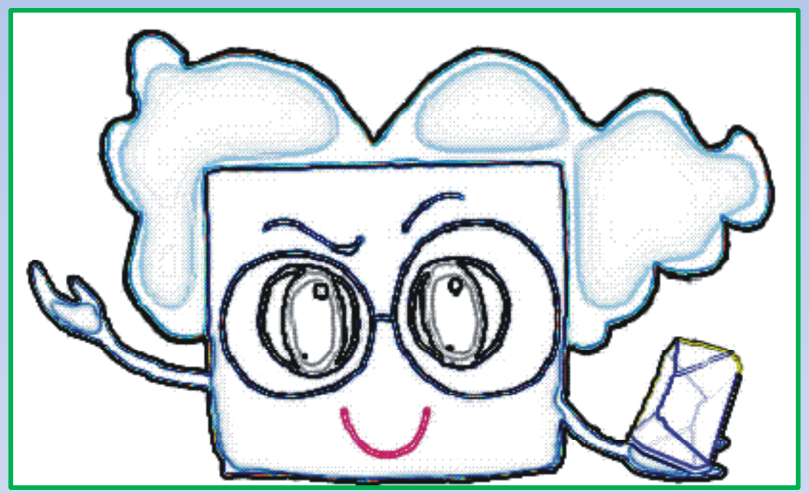
MATEMČEK

tekmovanje iz prostorske predstavljivosti



VAJE ZA TEKMOVANJE (2)

Za učenke in učence od 1. do 4. razreda

MATHEMA

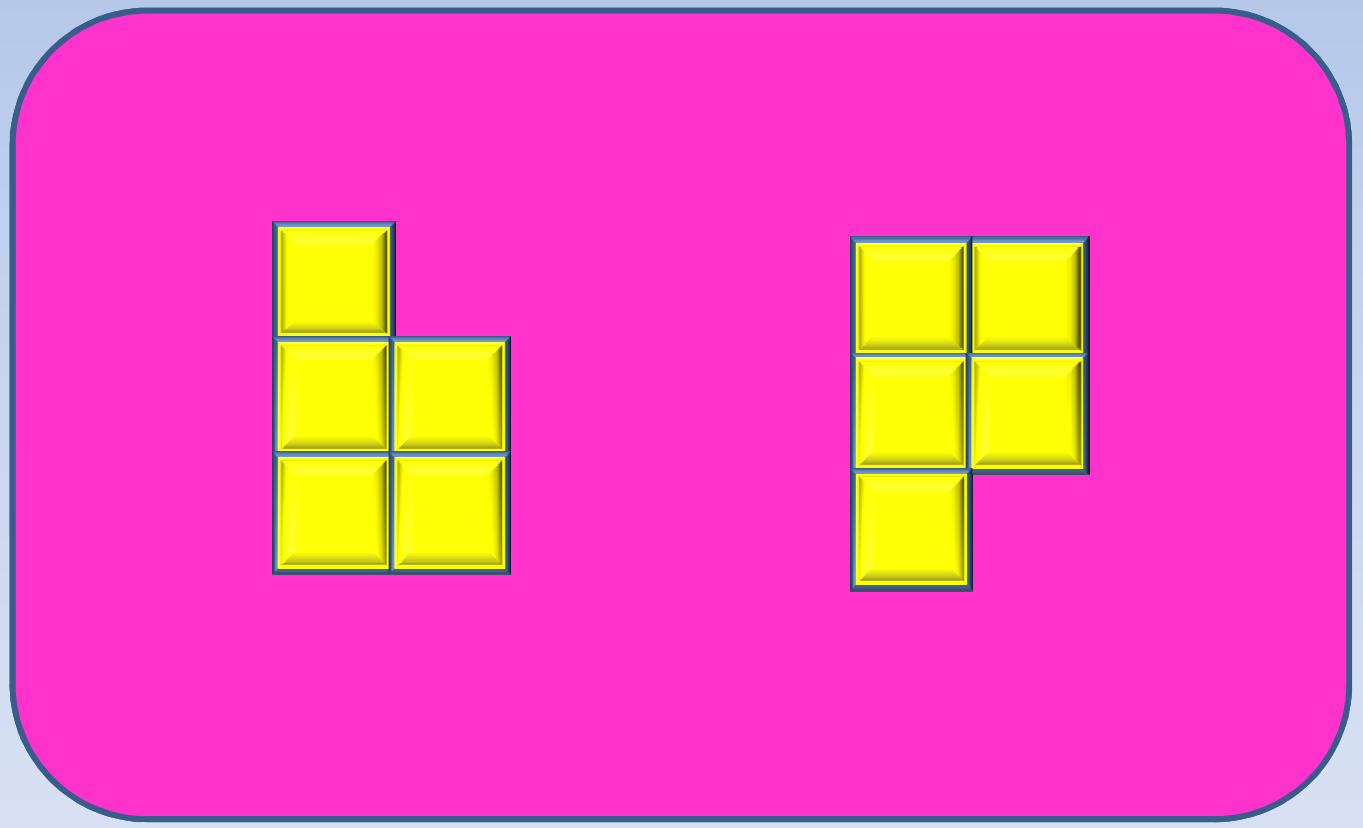
PRIPOMOČKI

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

NALOGE SO V 4 ZAHTEVNOSTNIH STOPNJAH.

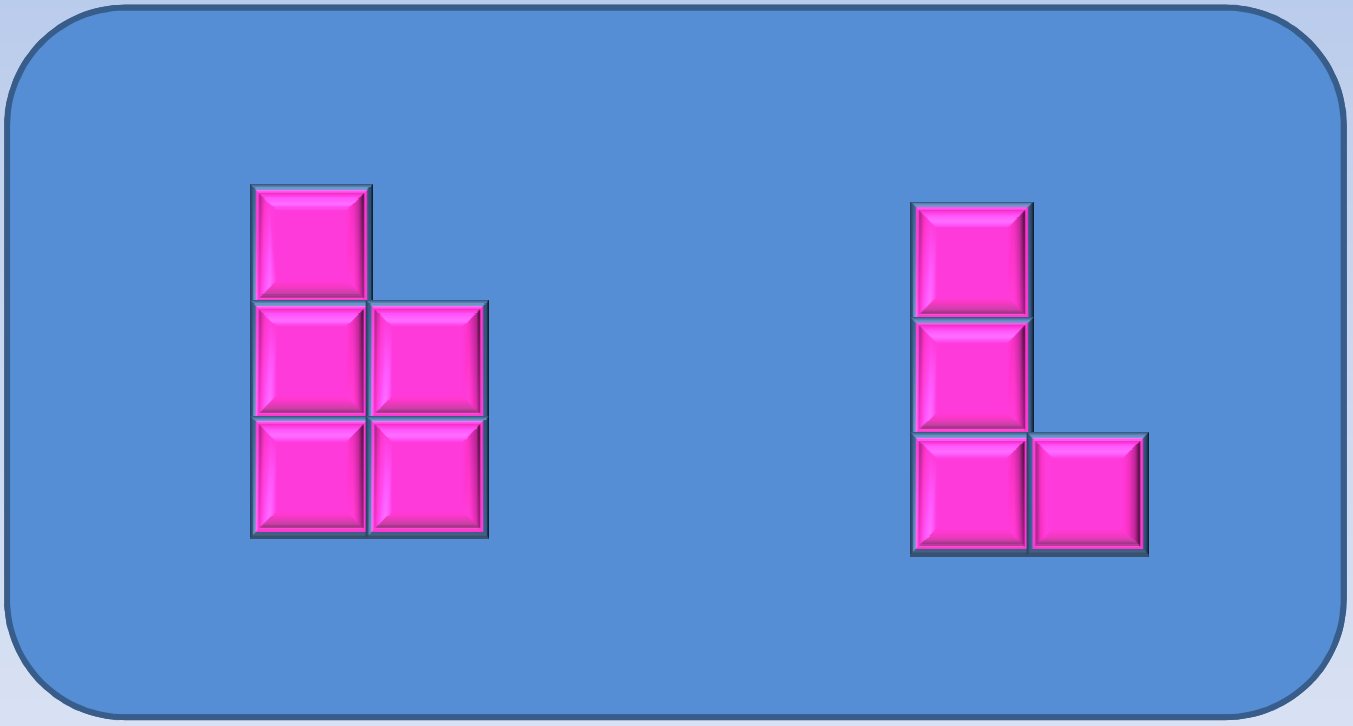
1. STOPNJA

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



1. STOPNJA

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



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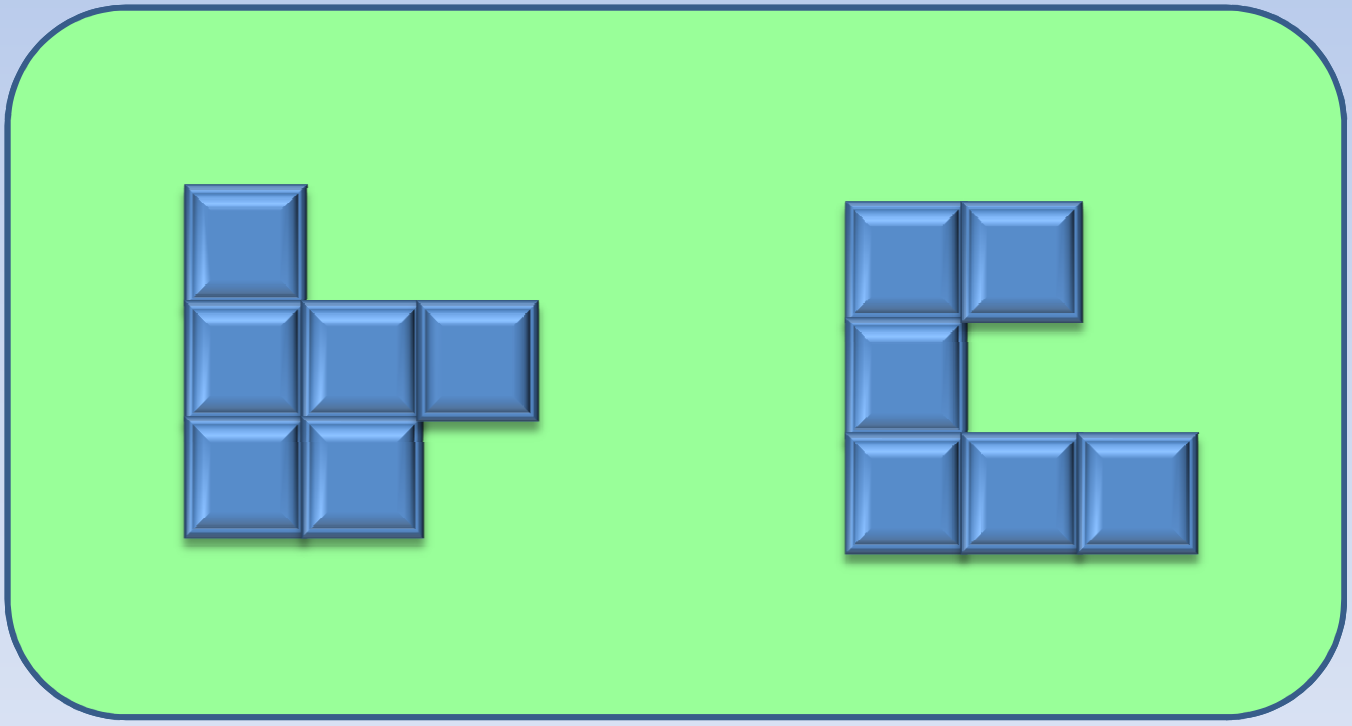
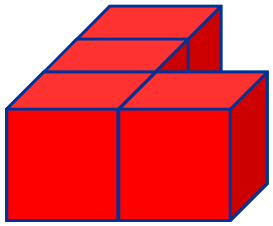
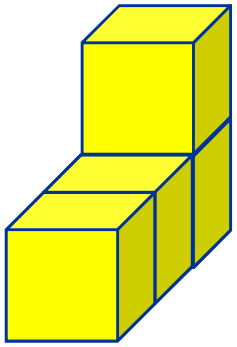
ALI LAHKO OBLIKI SESTAVIŠ V KVADRAT, TAKO DA SE NE PREKRIVATA IN MED NJIMA NI PRAZNEGA PROSTORA?

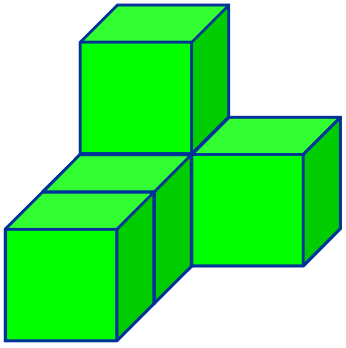


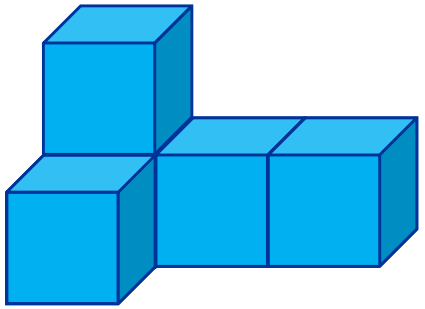
1. STOPNJA

SESTAVI IZ KOCK.









1. STOPNJA

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

1. STOPNJA

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

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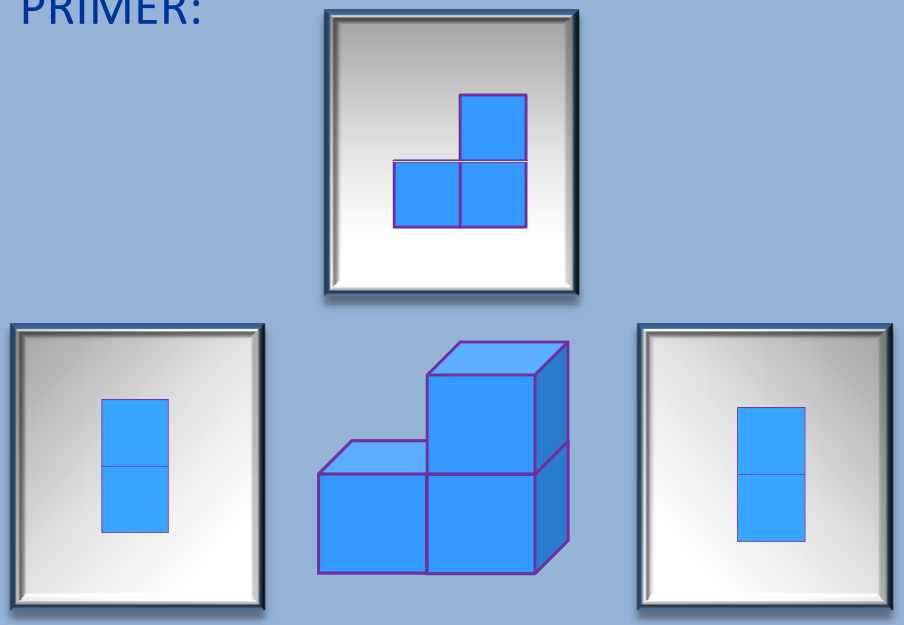

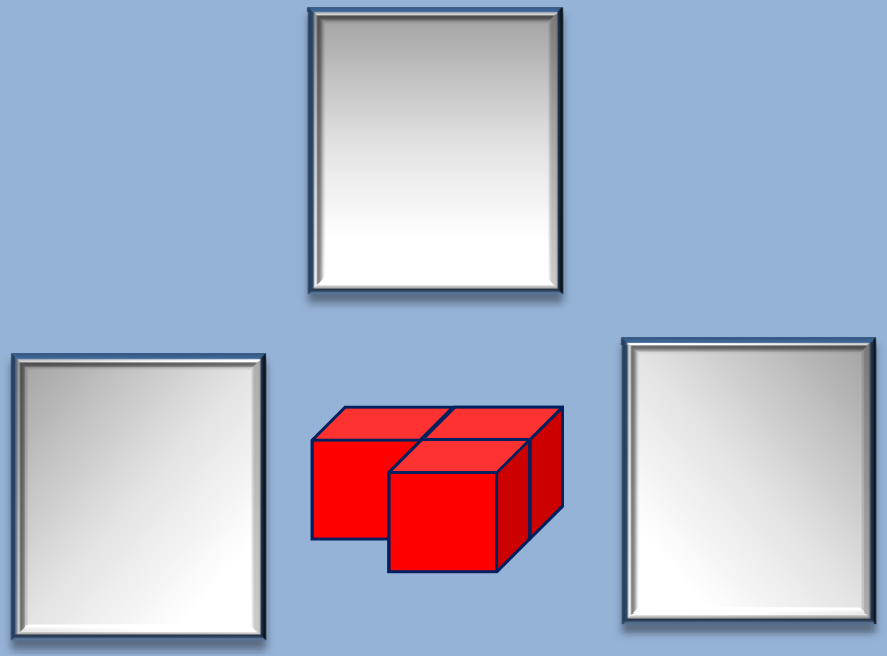

1. STOPNJA

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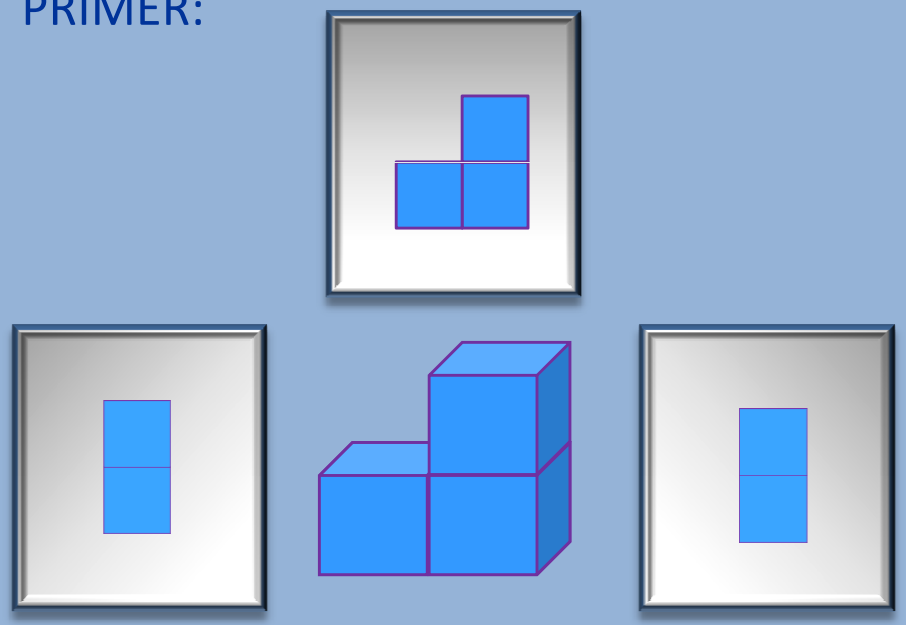

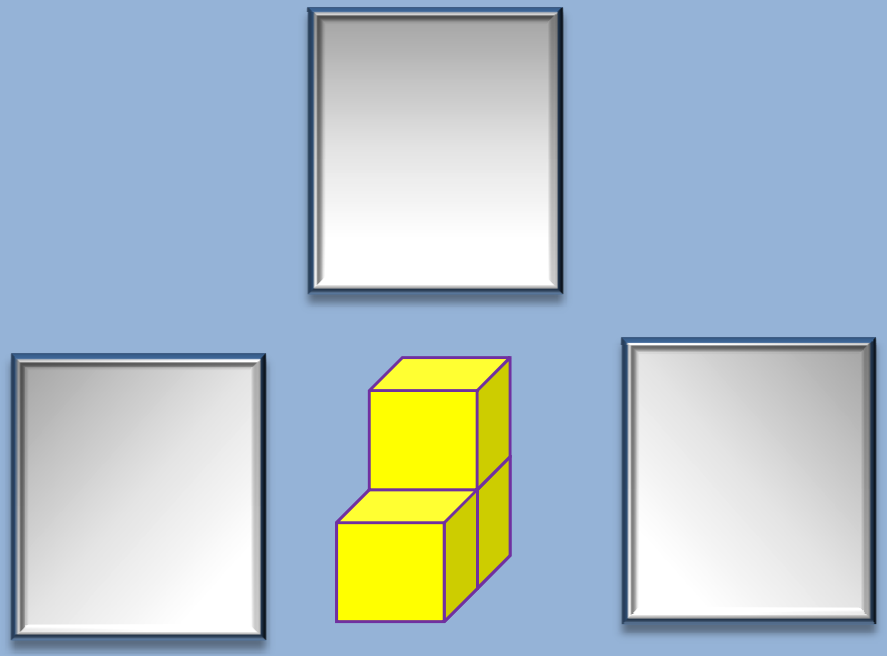

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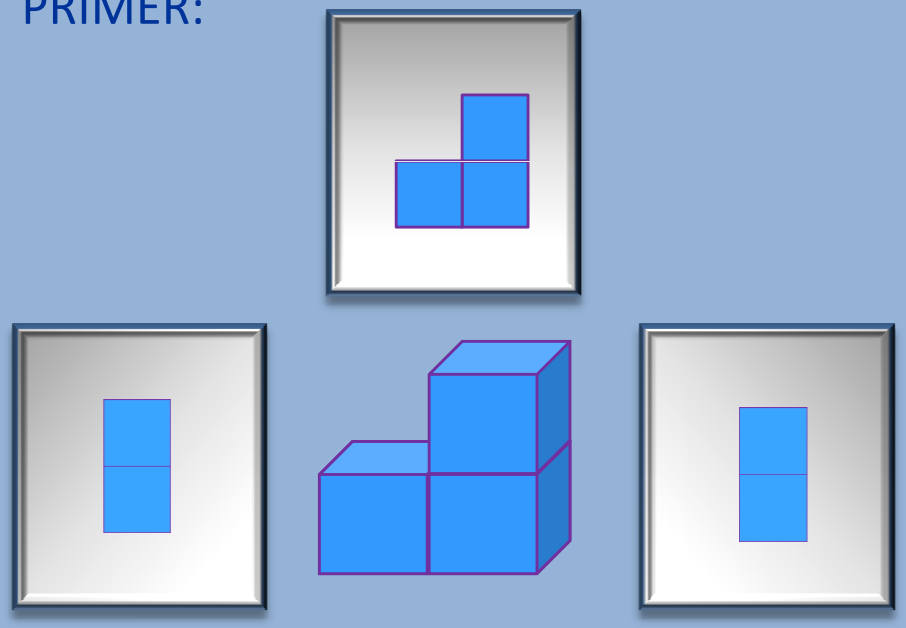

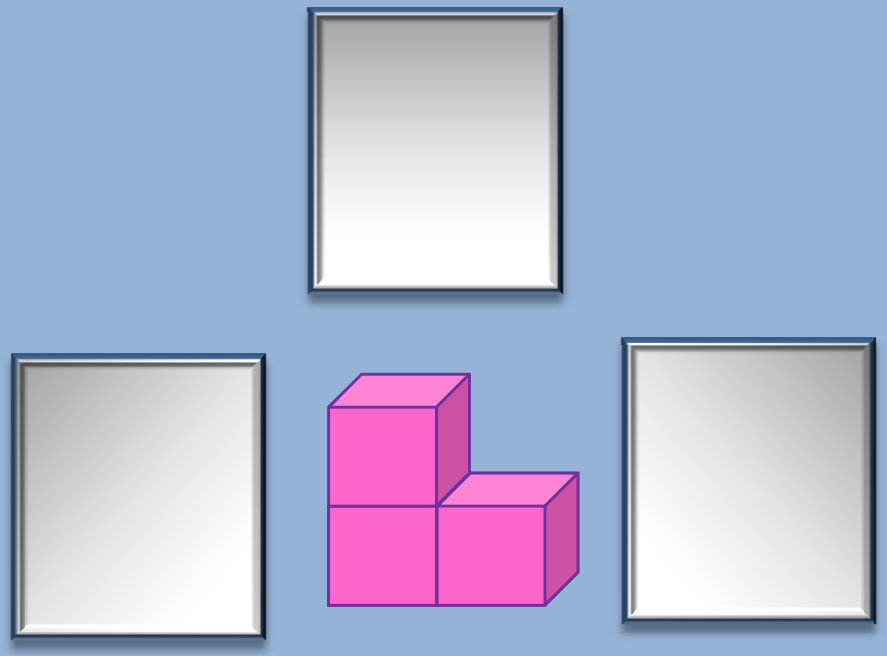

1. STOPNJA

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

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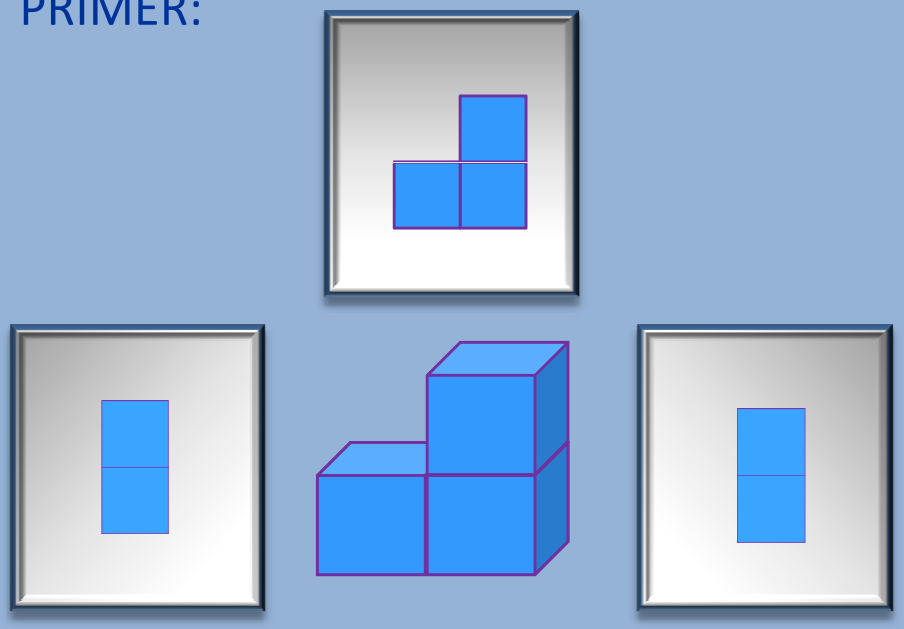
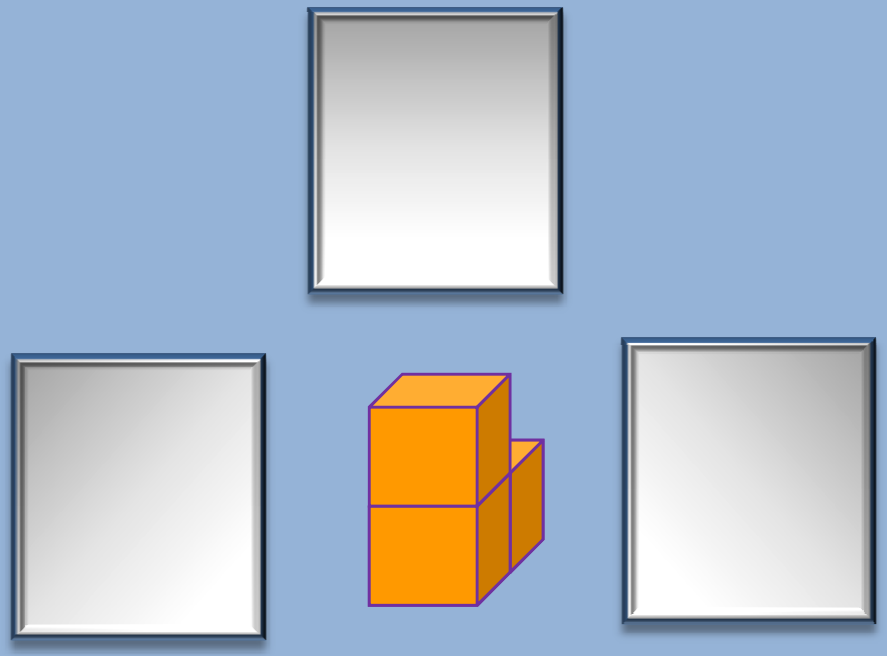
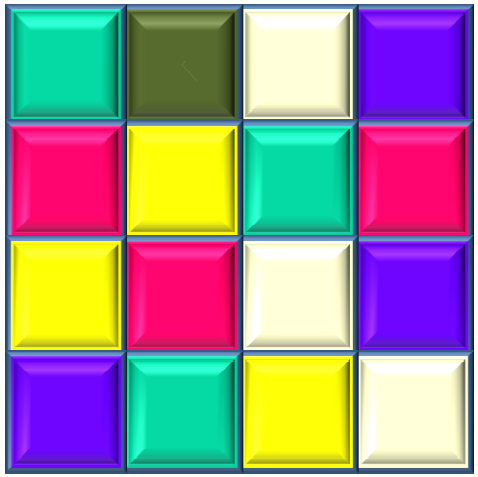
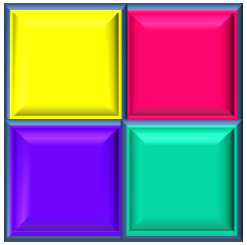




1. STOPNJA

ALI NAJDEŠ DESNI BARVNI VZOREC V LEVEM?



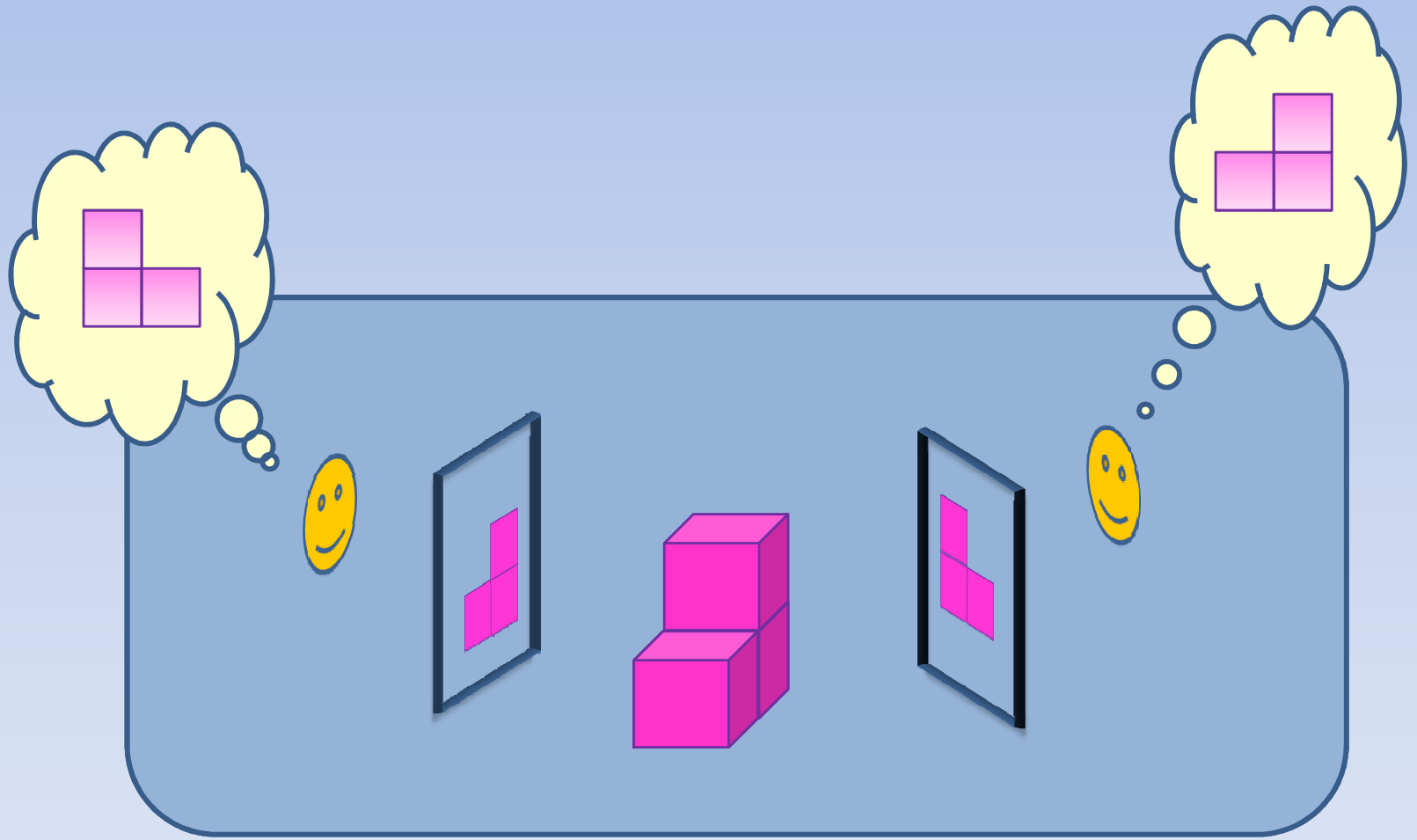


1. STOPNJA

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

1. STOPNJA

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



1. STOPNJA

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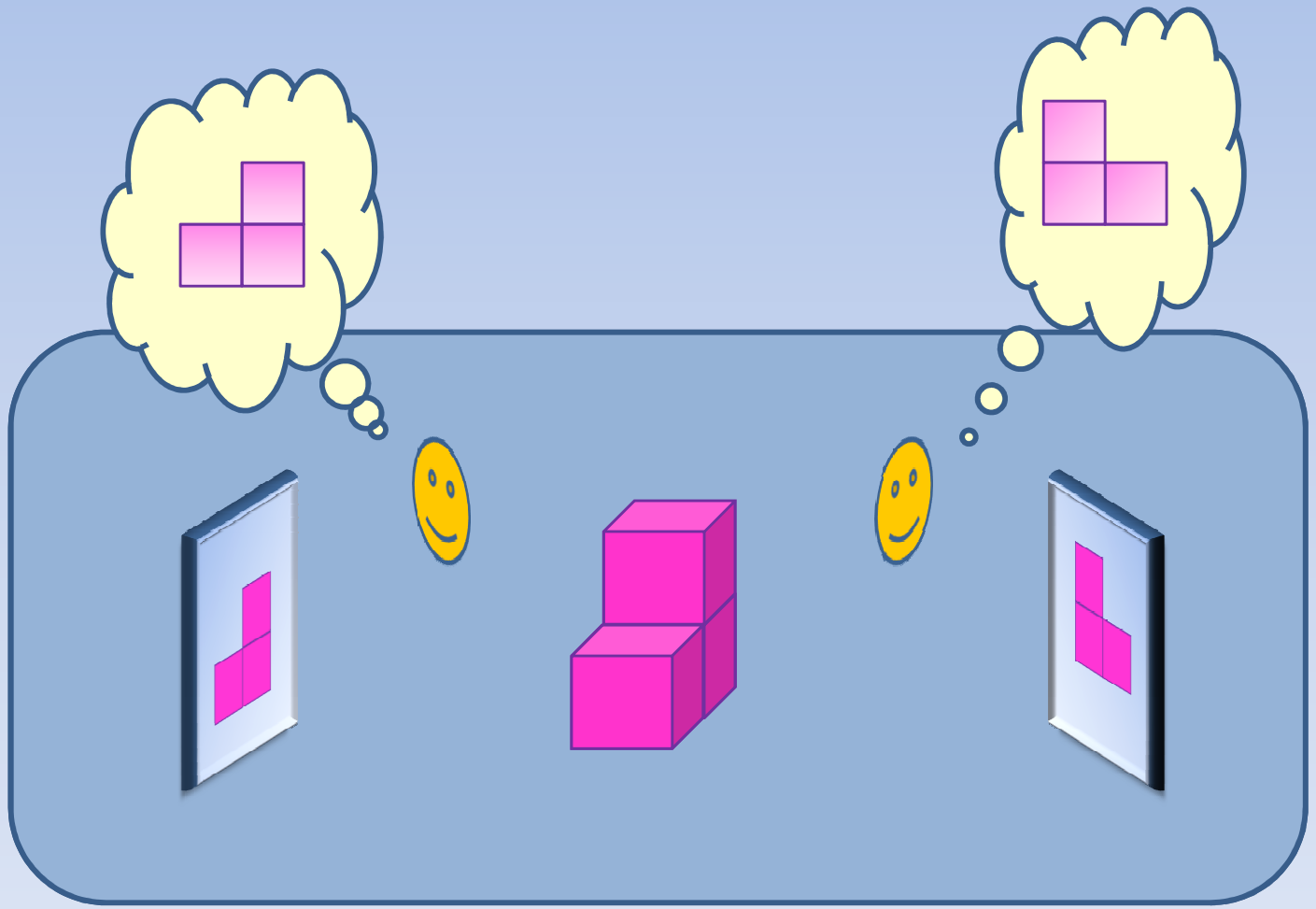
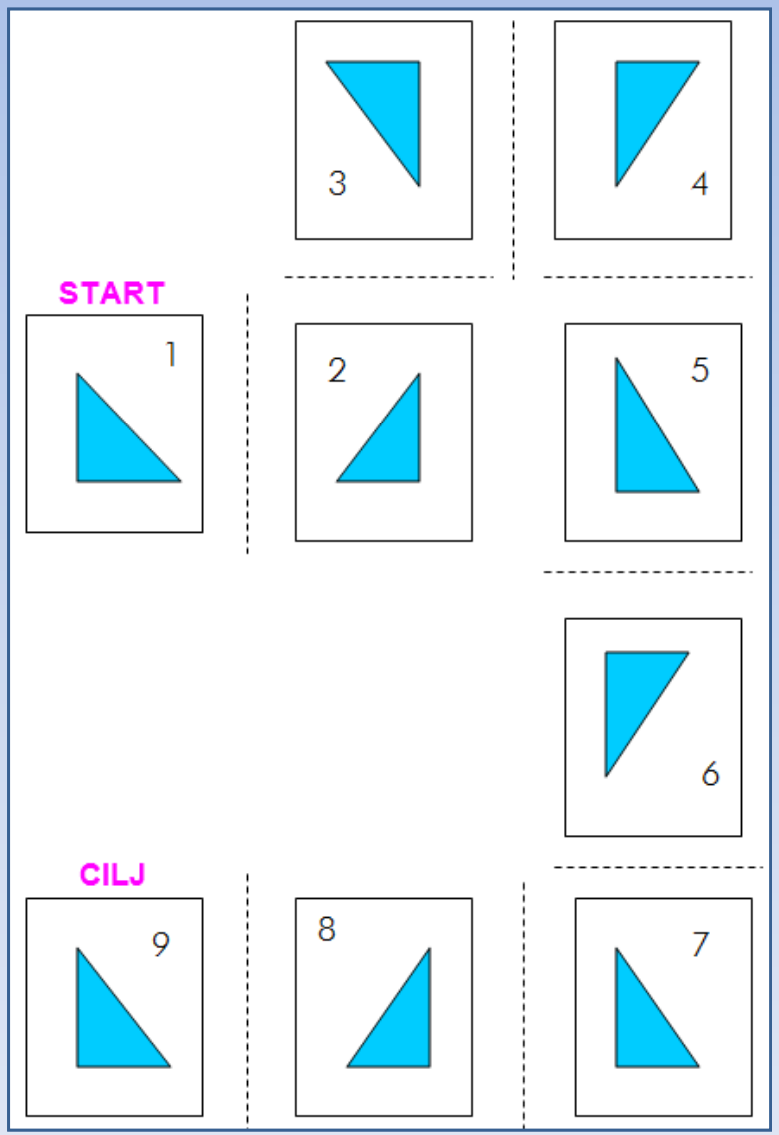
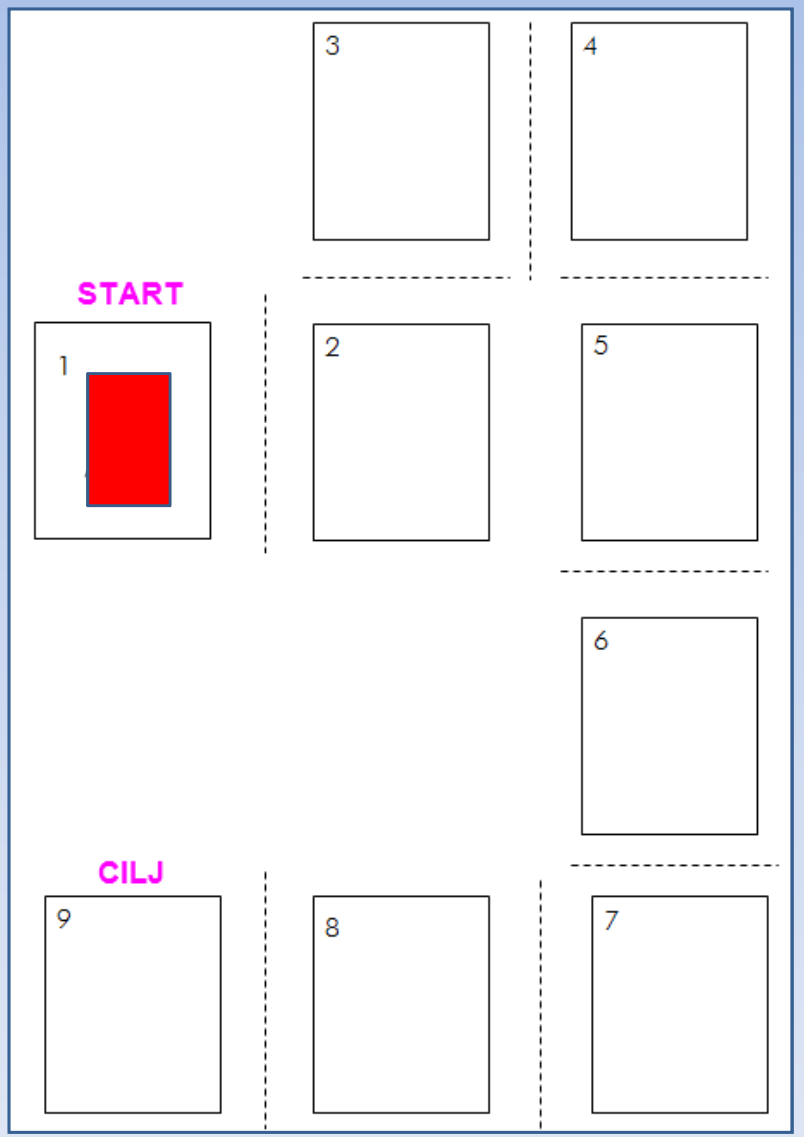


1. STOPNJA

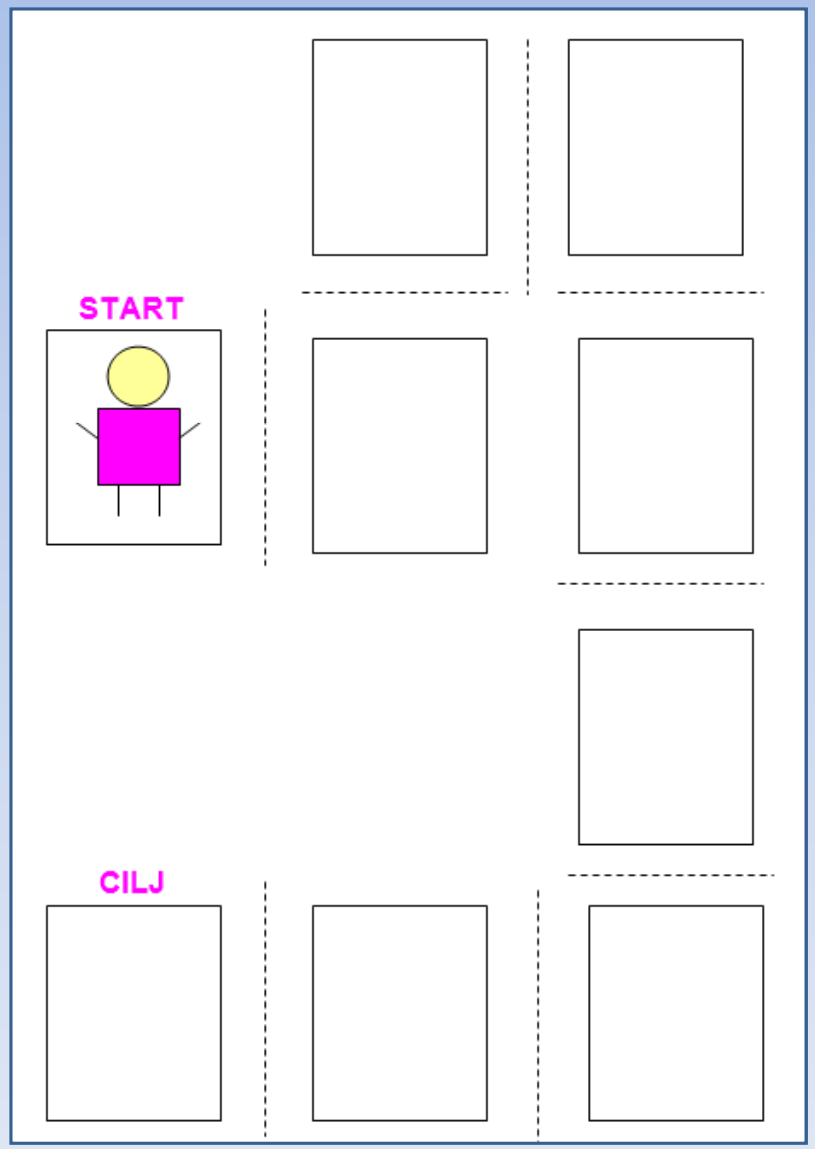
LIK NA DESNI ZRCALI PO ZGLEDU LEVO.





