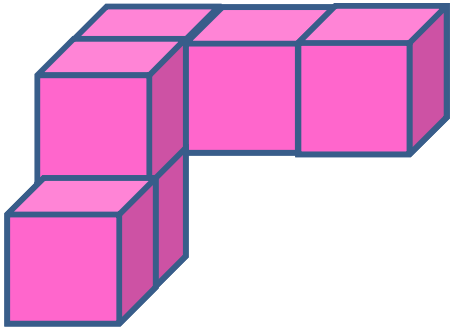
REŠITEV

4. STOPNJA

Ali sta spodnji obliki enaki? Telesi lahko obračaš v vse smeri.

DA



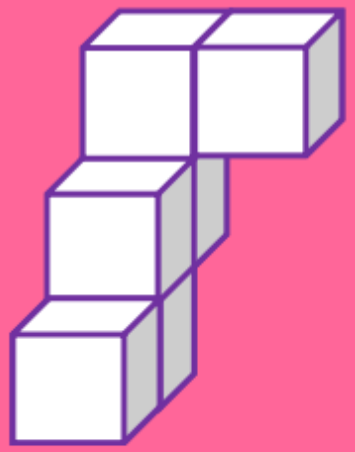


REŠITEV

4. STOPNJA

Ali sta spodnji telesi enaki? Telesi lahko obračaš v vse smeri.

NE

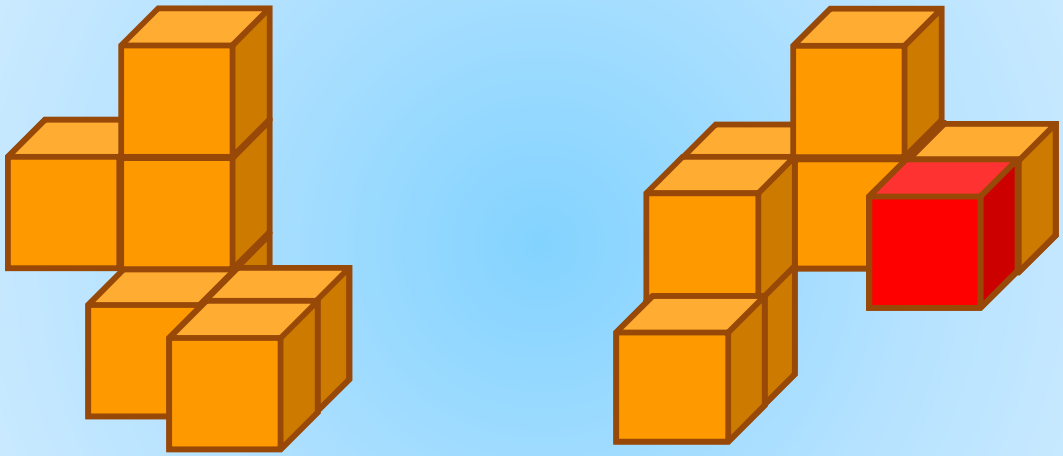


REŠITEV

4. STOPNJA

Ali sta spodnji telesi enaki? Telesi lahko obračaš v vse smeri.

NE

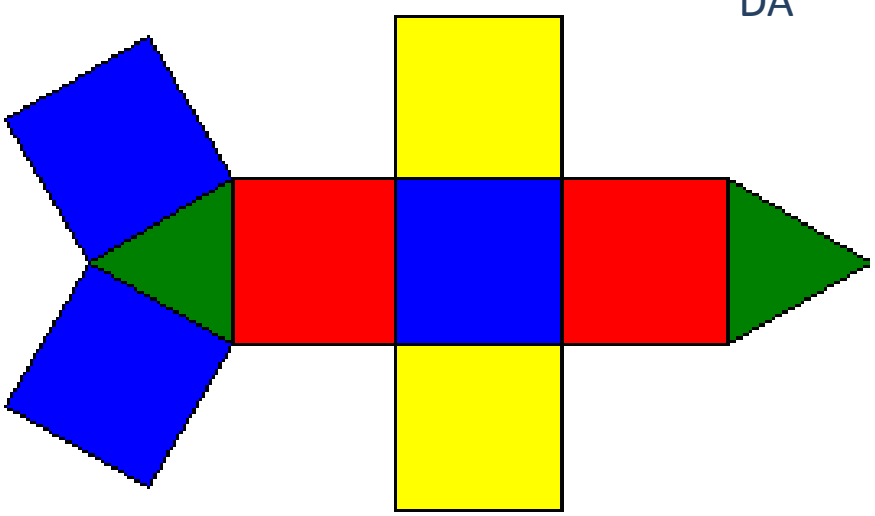


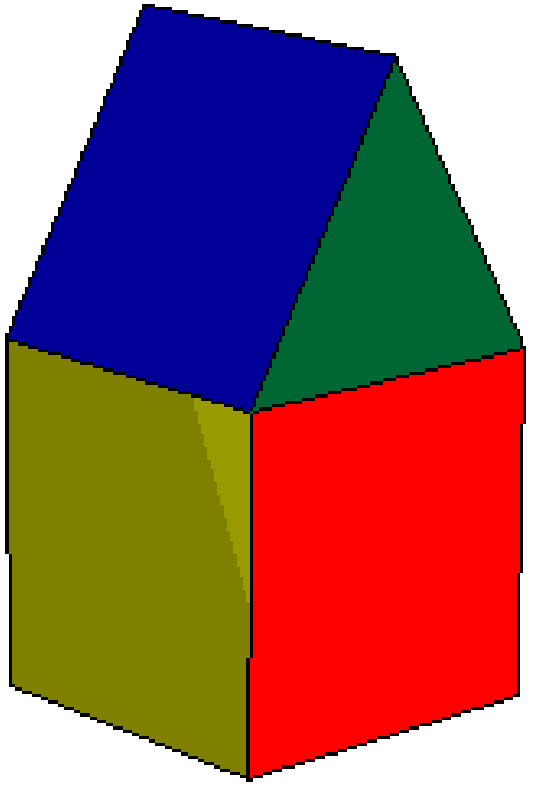
REŠITEV

4. STOPNJA

Ali je hiška spredaj in zadaj enako pobarvana?

DA





REŠITEV

4. STOPNJA

Na katerem od trakov bodo zapisale sledi vseh številk od 1 do 6, ki jih kocka pri kotaljenju pušča na trakovih?
Kocka potuje od zgornjega do spodnjega rumenega polja, vsakič se prekotali na novo polje (nikoli se ne ustavi večkrat na enem polju). Velikost polja je enaka velikosti mejne ploskve kocke.

