2. Preslikave in simetrija

2.1. Premik in zasuk

1 Premik: b), c)
Zasuk: a), č)

2 Premik: dvigalo, vlak, letalo, …
Zasuk: vrtiljak, vetrnica mlina na veter, propeler, …

3

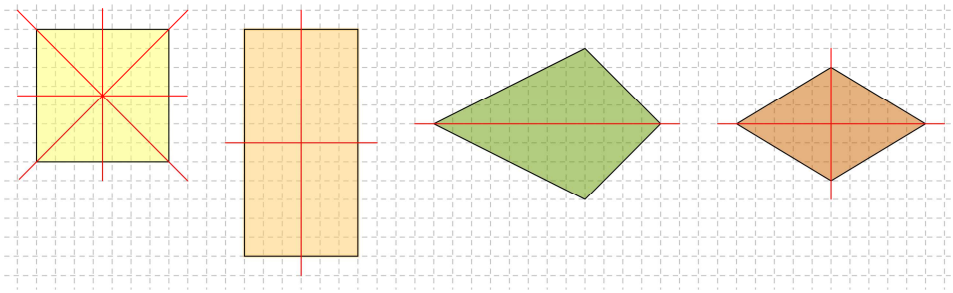
a) Premik za 12 enot v desno.
b) Premik za 11 enot v desno in 3 enote navzgor.

4 Zasuk za 180° v levo ali v desno.

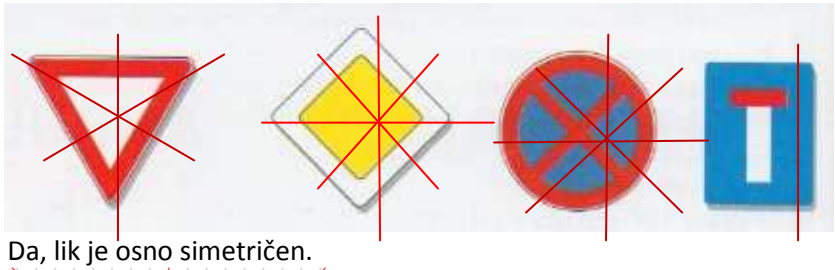
5 V 3 urah se zavrti za 90°, v 6 urah se zavrti za 180°, v 12 urah se zavrti za 360°, v enem dnevu se zavrti za 720°.

2.2. Zrcaljenje čez premico

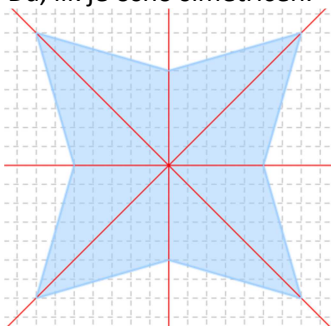
1



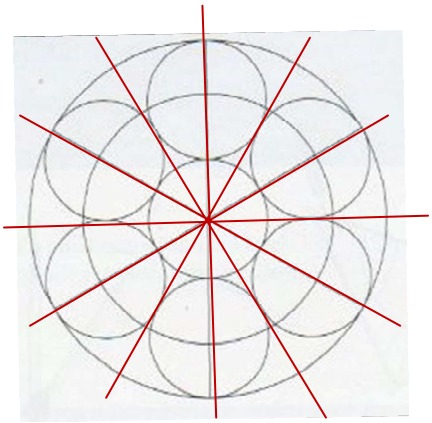
2



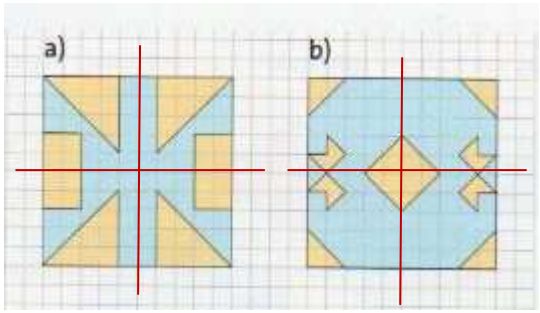
3 Da, lik je osno simetričen.



4

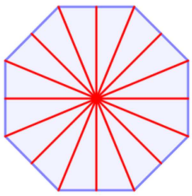


5



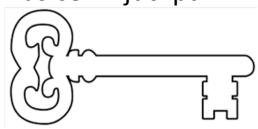
6

a)



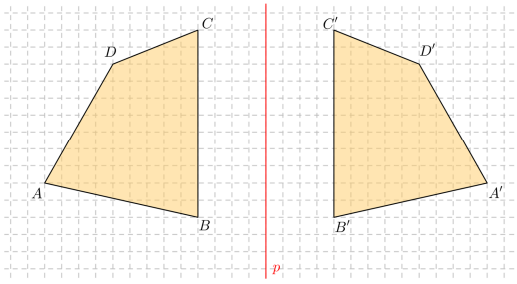
b) 8

7 Klasičen ključ ipd.

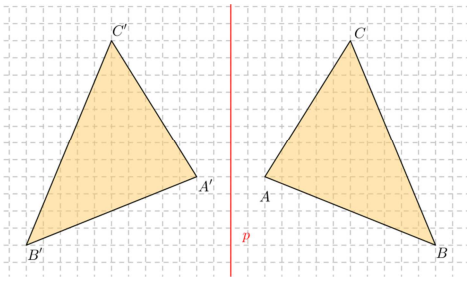


8

a)



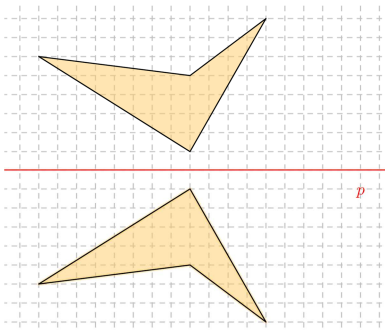
b)



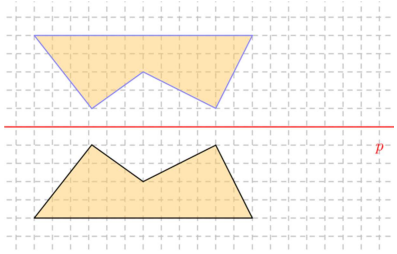
9

a)

b)

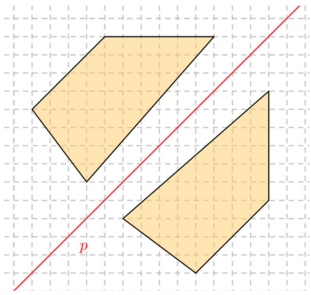


c)

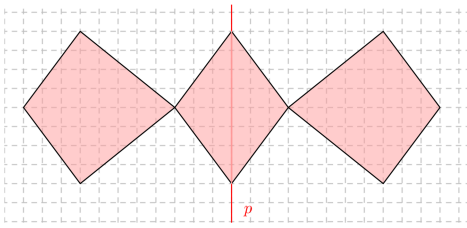


10

a)

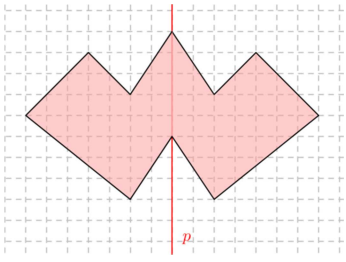


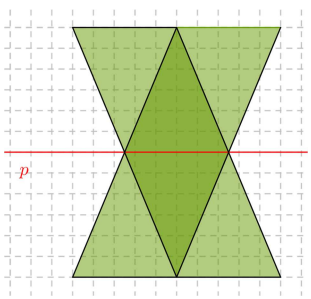
b)



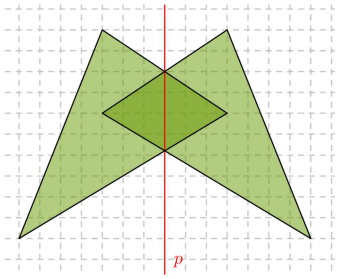
11

a)