1. STOPNJA

ZRCALI PO PREJŠNJEM ZGLEDU.



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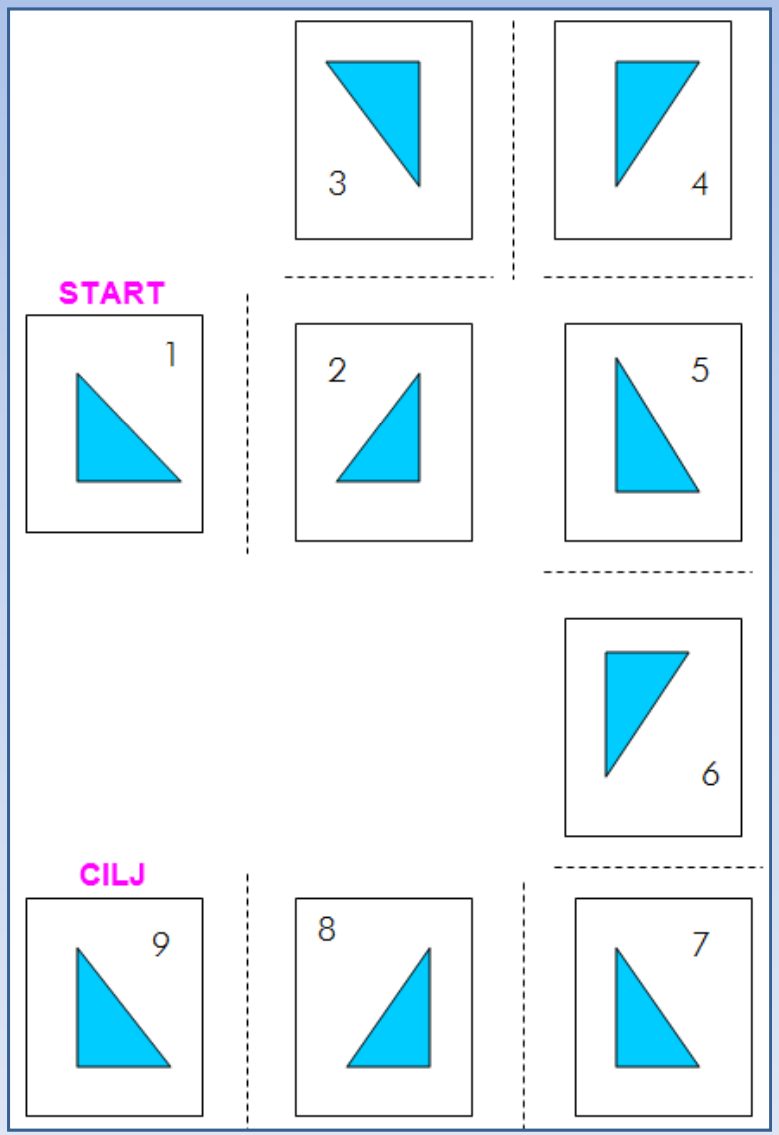

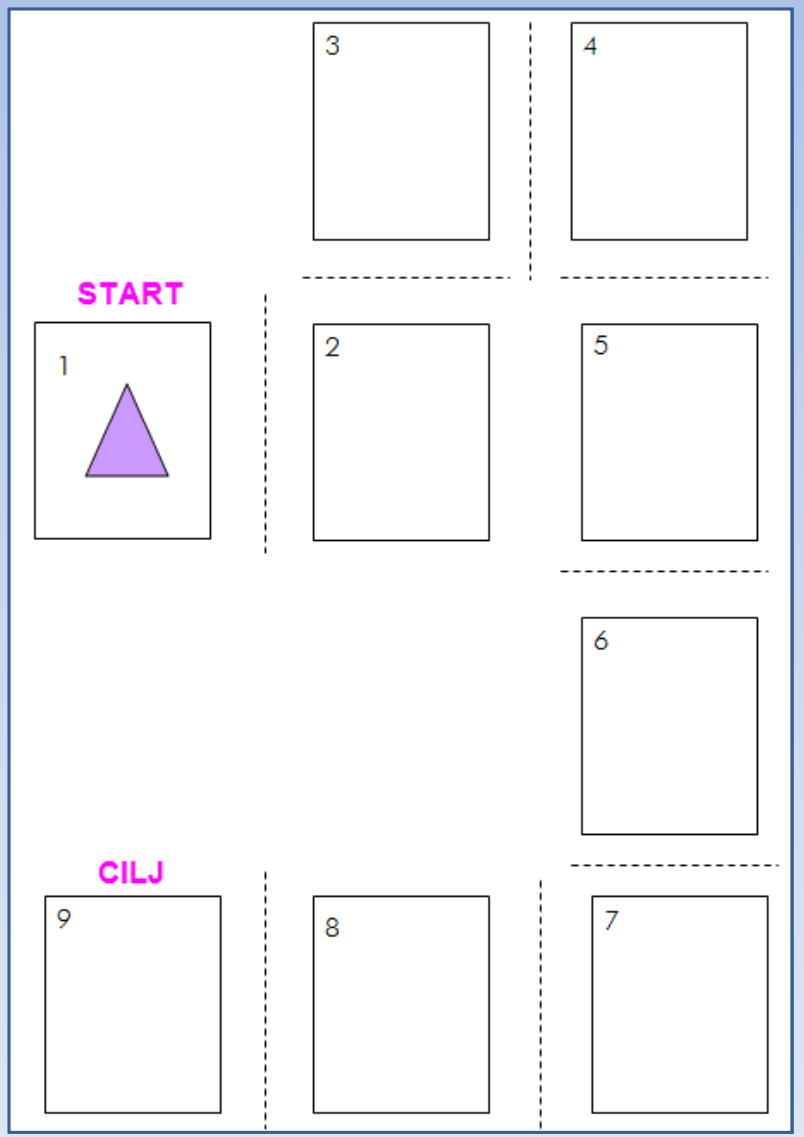

1. STOPNJA

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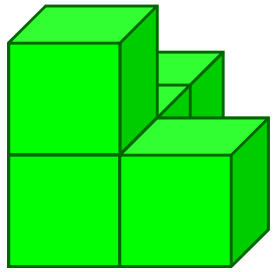
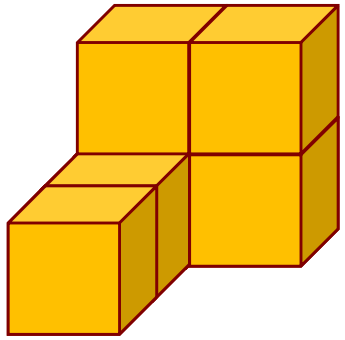
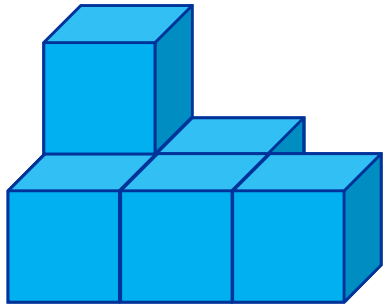
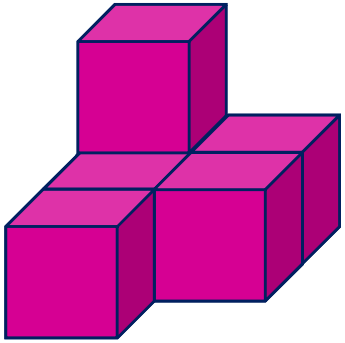


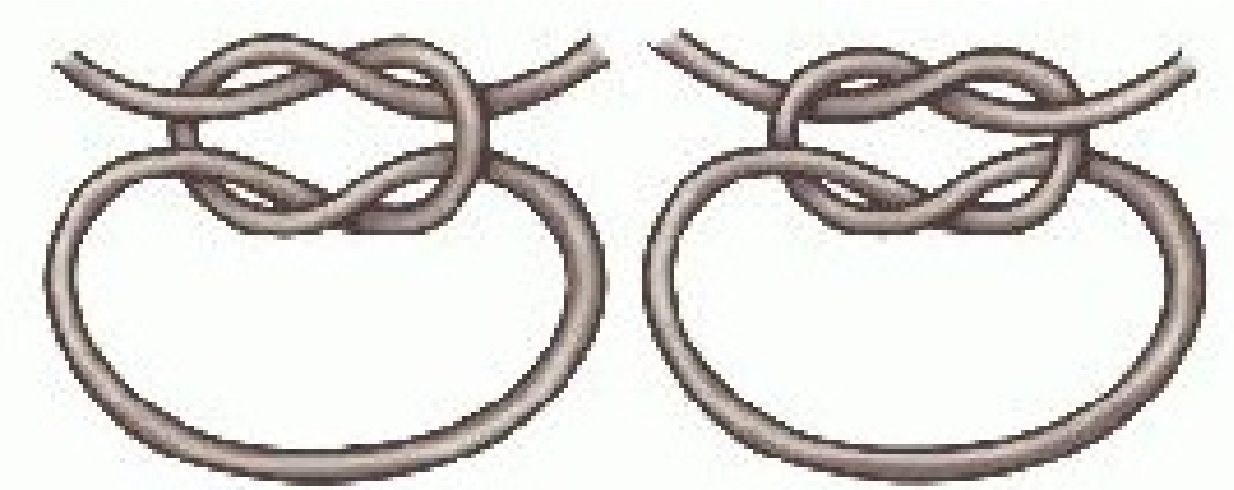






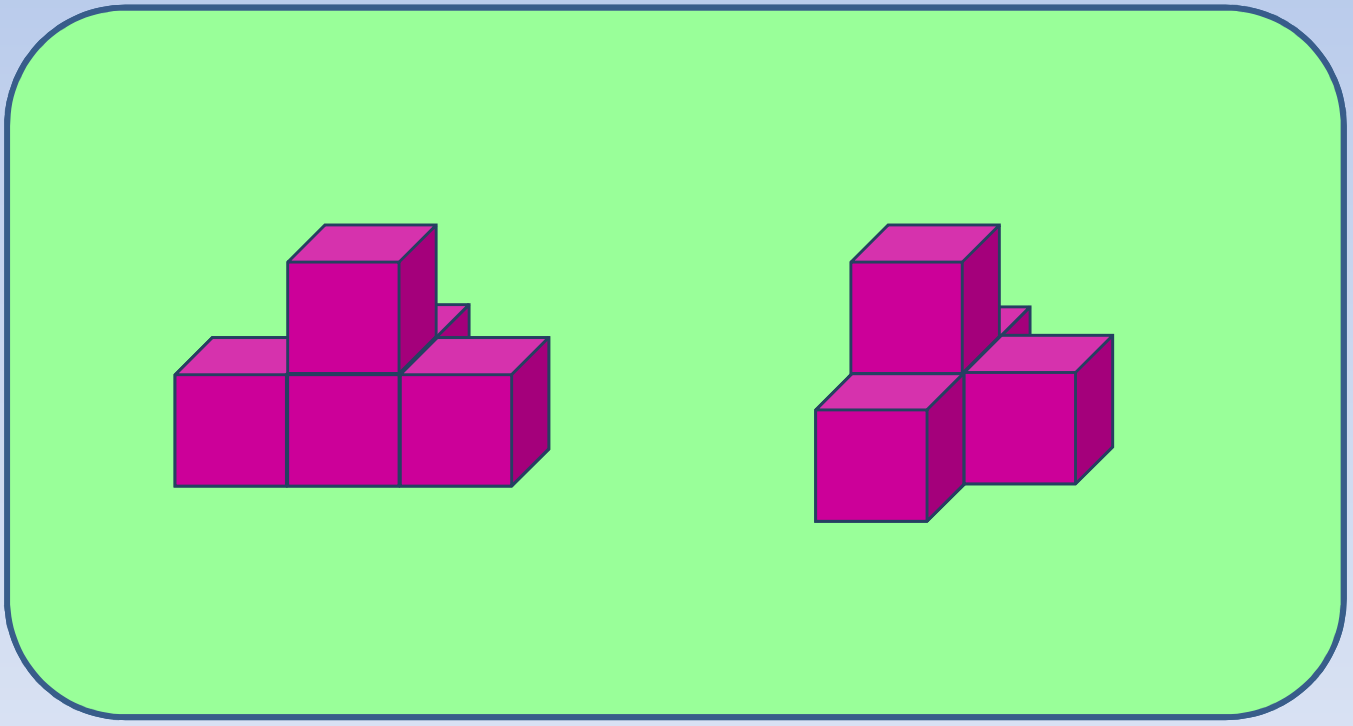
1. STOPNJA

JE VRVICA V OBEH PRIMERIH ENAKO ZAVOZLANA?



1. STOPNJA

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



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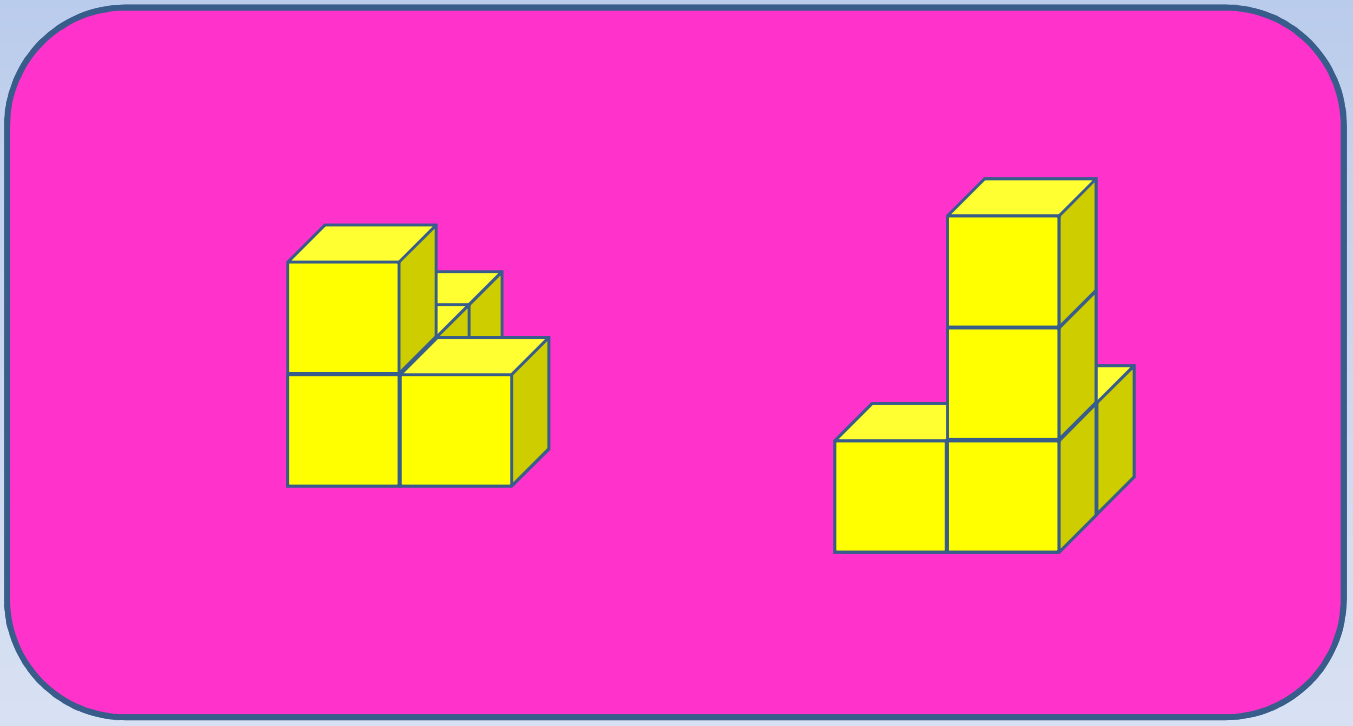

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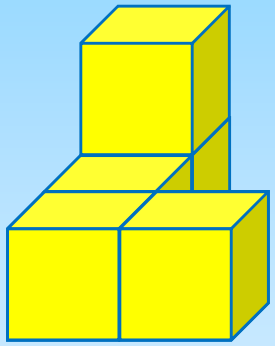
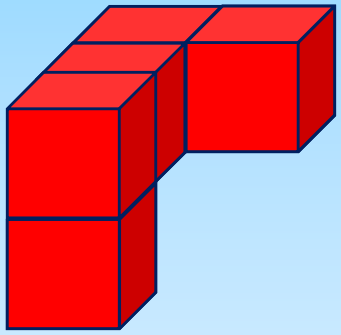
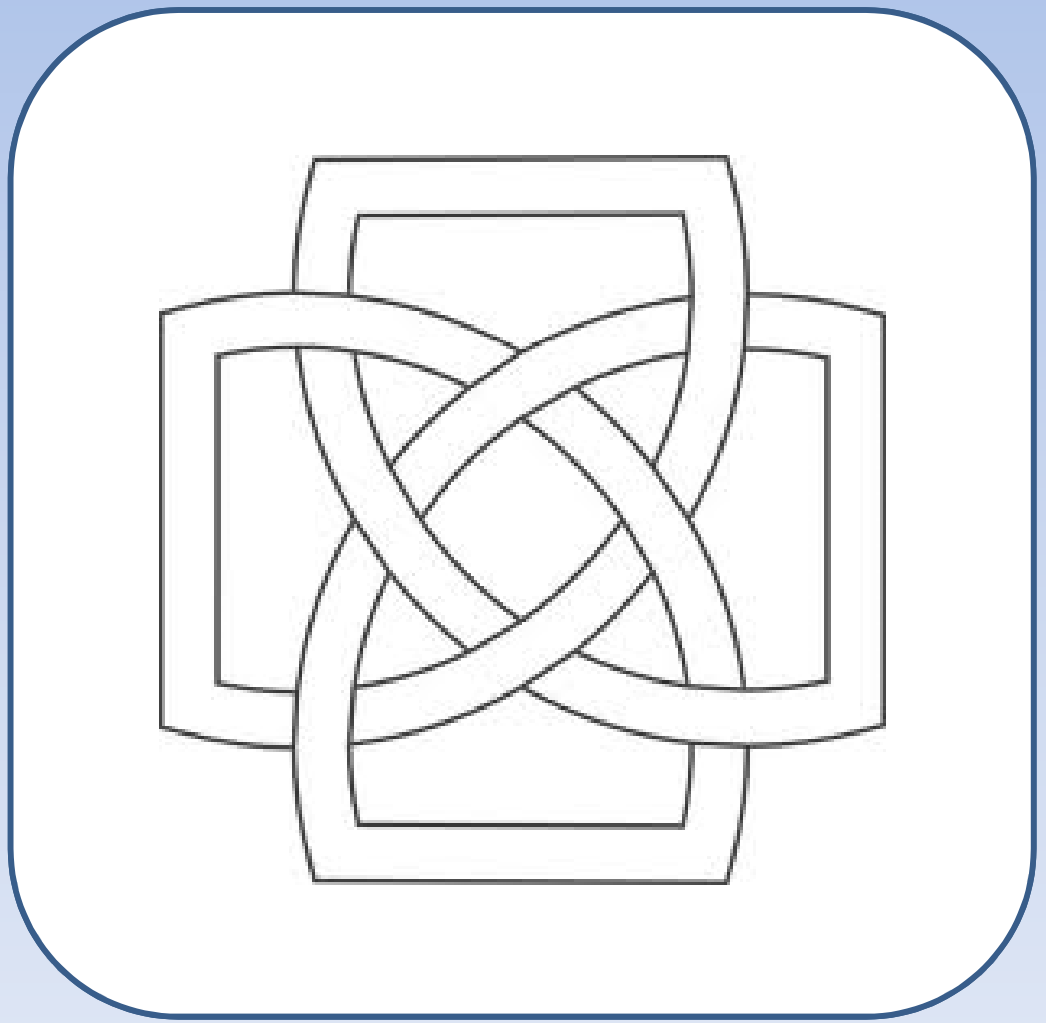




1. STOPNJA

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

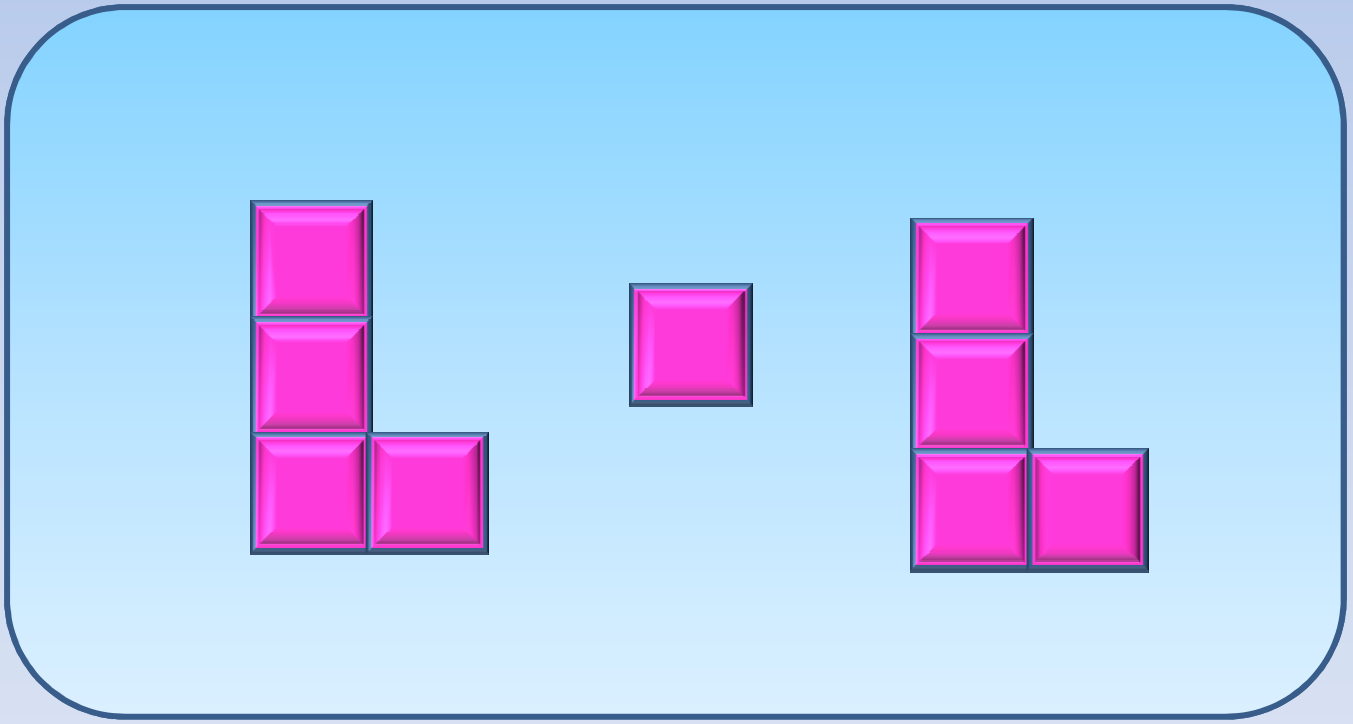


2. STOPNJA

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

2. STOPNJA

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



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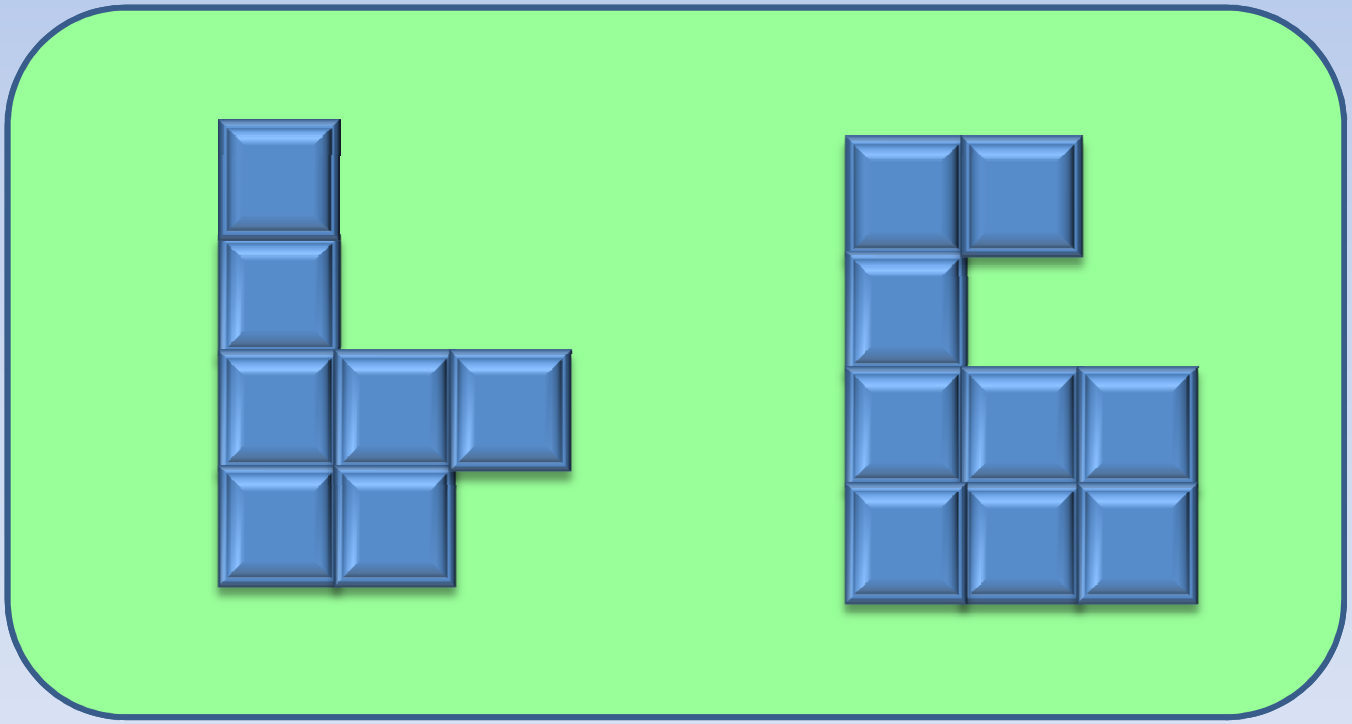
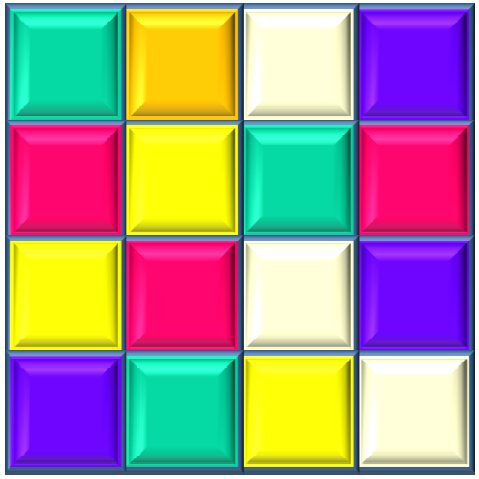
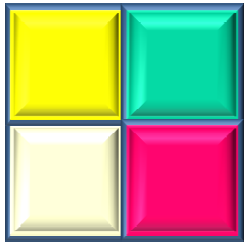
ALI LAHKO OBLIKI SESTAVIŠ V KVADRAT, TAKO DA SE NE PREKRIVATA IN MED NJIMA NI PRAZNEGA PROSTORA?



2. STOPNJA

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





2. STOPNJA

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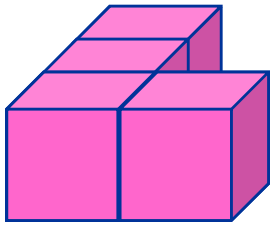
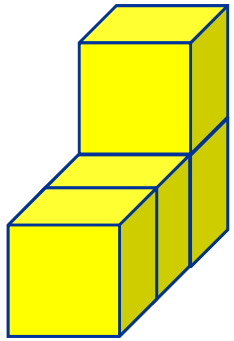
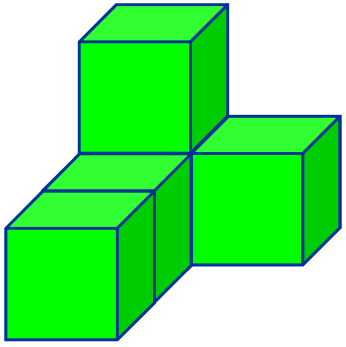
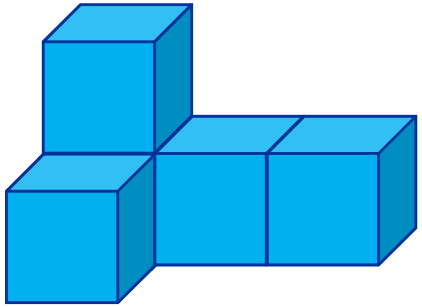


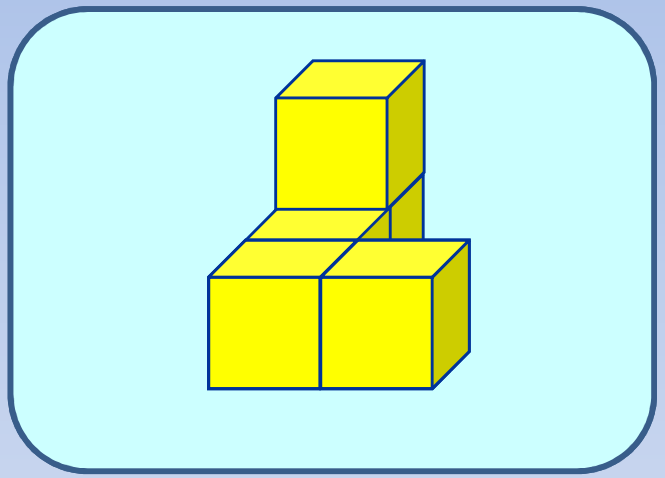


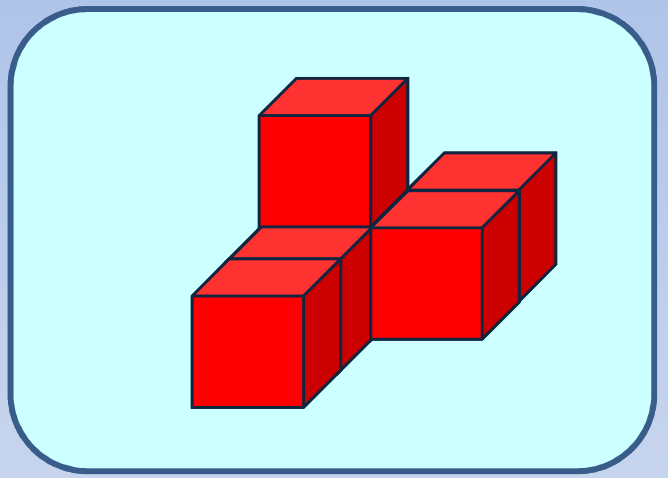


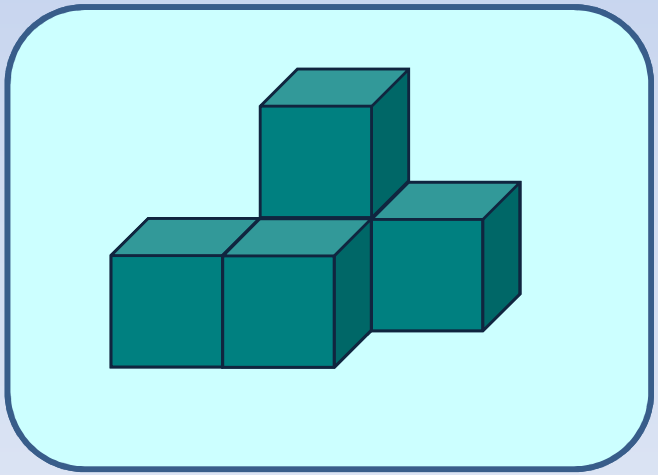


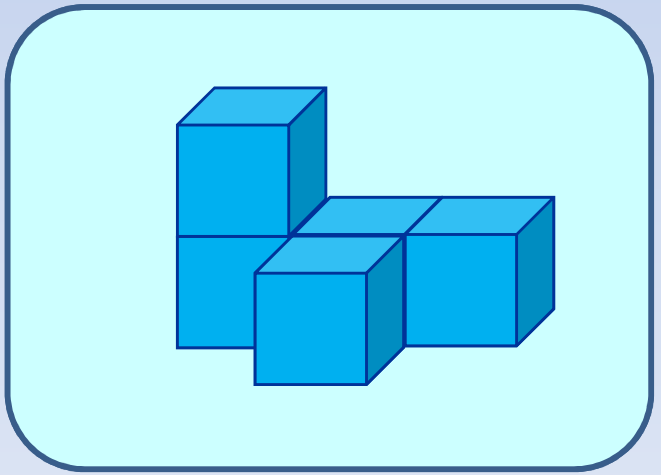
2. STOPNJA

SESTAVI IZ KOCK.