STE OPAZILI, DA SO KOCKE "LAŽNE" (ENAKE ŠTEVILKE)?
SPODNJA REŠITEV JE ZAPISANA S "PRAVIMI" KOCKAMI.

1	3	6	4	1
2	3	5	4	2

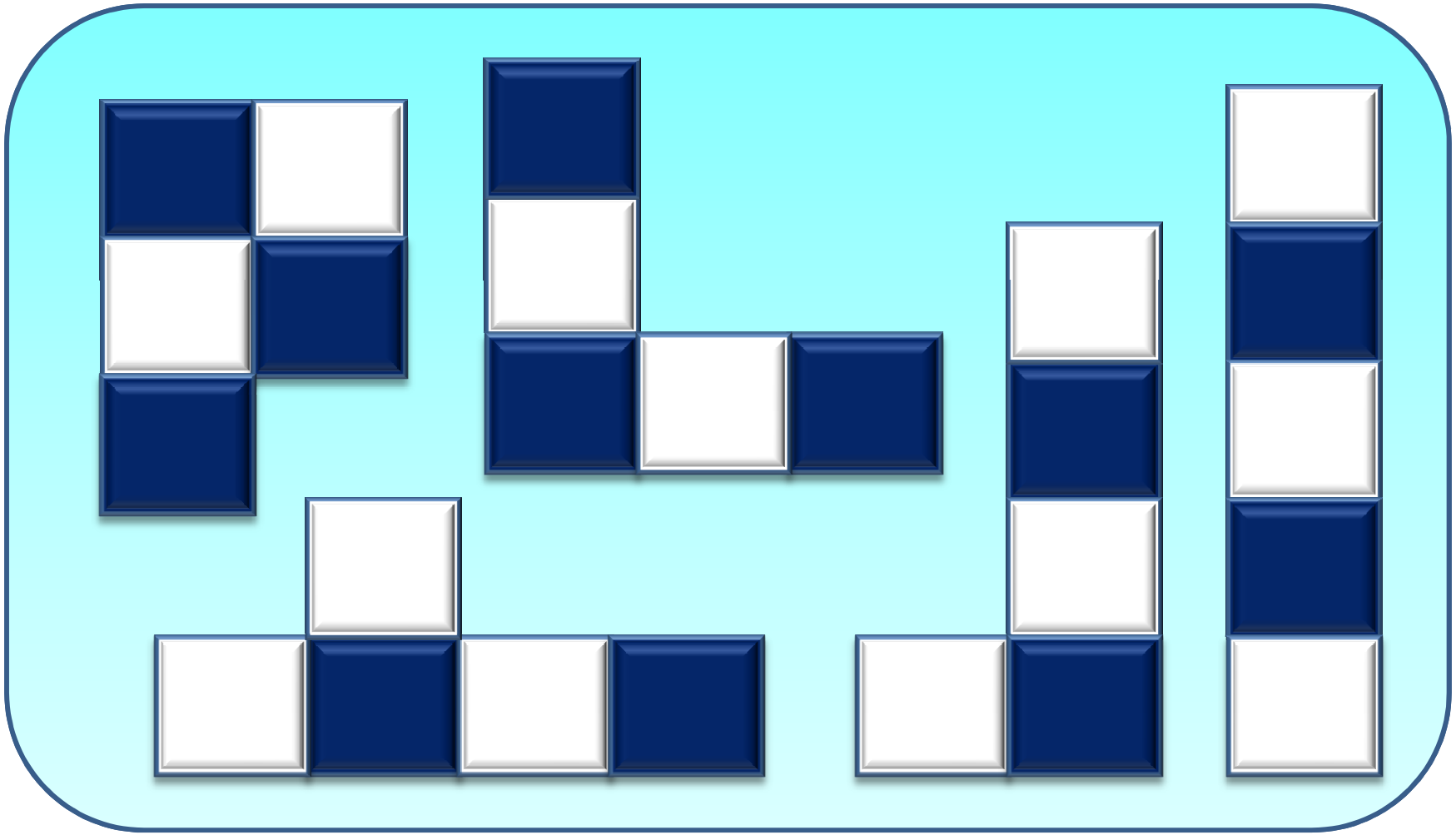
1	3	6	4	1
				2
6	3	1	4	6

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

REŠITEV

4. STOPNJA

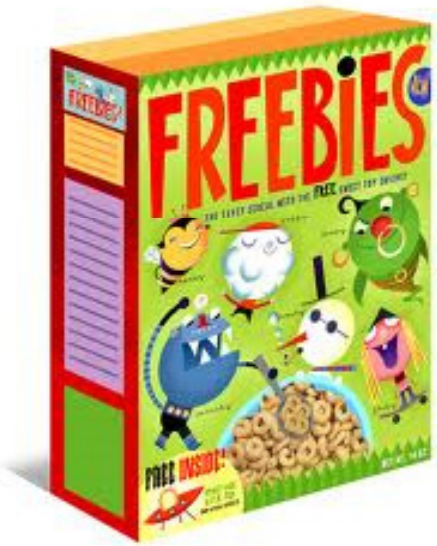
Ali lahko iz spodnjih delov sestaviš šahovnico kvadratne oblike?



REŠITEV

4. STOPNJA

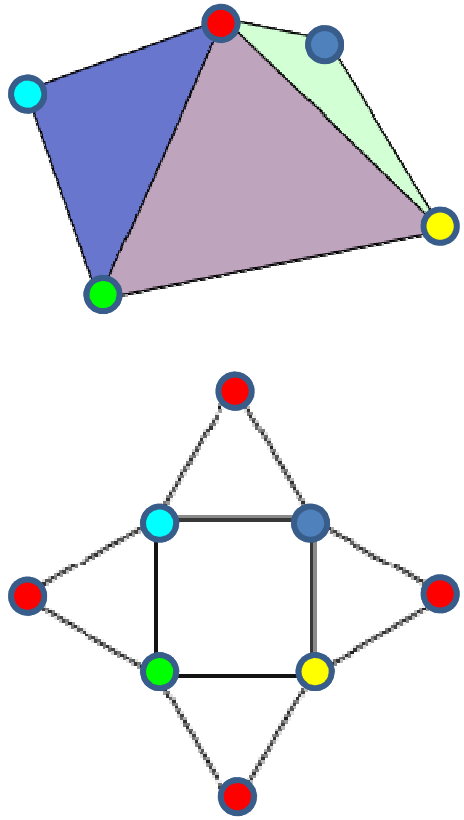
Različne oblike škatel (odpadna embalaža) razreži po toliko robovih, da dobiš mrežo škatle. Pazi, da ne prerežeš preveč robov.