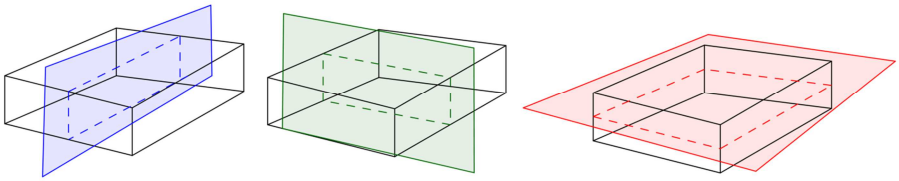




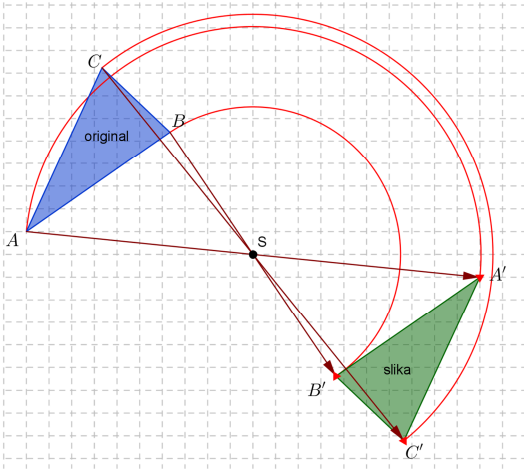
b)



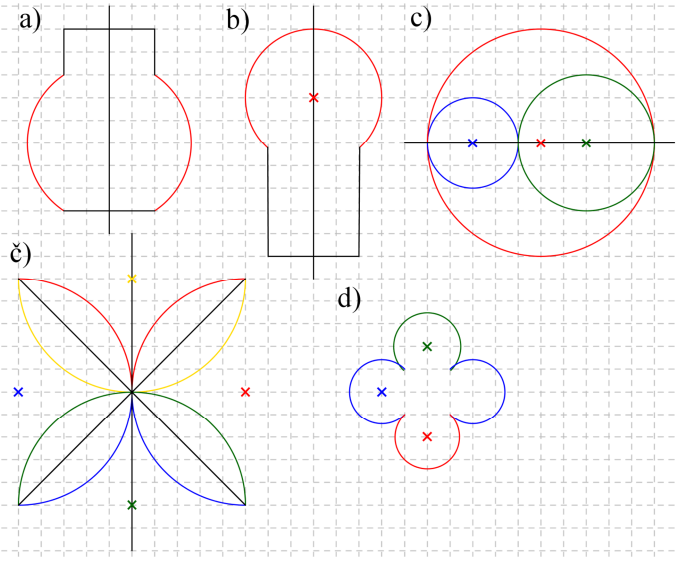
12 Imamo tri ravnine zrcaljenja.



13

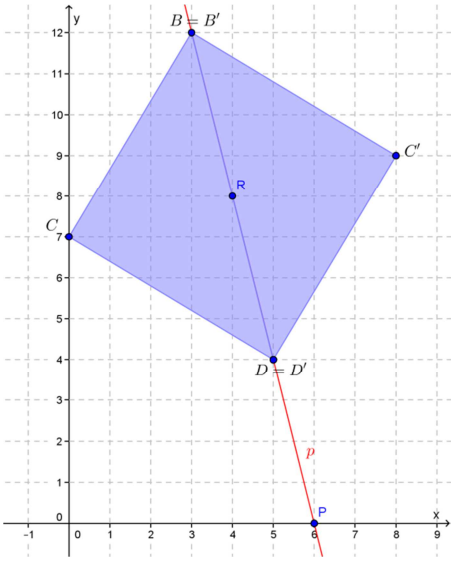


14

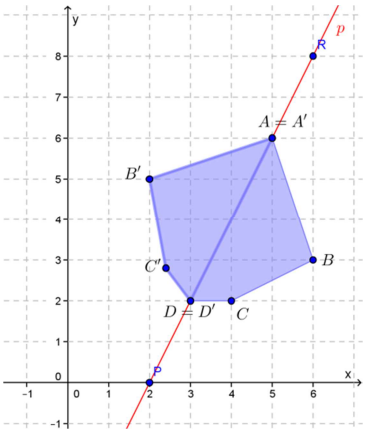


15

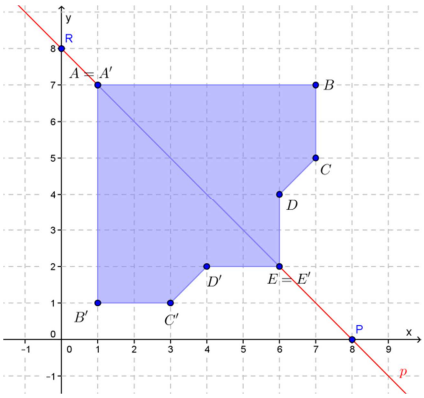
a)



b)



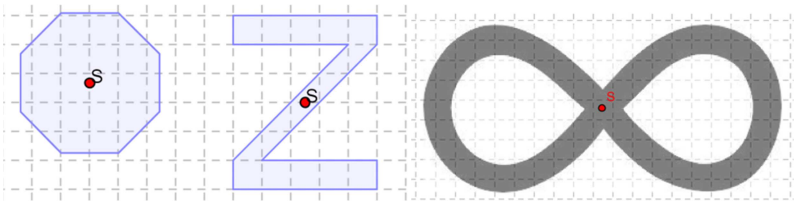
c)



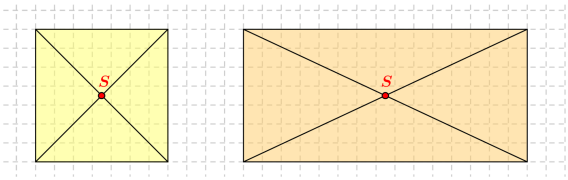
2.3. Zrcaljenje čez točko

1

2



3



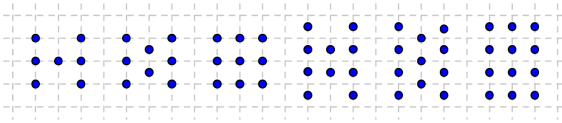
a) Da.

b) Središče simetrije je presečišče diagonal, saj se preko presečišča diagonal poljuben kvadrat ali pravokotnik prezrcalita sama vase.

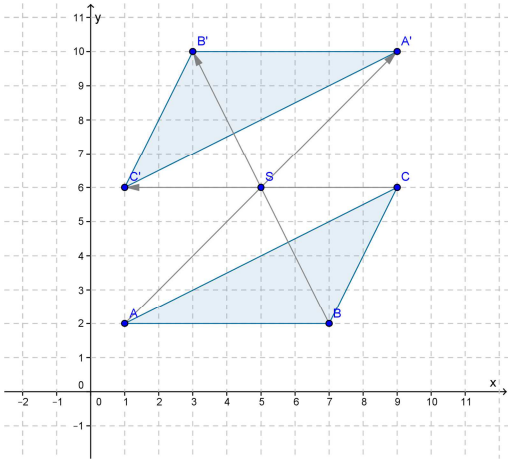
4

a) Vsa števila pik so prikazana središčno somerno, središče simetrije je središče ploskve.

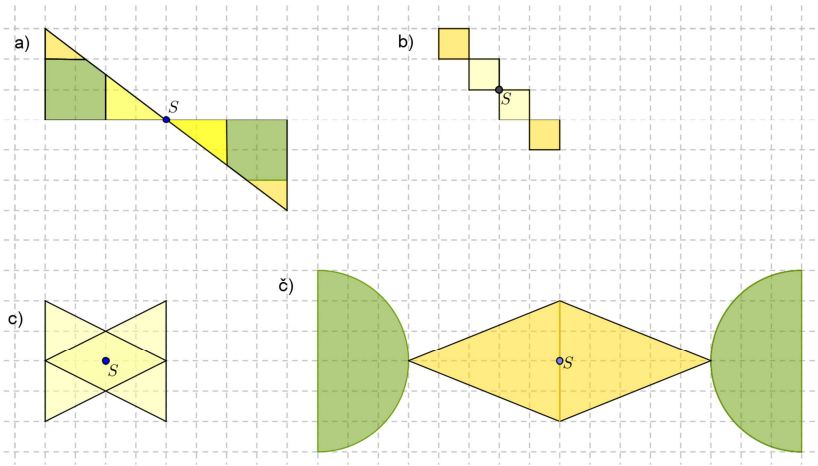
b)