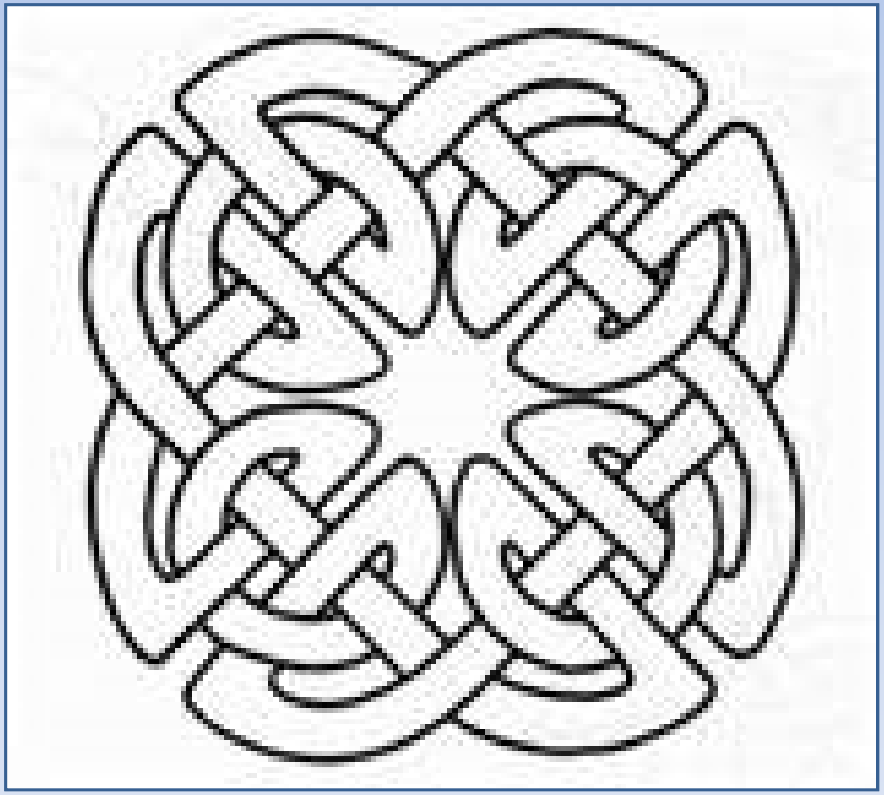






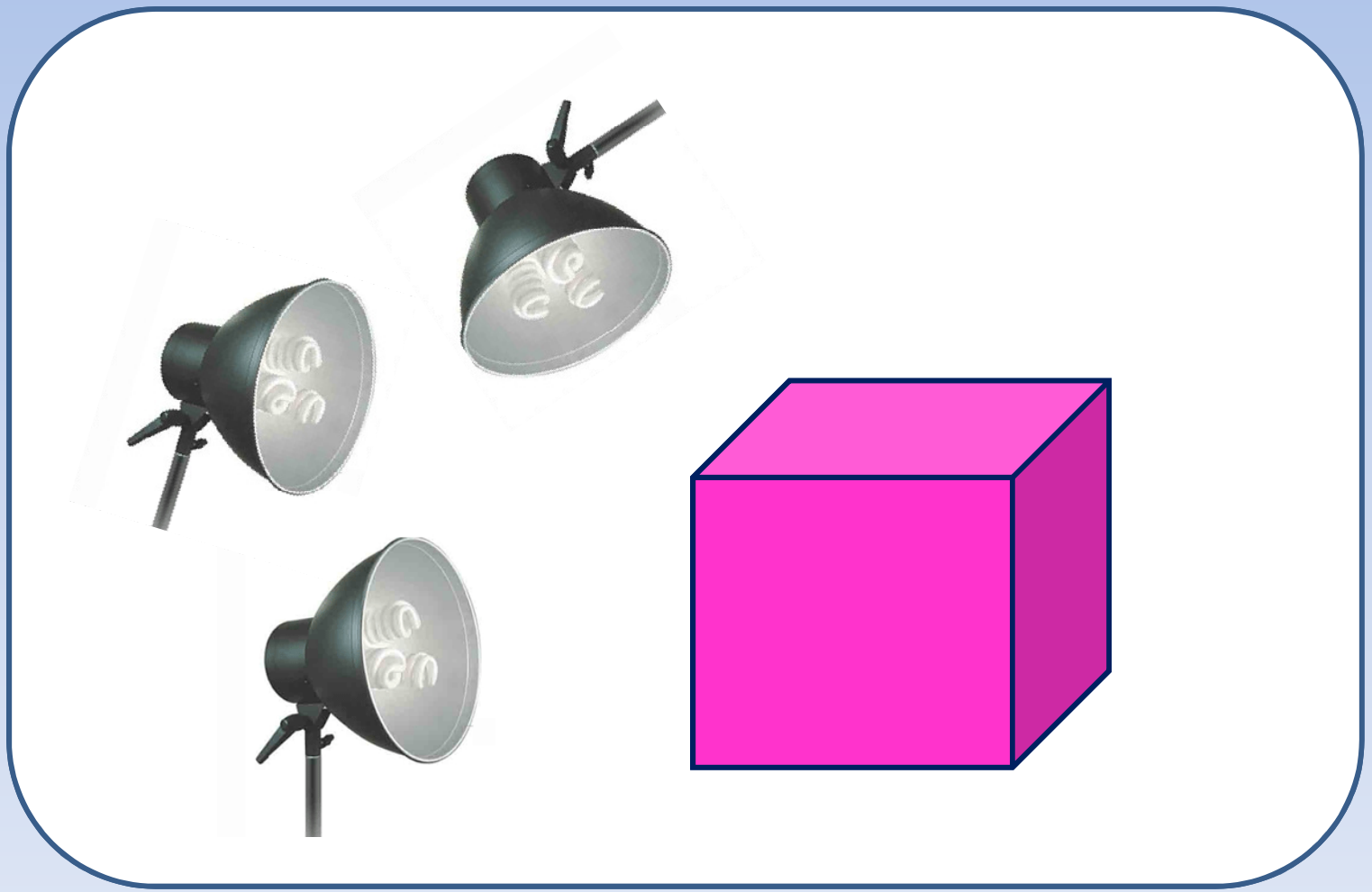
2. STOPNJA

- ALI JE VOZEL SESTAVLJEN IZ ENE ALI VEČ ZANK?



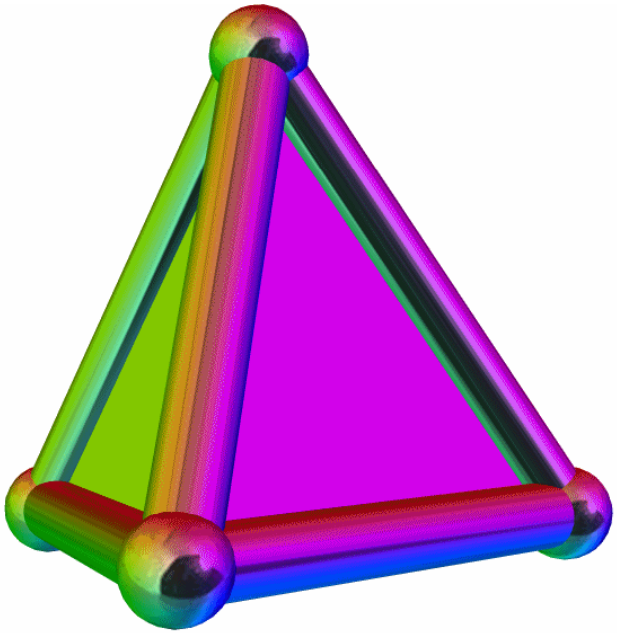
2. STOPNJA

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



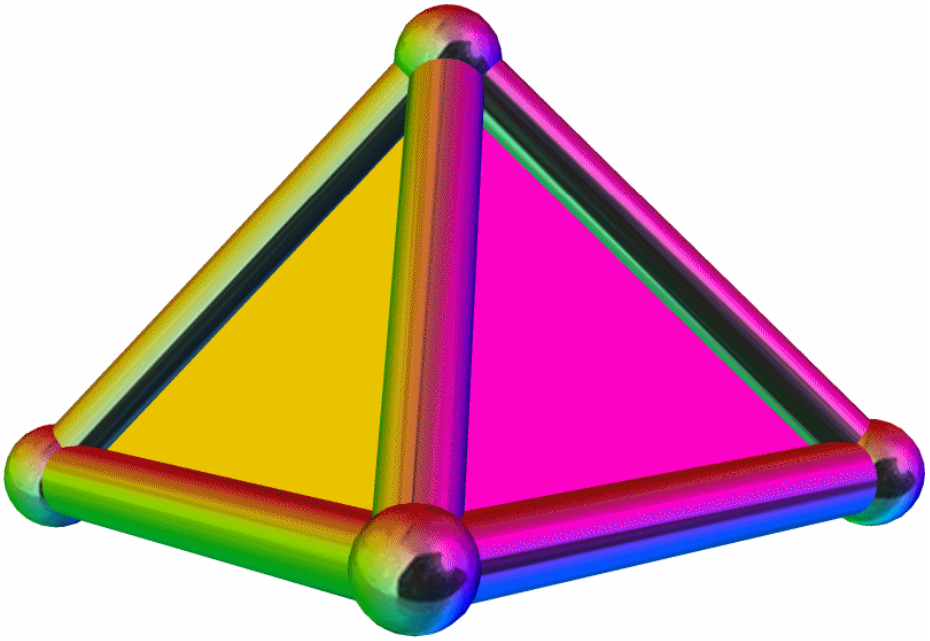
2. STOPNJA

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



2. STOPNJA

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

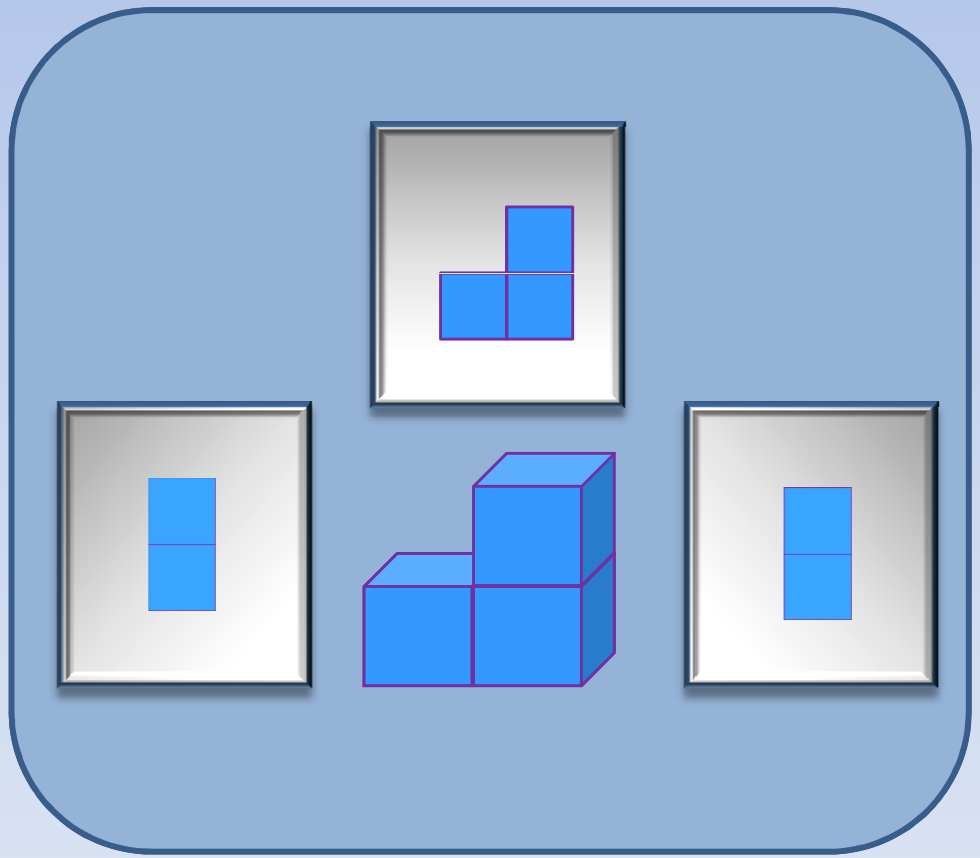


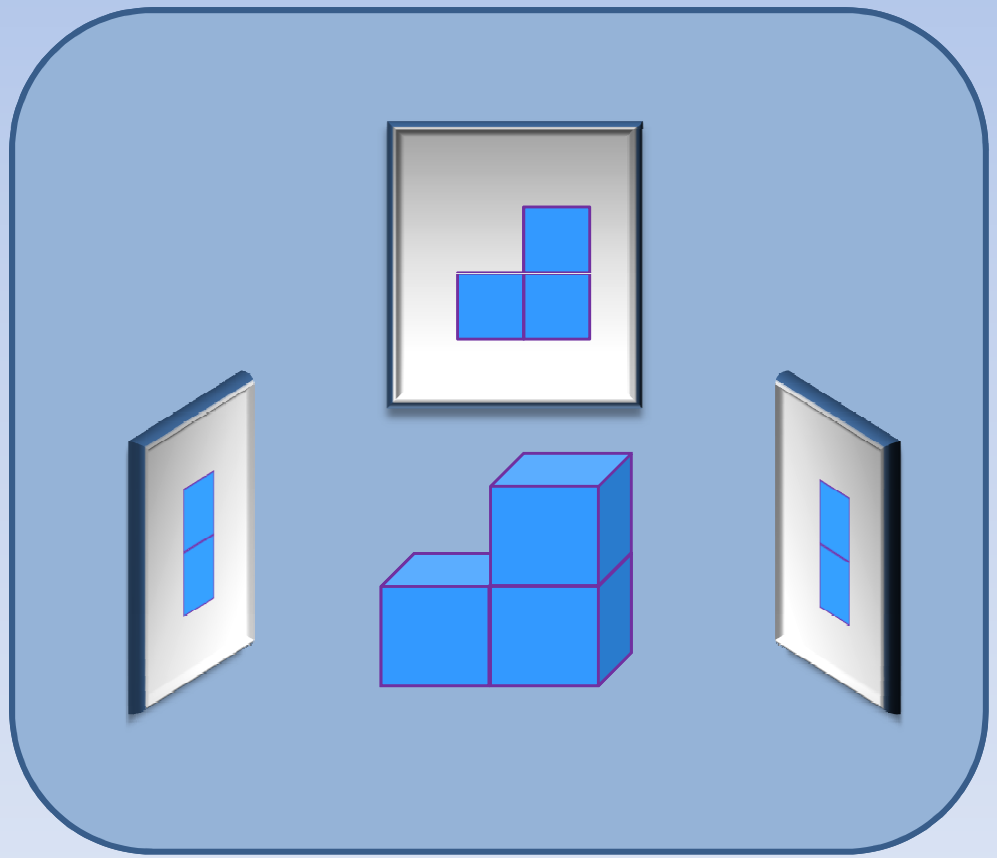
2. STOPNJA

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

2. STOPNJA

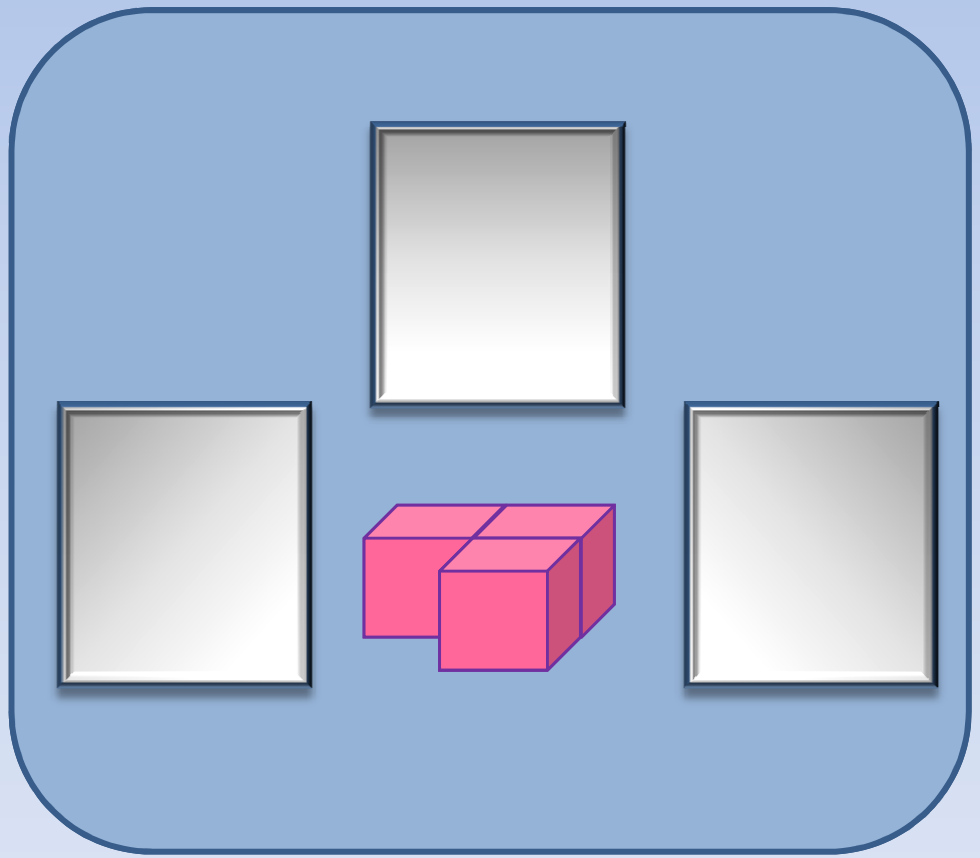
SPODAJ STA DVA PRIMERA, KAKO LAHKO NARIŠEŠ TELO, KI GA VIDIŠ V OGLEDALU.

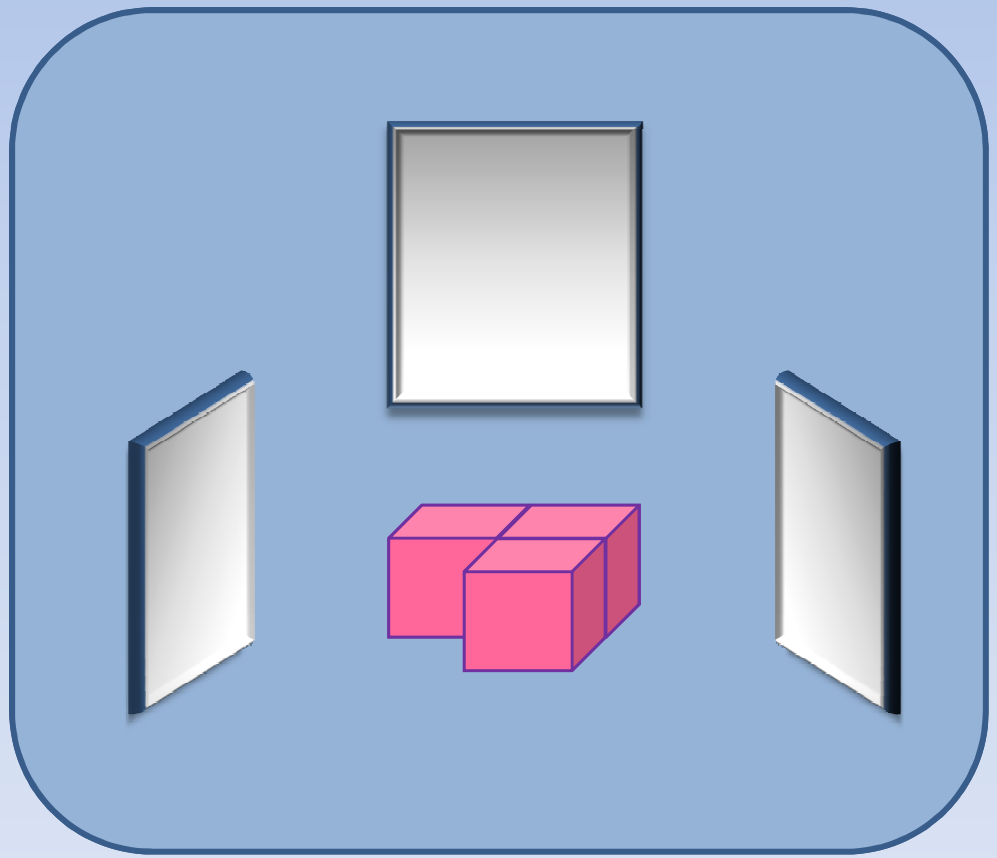




2. STOPNJA

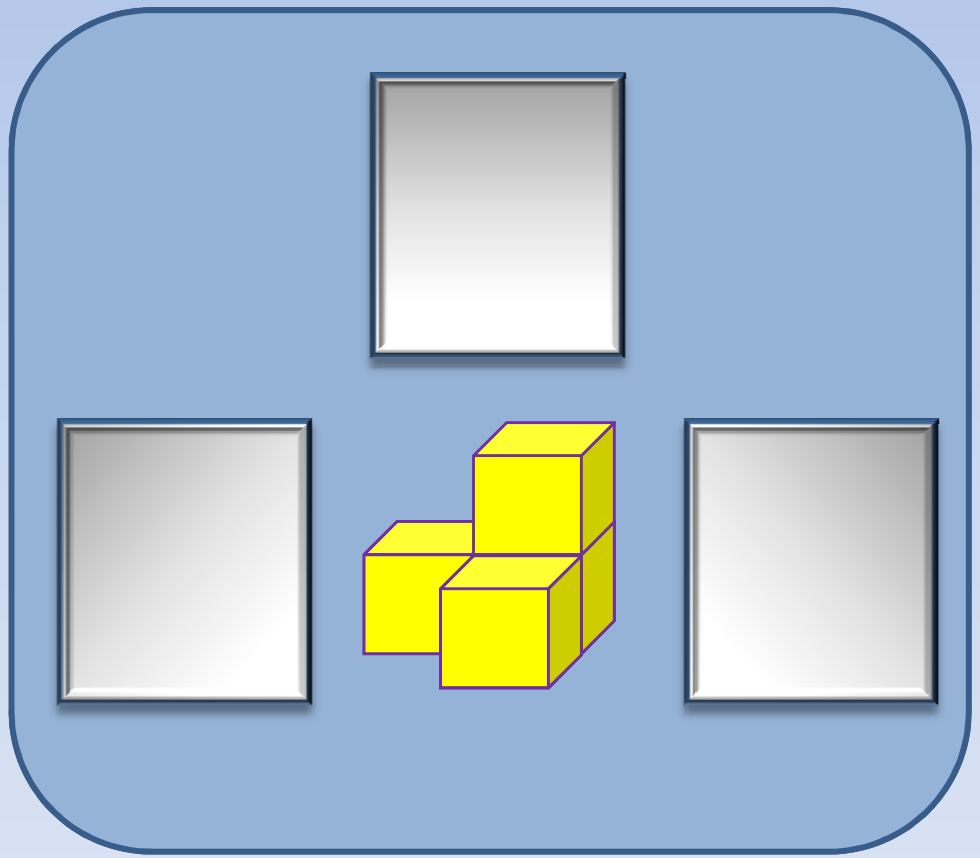
NARIŠI SLIKO TELESA V OGLEDALIH (NA LEVI ALI NA DESNI SLIKI).

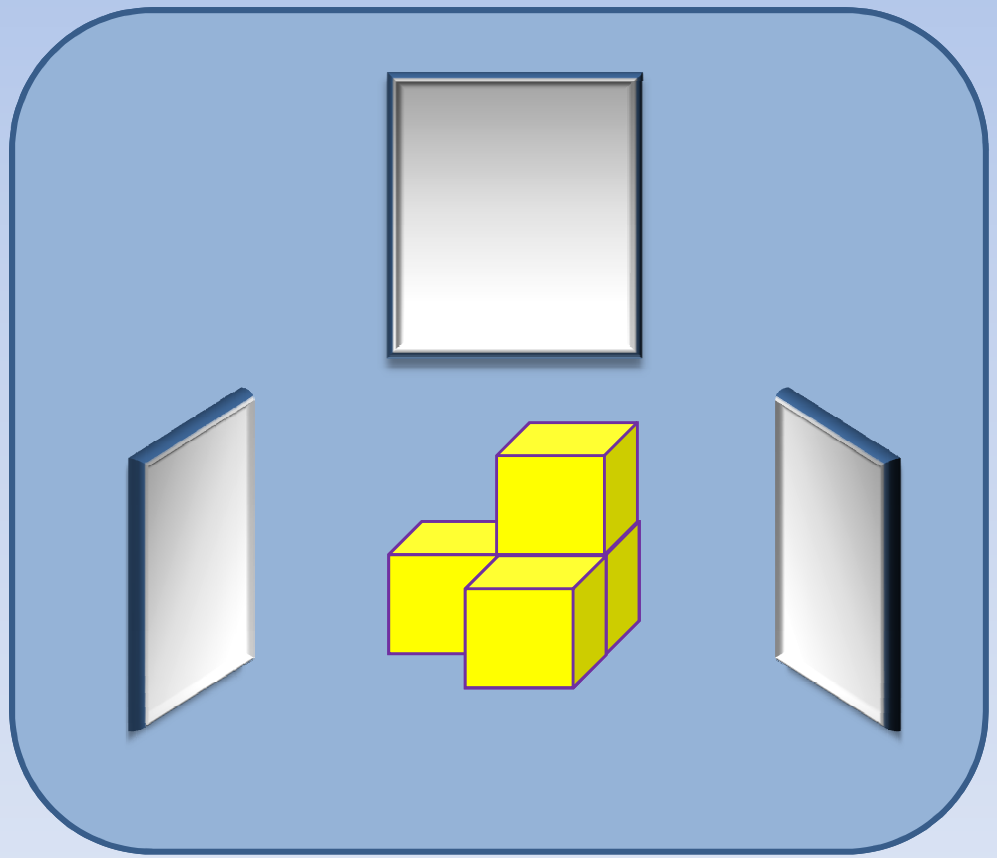




2. STOPNJA

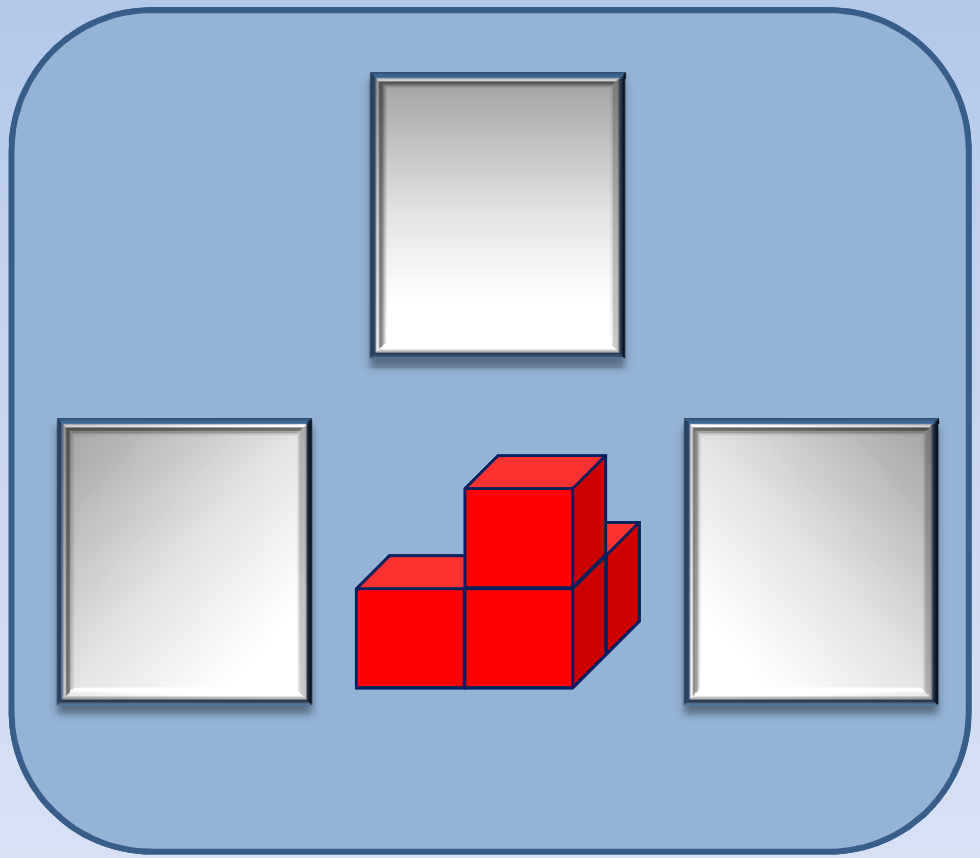
NARIŠI SLIKO TELESA V OGLEDALIH (NA LEVI ALI NA DESNI SLIKI).

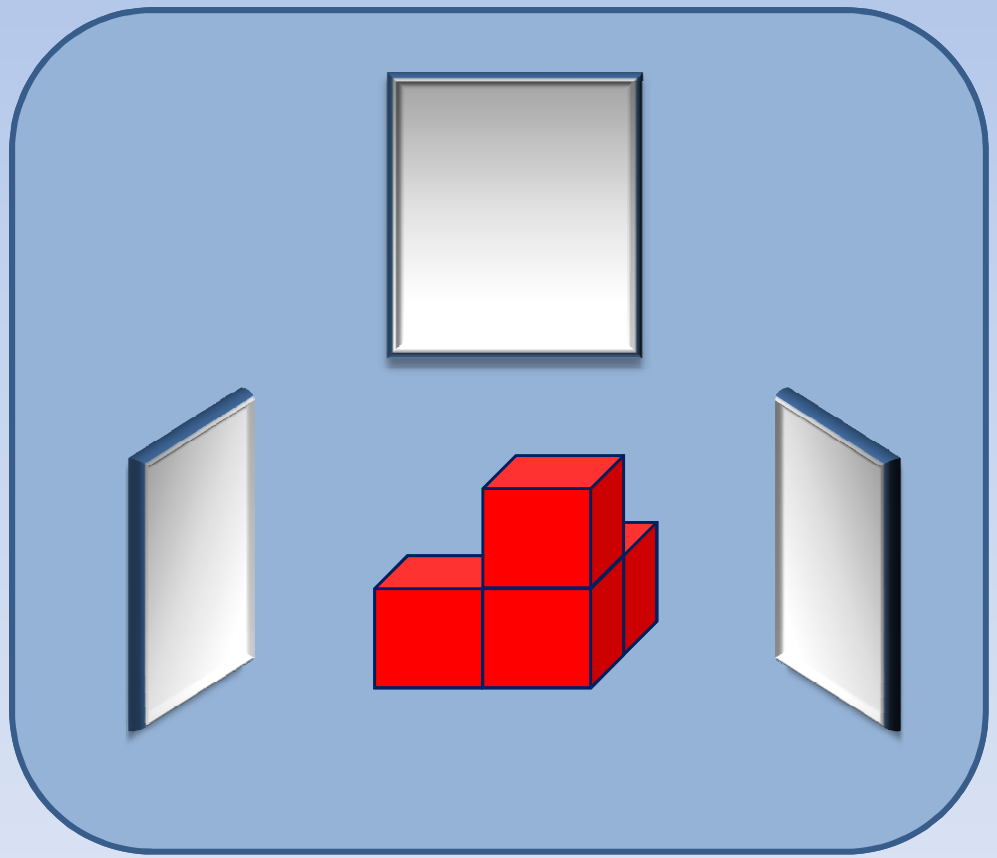




2. STOPNJA

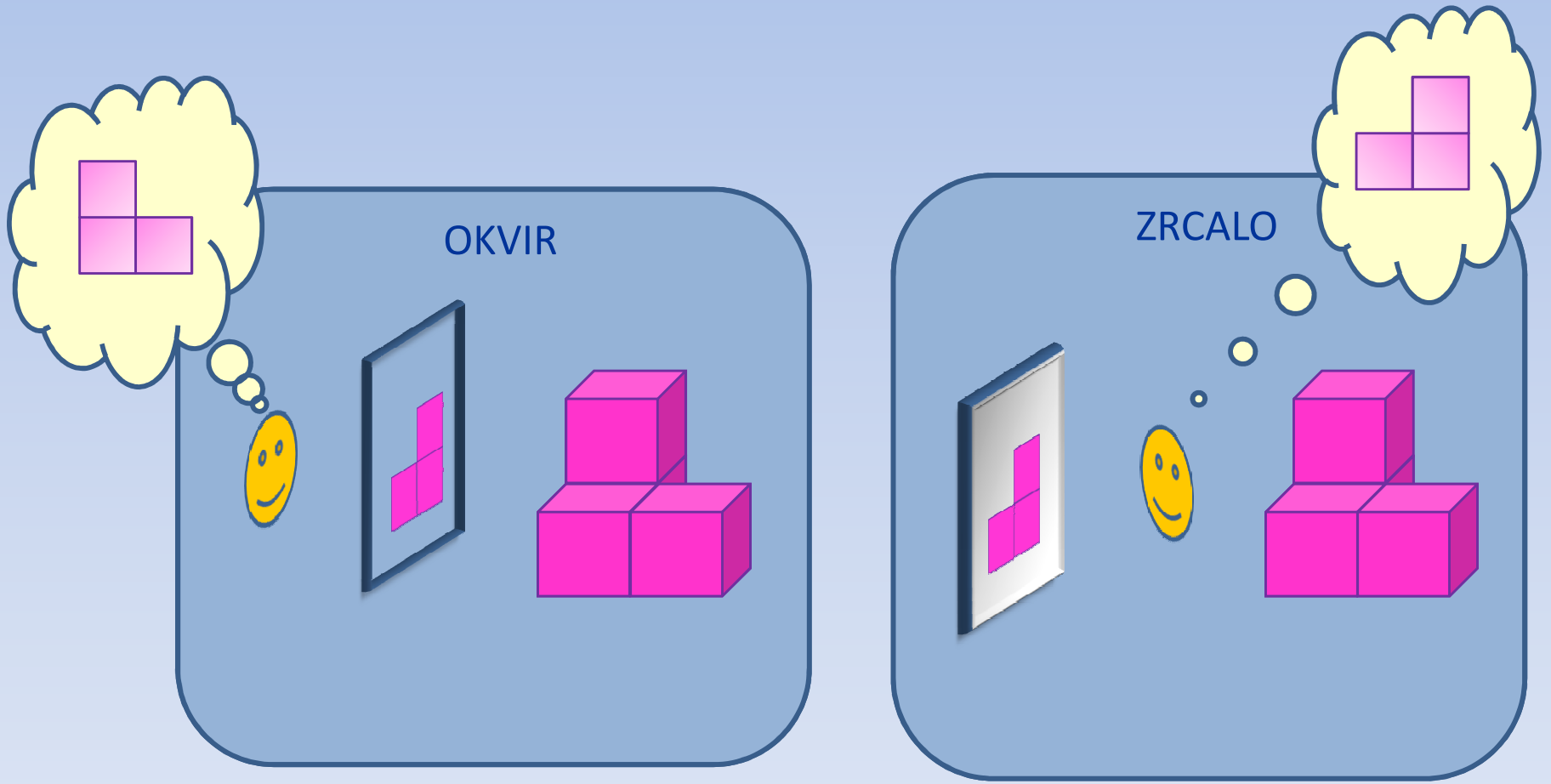
NARIŠI SLIKO TELESA V OGLEDALIH (NA LEVI ALI NA DESNI SLIKI).





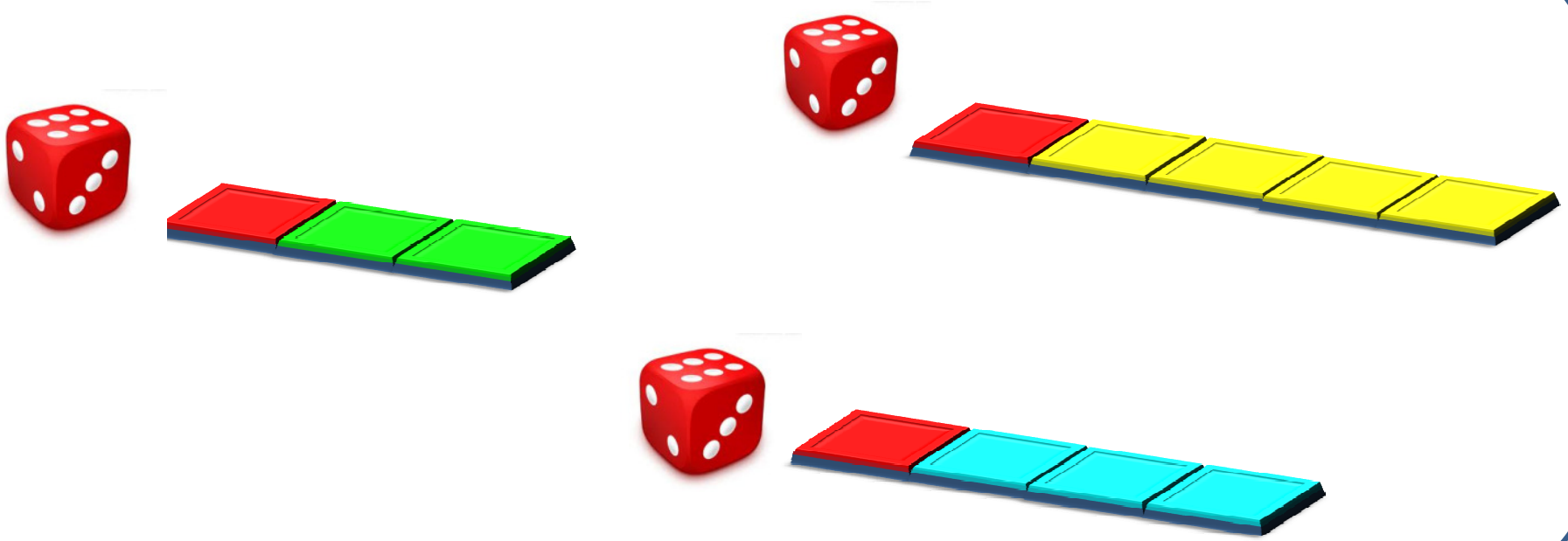
2. STOPNJA

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



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?



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

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

2. STOPNJA

VSAKO ČRKO PREZRCALI LEVO IN DESNO PREKO OZNAČENE ČRTE.