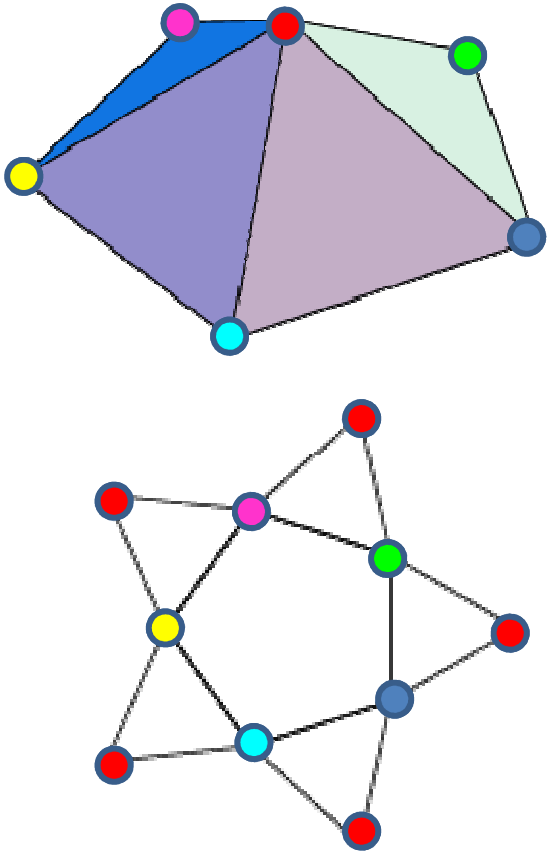


REŠITEV

4. STOPNJA

Na levi je primer na mreži označenih oglišč. Oglišča na mreži, ki se združijo v skupno oglišče telesa, so narisane z enako barvo.
Na sliki desno označi skupna oglišča z enako barvo.



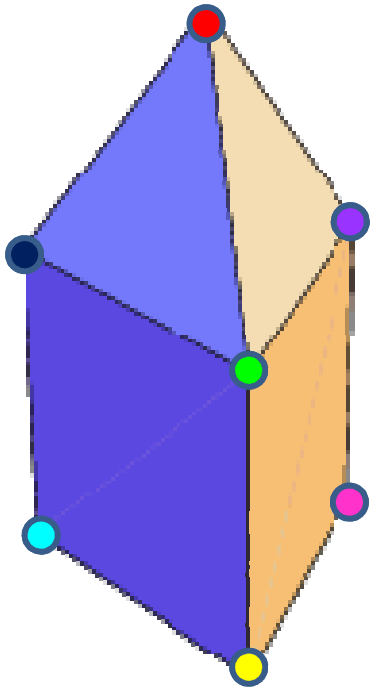


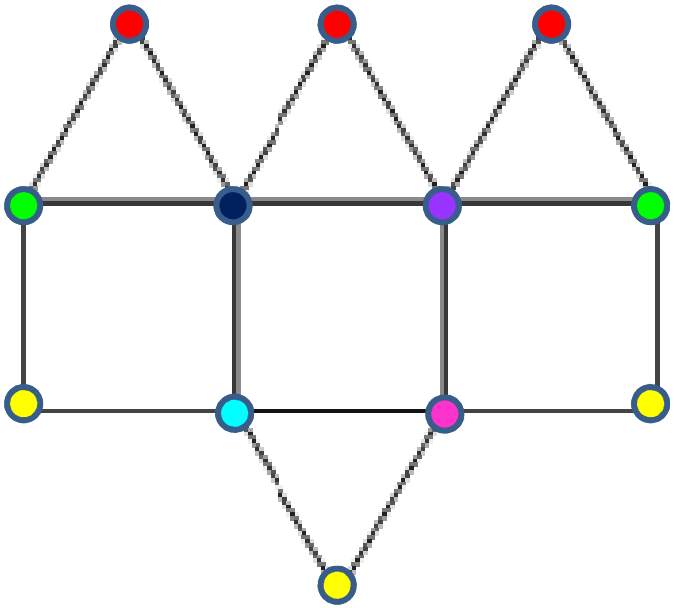
Mrežo zavihamo po robovih “navzgor”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



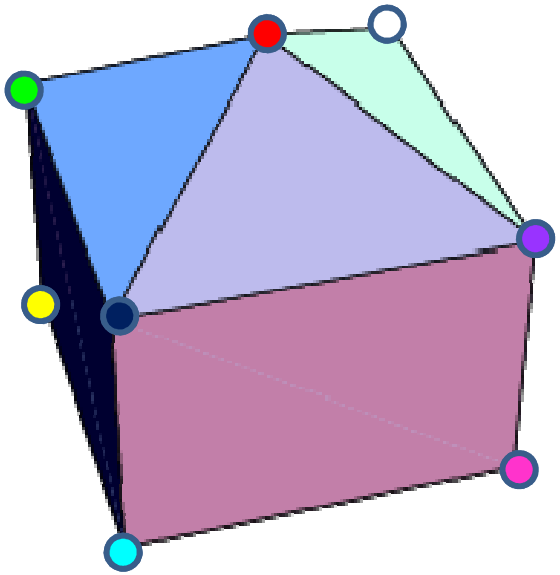


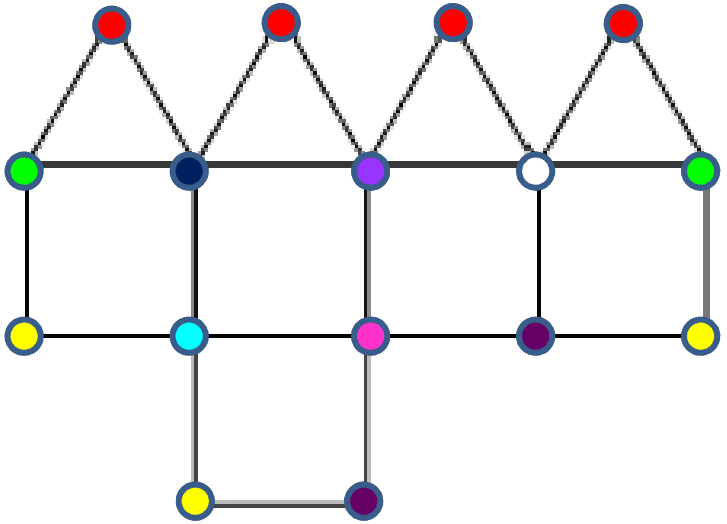
Mrežo zavihamo po robovih “navzgor”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