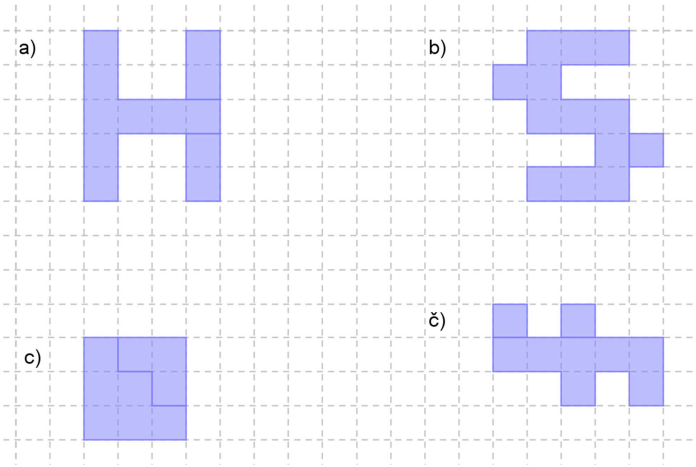
5



6



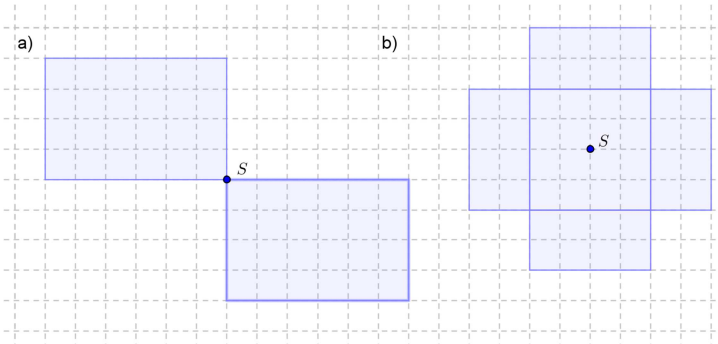
7 Ena od možnih rešitev:



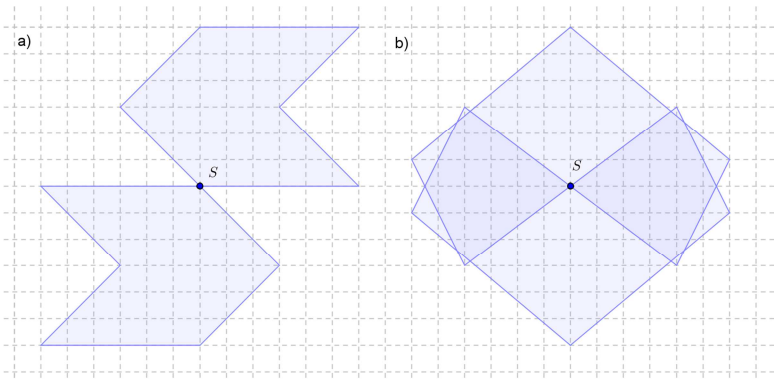
8

a) Središčno in osno simetričen.
b) Središčno in osno simetričen.
c) Osno simetričen.

9

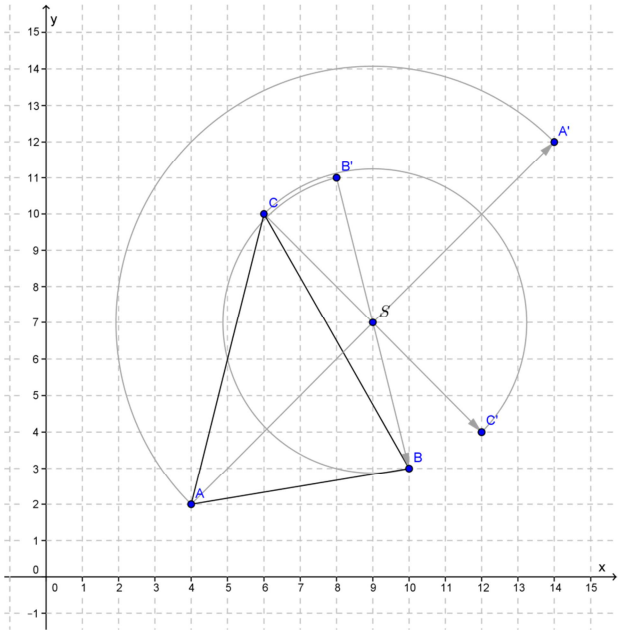


10

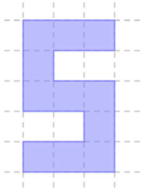


11

a) Glej sliko.
b) Glej sliko.
c) A'(14,12), B'(8,11), '(12,4).
č) Glej sliko.



12 Središčno simetrični liki niso vedno tudi osno simetrični. Primer:

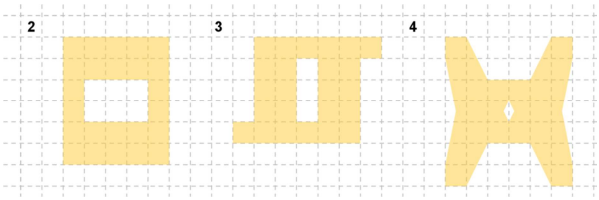


13

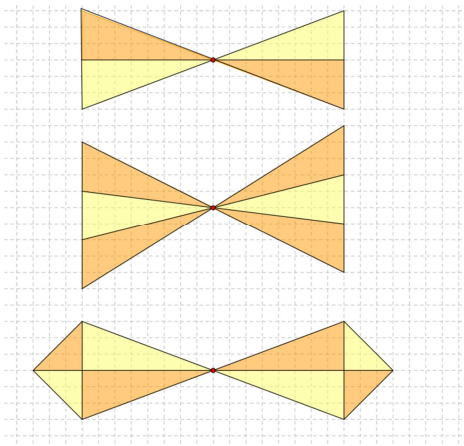
a) Karo osem, karo as.
b) Karo osem, karo devet, karo deset, karo fant, karo dama, karo kralj, karo as.
c) Karo sedem. Ni mogoče poiskati niti središča simetrije, niti simetrijske osi.
č) Ne.

14

a) Osno simetrični: 3,4
   Središčno simetričen: 1
b) Ena od možnih rešitev:

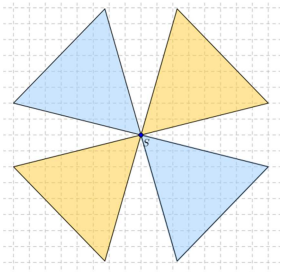


15

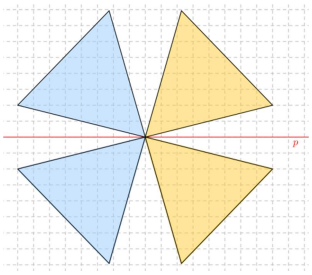


16

a)



b)



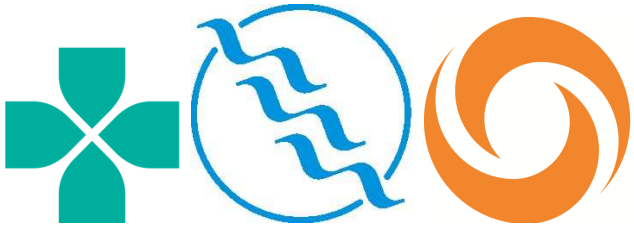
17

a) 0,3,8

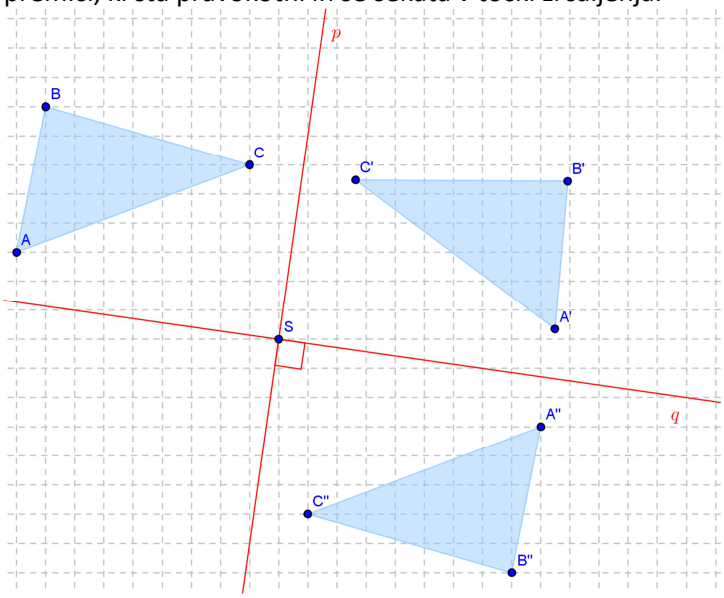
b) 0,2,5,8

c) 22:22

18



19 Da, zrcaljenje čez točko lahko nadomestimo z dvema zaporednima zrcaljenjema čez premici, ki sta pravokotni in se sekata v točki zrcaljenja.