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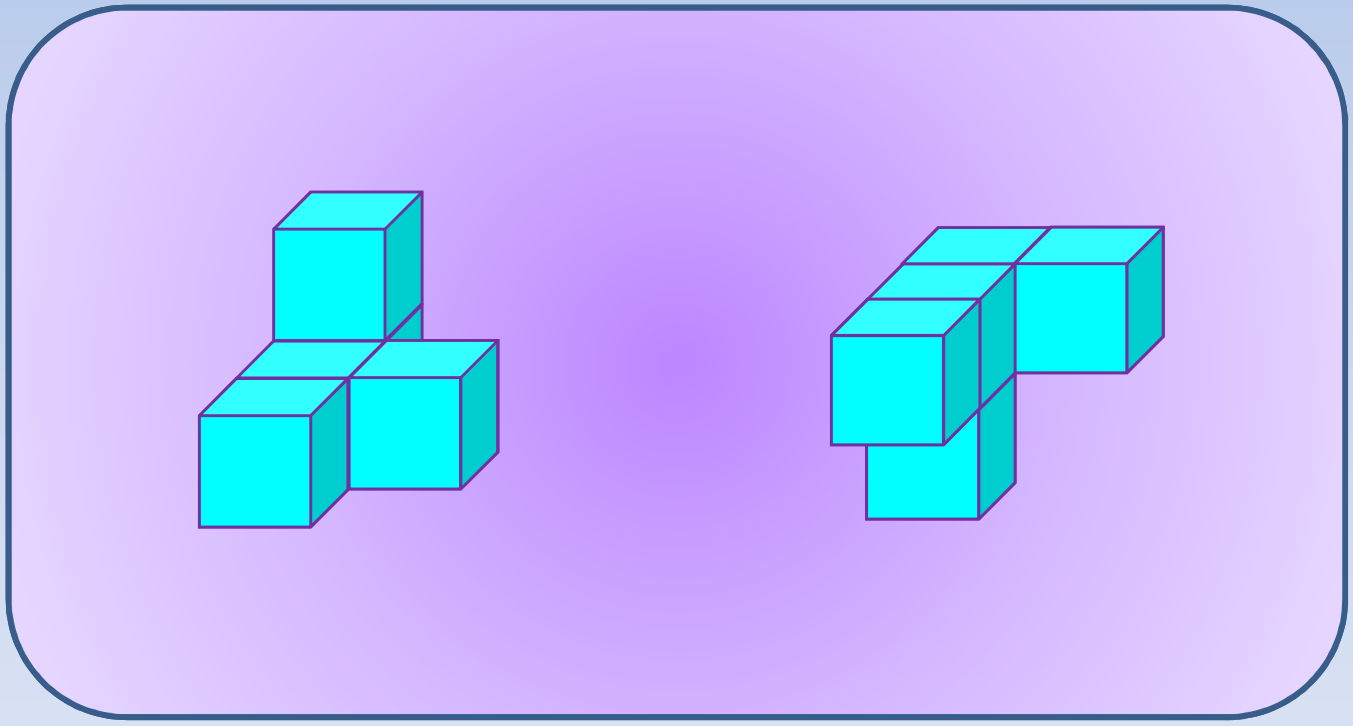
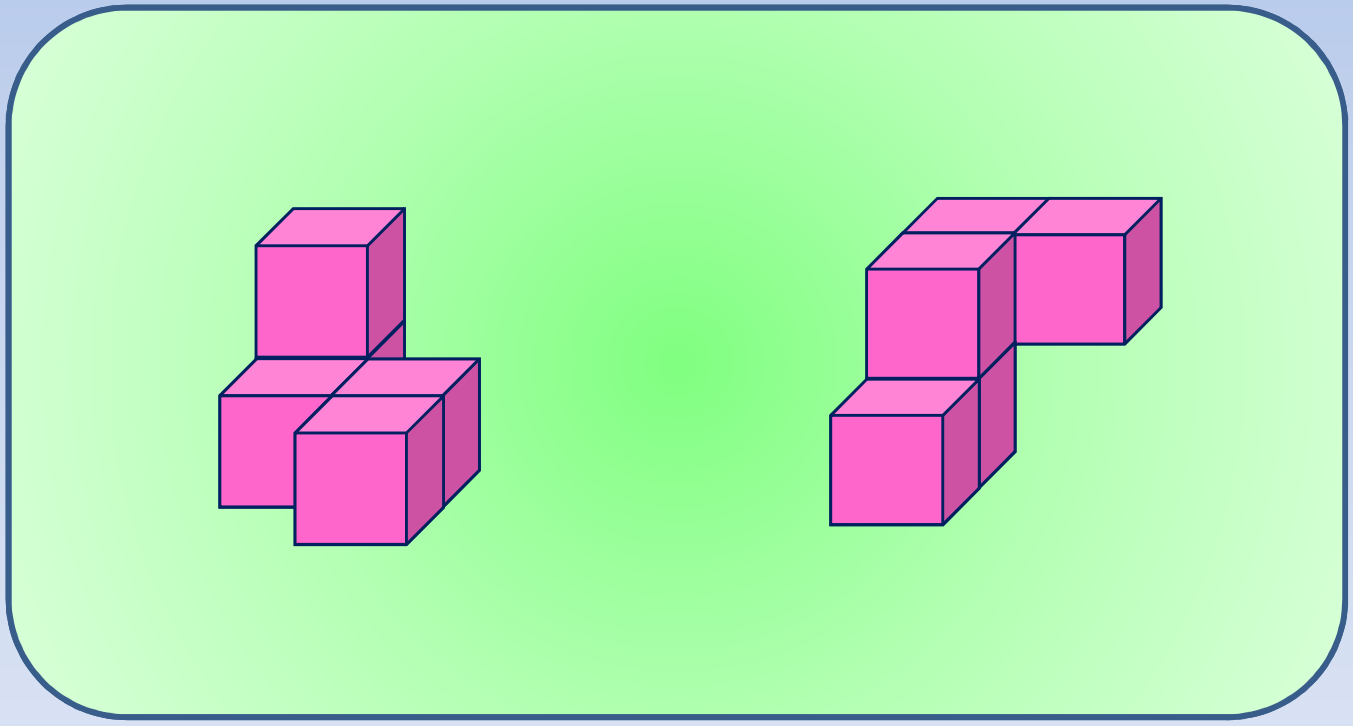
2. STOPNJA

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



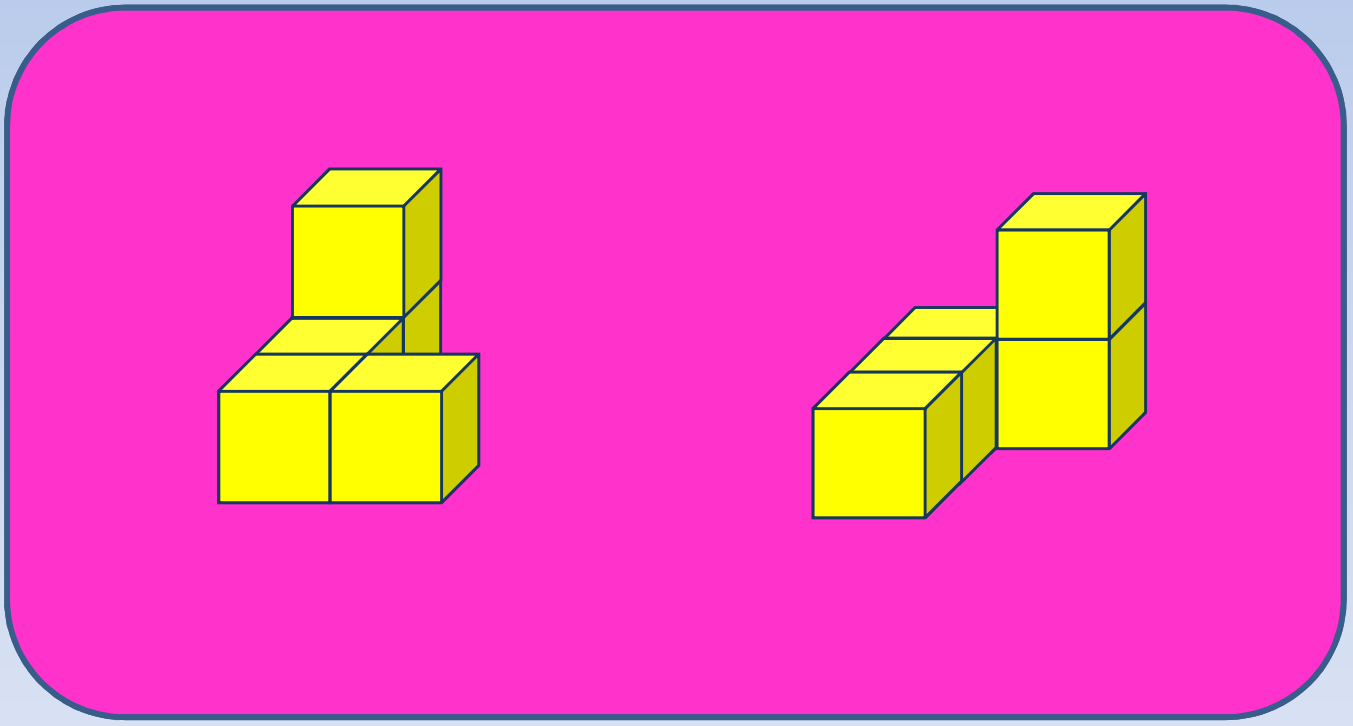
2. STOPNJA

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



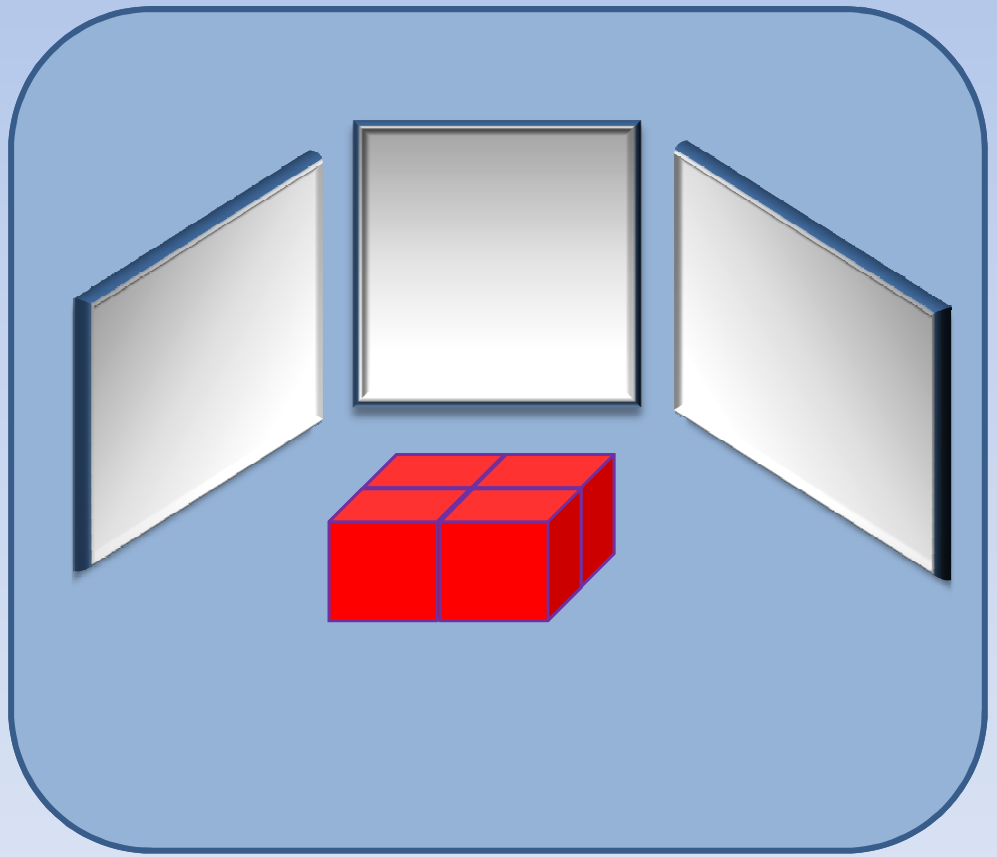
2. STOPNJA

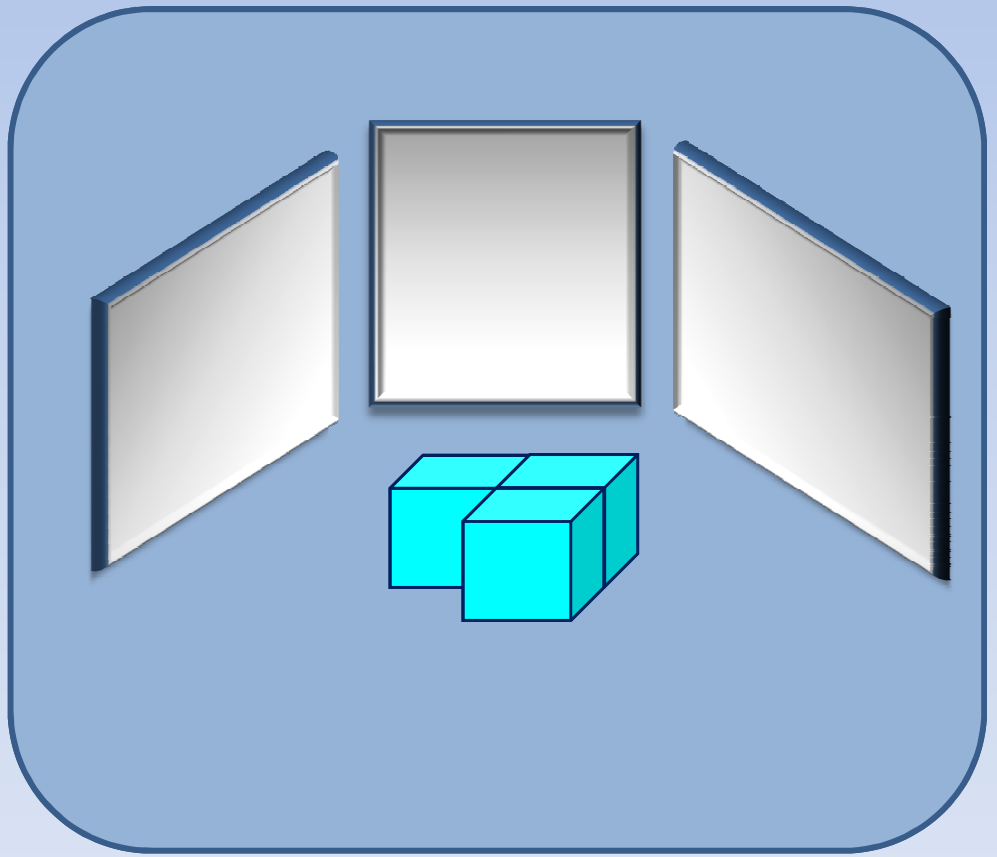
ALI STA TELESI ENAKE OBLIKE? TELESI LAHKO OBRAČAŠ V VSE SMERI.



2. STOPNJA

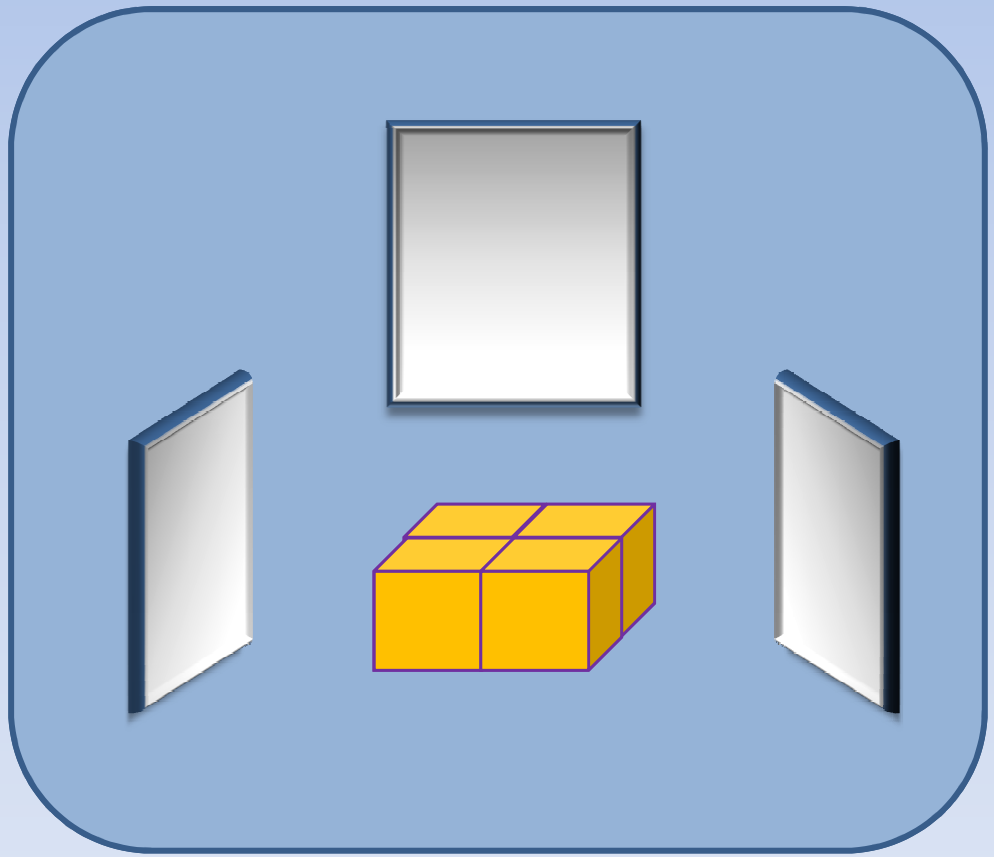
ALI IMATA TELESI V VSEH TREH OGLEDALIH ENAKE SLIKE?

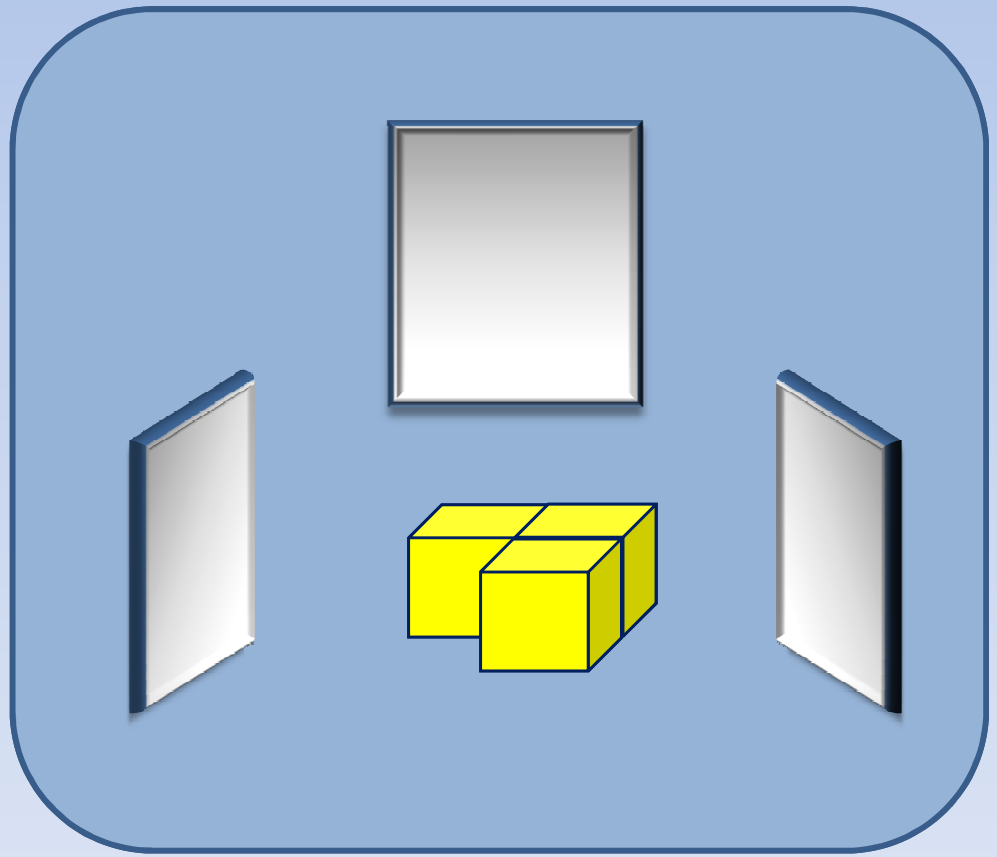




2. STOPNJA

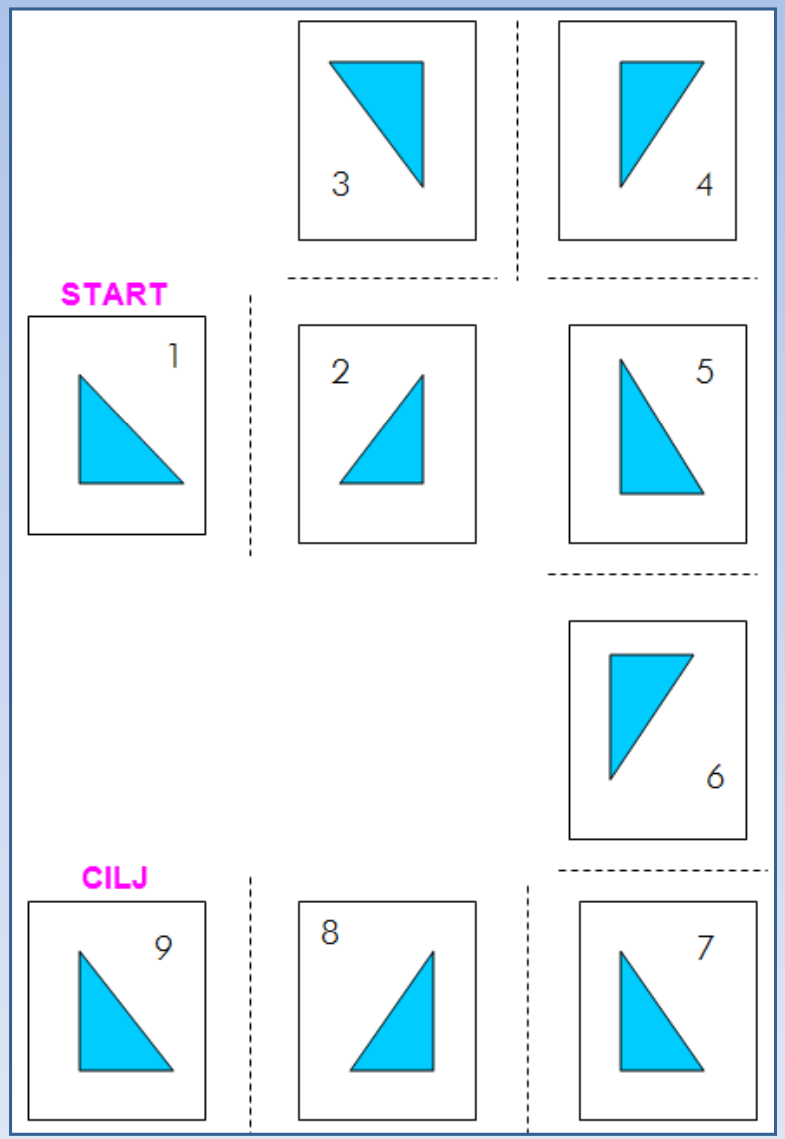
ALI IMATA TELESI V VSEH TREH OGLEDALIH ENAKE SLIKE?

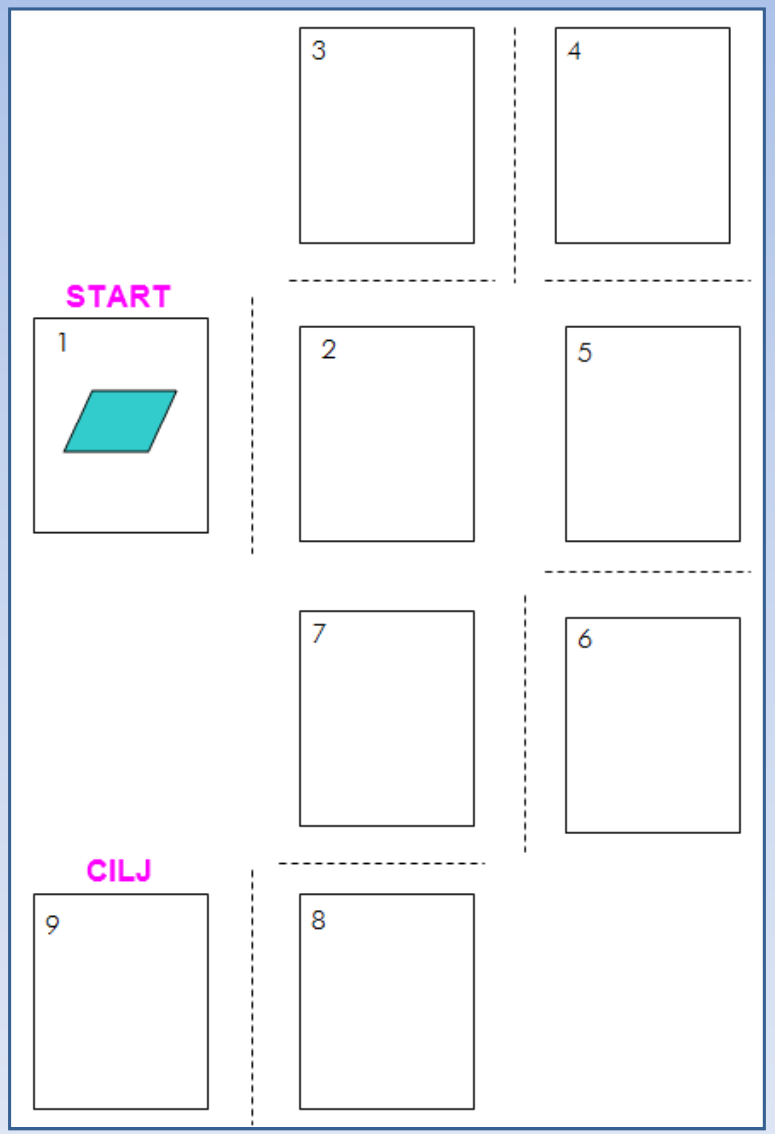




2. STOPNJA

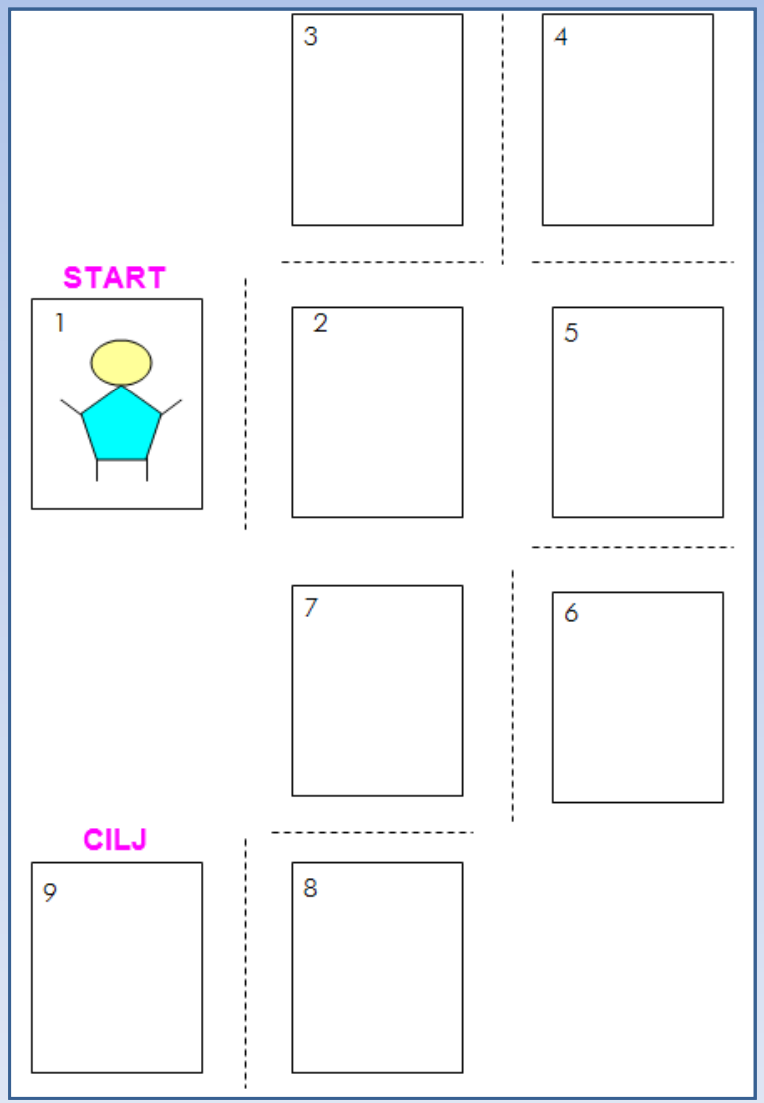
LIK NA DESNI ZRCALI PO ZGLEDU LEVO.





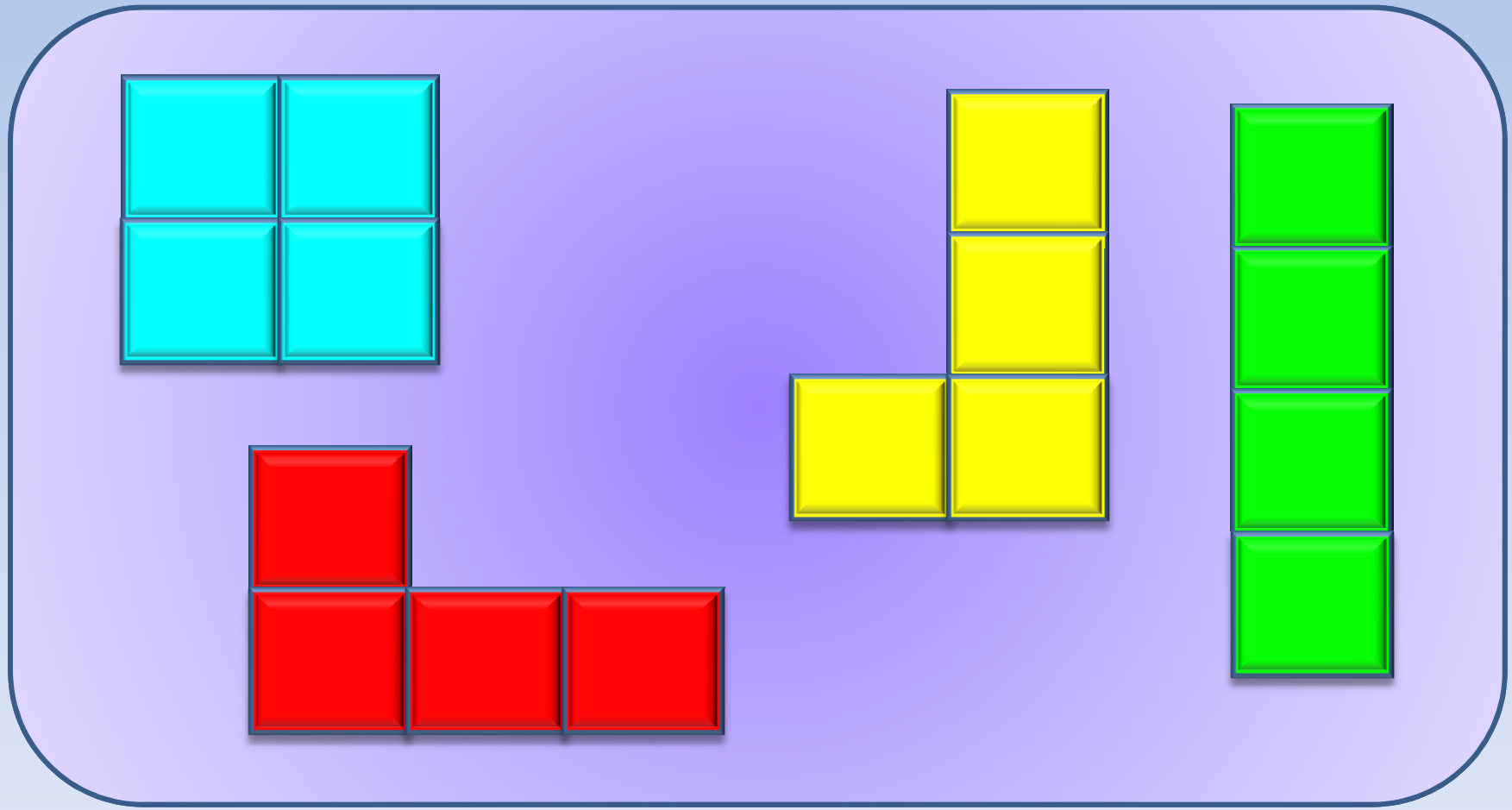
2. STOPNJA

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



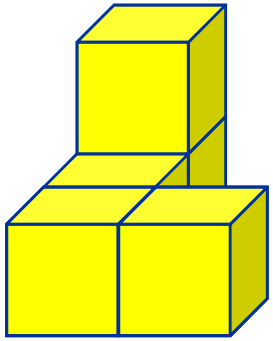
2. STOPNJA

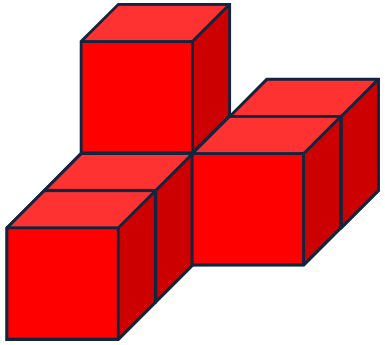
ALI LAHKO SPODNJE OBLIKE SESTAVIŠ V KVADRAT? OBLIKE SE NE PREKRIVAJO IN MED NJIMI NI PRAZNEGA PROSTORA.

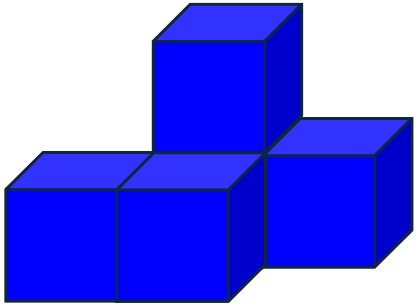


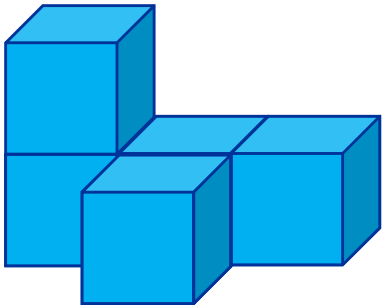
2. STOPNJA

SESTAVI IZ KOCK.



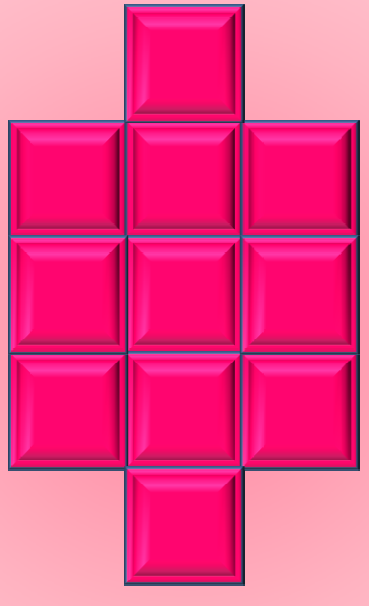


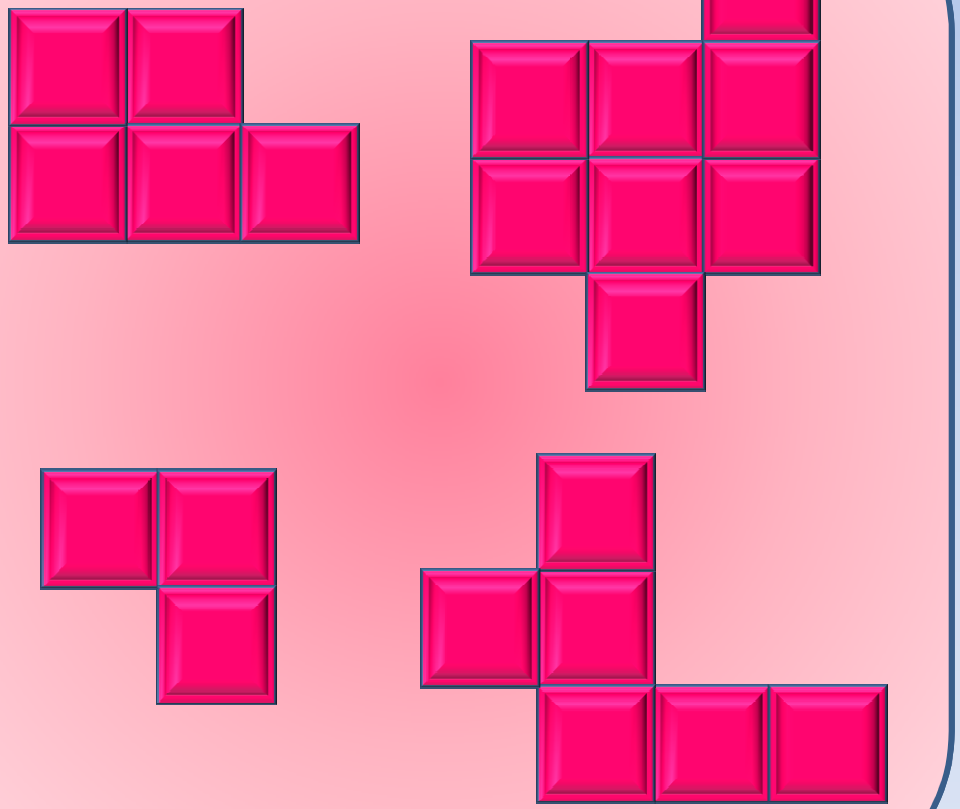




3. STOPNJA

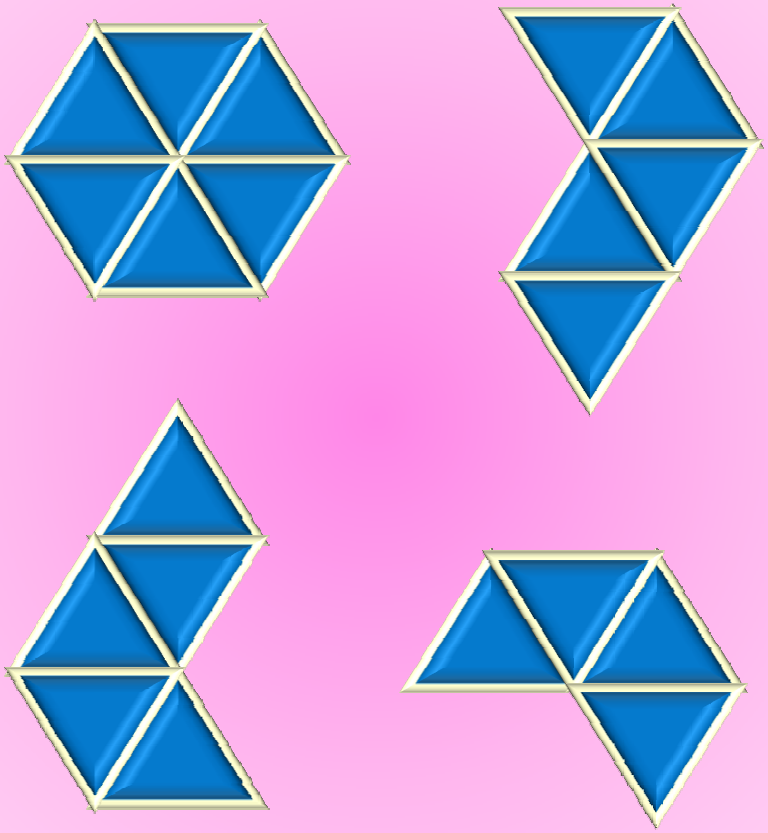
Kateri dve obliki desno sestavljata obliko na levi.





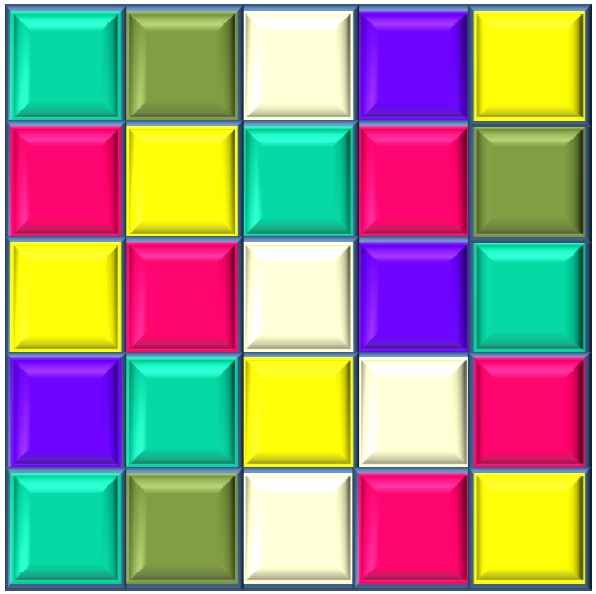
3. STOPNJA

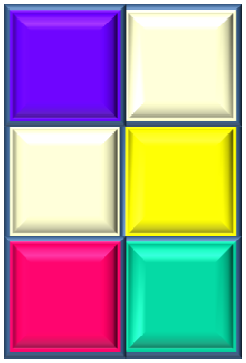
Kateri dve obliki desno sestavljata lik na levi.