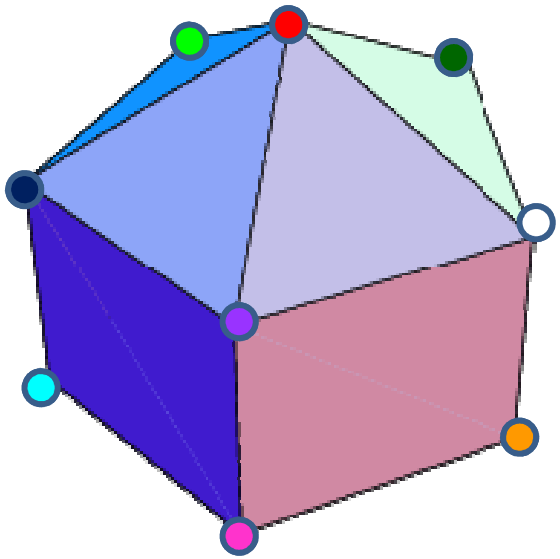


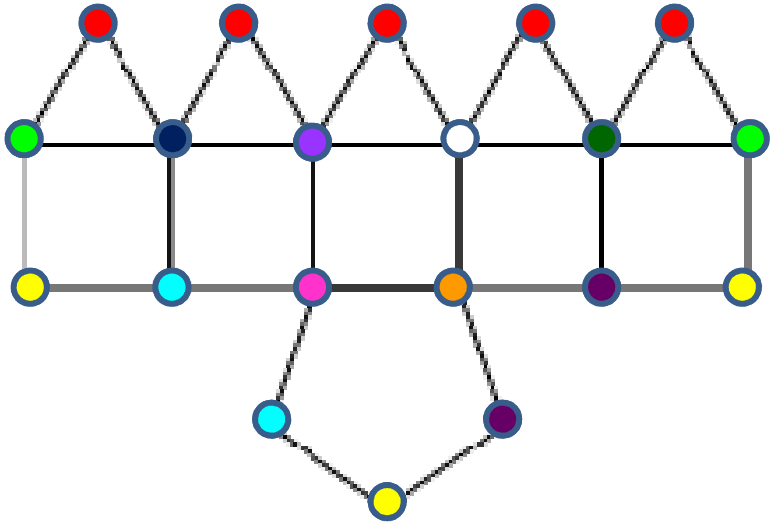
Mrežo zavihamo po robovih “navzdol”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



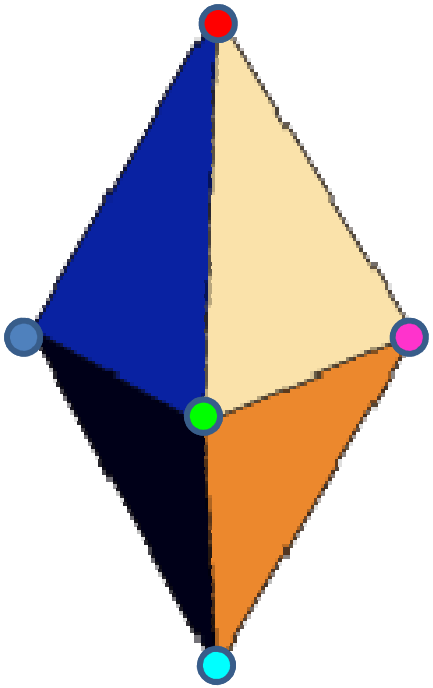


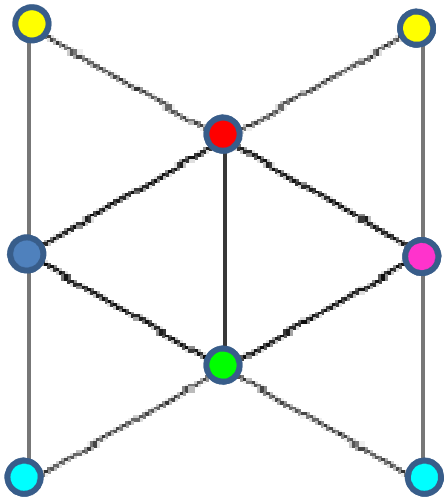
Mrežo zavihamo po robovih “navzdol”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



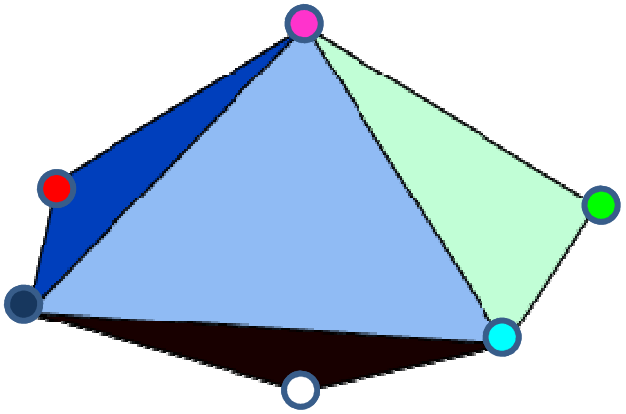


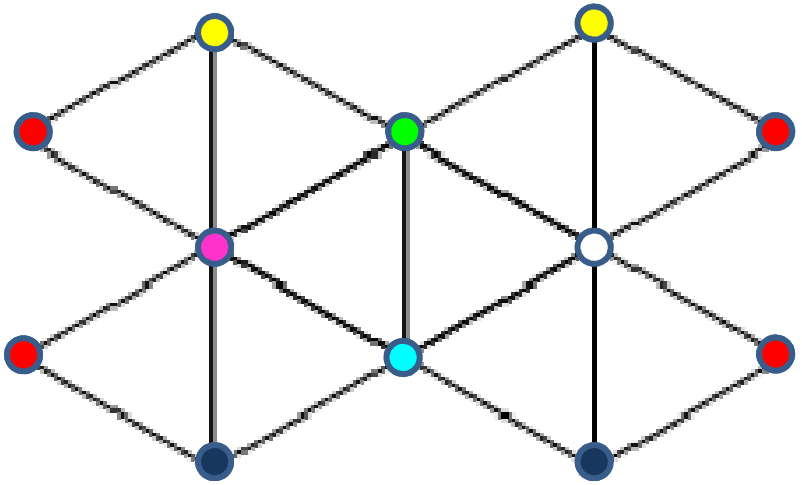
Mrežo zavihamo po robovih “navzdol”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