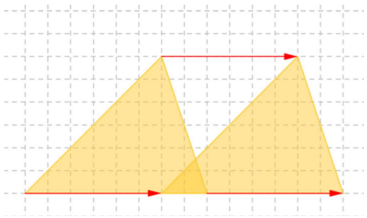


2.4. Preslikave in geometrijski vzorci

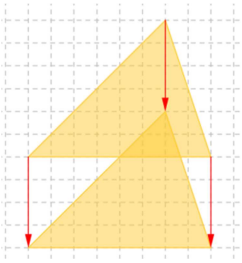
1 S premikom.

2 Pri vseh primerih najprej premaknemo oglišča trikotnika in jih povežemo.

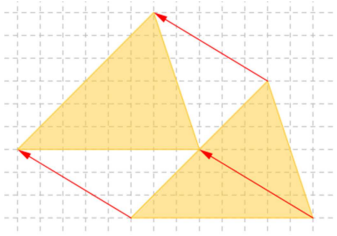
a)



b)



c)



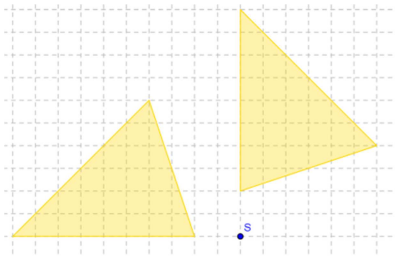
3 Ponavljajoči se vzorci na blagu, tapetah, ploščicah, laminatu, tlakovci, …

4

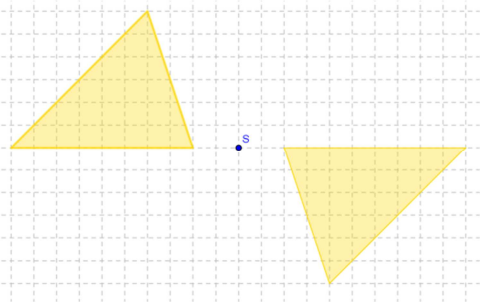
a) Premik
b) Zrcaljenje, premik, vrtež.
c) Zrcaljenje, premik.

5

a)



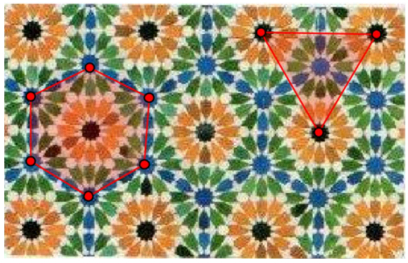
b)



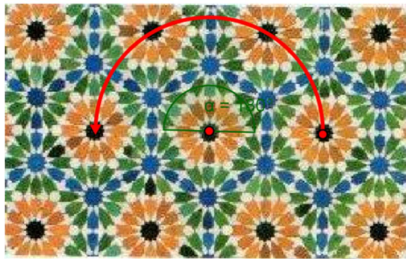
c) Lik se prezrcali sam vase.

6

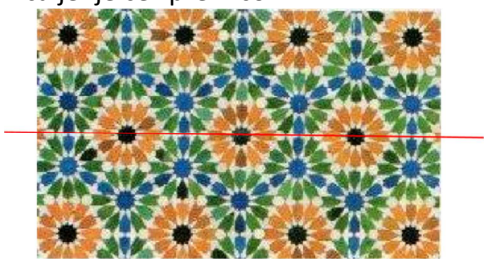
Premik:



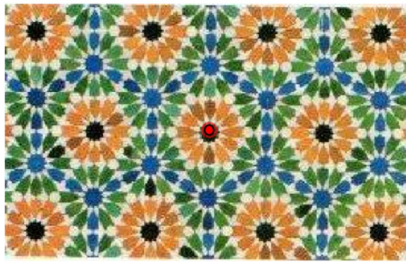
Vrtež za 180°:



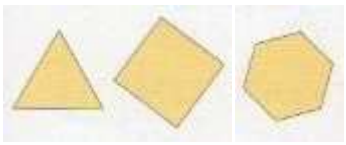
Zrcaljenje čez premico:



Zrcaljenje čez točko:



7

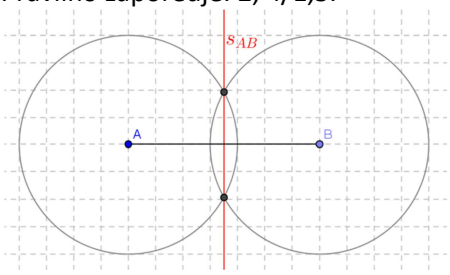


8 Premik.

9

2.5. Simetrala daljice in kota

1 Pravilno zaporedje: 2, 4/1,3.



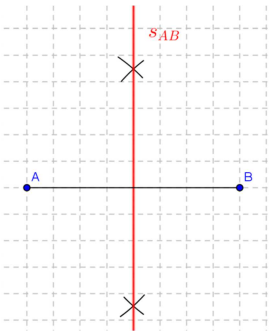
2

a) Ne.

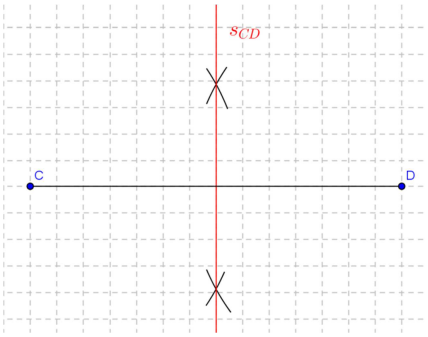
b) Da.

3

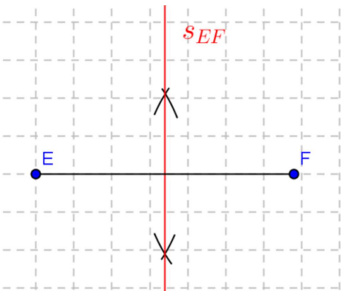
a)



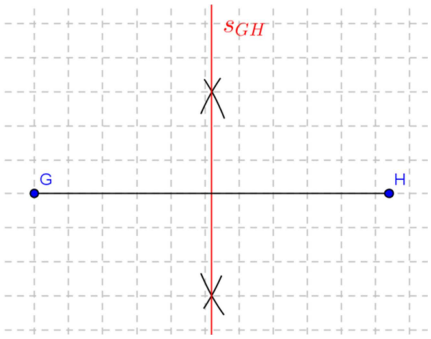
b)



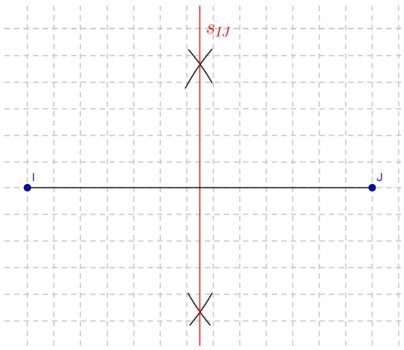
c)



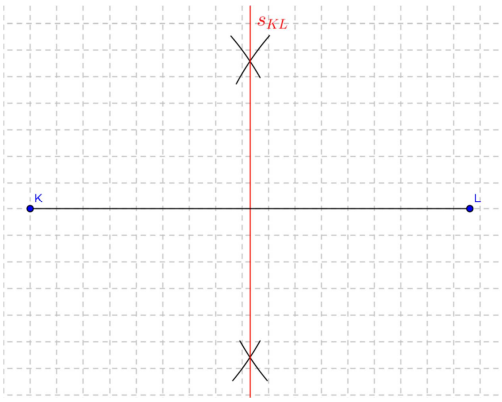
č)



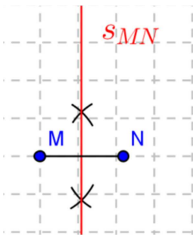
d)



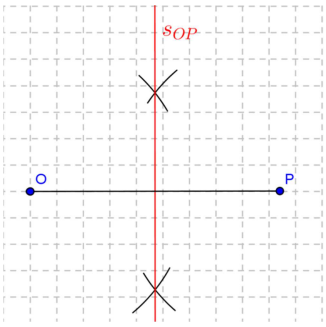
e)



f)