3. STOPNJA

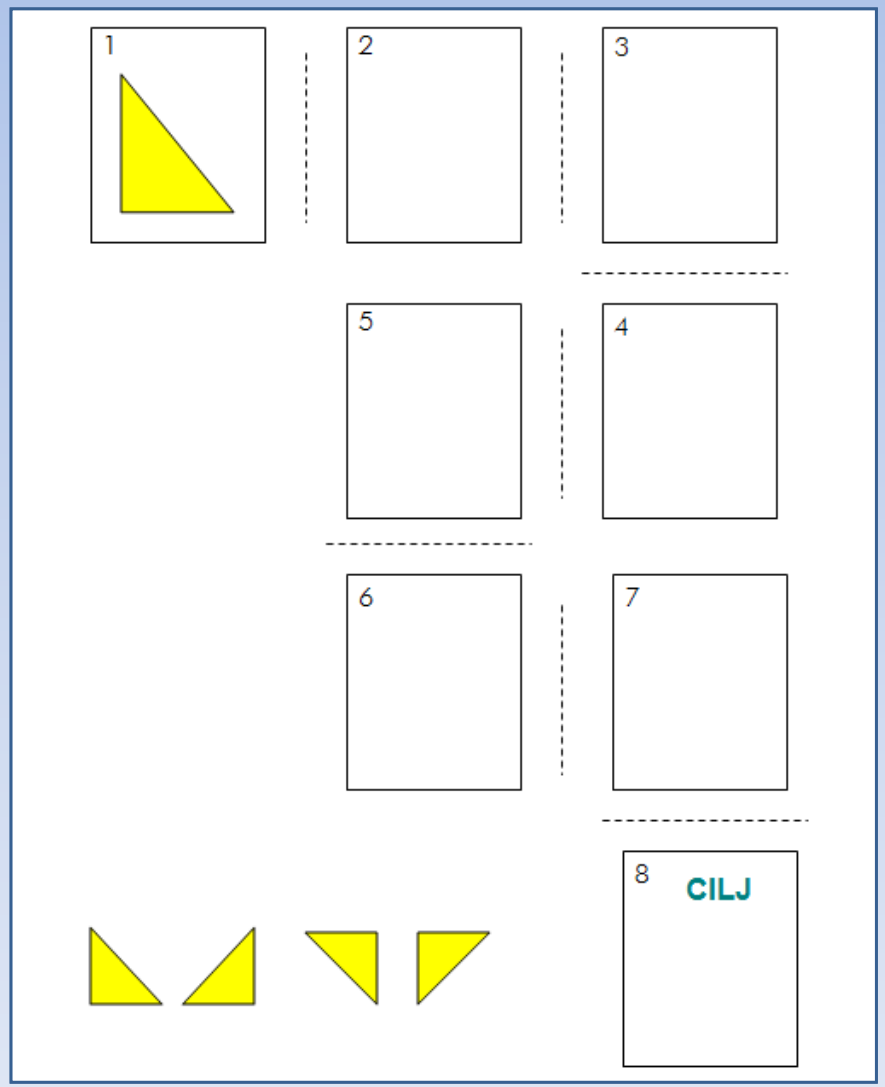
Ali najdeš desni barvni vzorec v levem. Desnega smeš vrteti.





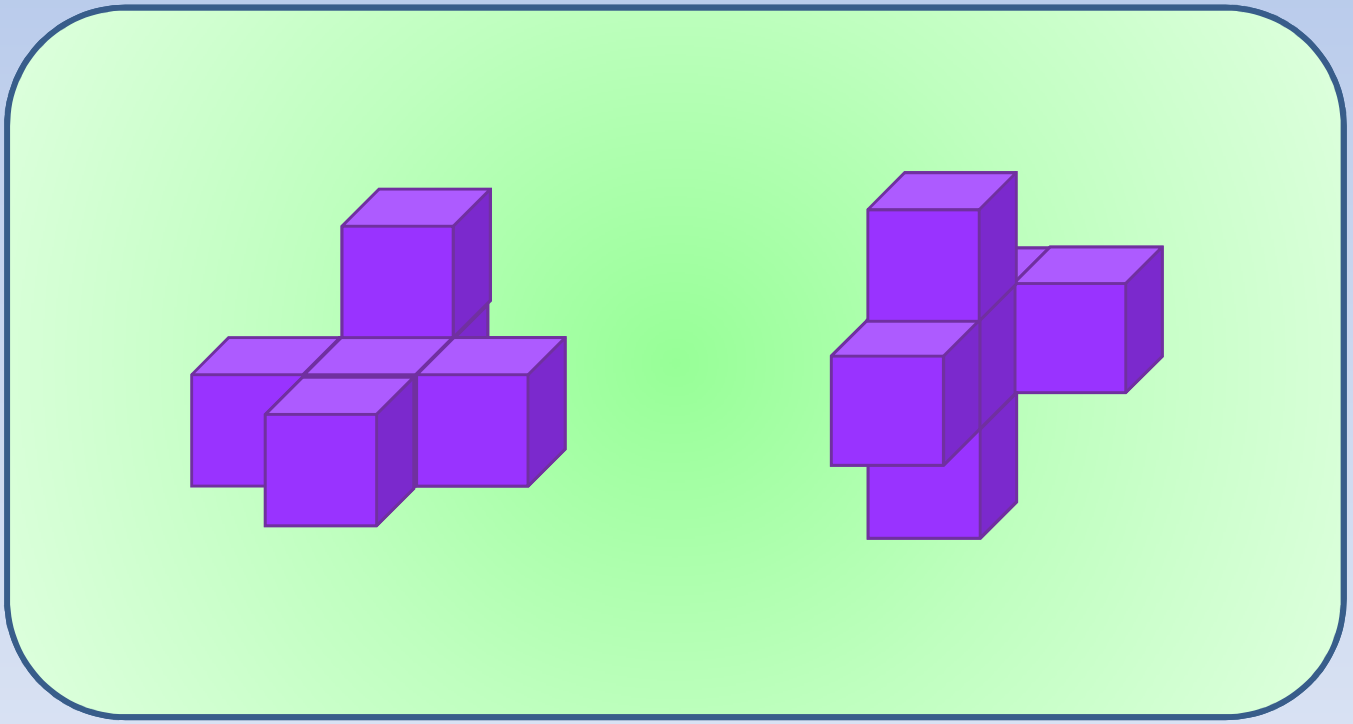
3. STOPNJA

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



3. STOPNJA

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



3. STOPNJA

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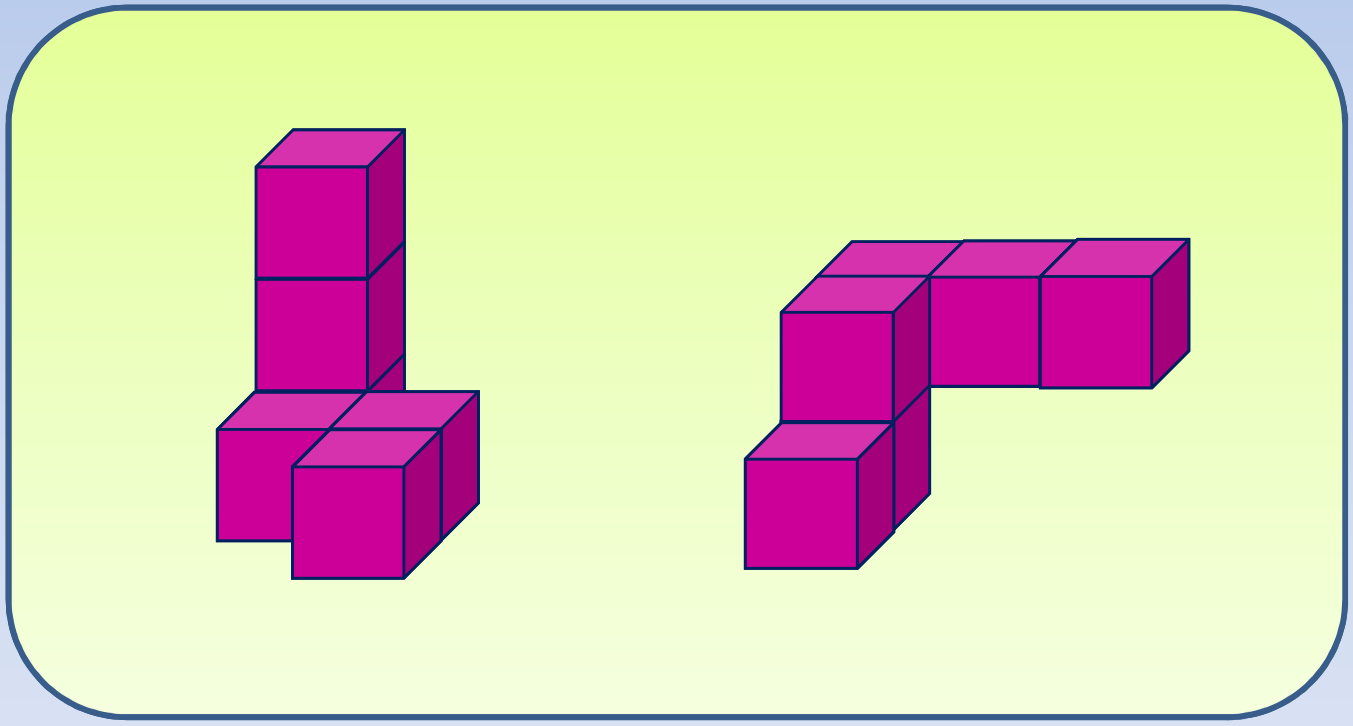

3. STOPNJA

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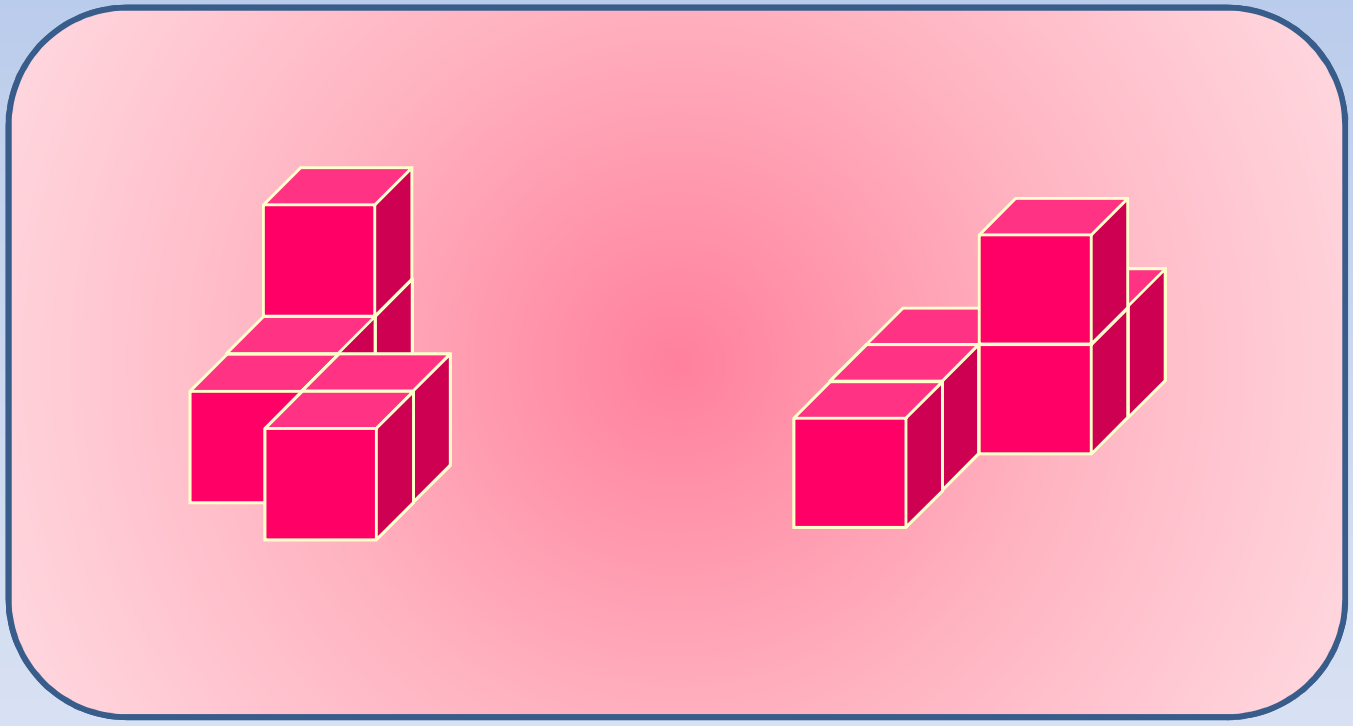
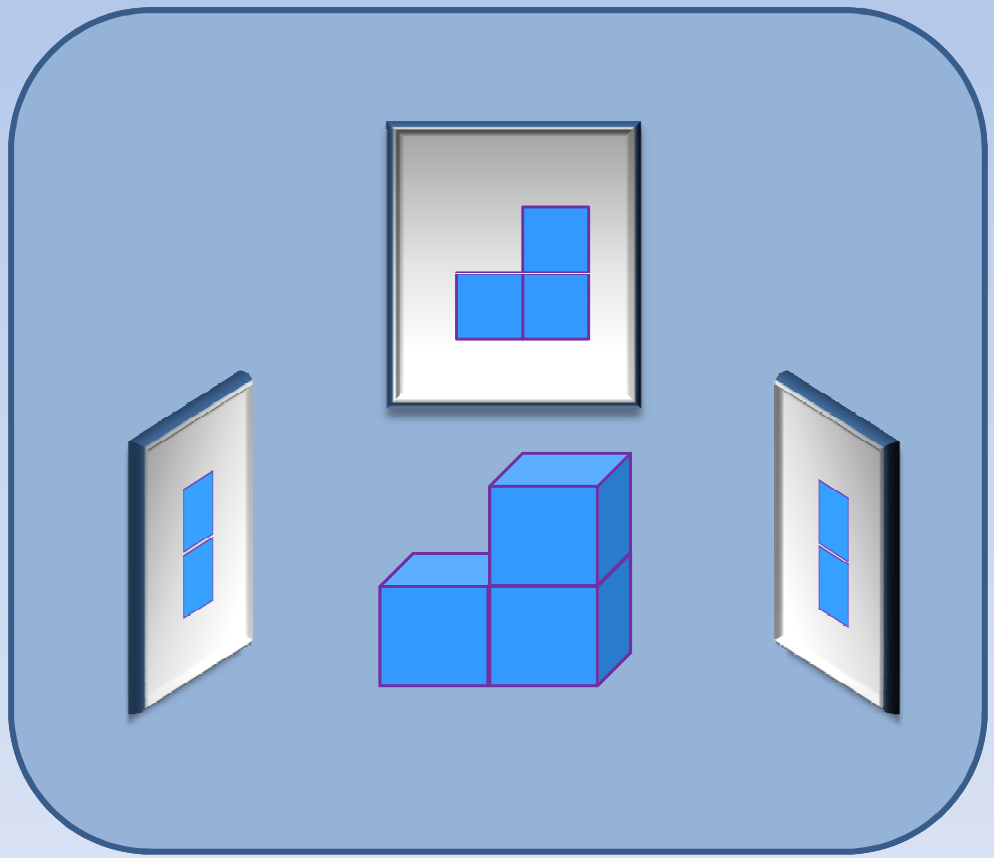
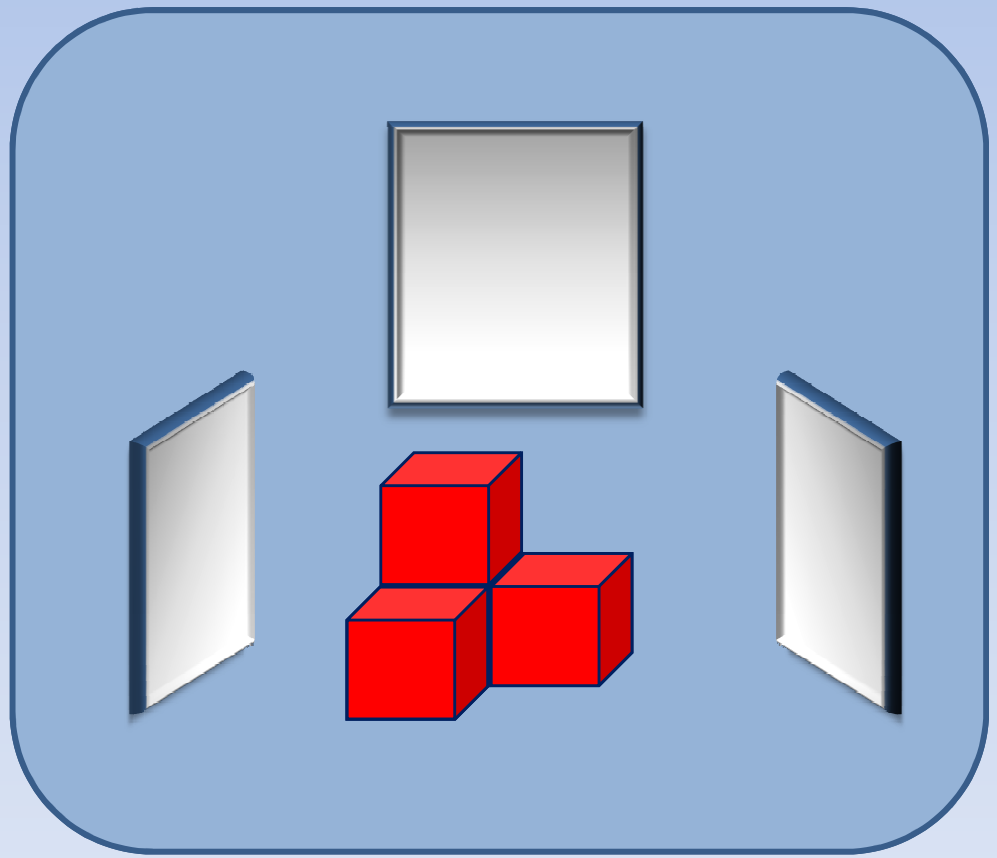


3. STOPNJA

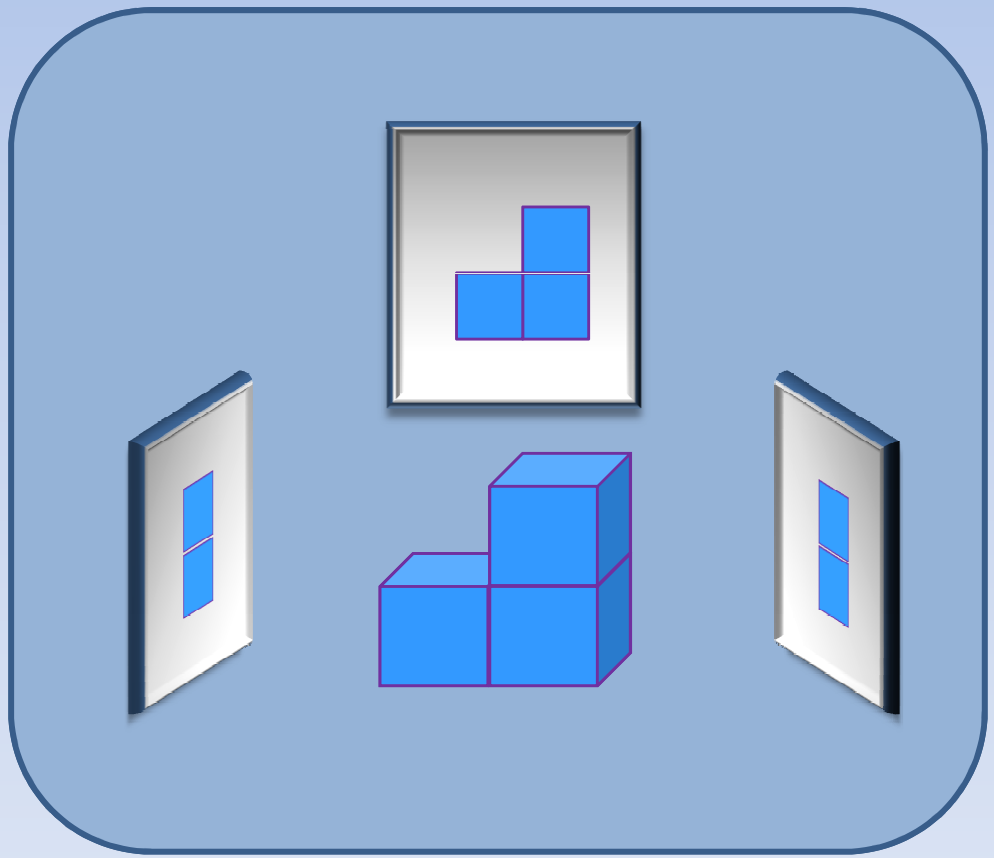
Po zgledu levo nariši sliko rdečega telesa v treh ogledalih.

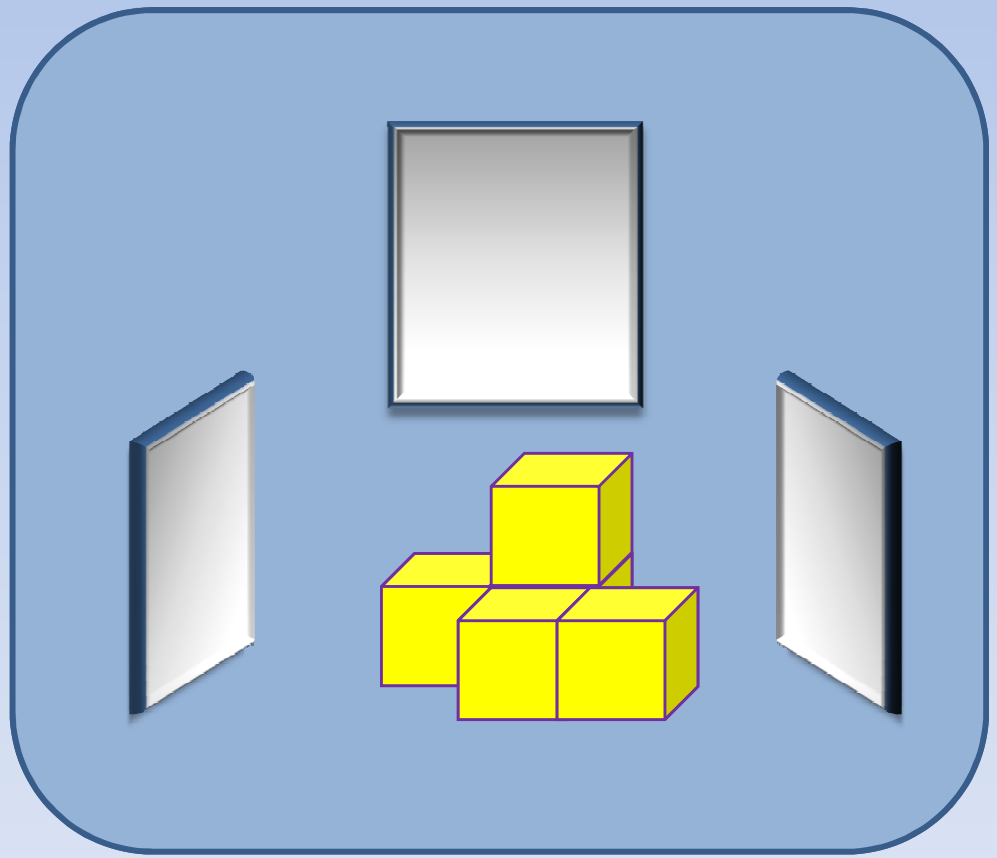




3. STOPNJA

Po zgledu levo nariši sliko rdečega telesa v treh ogledalih.





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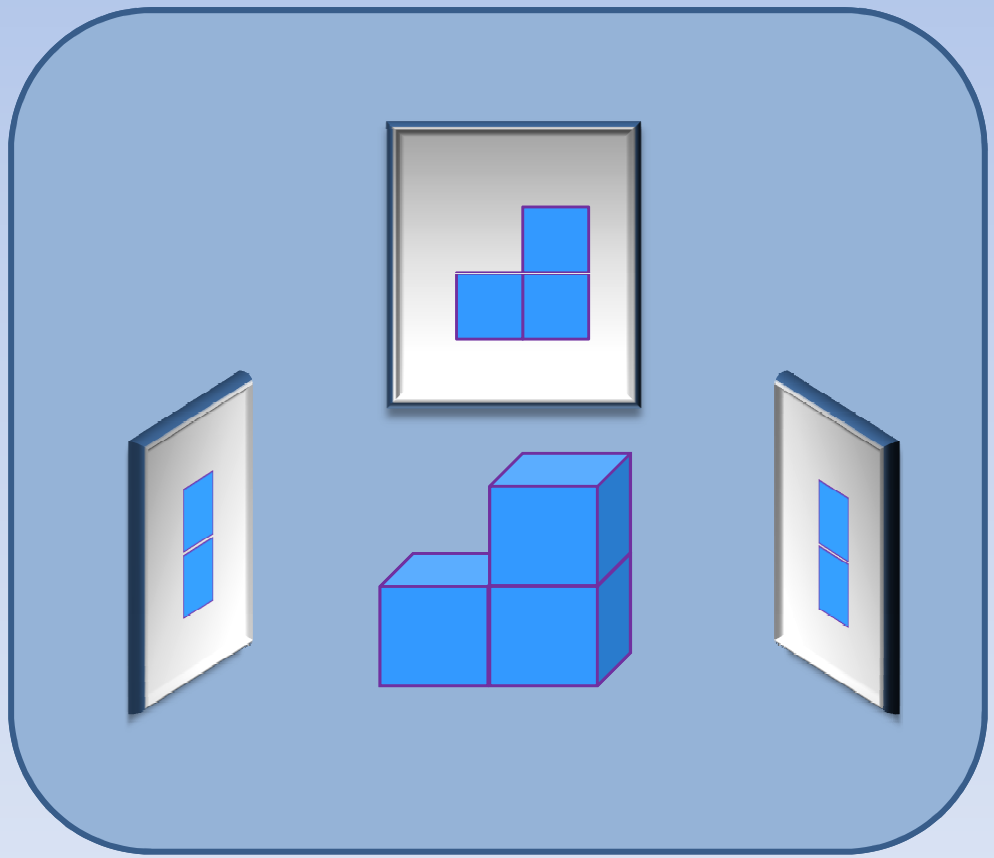
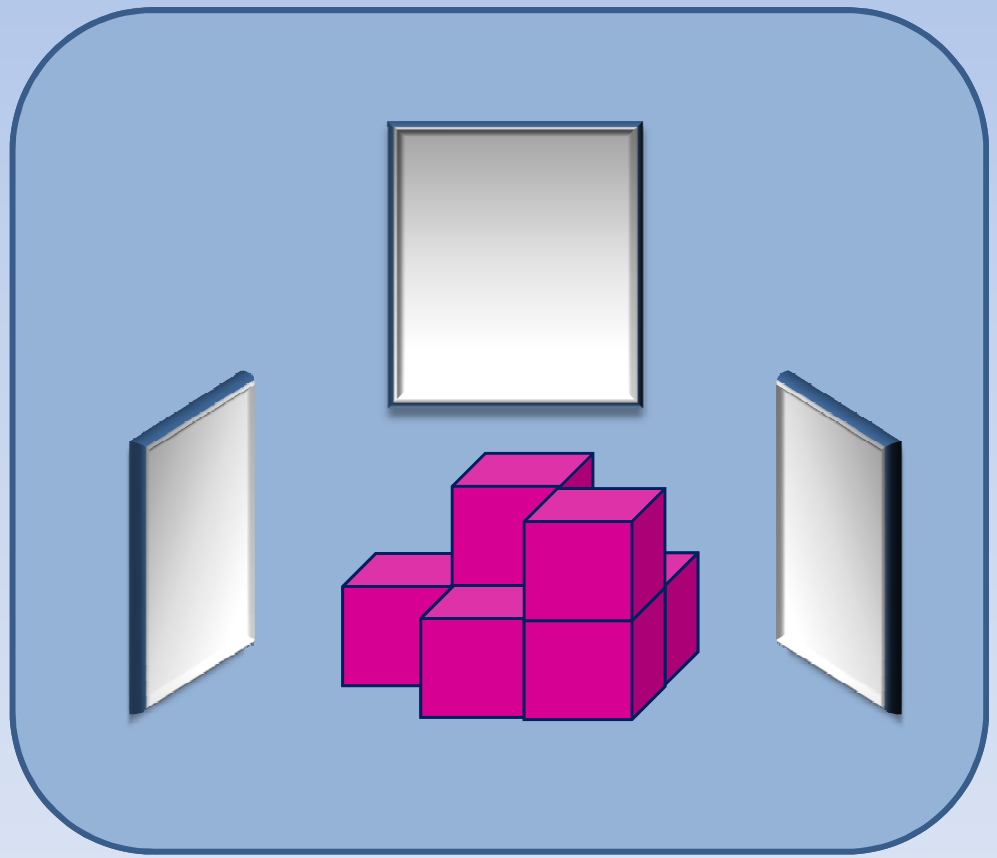
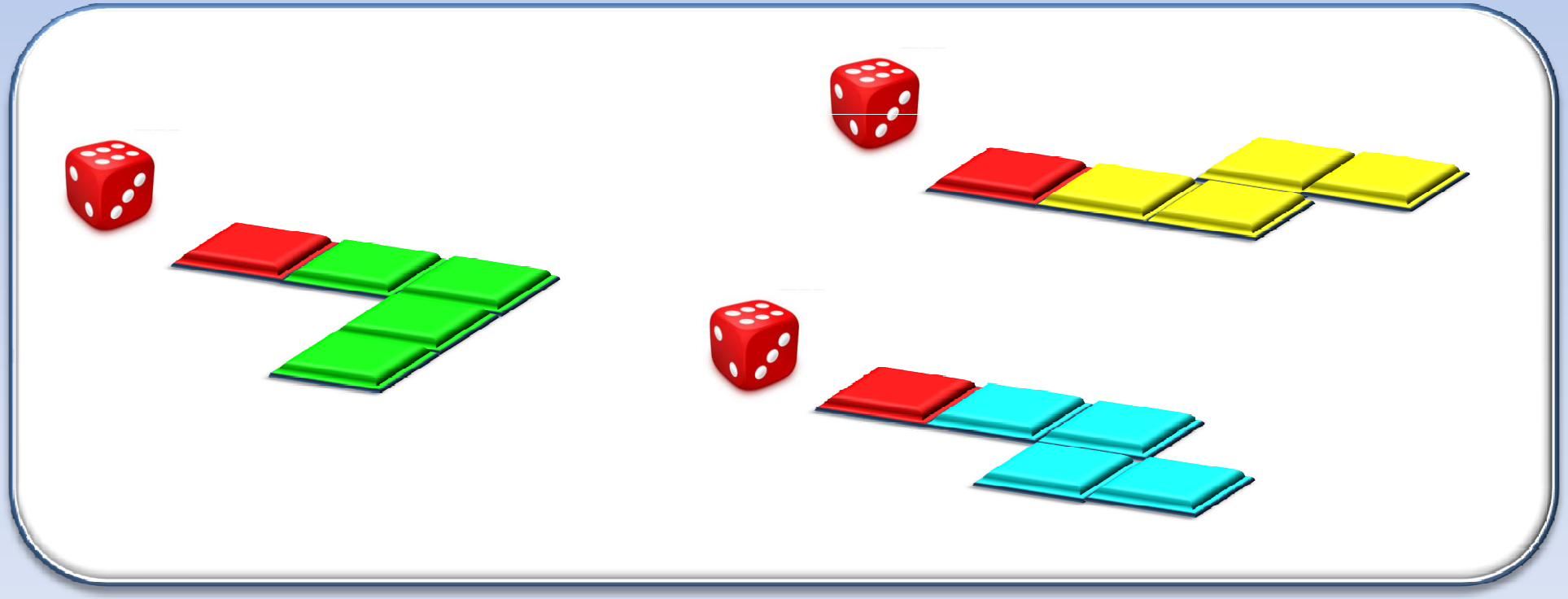
Po zgledu levo nariši sliko rdečega telesa v treh ogledalih.





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?



3. STOPNJA

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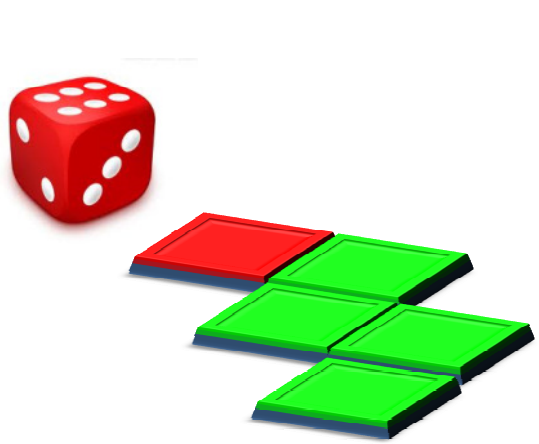
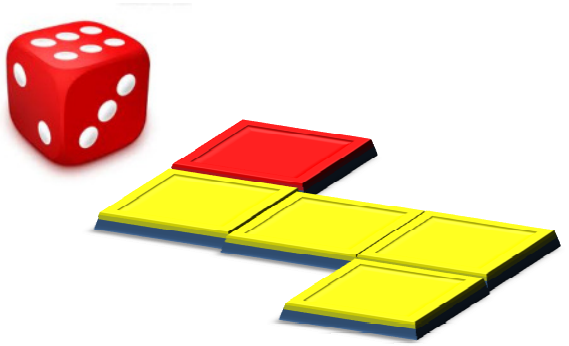
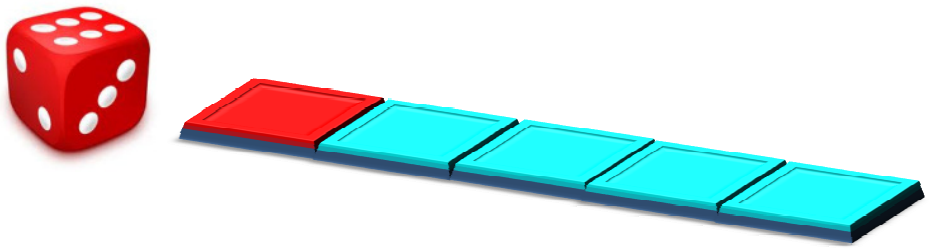
Na katerem od trakov se bo kateri od odtisov dvakrat ponovil?

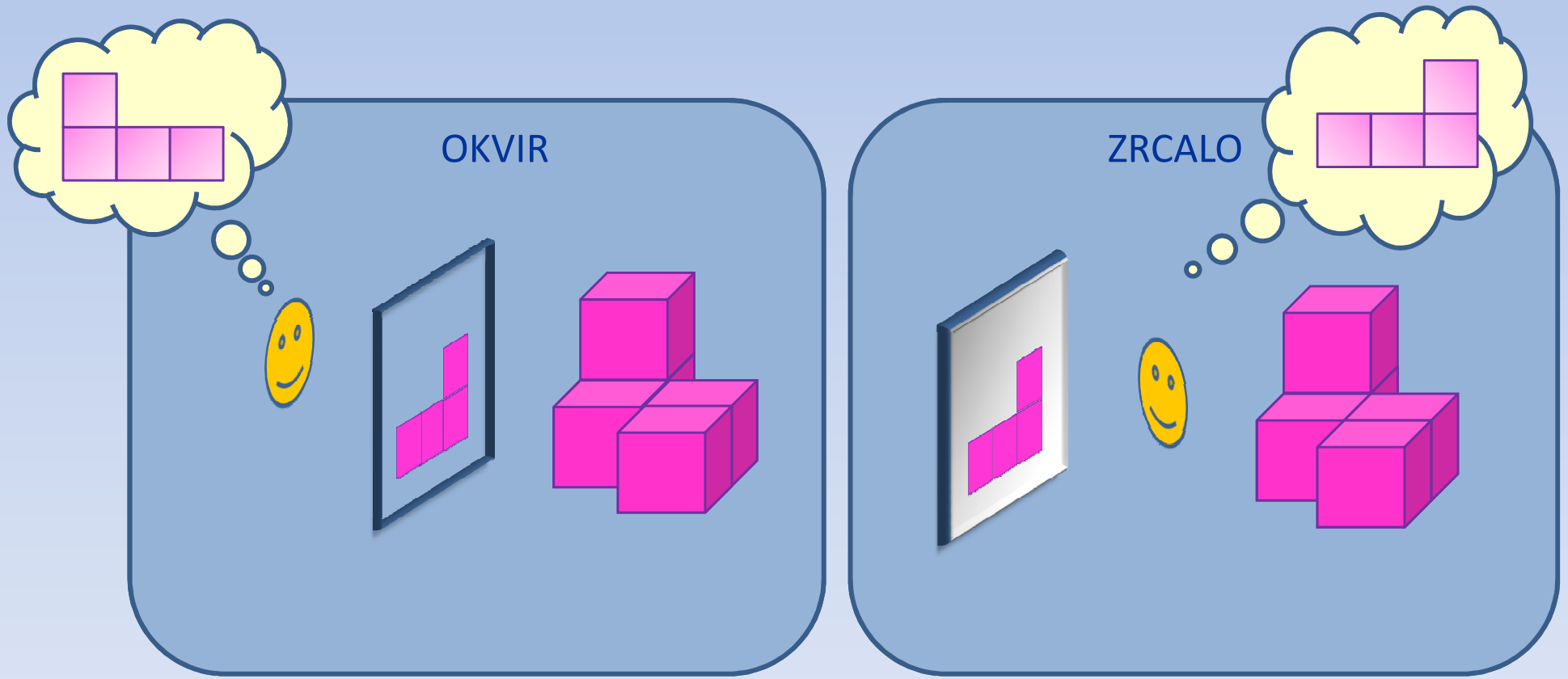






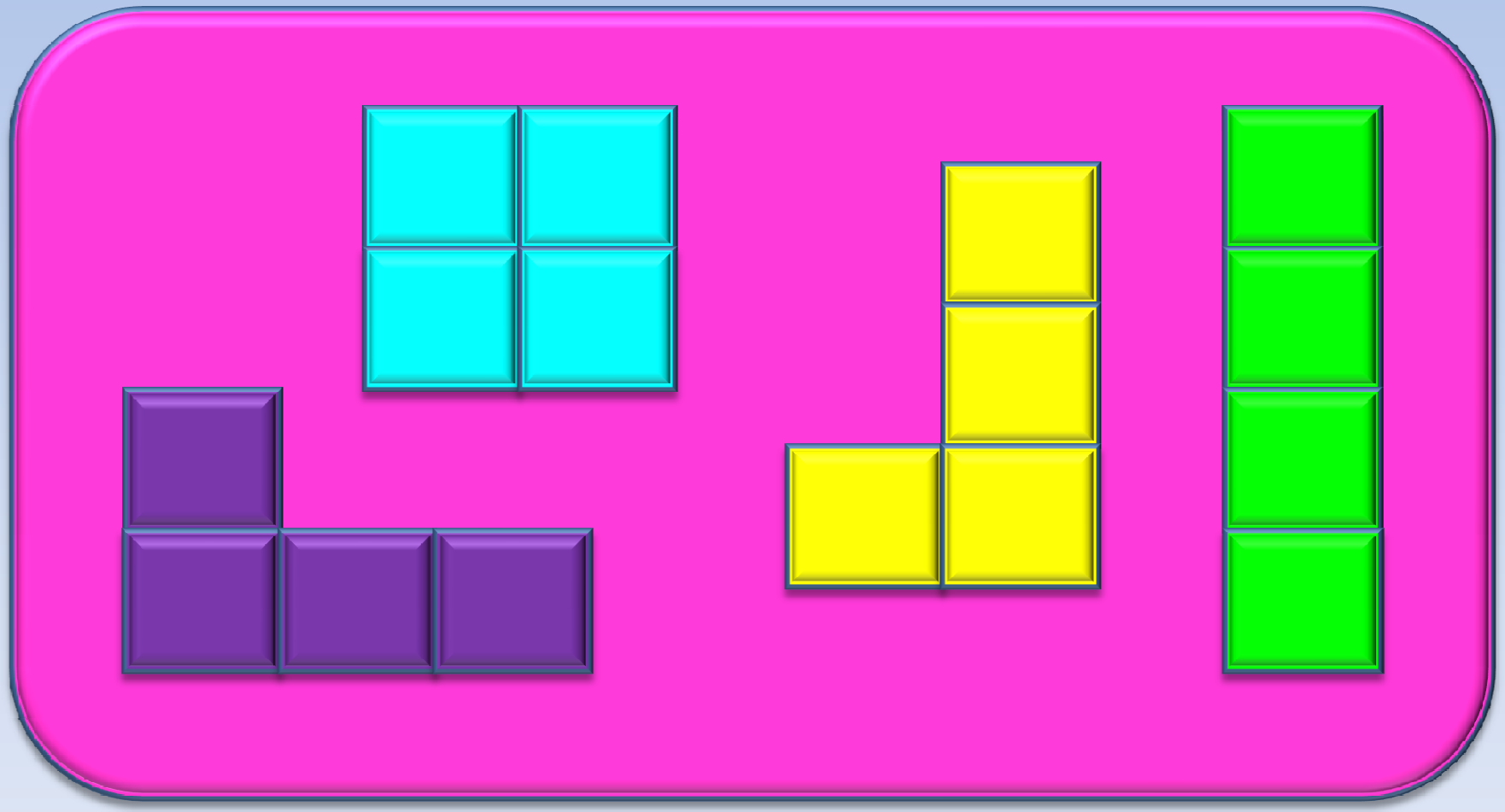
3. STOPNJA

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



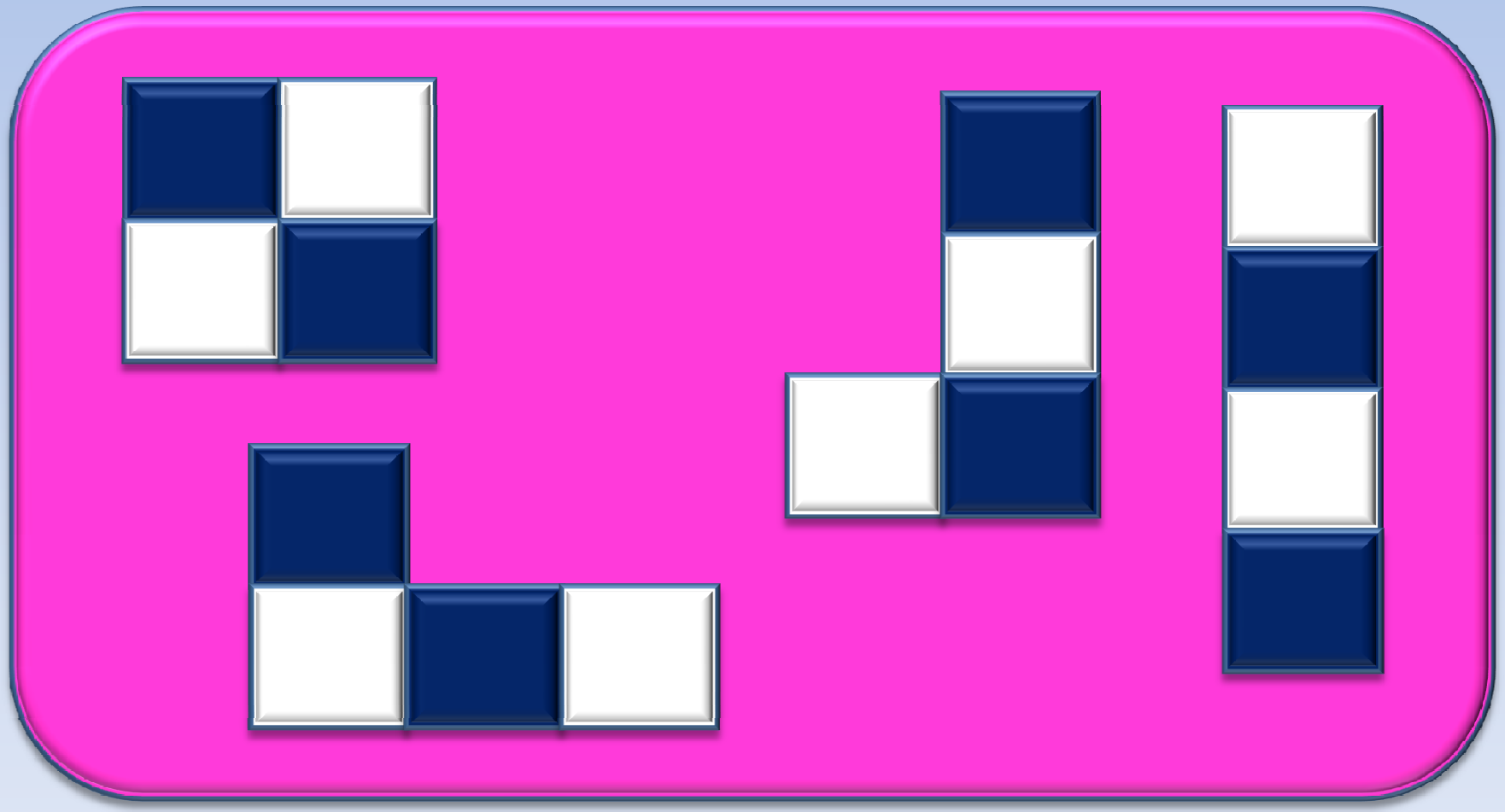
3. STOPNJA

Ali lahko iz spodnjih oblik sestaviš kvadrat?