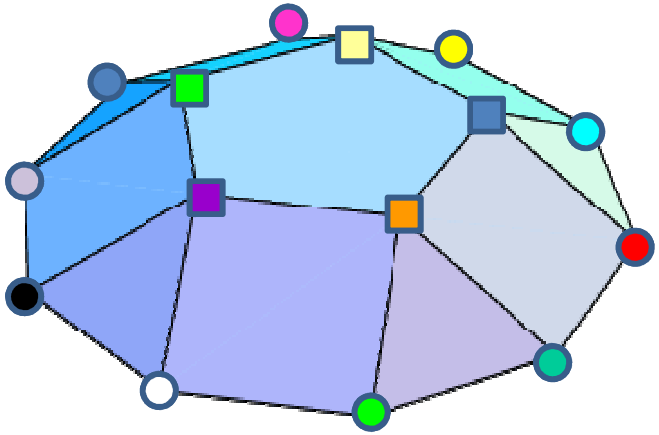


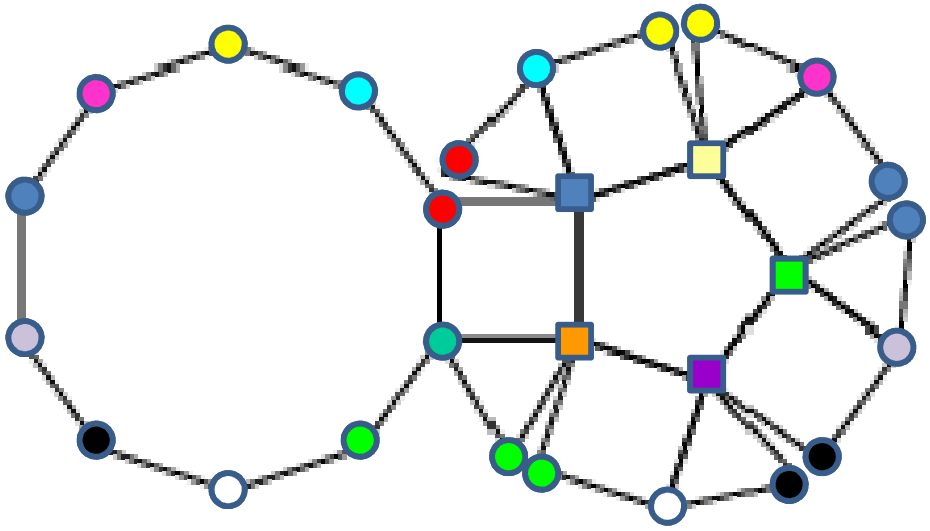
Mrežo zavihamo po robovih “navzdol”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



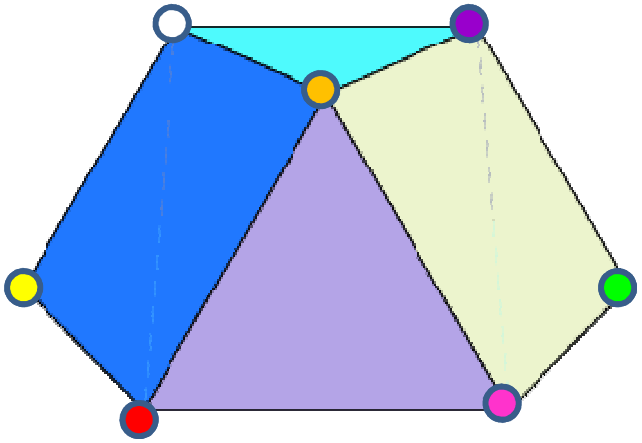


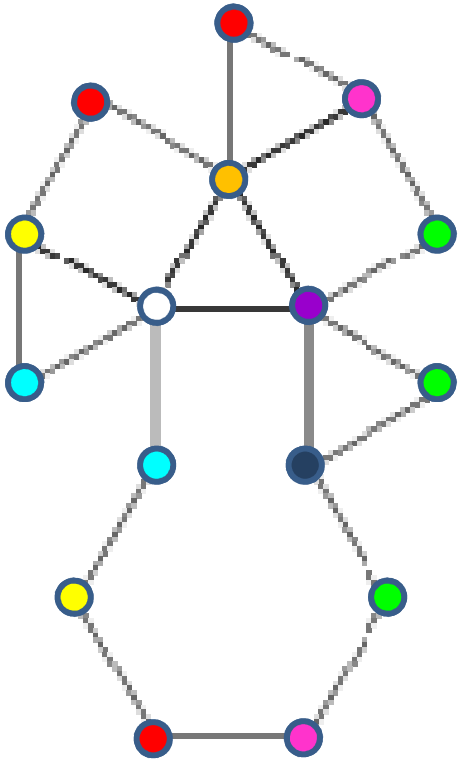
Mrežo zavihamo po robovih “navzgor”

REŠITEV

4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.



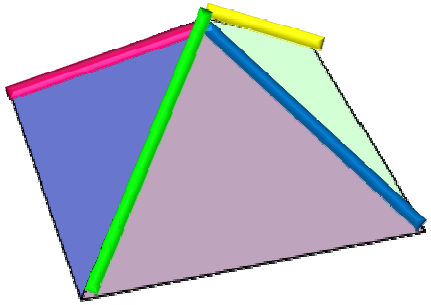


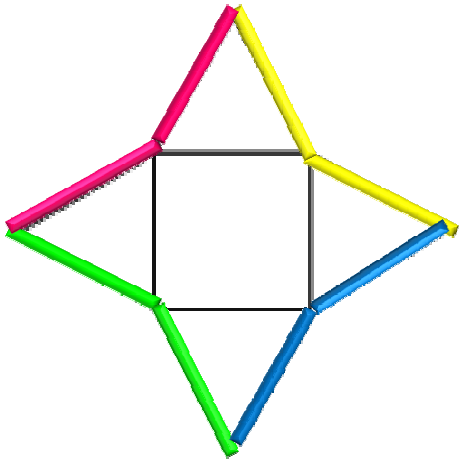
Mrežo zavihamo po robovih “navzgor”