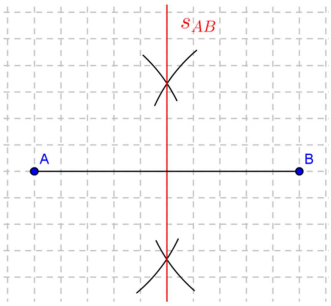
g)



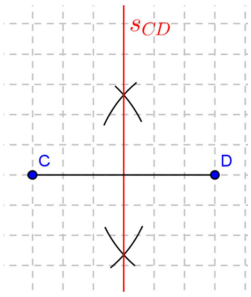
4

a)

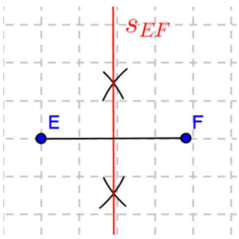
b)



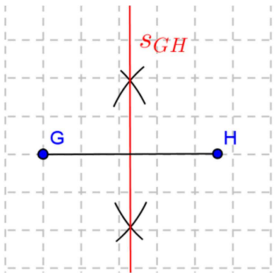
c)



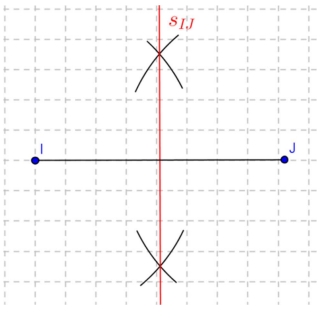
č)



d)



e)



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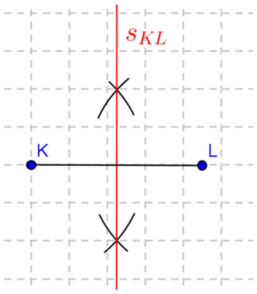

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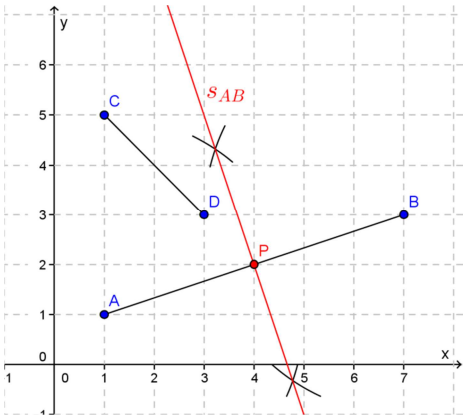
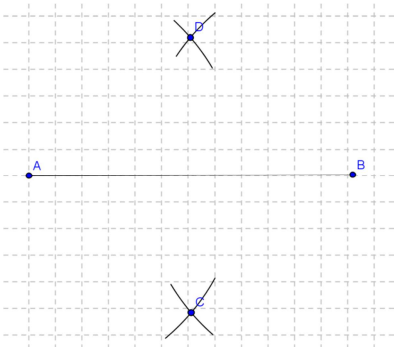
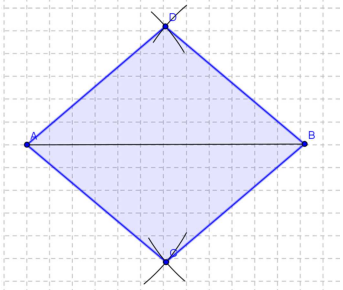


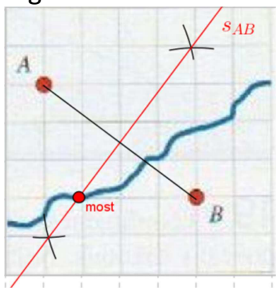
a)



b) Romb s stranico dolžine 4 cm.

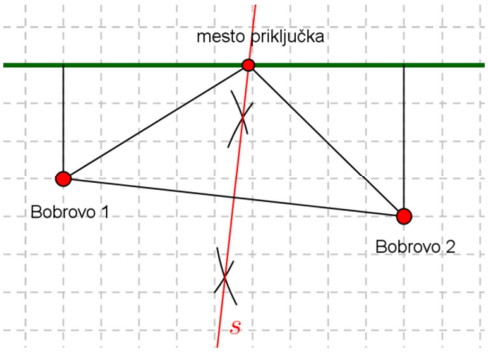


7 Lego mostu določa točka, v kateri simetrala daljice AB seka reko.



8

a)

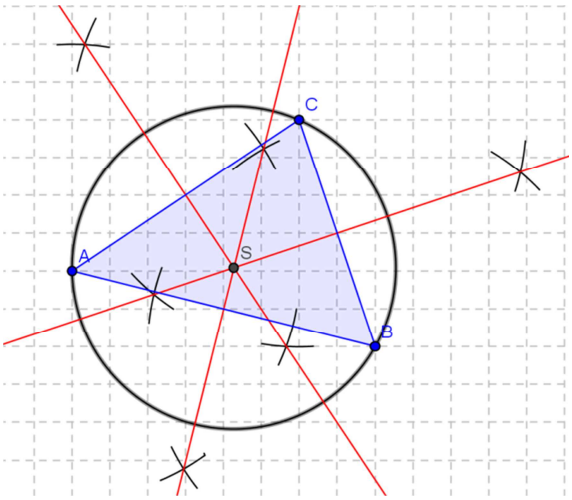


b) Približno 2,9 km.

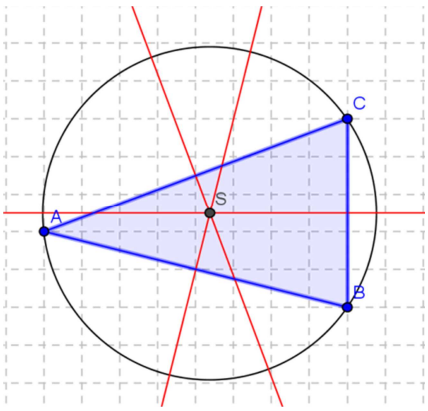
9 Rešeno v učbeniku.

10

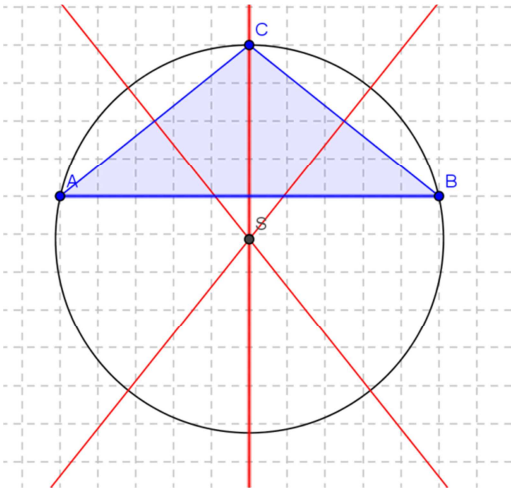
a)



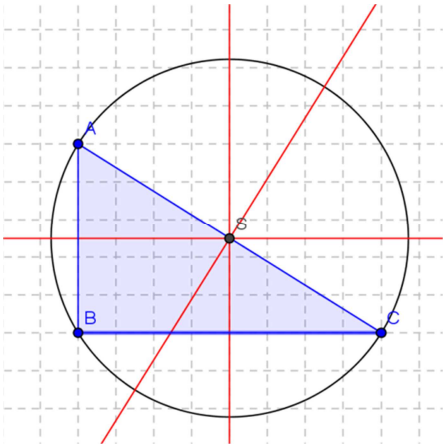
b)



c)



d)

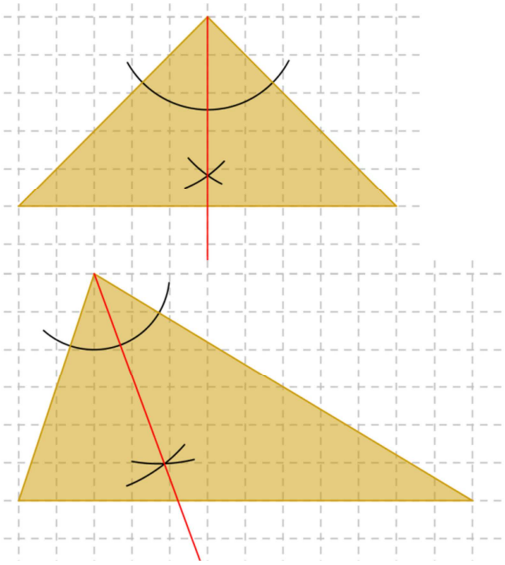


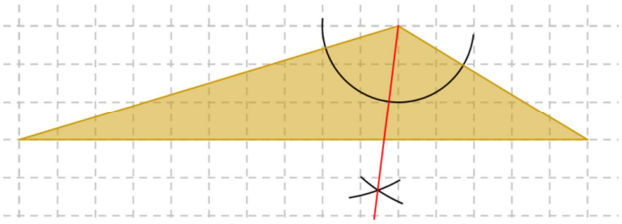
11 Na krožnici izberi poljubne tri točke (oglišča trikotnika), središče krožnice je v presečišču simetral stranic izbranega trikotnika.