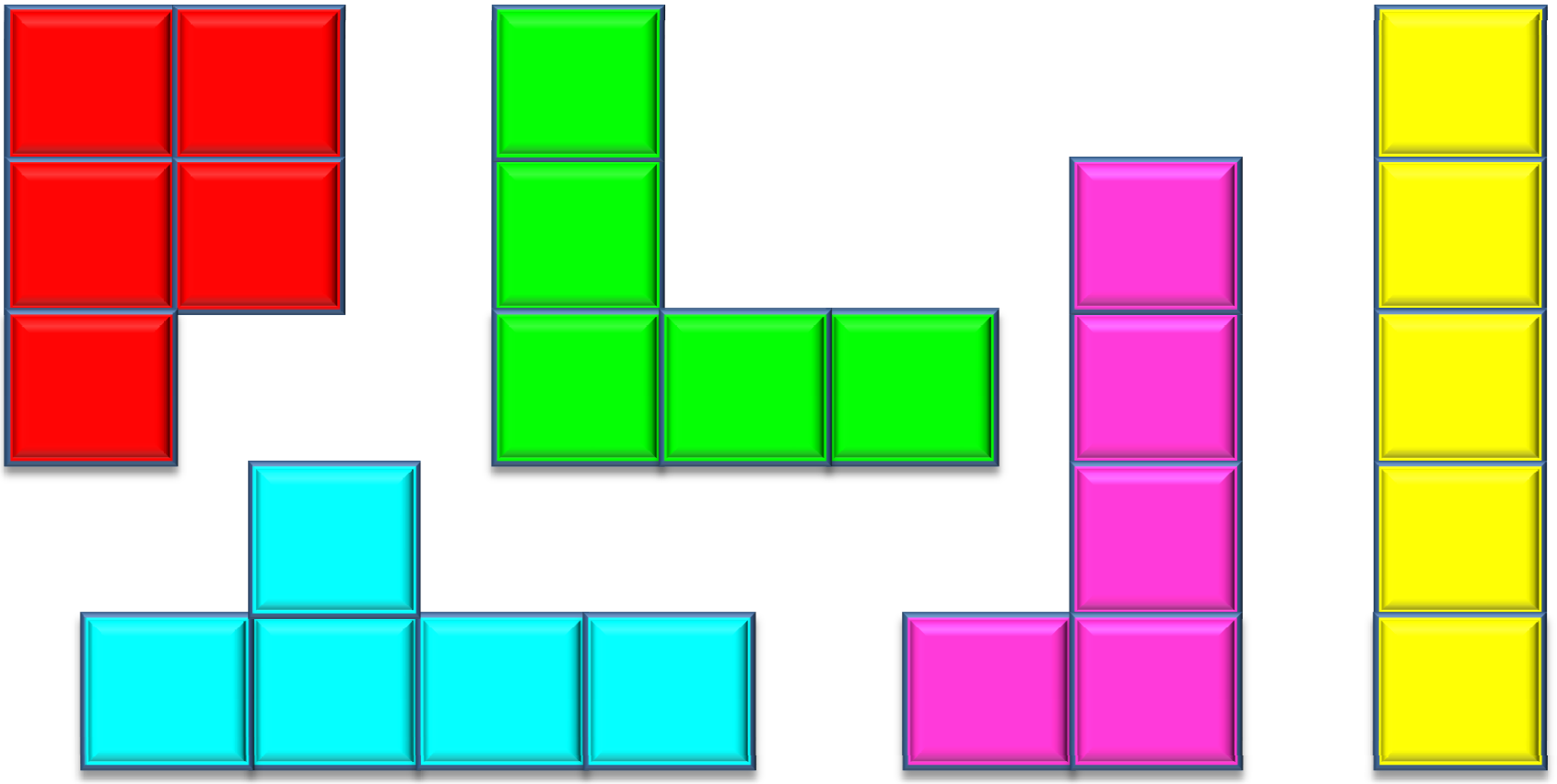
3. STOPNJA

Ali lahko iz spodnjih delov sestaviš šahovnico kvadratne oblike?



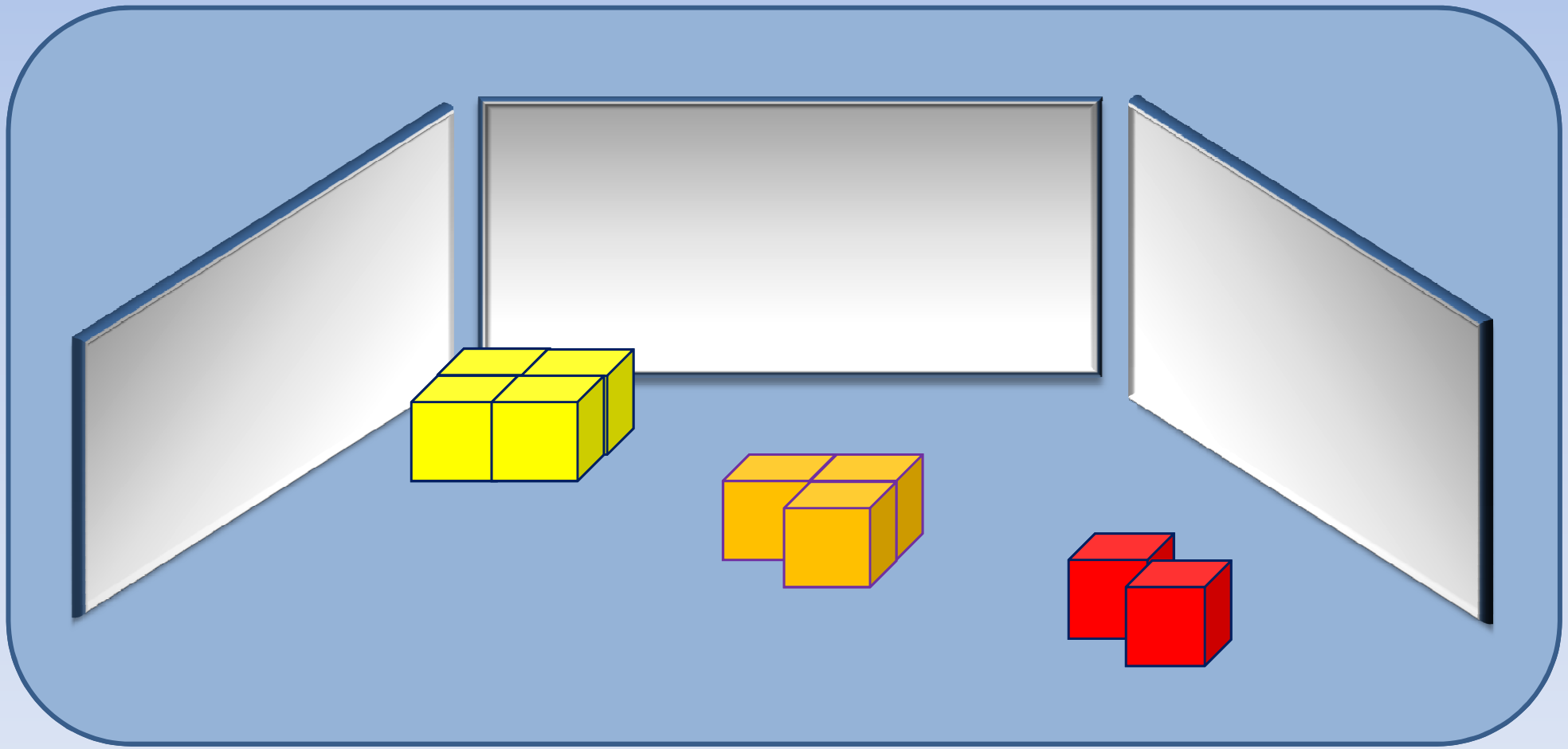
3. STOPNJA

Ali lahko iz spodnjih delov sestaviš kvadrat?



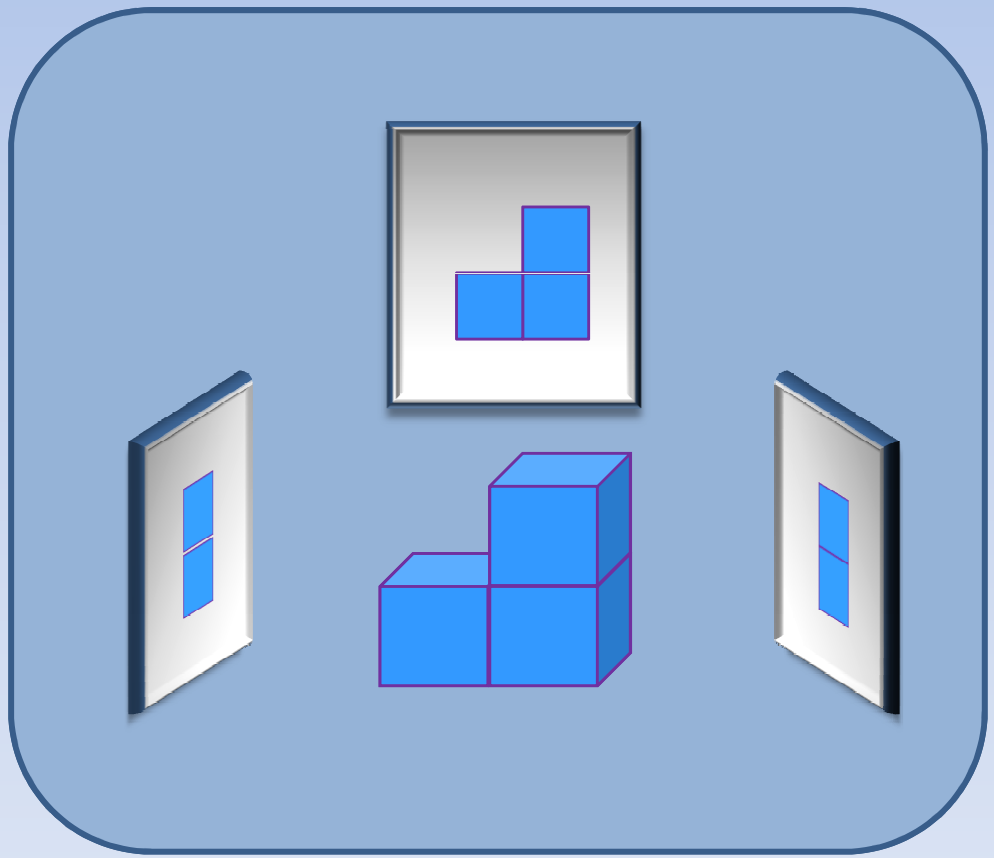
3. STOPNJA

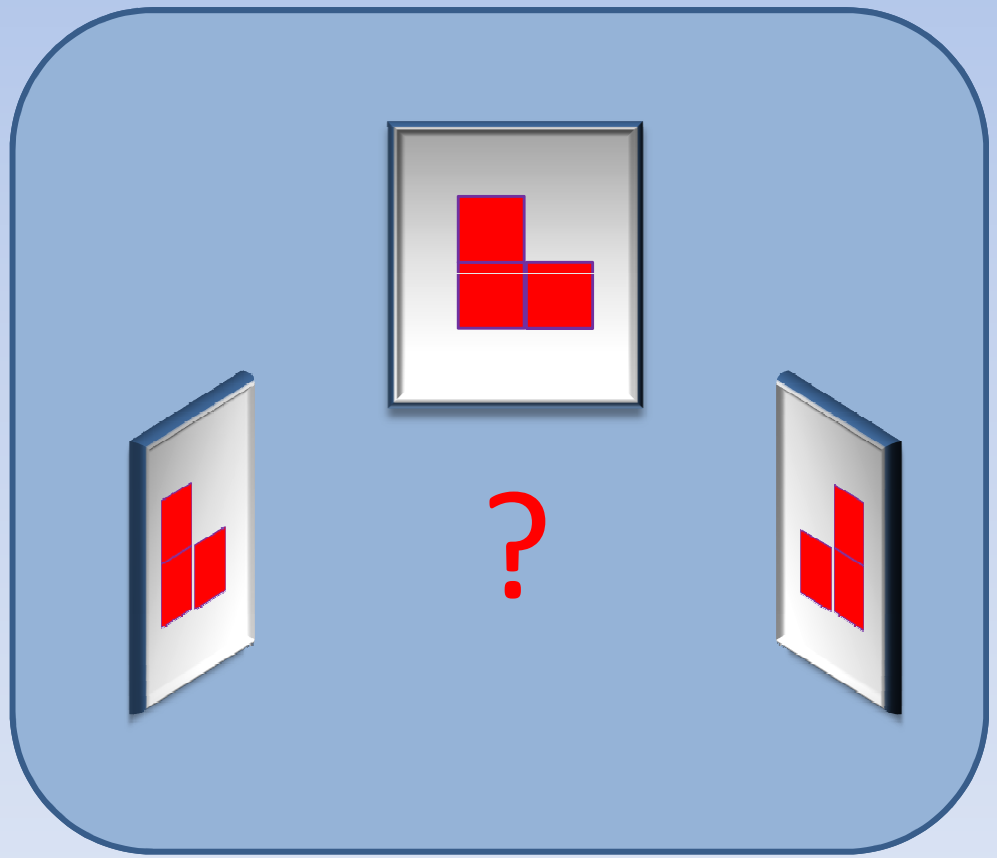
Ali imajo vsa tri telesa v vsakem od ogledal enake slike?



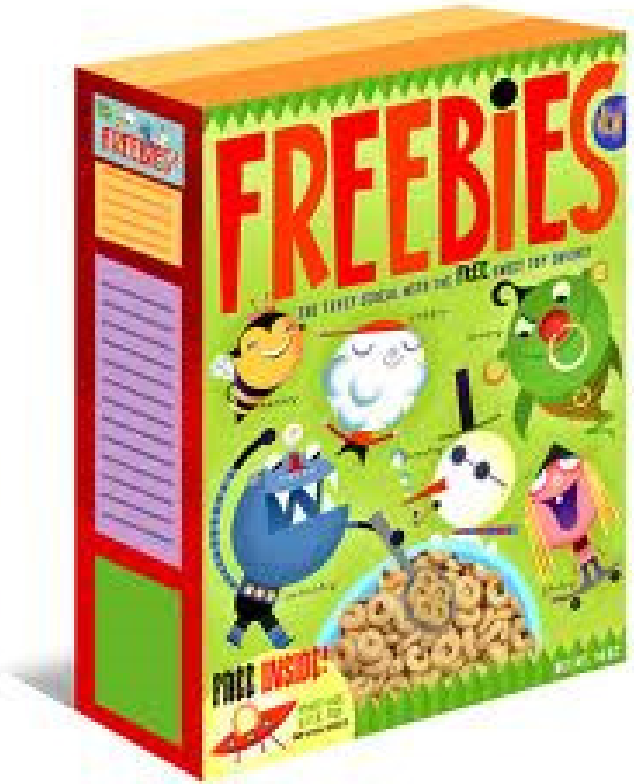
3. STOPNJA

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

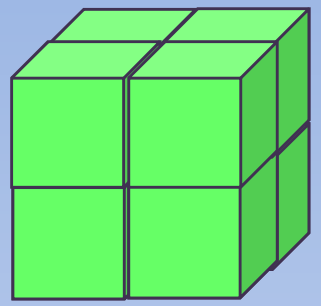




Katerih oblik so sence škatle, ko jo osvetljuješ iz različnih smeri?



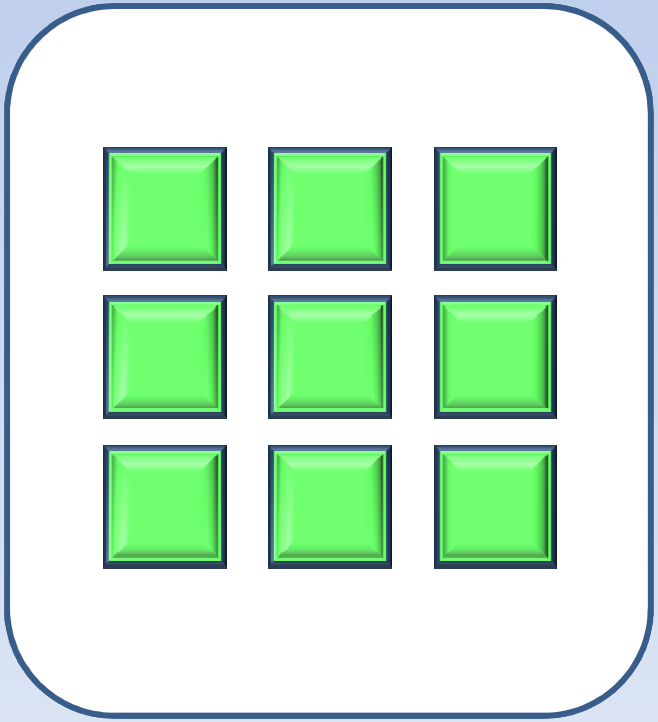
3. STOPNJA

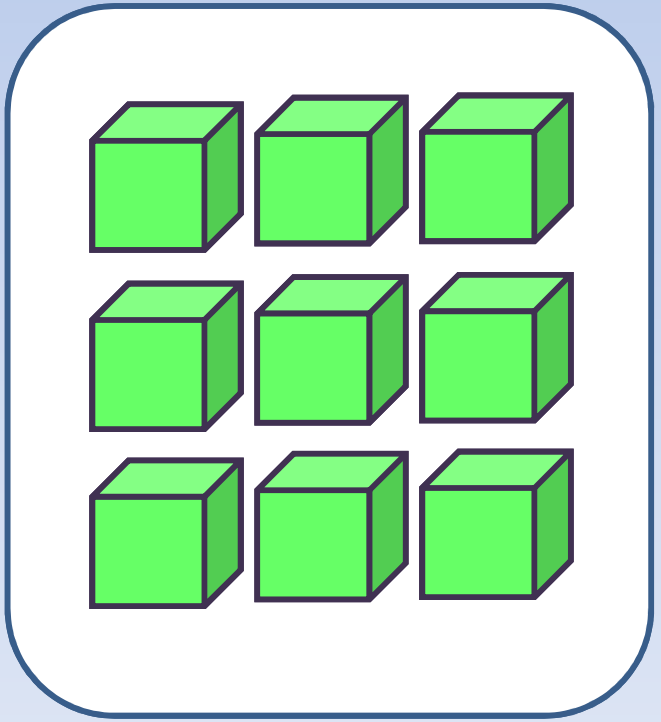


Kocko sestavljamo na dva načina:

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

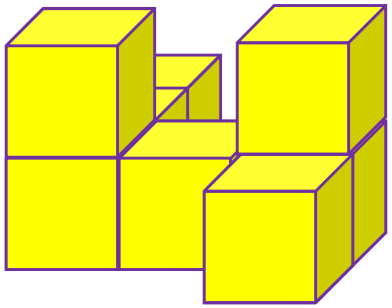
Koliko kvadratov in koliko kock potrebujemo, da sestavimo kocko?

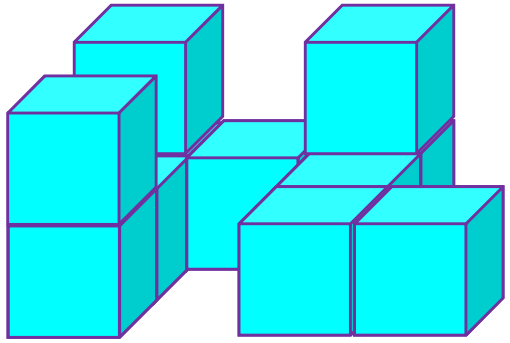


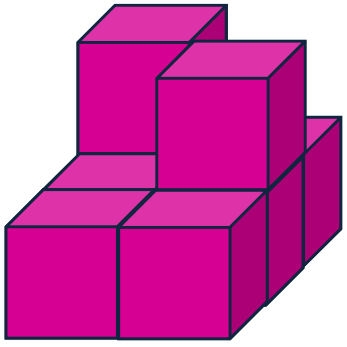


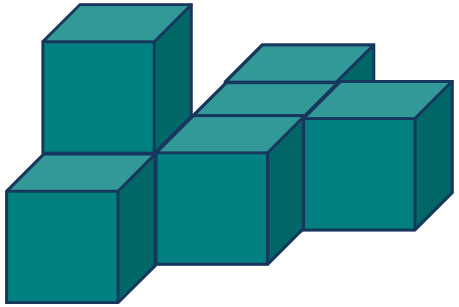
4. STOPNJA

Sestavi iz kock.



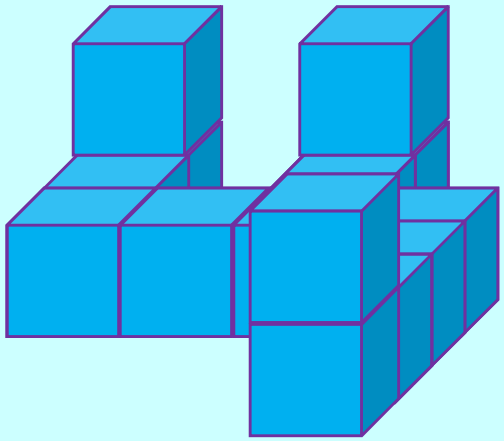


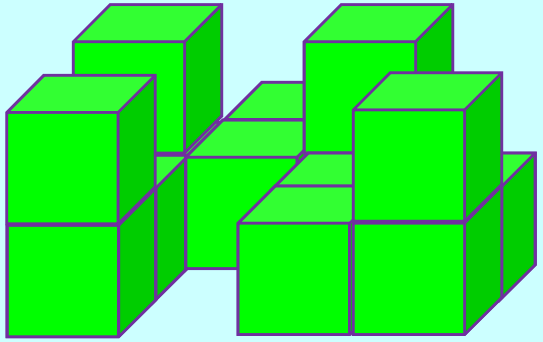


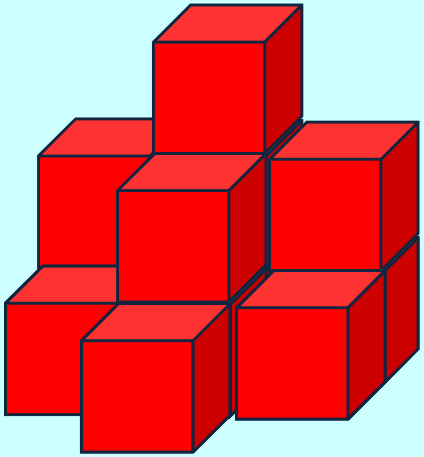


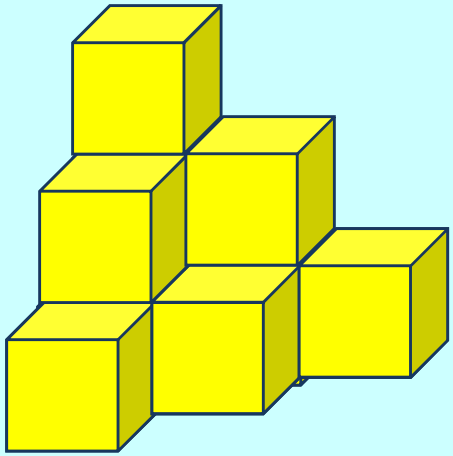
4. STOPNJA

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



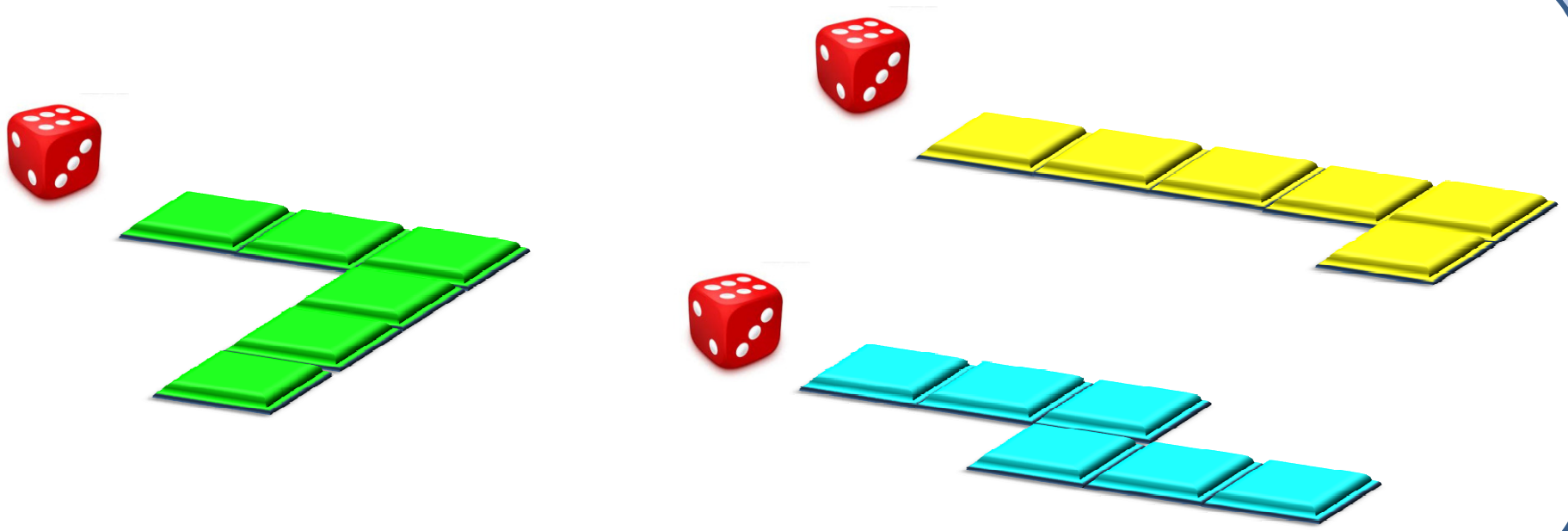






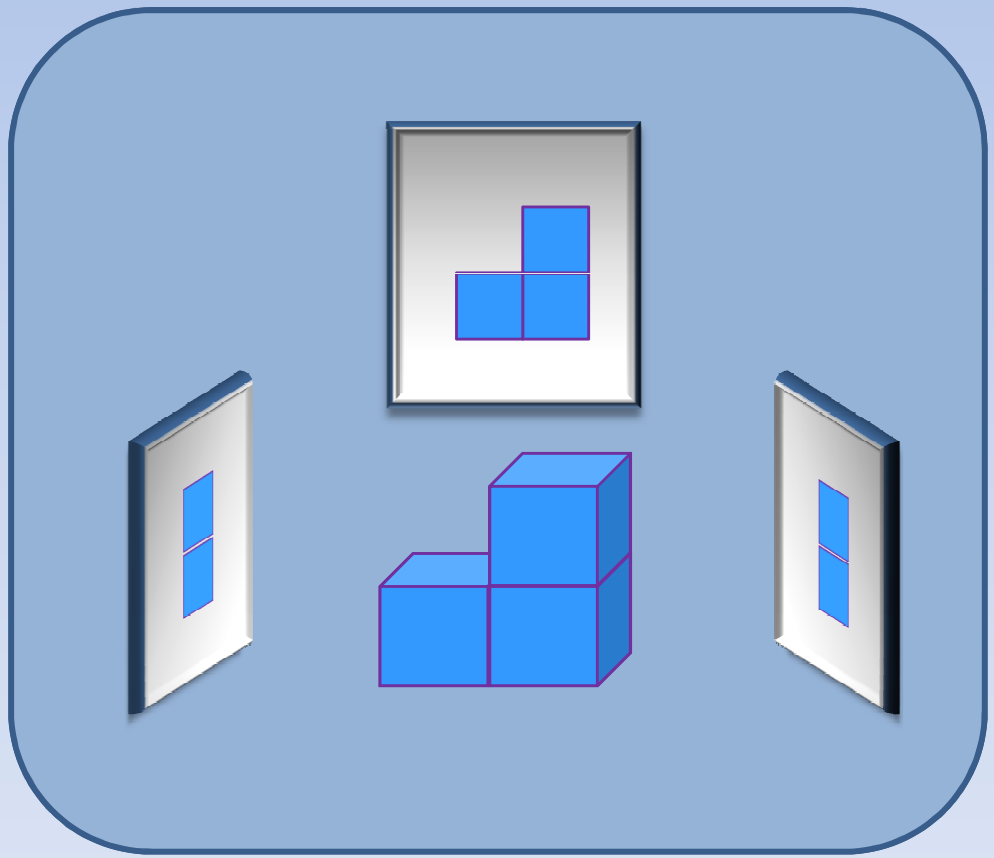
4. STOPNJA

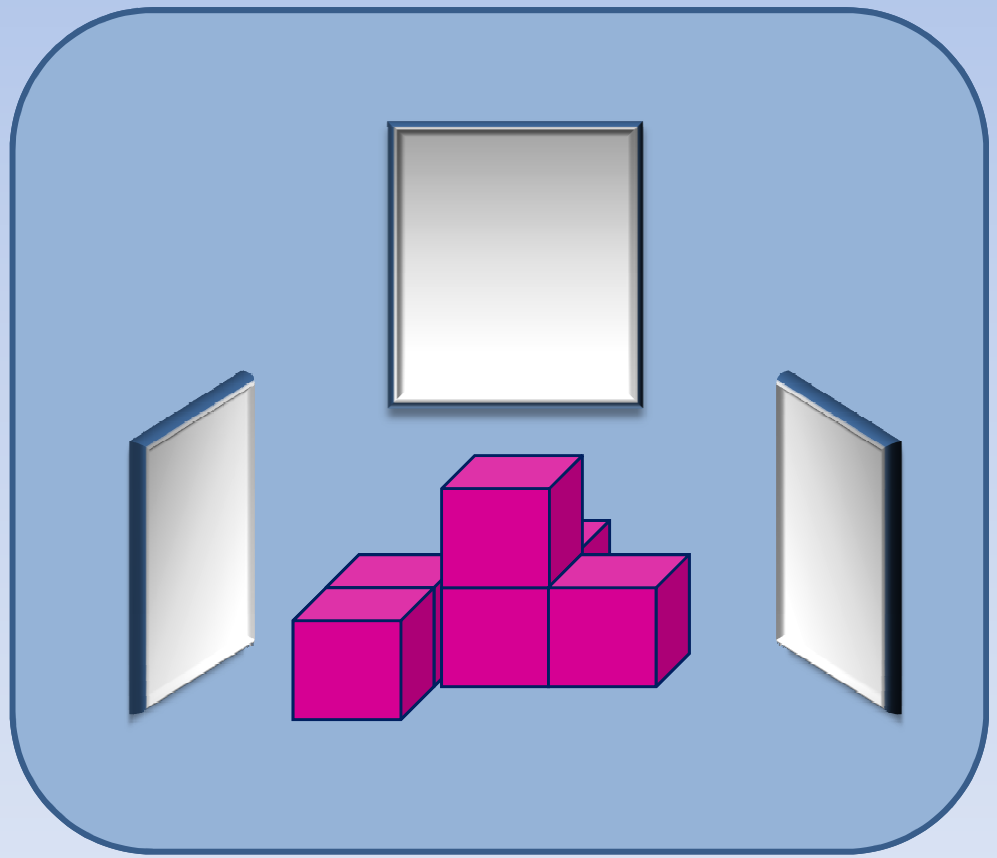
Kocka se preko roba kotali po trakovih različnih dolžin in oblik. Na vsakem polju za seboj pusti odtis ene od svojih mejnih ploskev. Velikost polja je enaka velikosti mejne ploskve kocke.
Na katerem od trakov se bodo zapisal odtisi vseh mejnih ploskev kocke?



4. STOPNJA

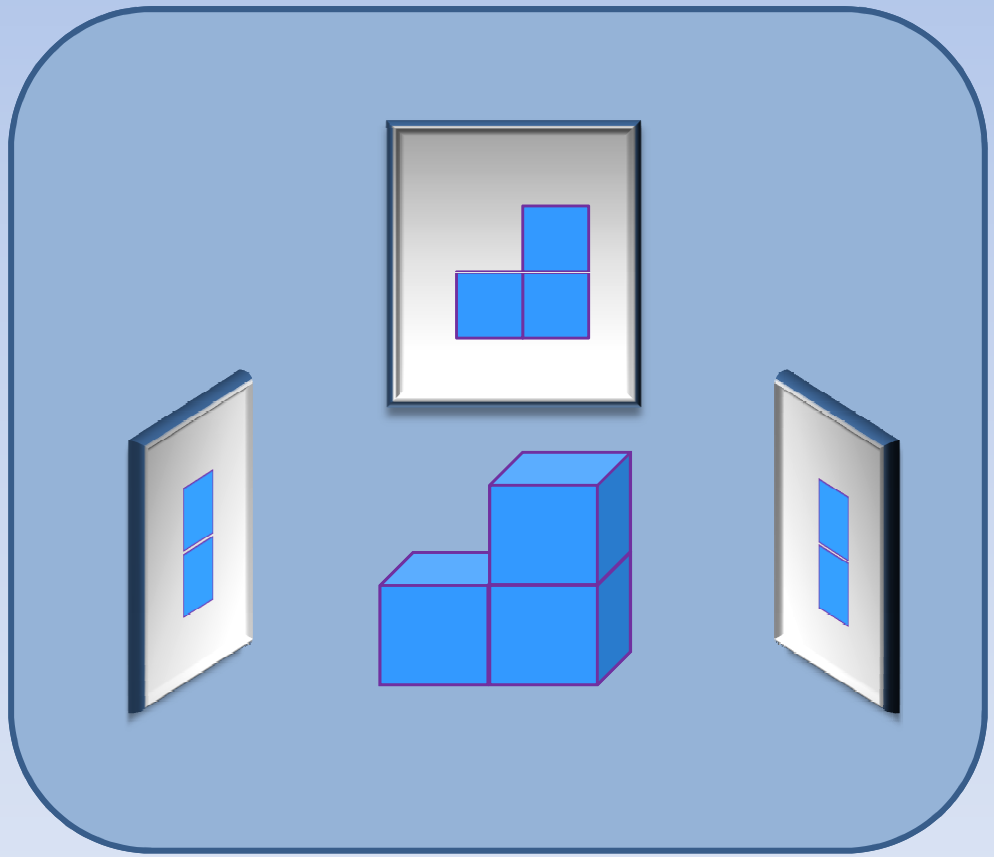
Po zgledu levo nariši sliko vijoličnega telesa v treh ogledalih.