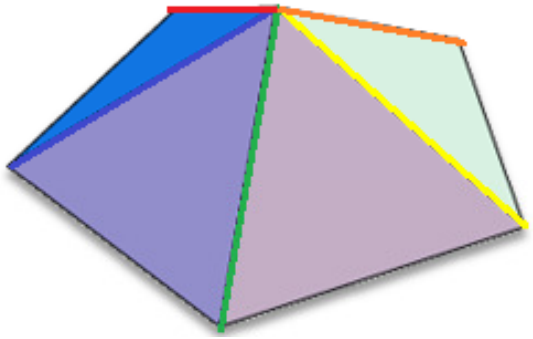
REŠITEV

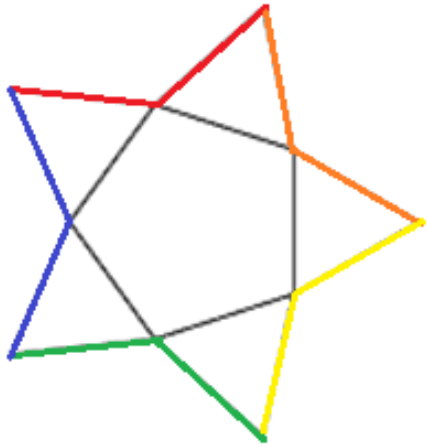
4. STOPNJA

Na levi je primer na mreži označenih stranic, ki sestavljajo isti rob telesa.
Stranice, ki sestavljajo isti rob, so pobarvane z enako barvo.
Na mreži na sliki desno označi skupne robove z enako barvo.