12 Uporaba računalniškega programa.

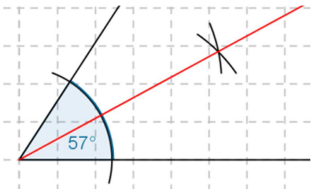
13 Pravilno zaporedje: 5, 3, 4, 2, 1.

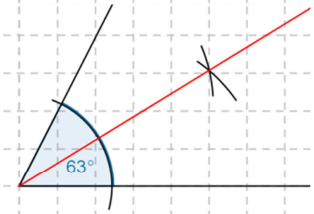
14

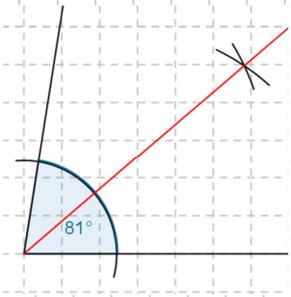


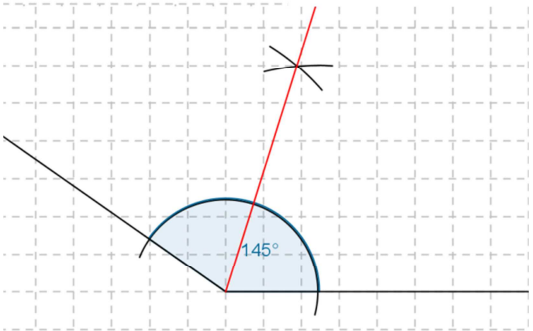


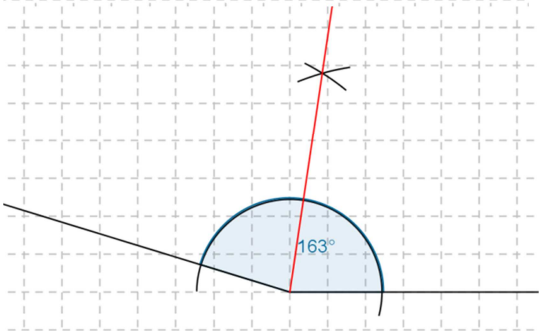
15



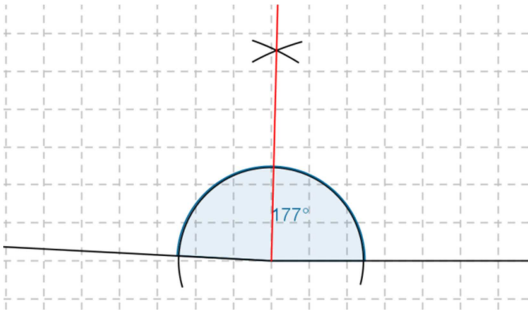


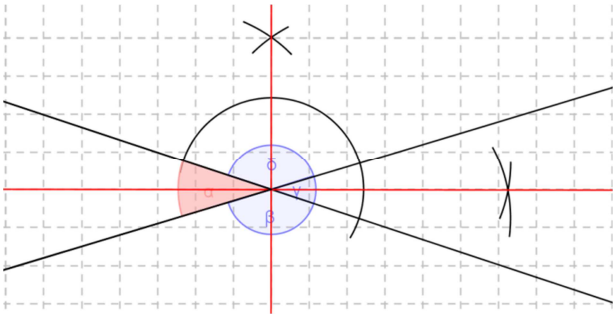






16



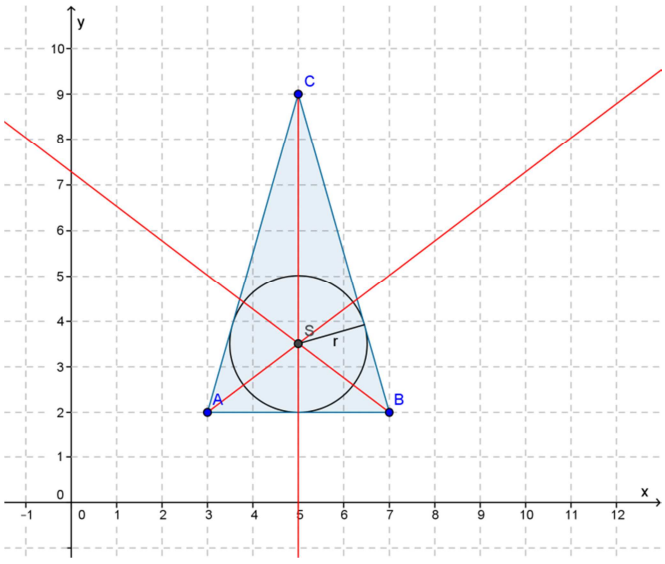


17 Najprej smo s simetralo kota dani kot razpolovili, nato smo določili še simetrali dobljenih polovičnih kotov. Na ta način smo dani kot razdelili na štiri enake dele.

18 Rešeno v učbeniku.

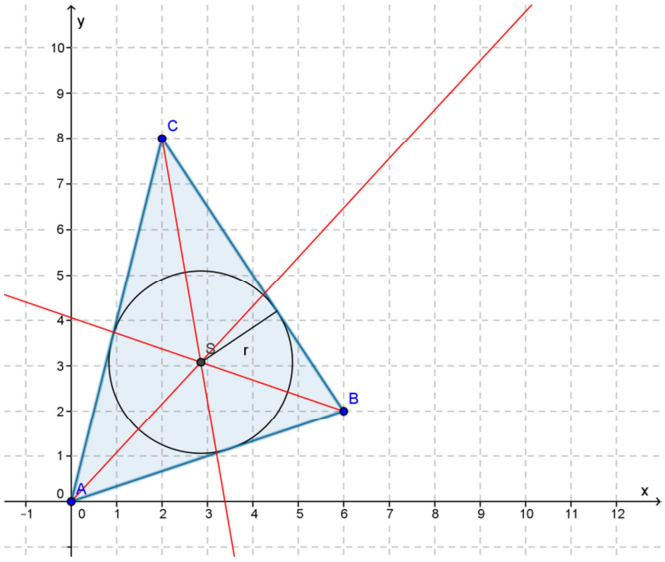
19

a)

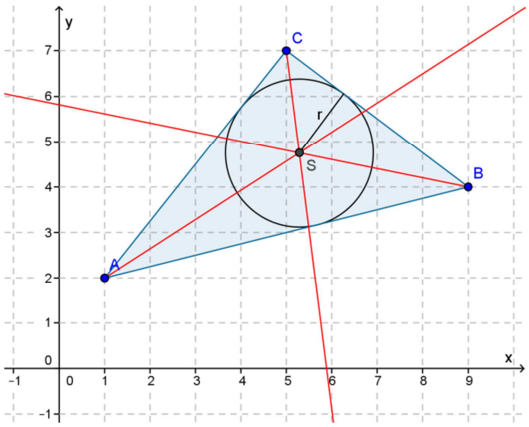


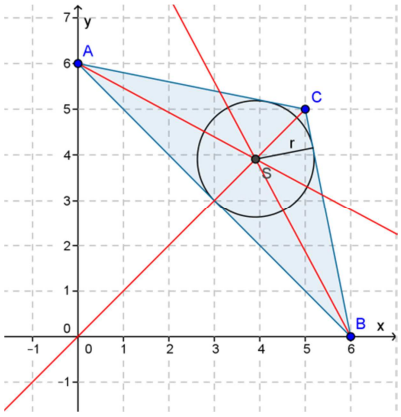
b)

c)