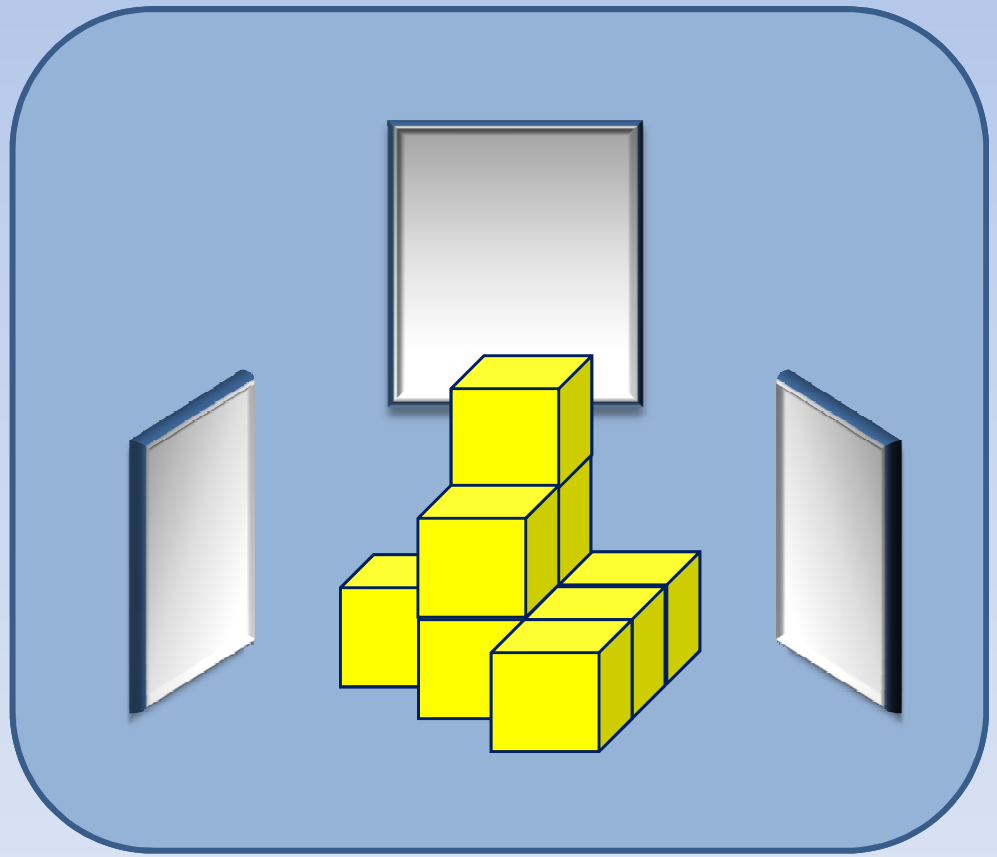




4. STOPNJA

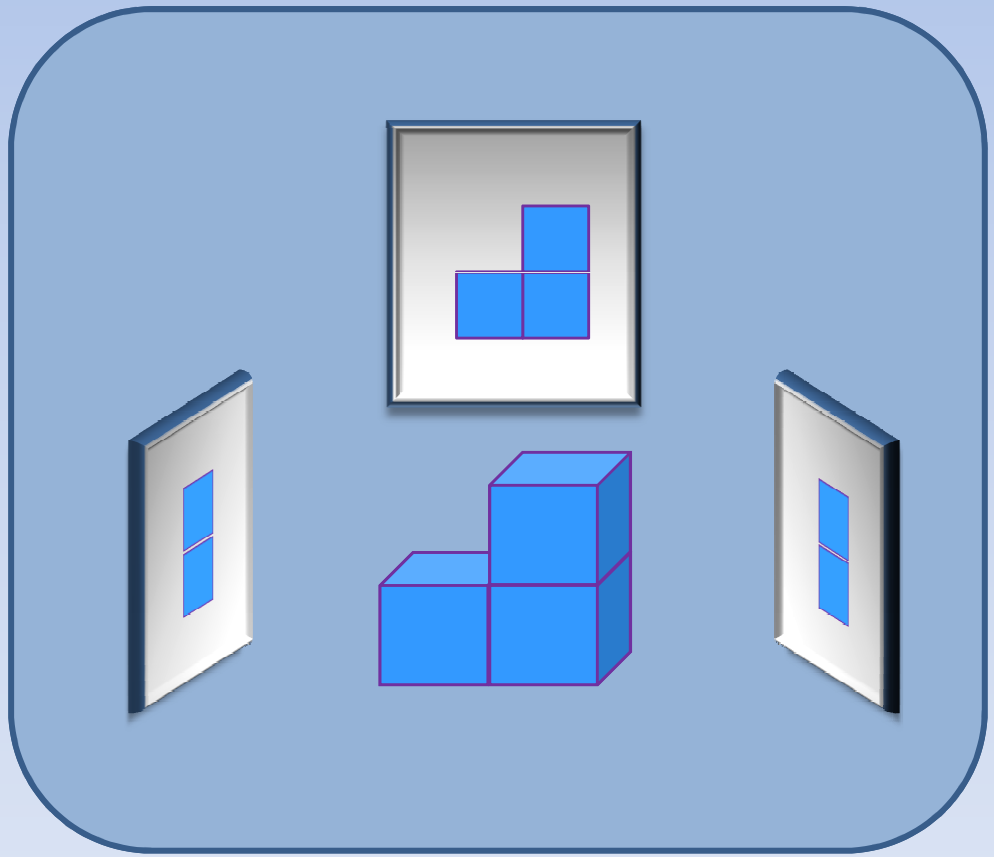
Po zgledu levo nariši sliko rumenega telesa v ogledalu.

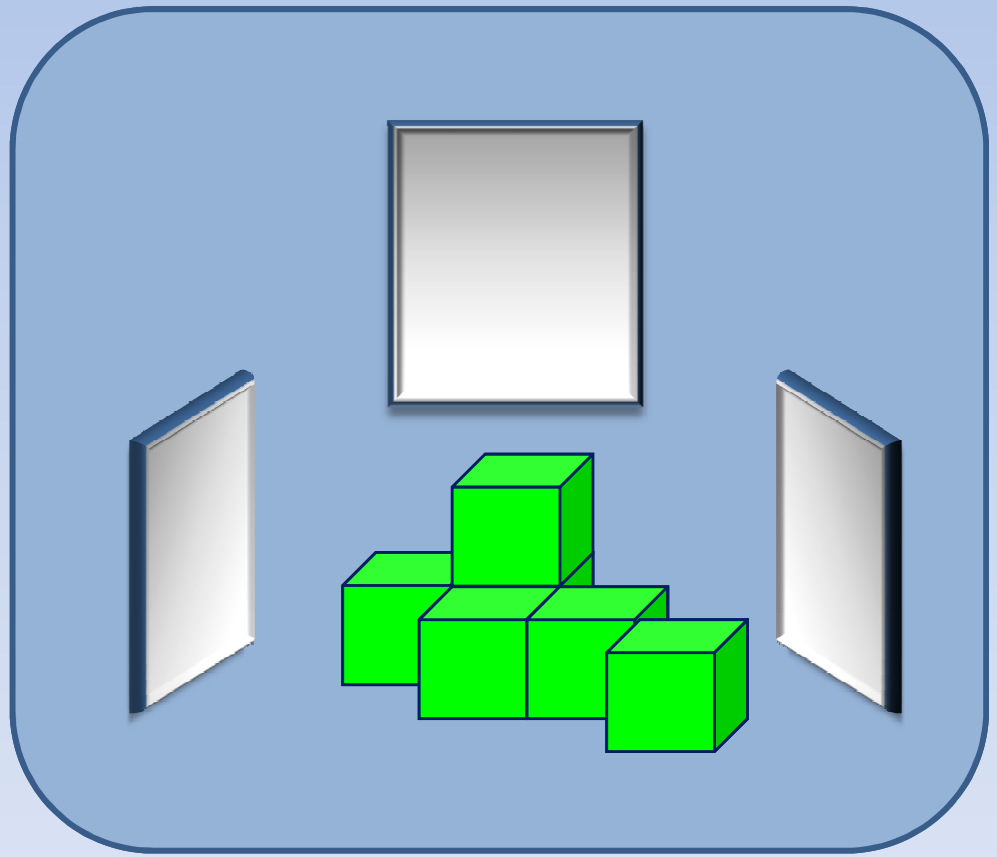




4. STOPNJA

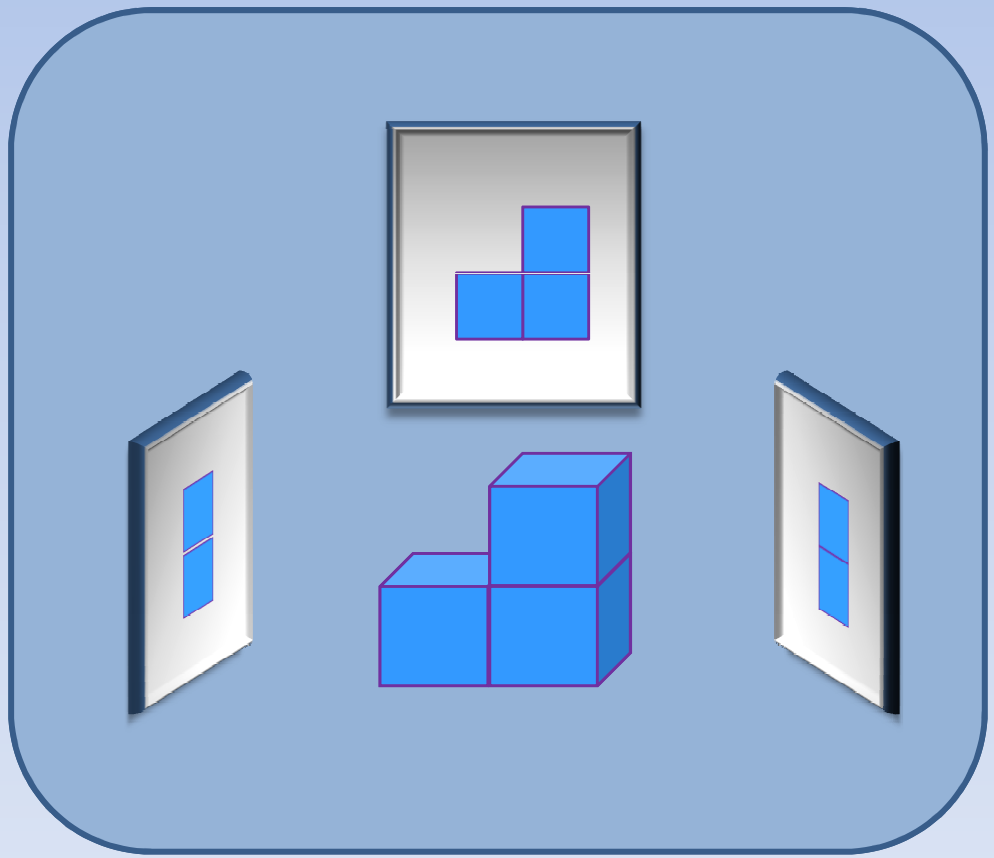
Po zgledu levo nariši sliko zelenega telesa v ogledalu.

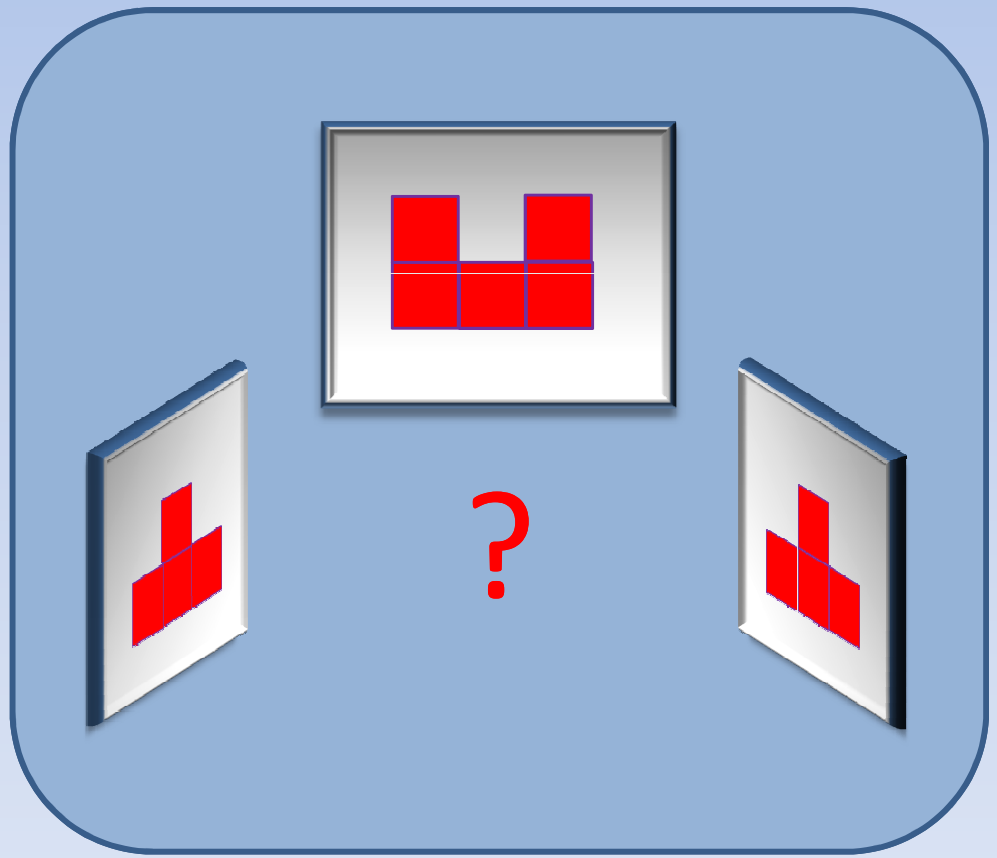




4. STOPNJA

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





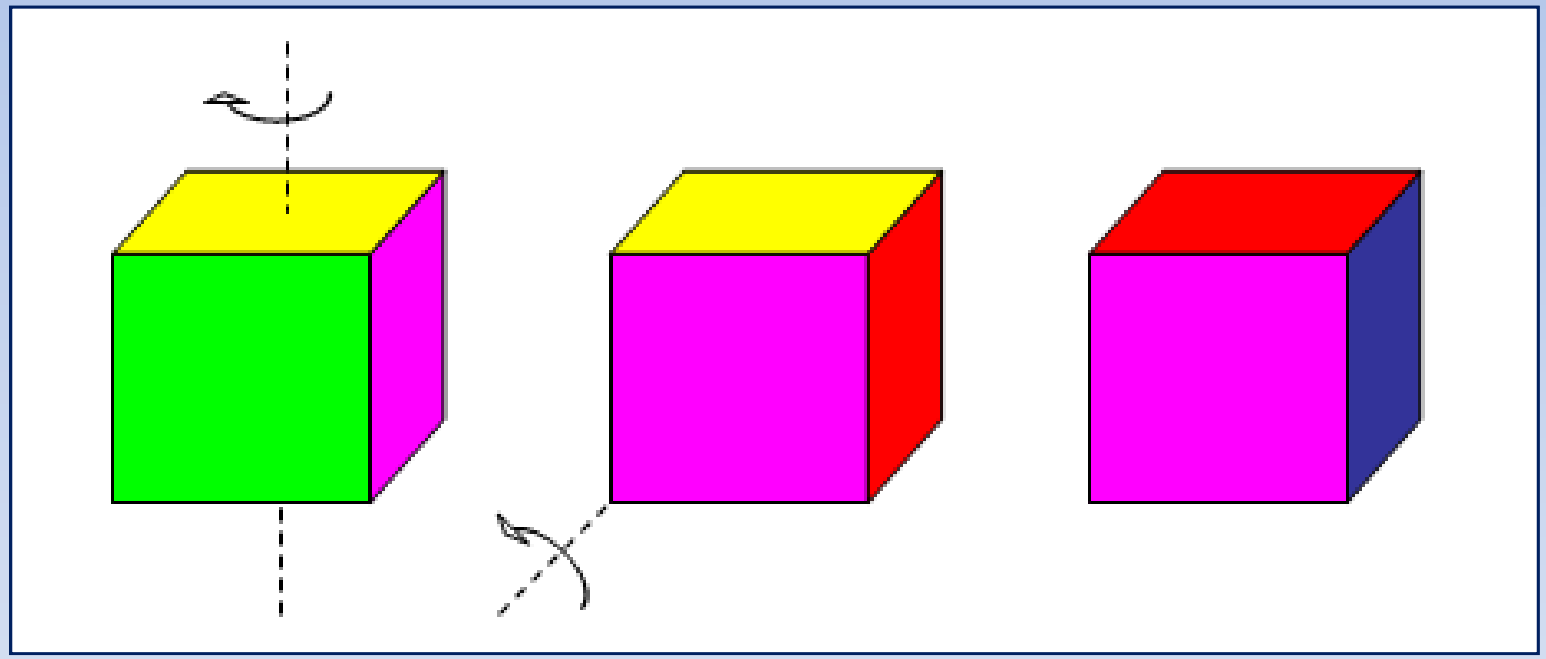
4. STOPNJA

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

Vir slike: internet

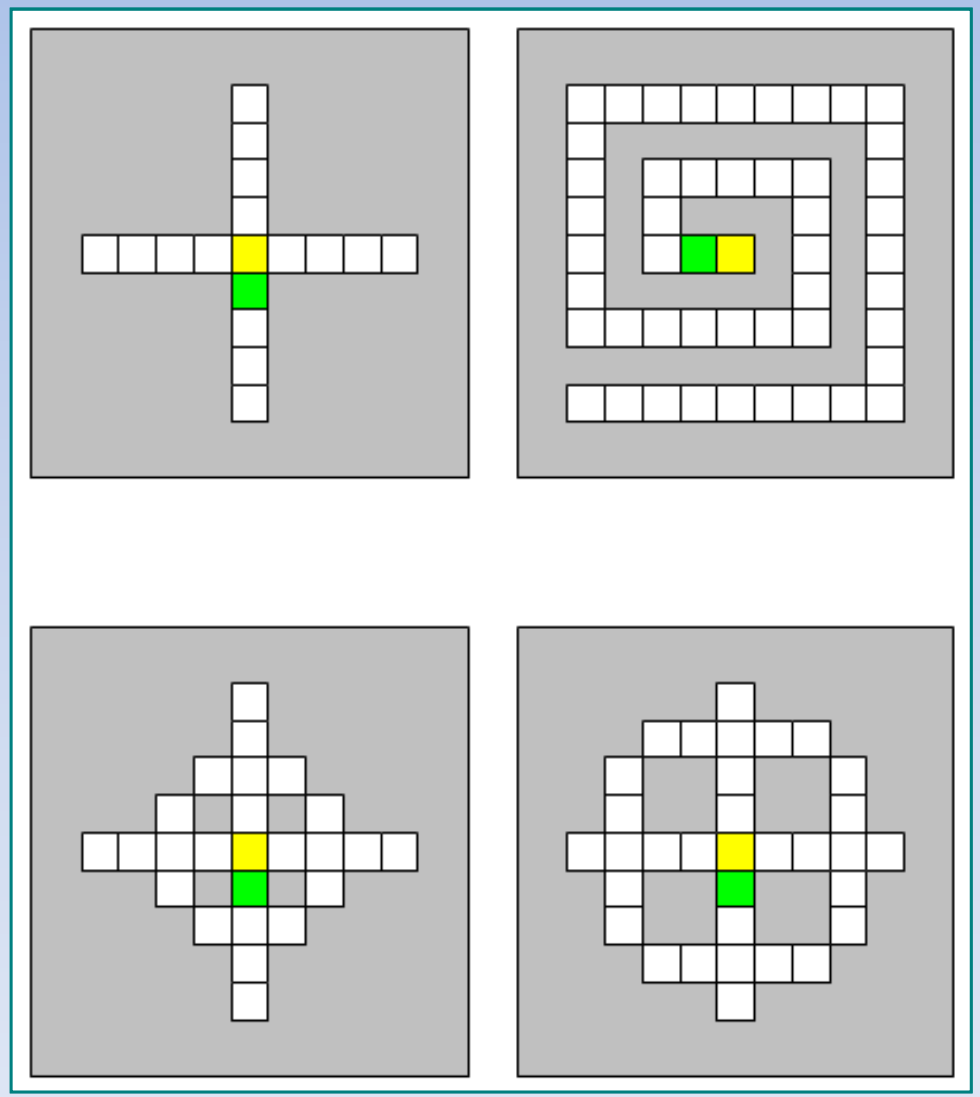
4. STOPNJA

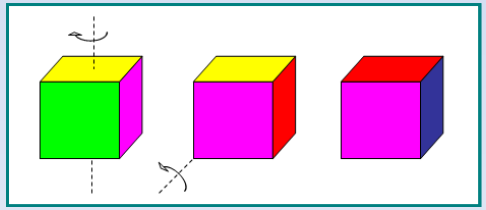
Kateri barvi sta na nasprotnih mejnih ploskvah spodnje kocke?



4. STOPNJA

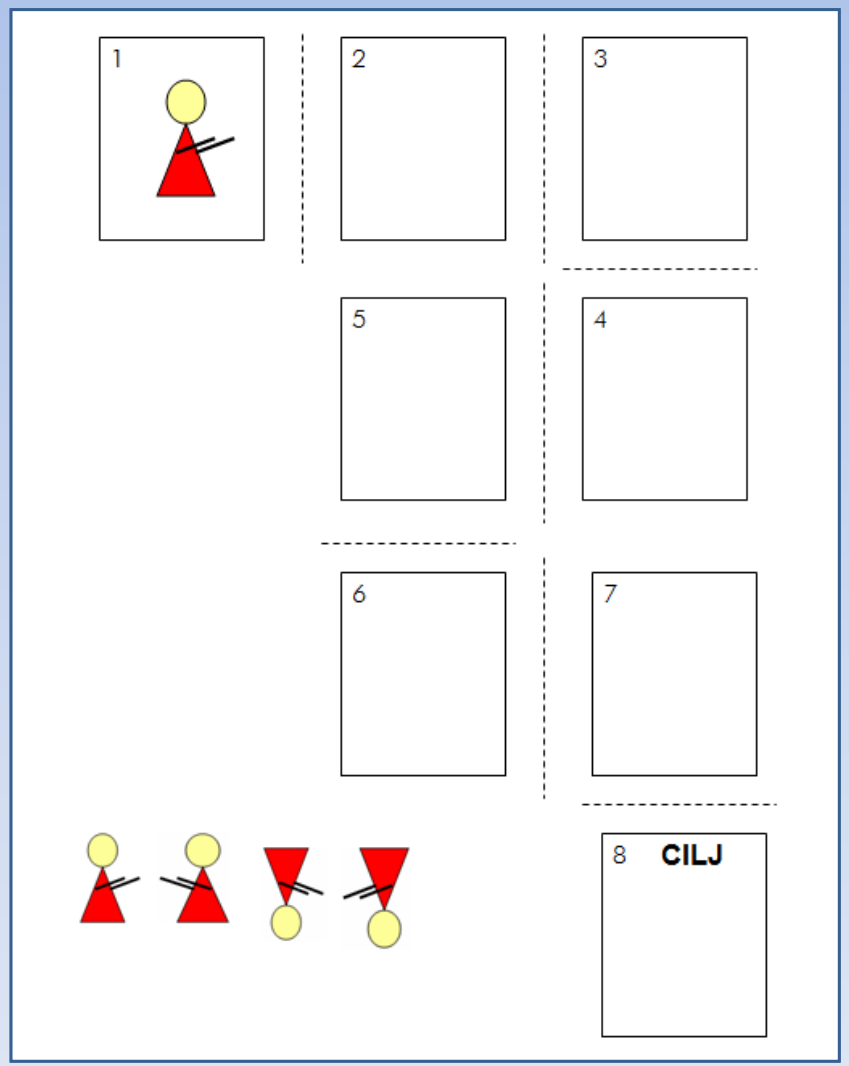
Kocka (v desnem spodnjem kotu) se kotali po različnih vzorcih in trakovih. S pravimi barvami pobarvaj bela polja na spodnjih vzorcih.





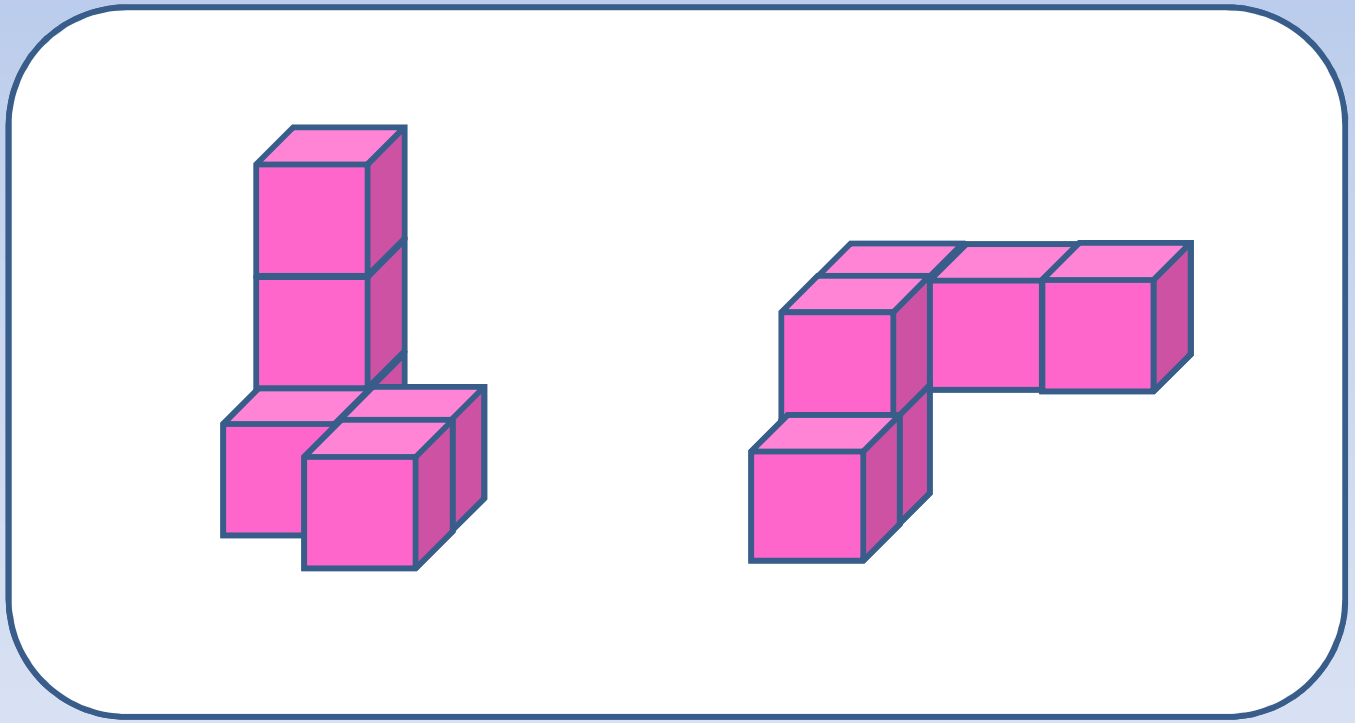
4. STOPNJA

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



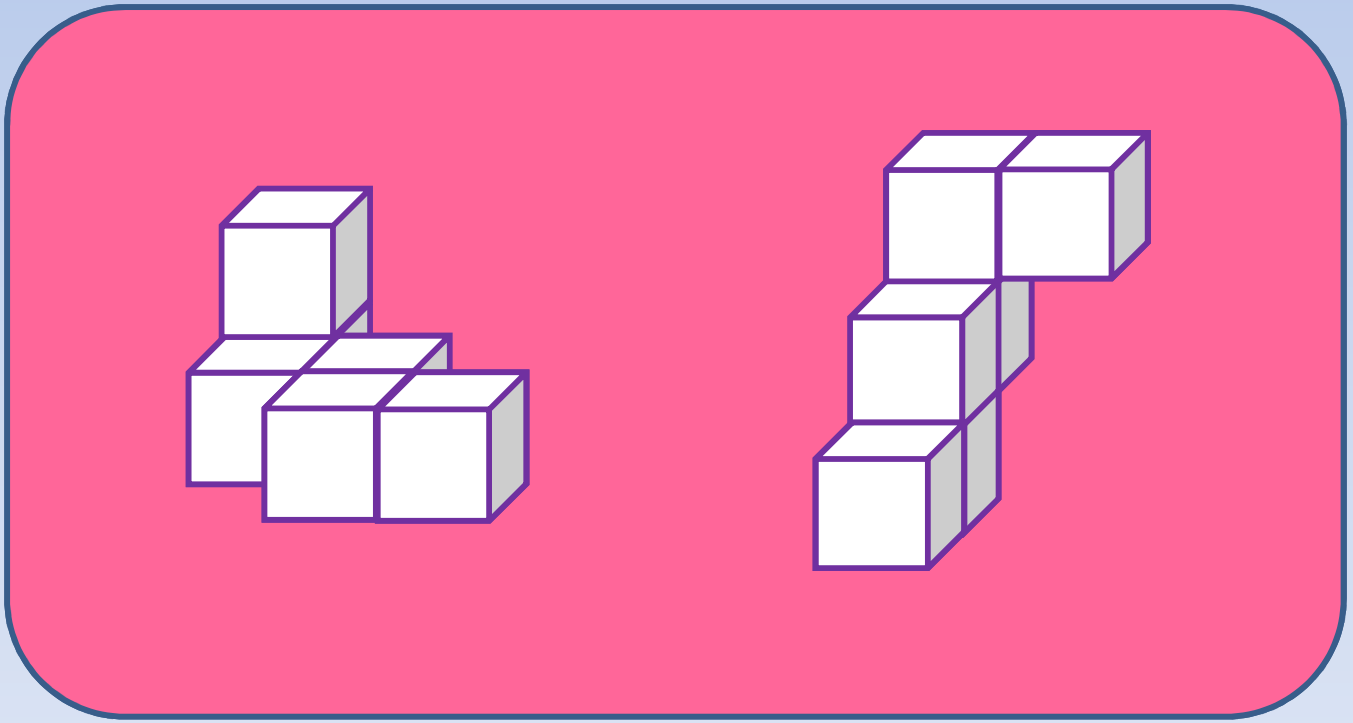
4. STOPNJA

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



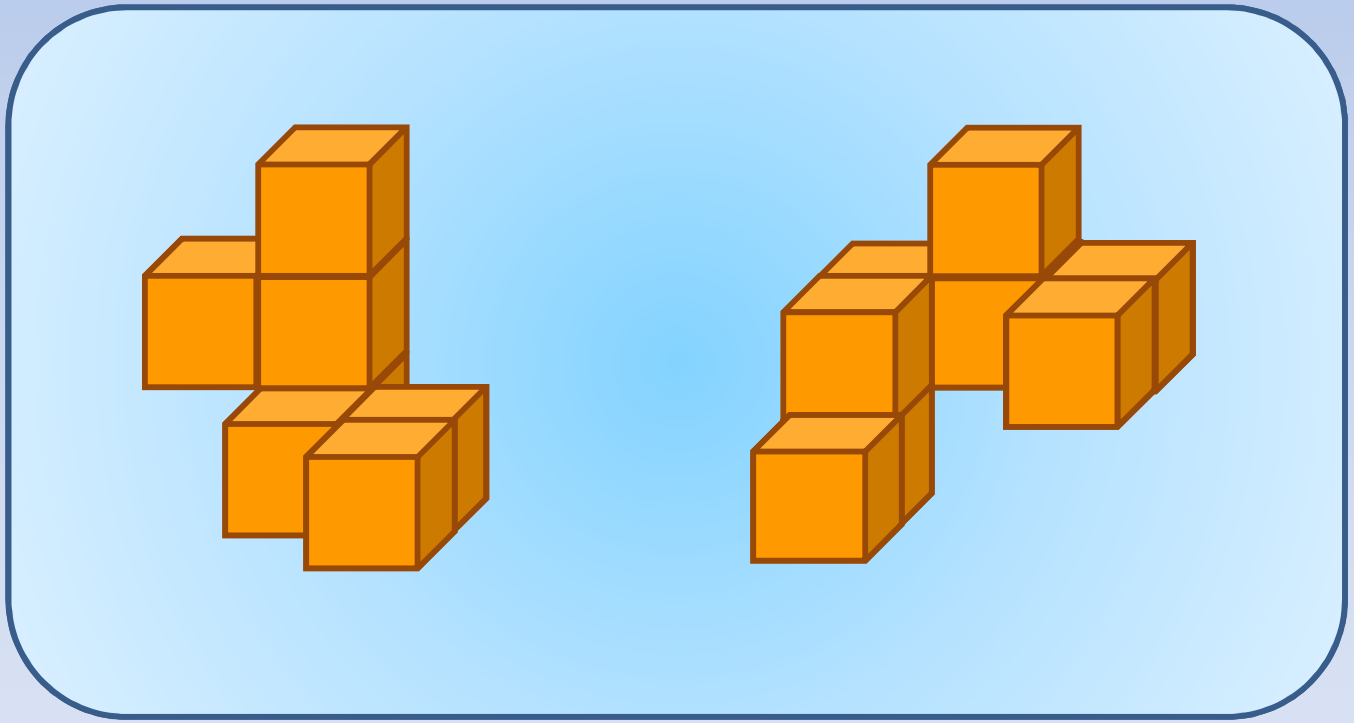
4. STOPNJA

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



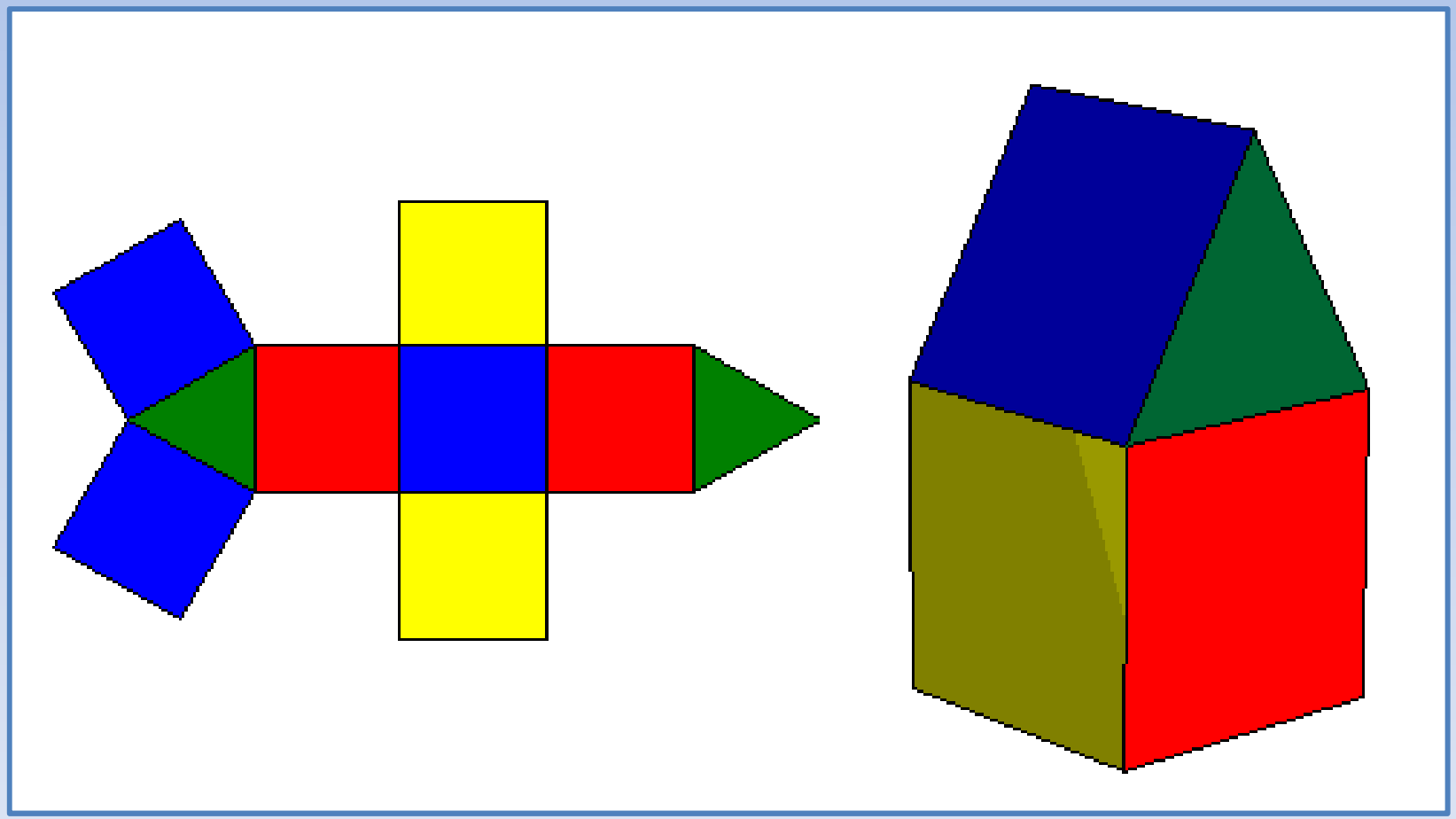
4. STOPNJA

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



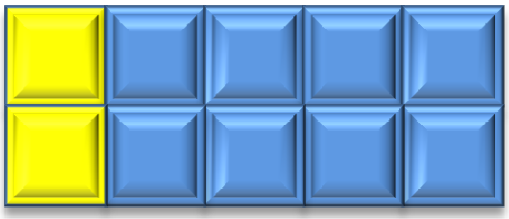
4. STOPNJA

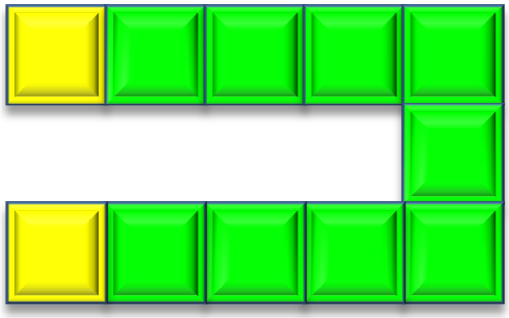
Ali je hiška spredaj in zadaj enako pobarvana?

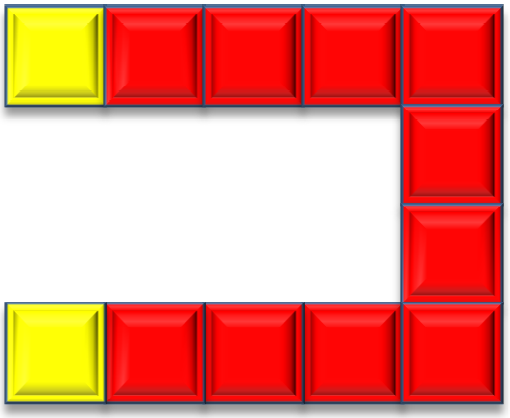


4. STOPNJA

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.