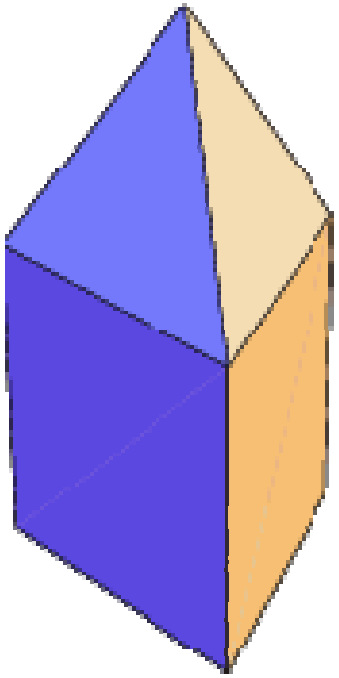


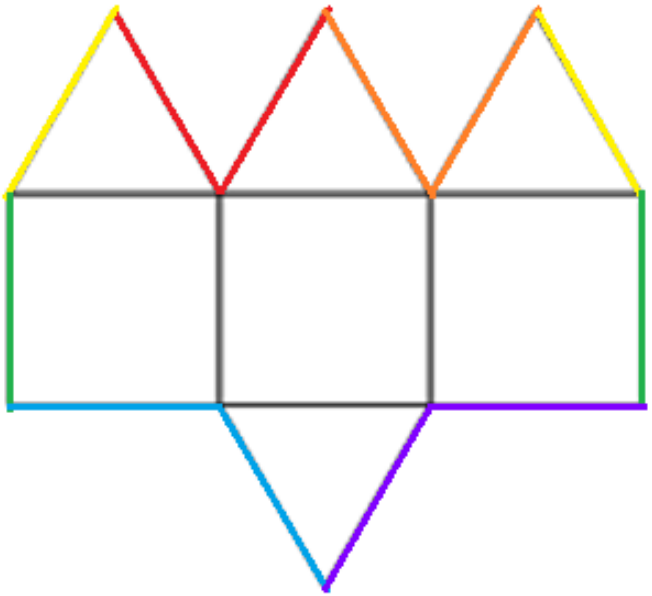


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

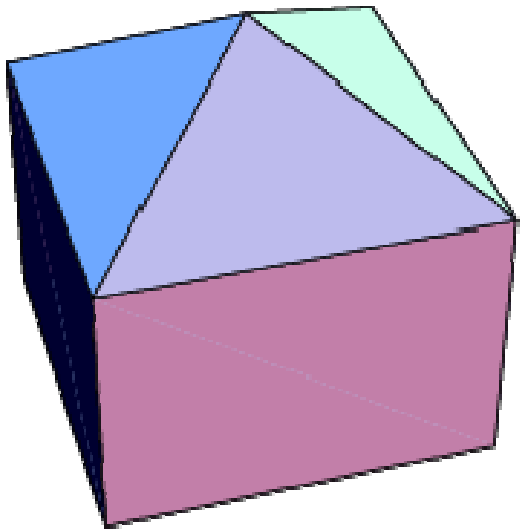


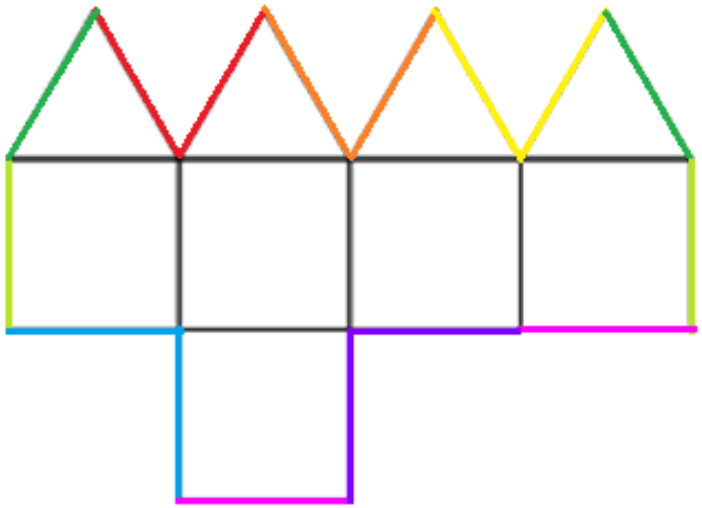


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

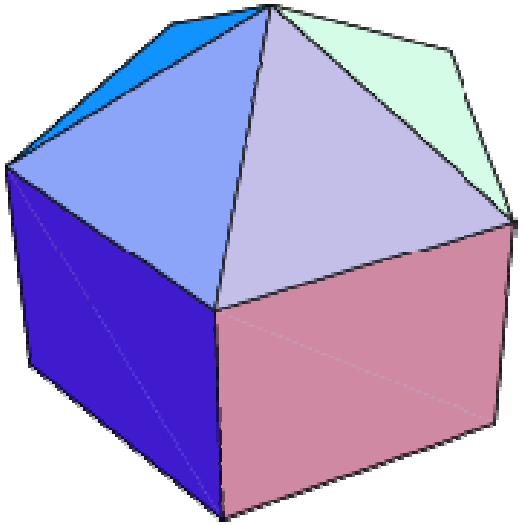


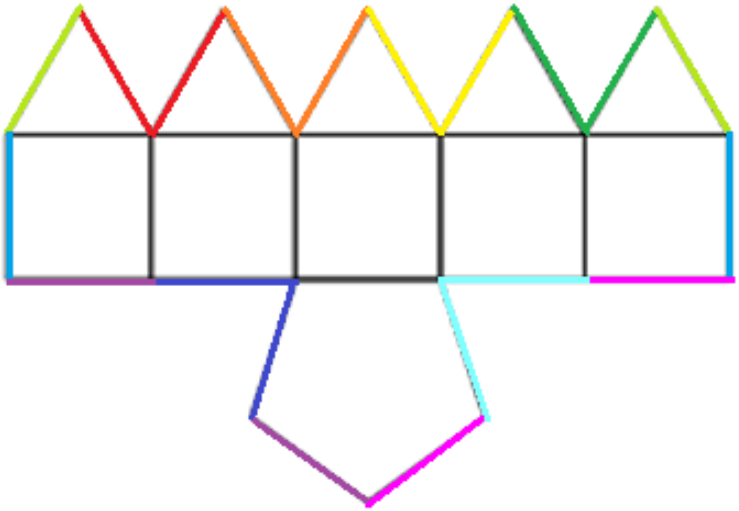


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

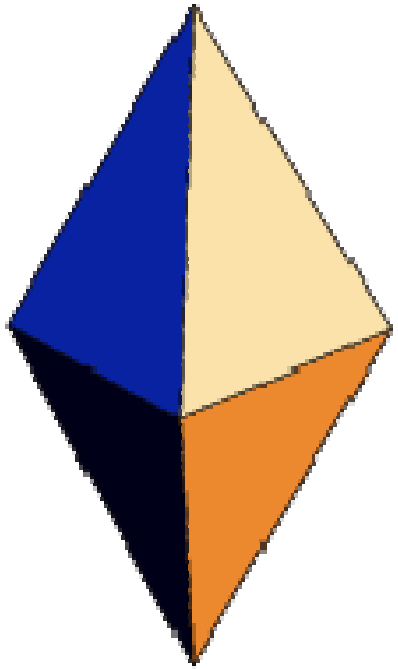


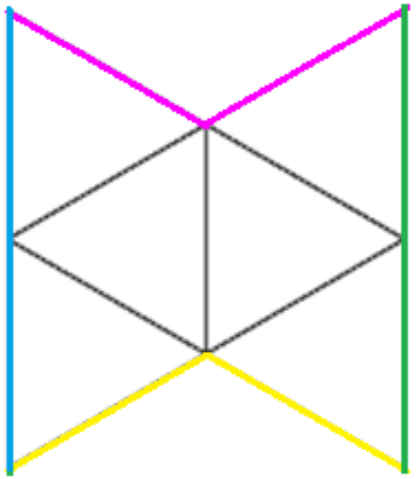


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