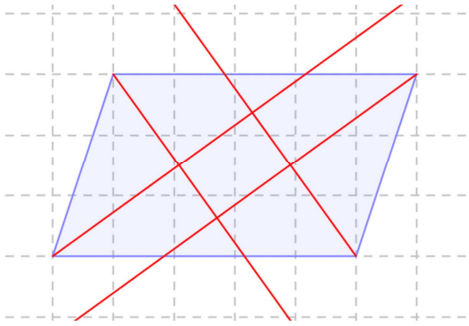
d)



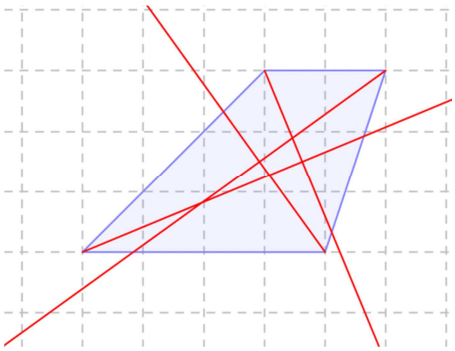


20 Krožnico lahko včrtamo le tistim štirikotnikom, katerih simetrale kotov se sekajo v isti točki.

a)

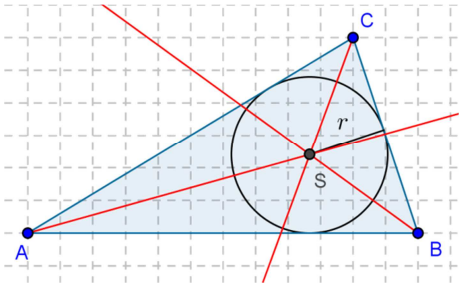


b)

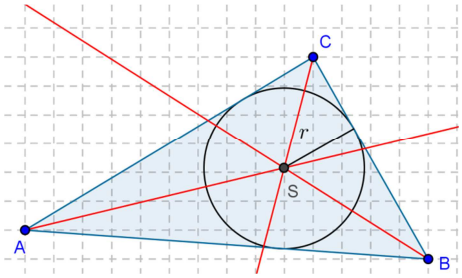


21

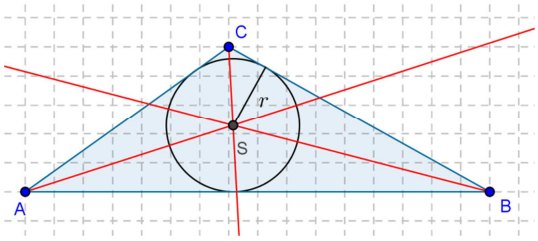
a)



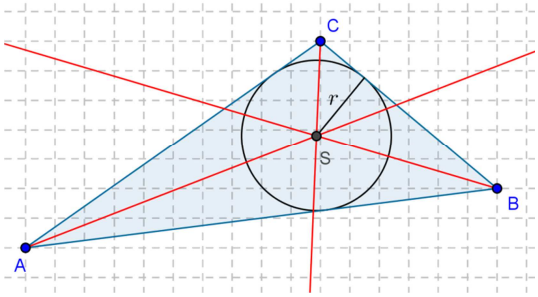
b)



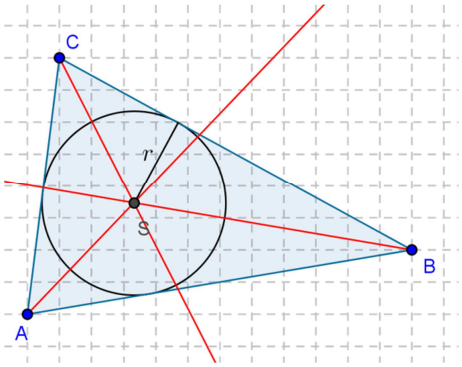
c)



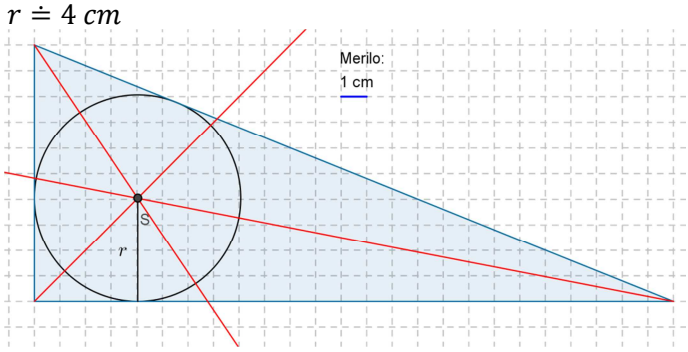
d)



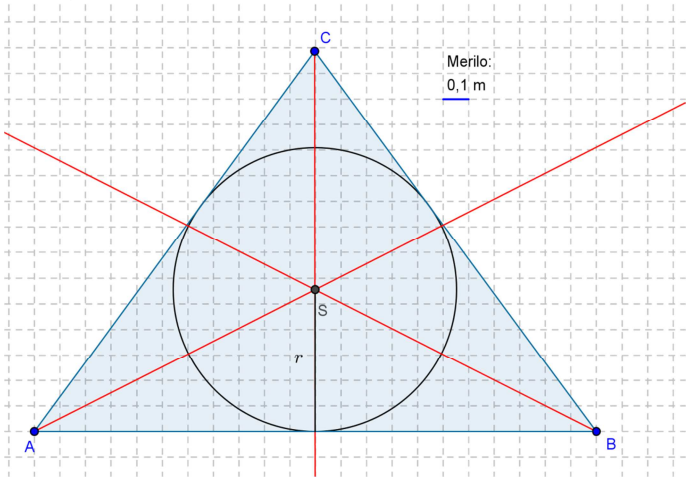
e)



22 $r \doteq 4\ cm$



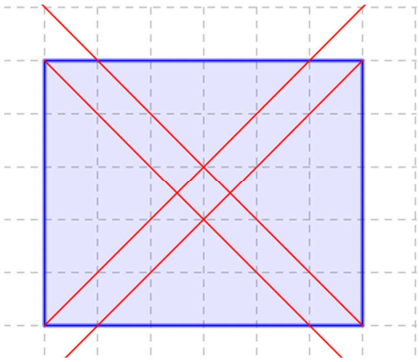
23 $r \doteq 0{,}55\ m$



24

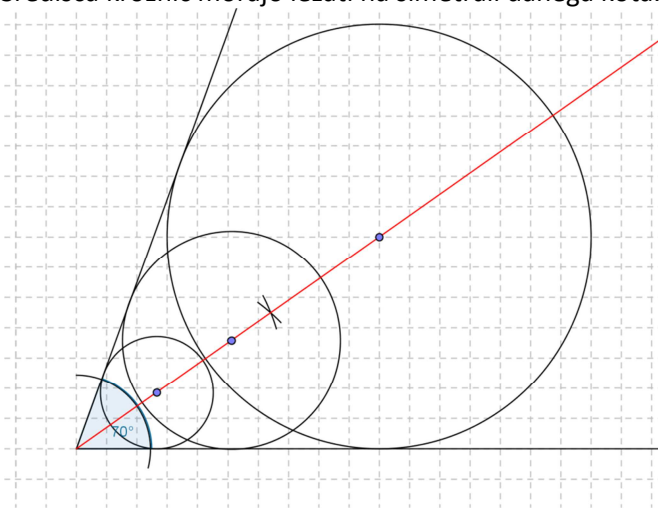
a) Središče trikotniku včrtane krožnice.
b) Simetrala daljice BC.
č) Simetrala kota γ.
c) Središče trikotniku očrtane krožnice.