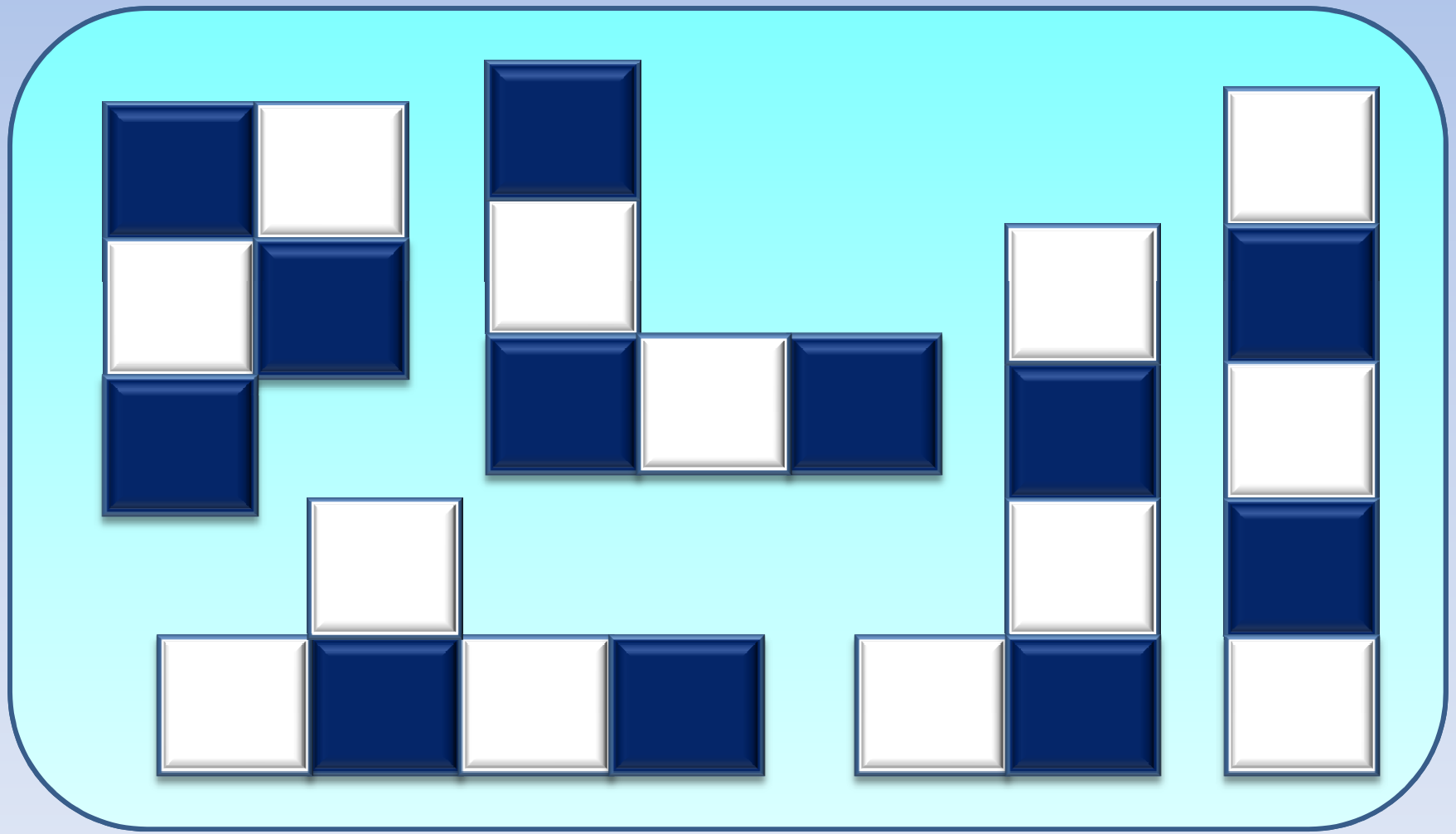






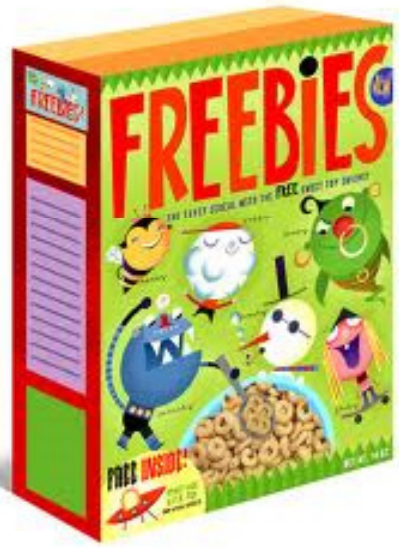
4. STOPNJA

Ali lahko iz spodnjih delov sestaviš šahovnico kvadratne oblike?



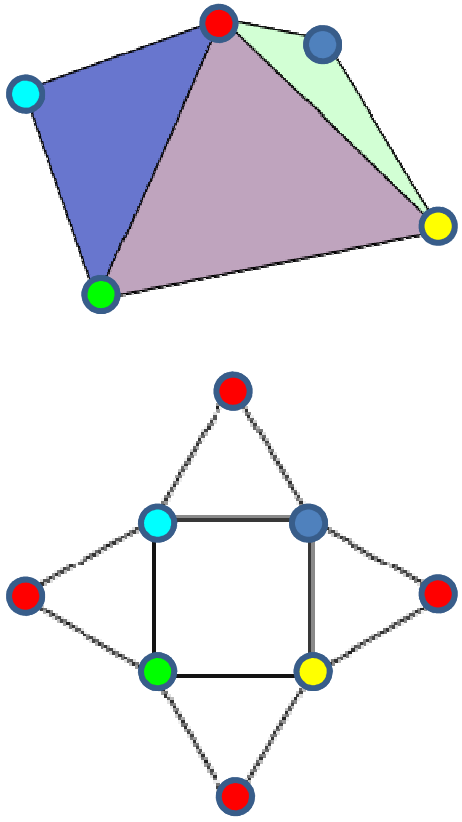
4. STOPNJA

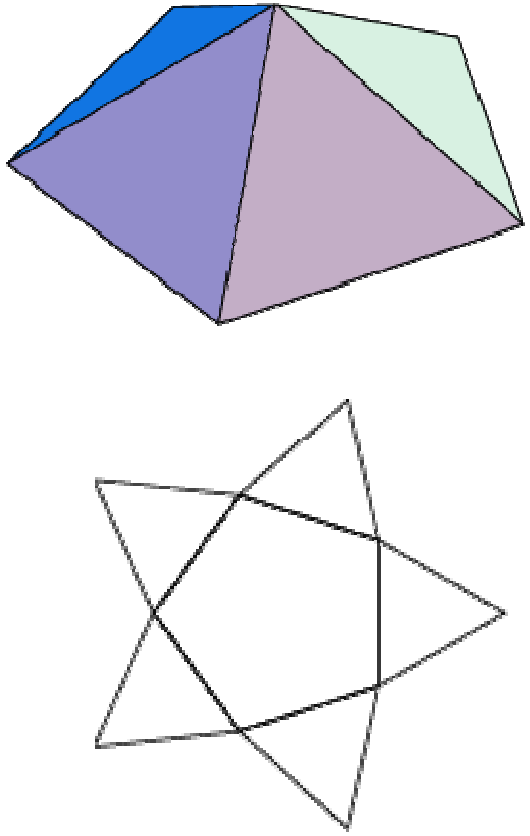
Različne oblike škatel (odpadna embalaža) razreži po toliko robovih, da dobiš mrežo škatle. Pazi, da ne prerežeš preveč robov.



4. STOPNJA

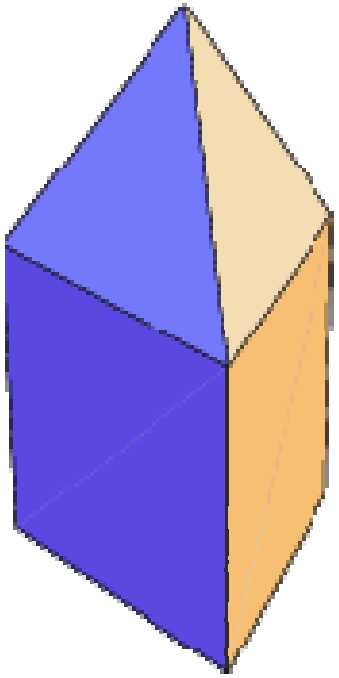
Na levi je primer na mreži označenih oglišč. Oglišča na mreži, ki se združijo v skupno oglišče telesa, so narisane z enako barvo.
Na sliki desno označi skupna oglišča z enako barvo.

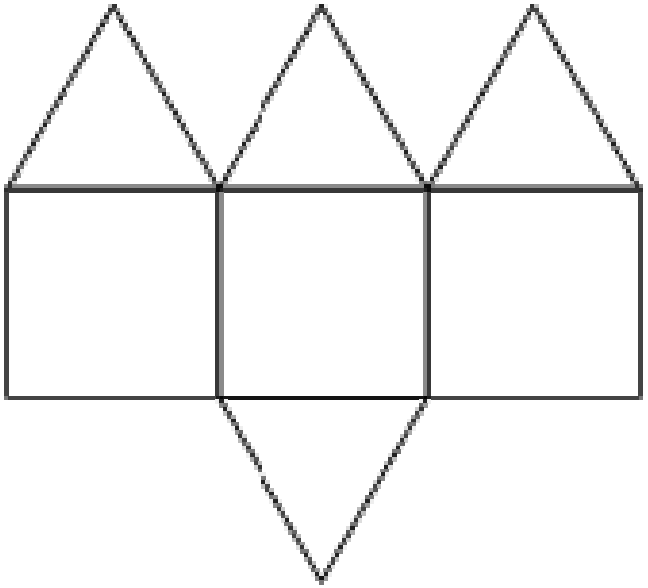




4. STOPNJA

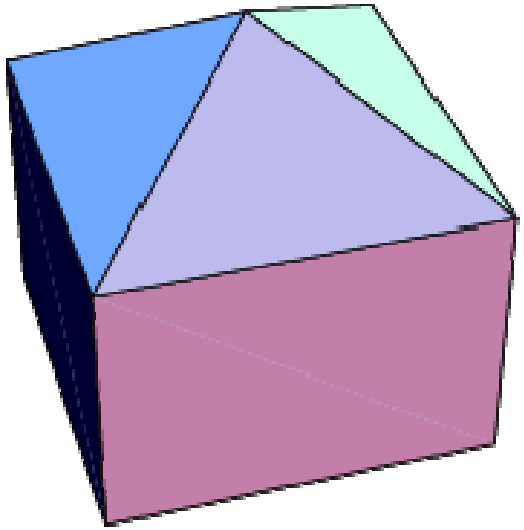
Na mreži označi skupna oglišča z enako barvo.

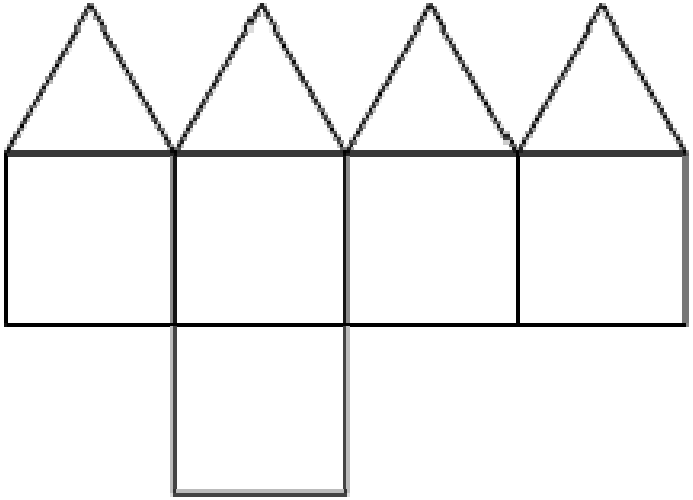




4. STOPNJA

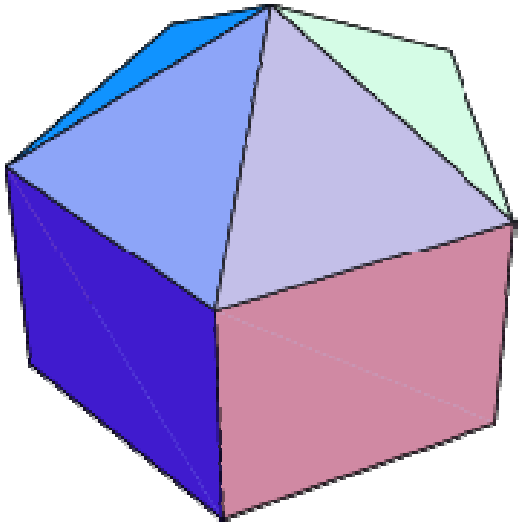
Na mreži označi skupna oglišča z enako barvo.

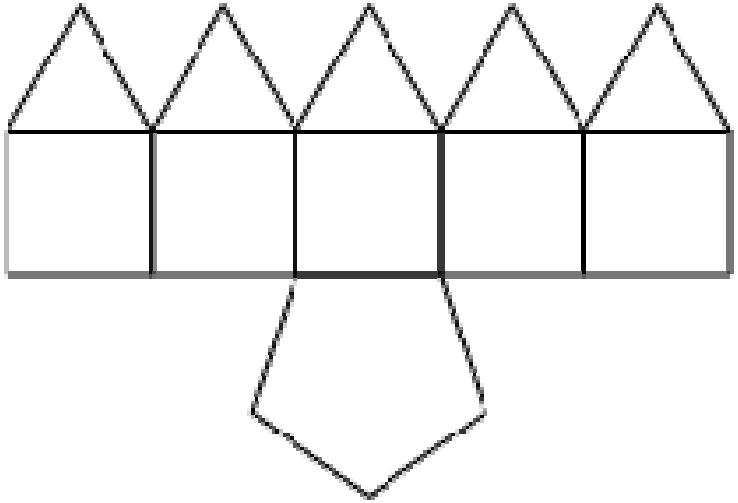




4. STOPNJA

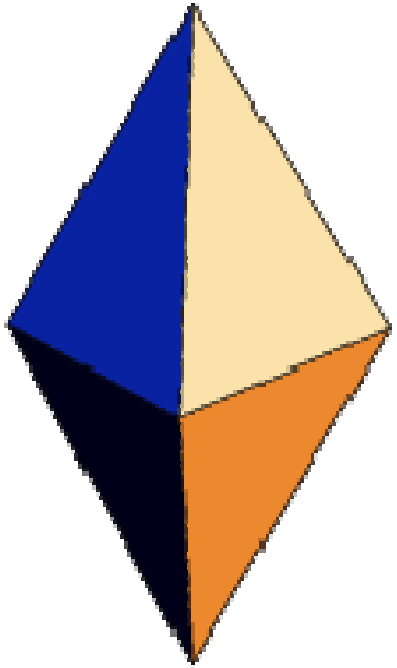
Na mreži označi skupna oglišča z enako barvo.

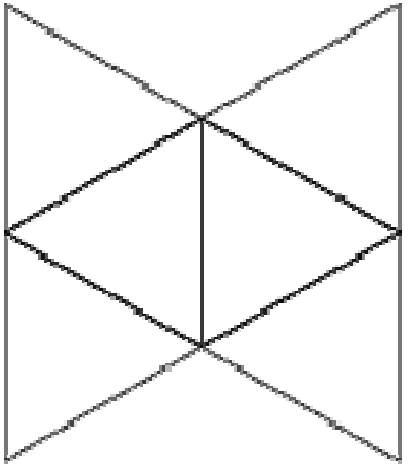




4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.





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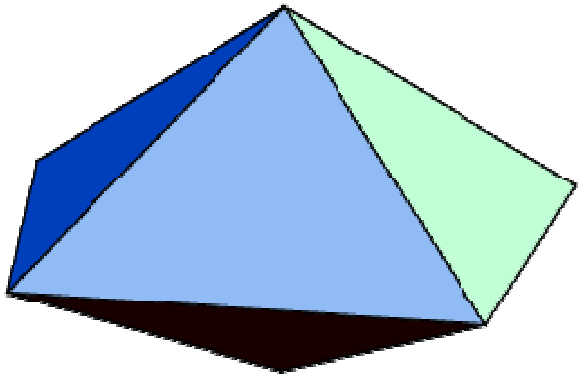
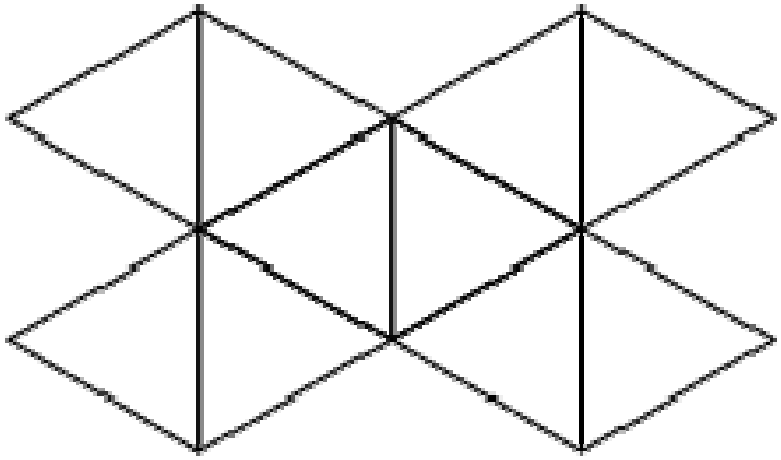
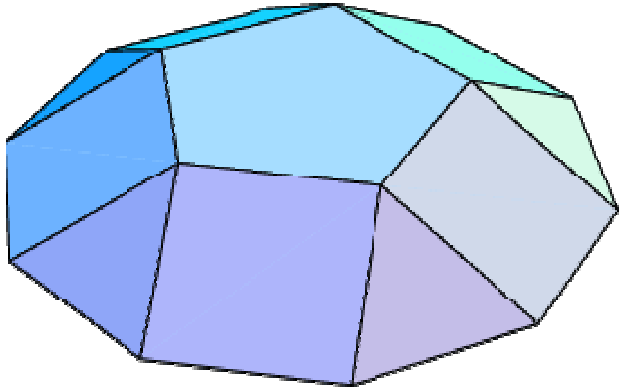
Na mreži označi skupna oglišča z enako barvo.

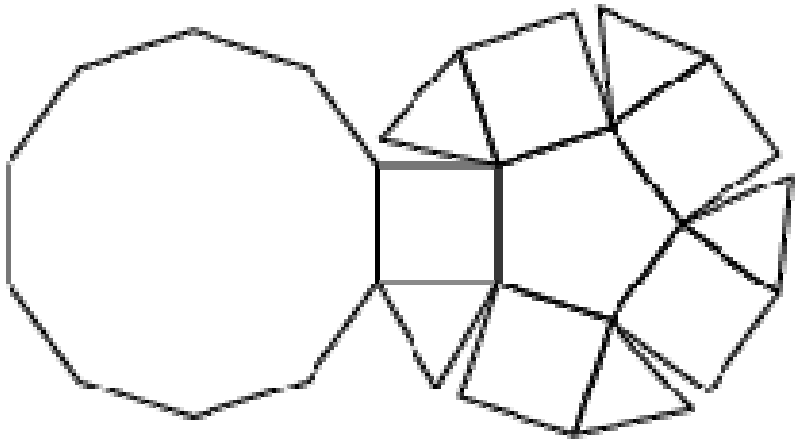




4. STOPNJA

Na mreži označi skupna oglišča z enako barvo.





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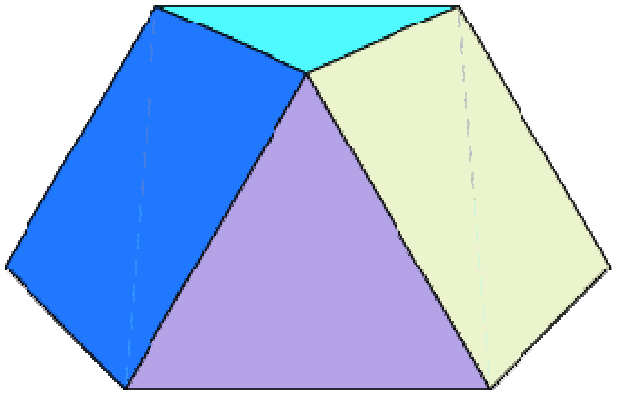
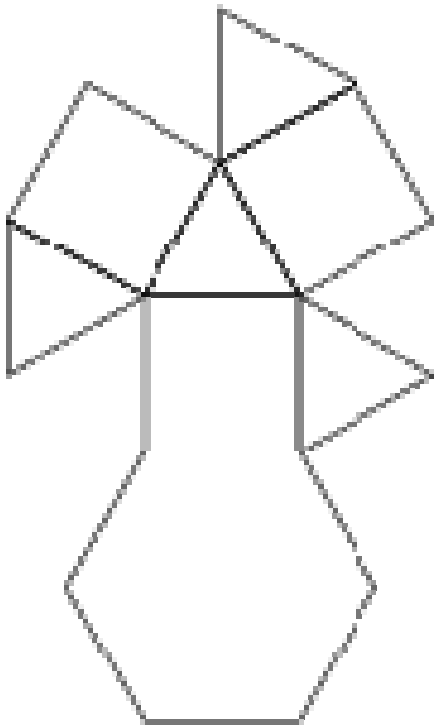
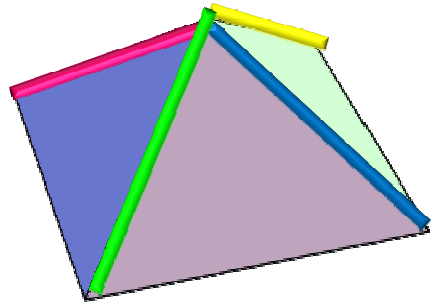
Na mreži označi skupna oglišča z enako barvo.

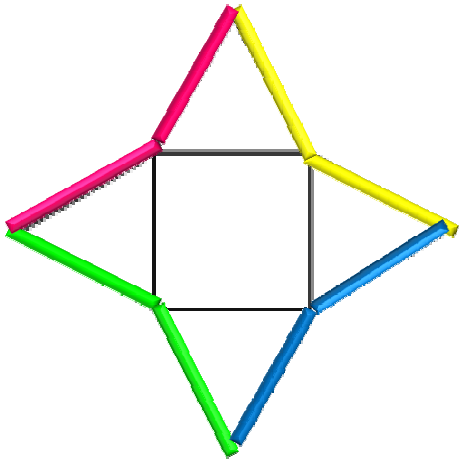


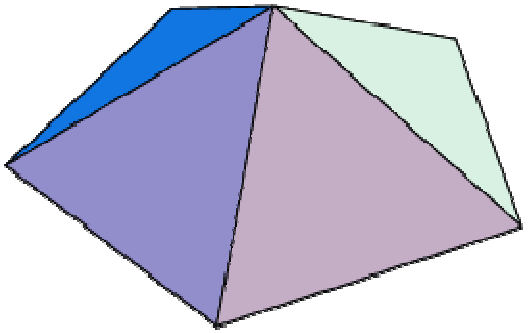


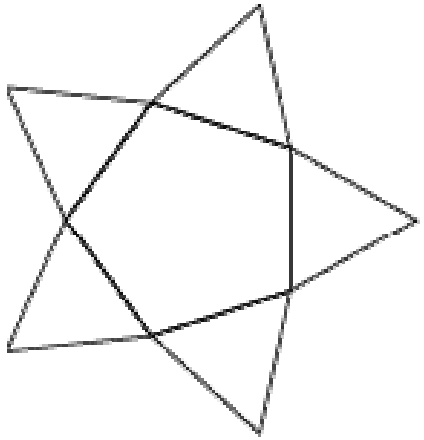
4. STOPNJA

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.



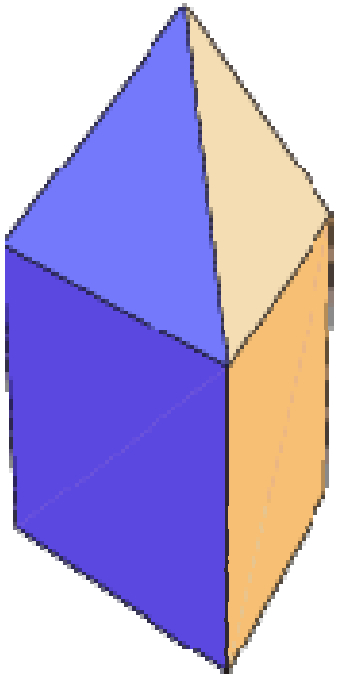


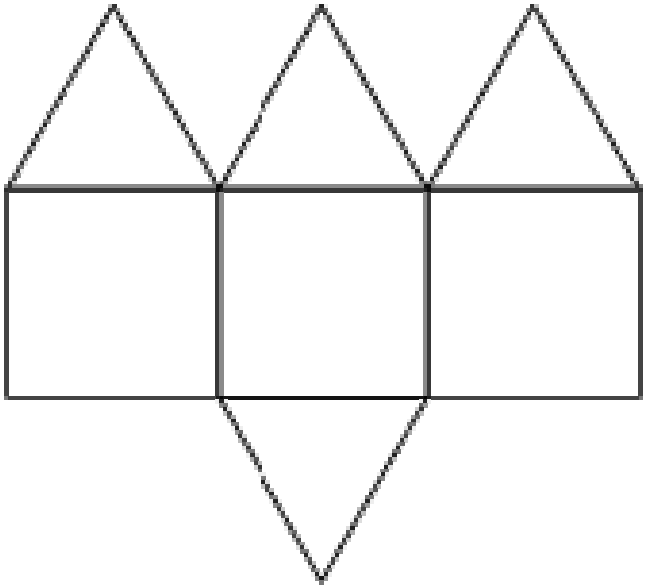




4. STOPNJA

Na sliki označi skupne robove z enako barvo.





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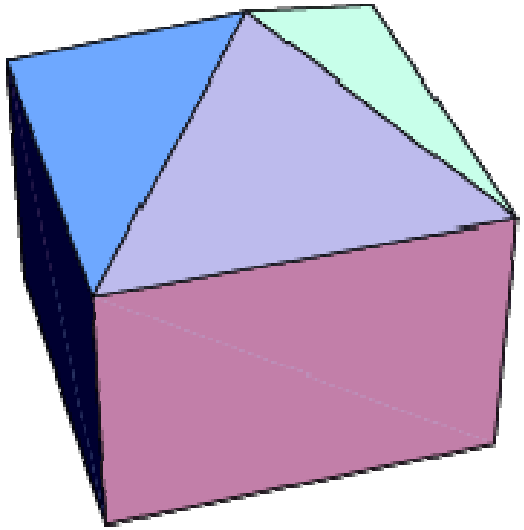
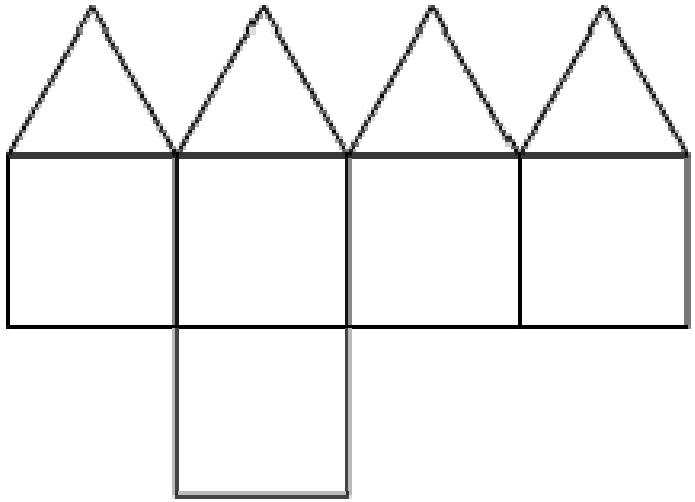
Na sliki označi skupne robove z enako barvo.





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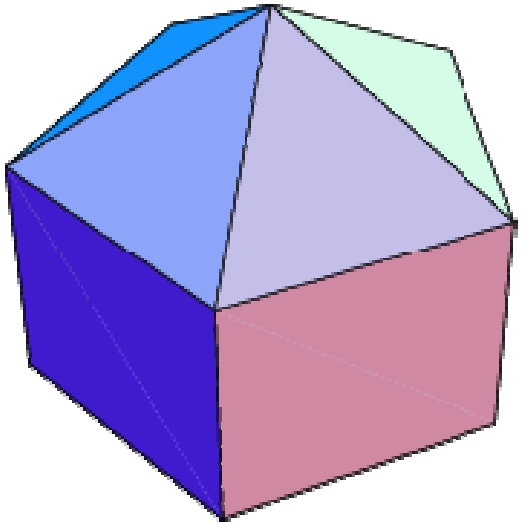
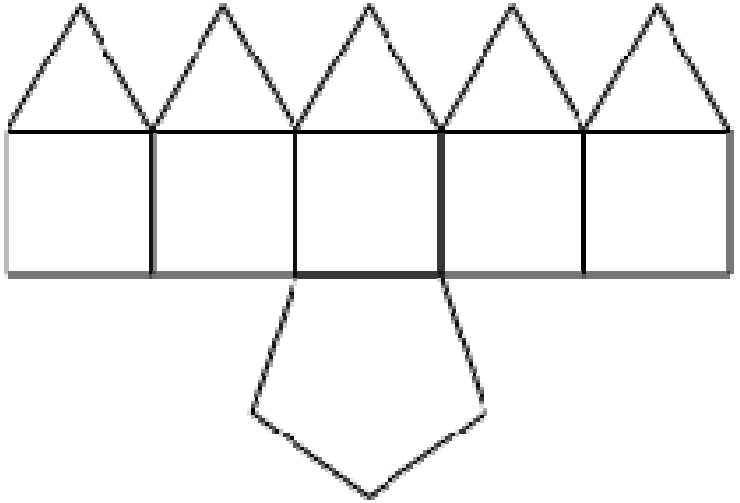
Na sliki označi skupne robove z enako barvo.





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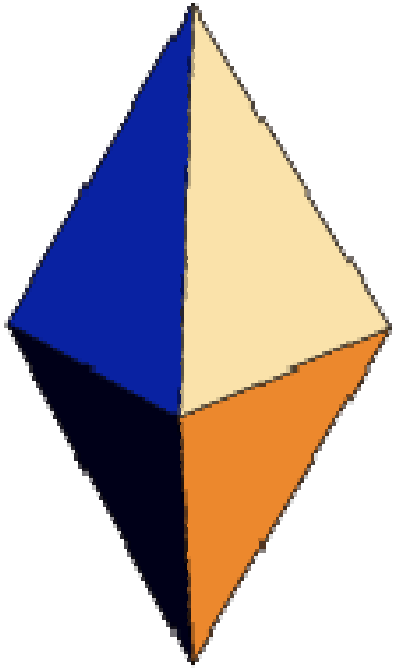
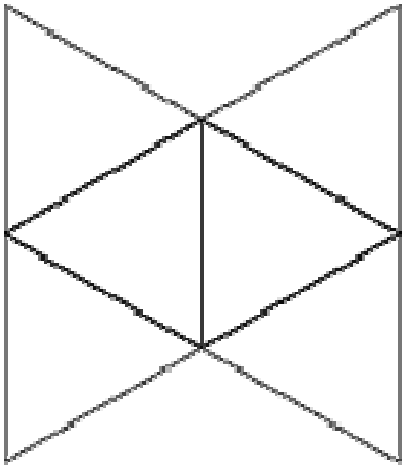
Na sliki označi skupne robove z enako barvo.





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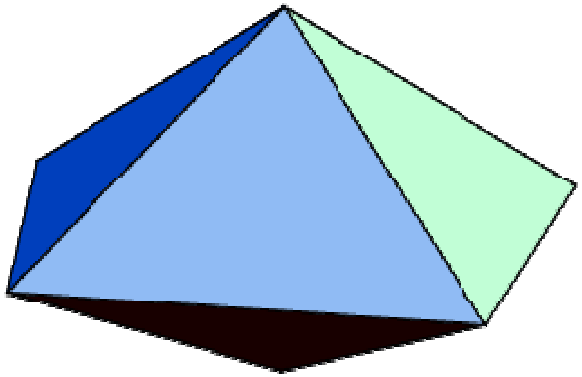
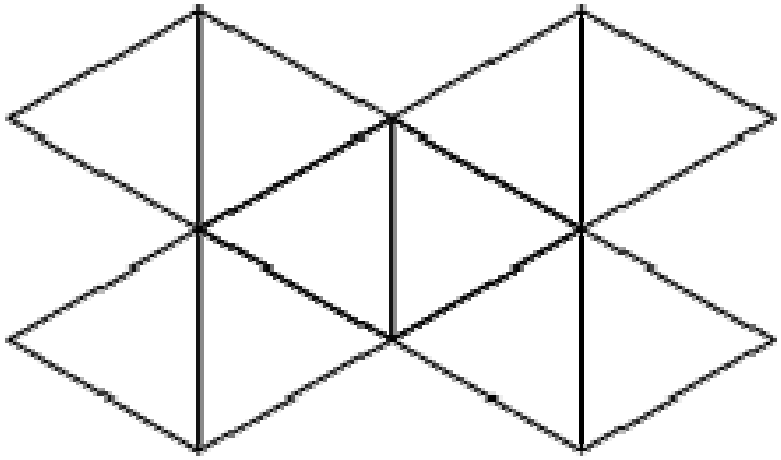
Na sliki označi skupne robove z enako barvo.





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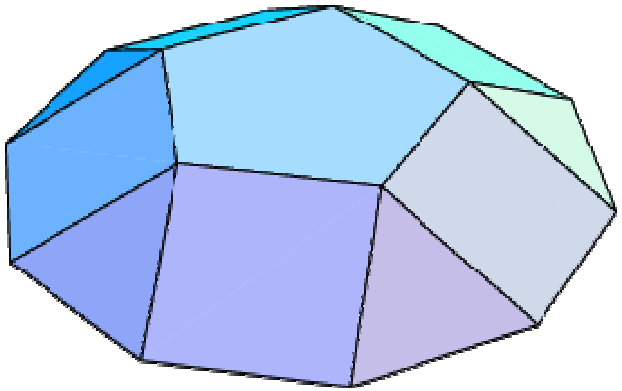
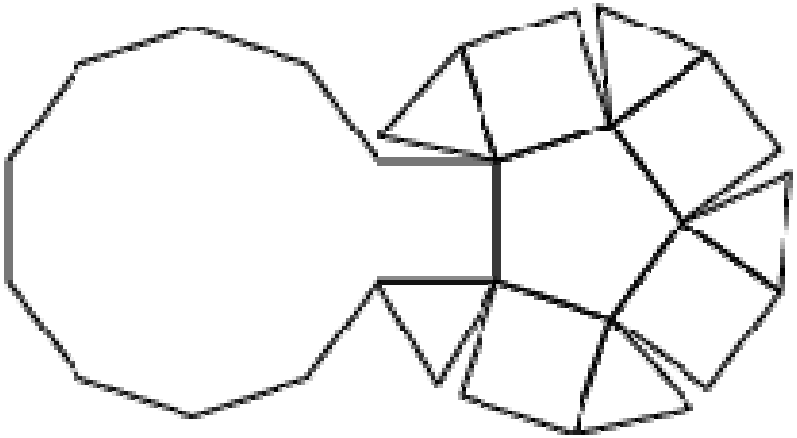
Na sliki označi skupne robove z enako barvo.





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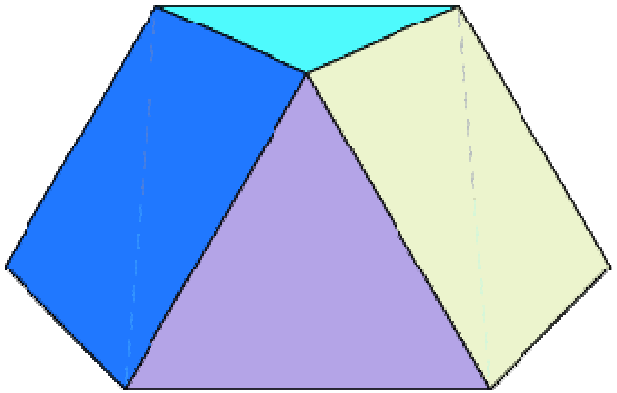
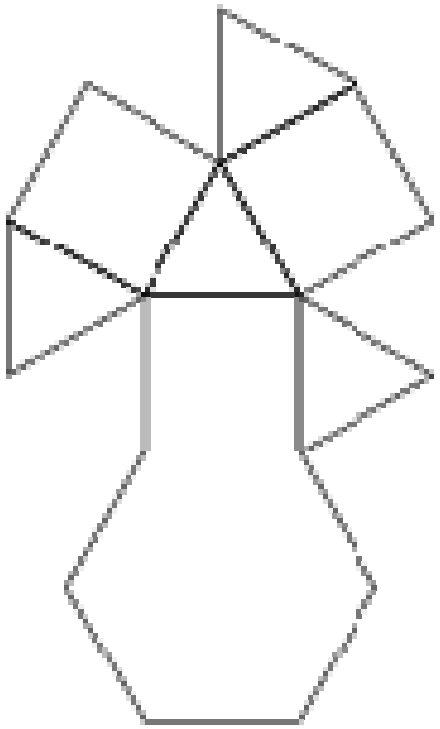
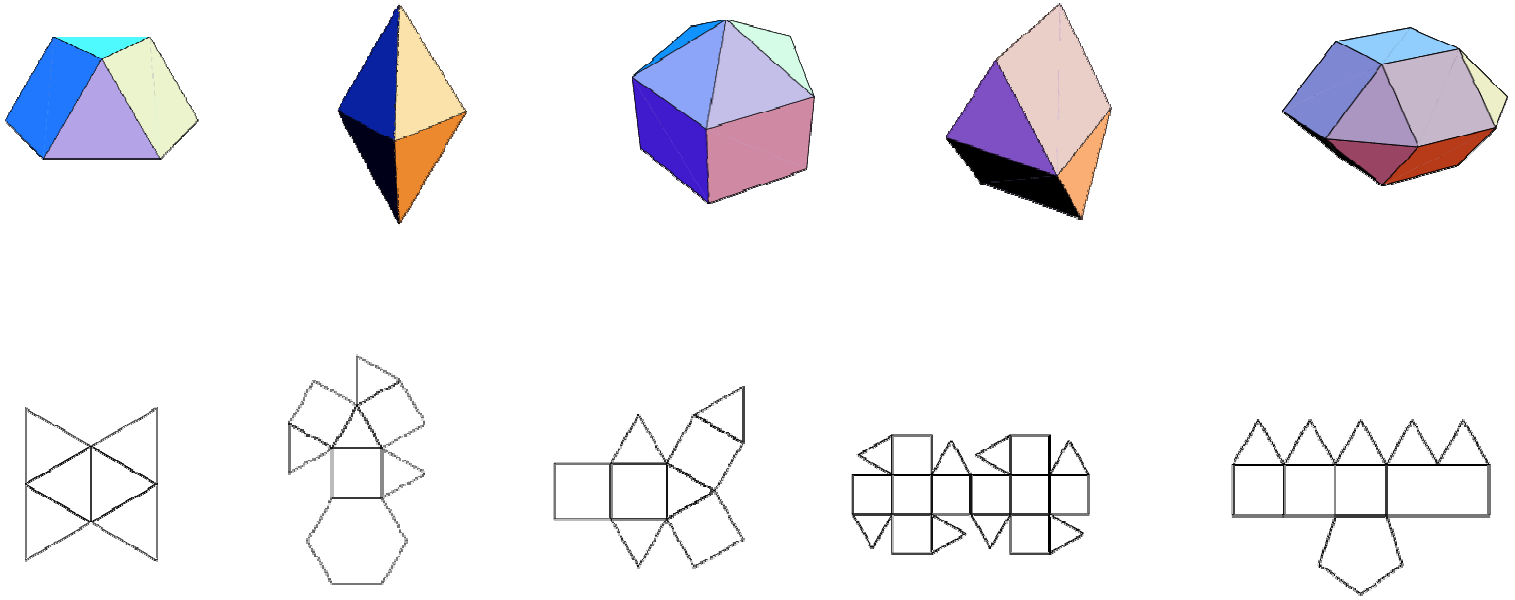
Na sliki označi skupne robove z enako barvo.





4. STOPNJA

Poišči pare telesa in pripadajoče mreže.