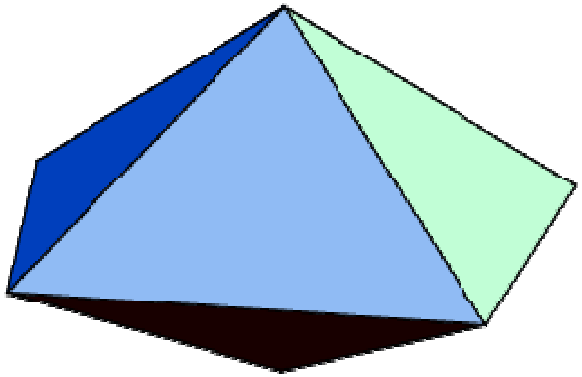


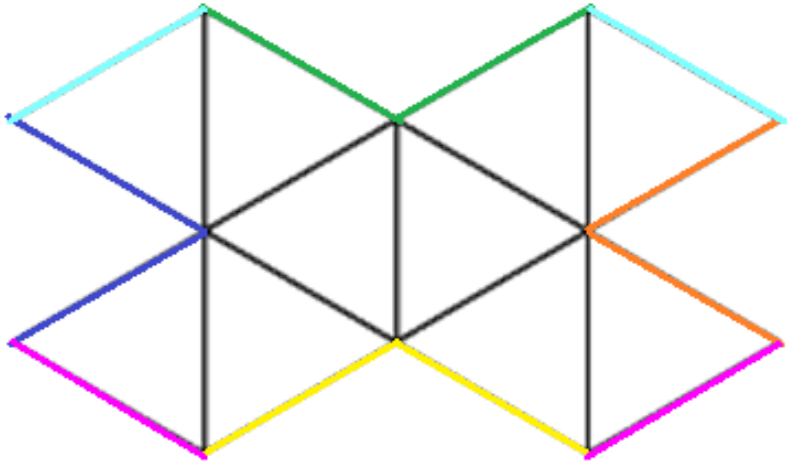


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

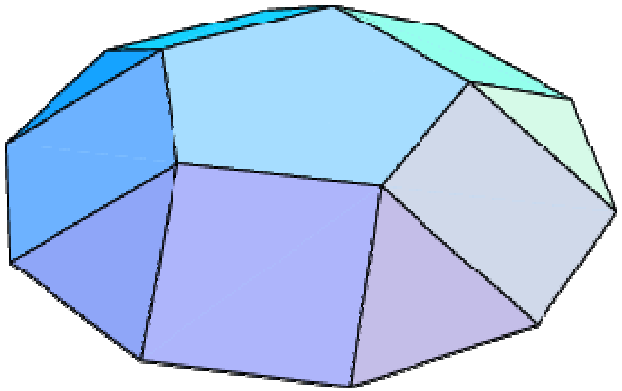


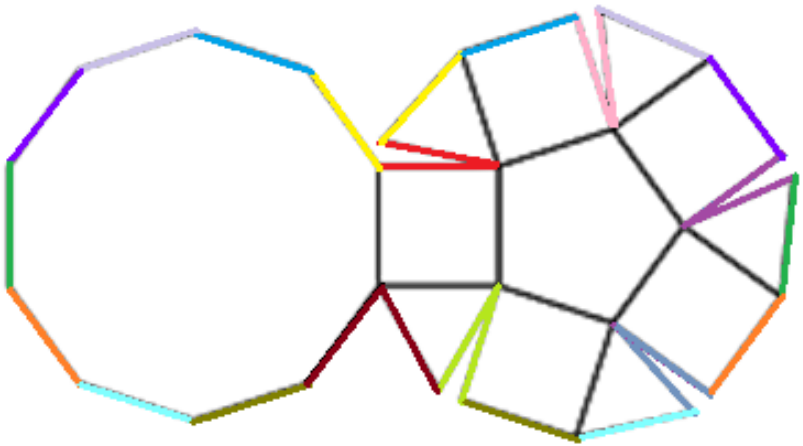


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

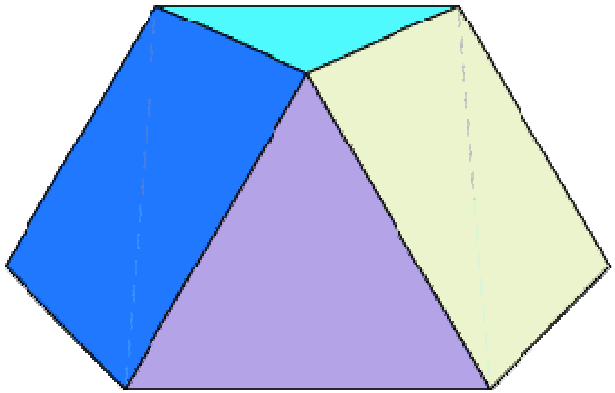


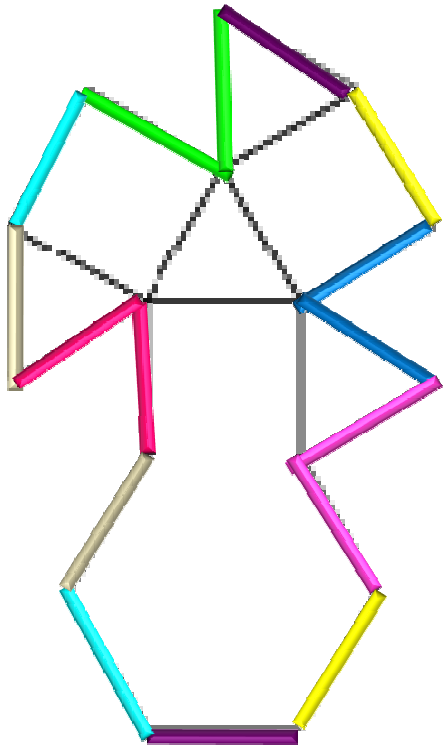


REŠITEV

4. STOPNJA

Na sliki označi skupne robove z enako barvo.

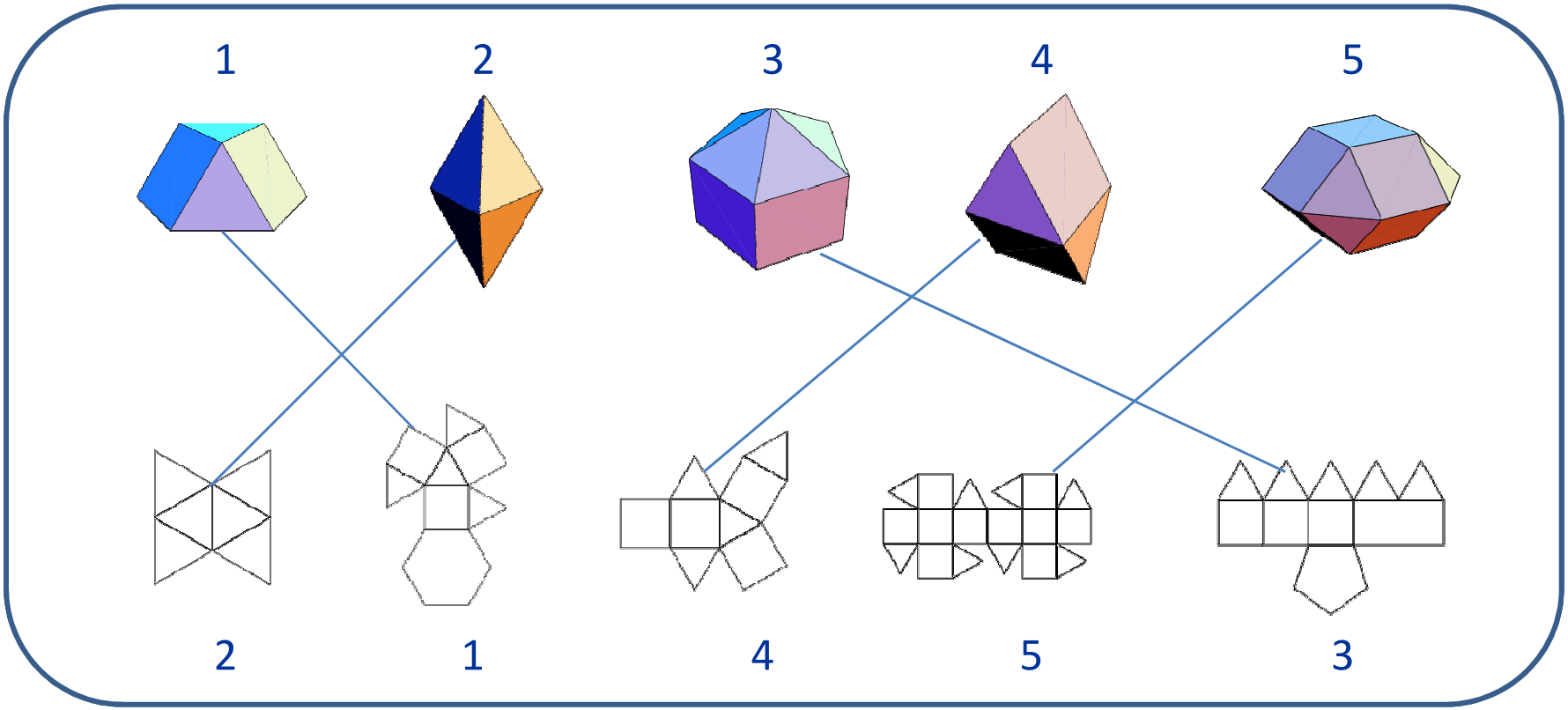




REŠITEV

4. STOPNJA

Poišči pare telesa in pripadajoče mreže.



Rešitev je označena na dva načina: s številkami in s črkami.