25

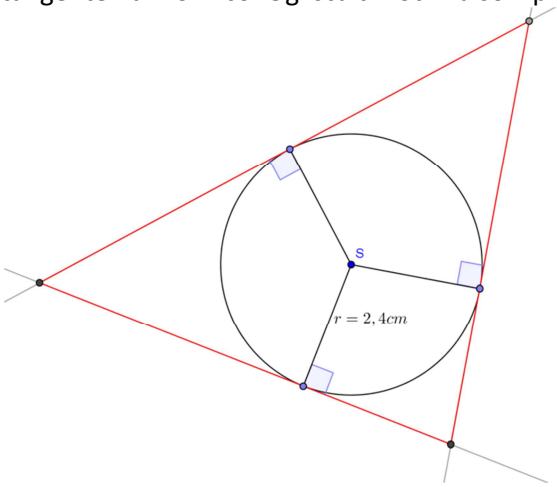


26 V učbeniku.

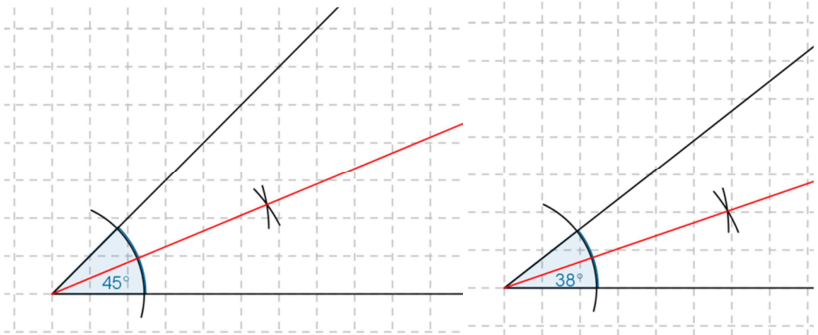
27 Središča krožnic morajo ležati na simetrali danega kota.



28 Na krožnici s polmerom 2,4 cm izberi poljubne tri točke ter skozi izbrane točke nariši tangente na krožnico. Oglišča trikotnika so v presečiščih narisanih tangent.



29

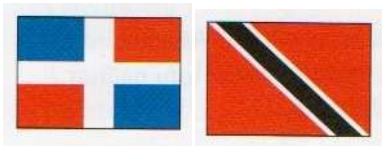


Utrdi svoje znanje

1

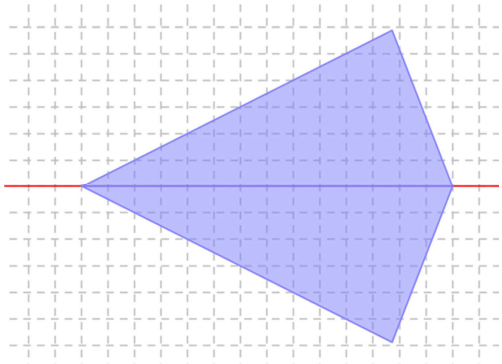
a)

b)



c)

2



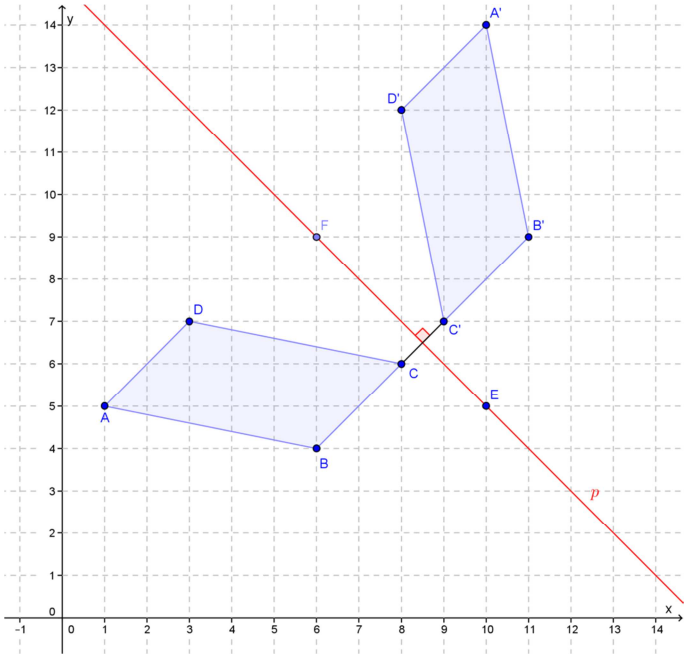
3

a) Glej sliko.

b) Glej sliko.

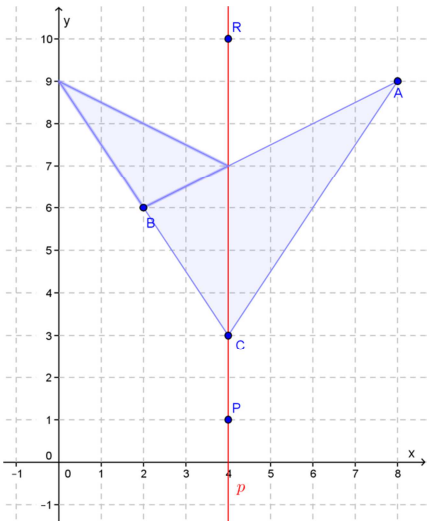
c) Poljubni točki na premici p, npr. E(10,5), F(6,9).

č) A'(10,14), B'(11,9), C'(9,7).

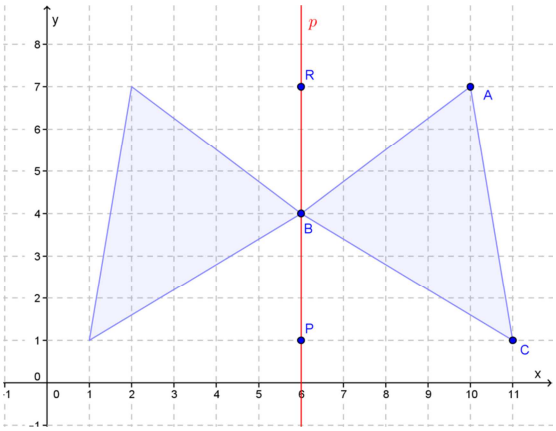


4

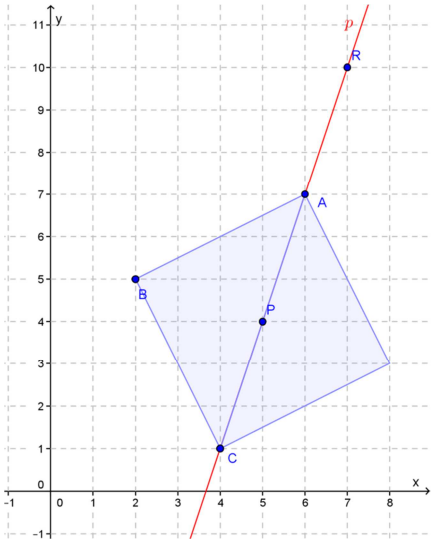
a)



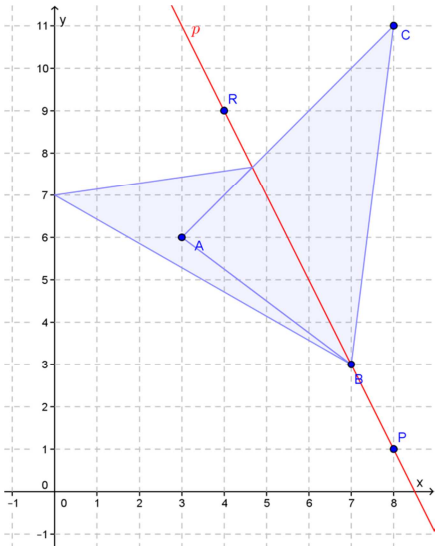
b)



c)

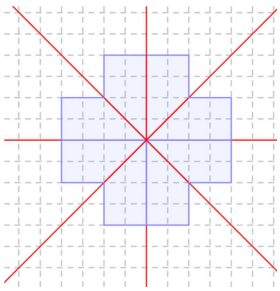


č)

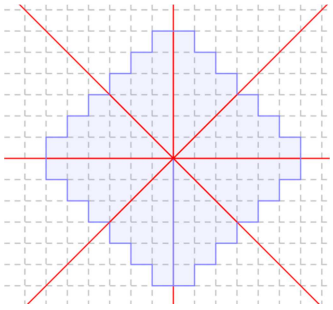


5

a)

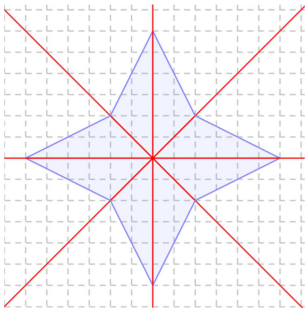


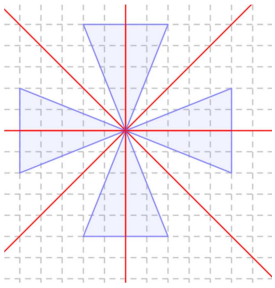
b)



c)

č)

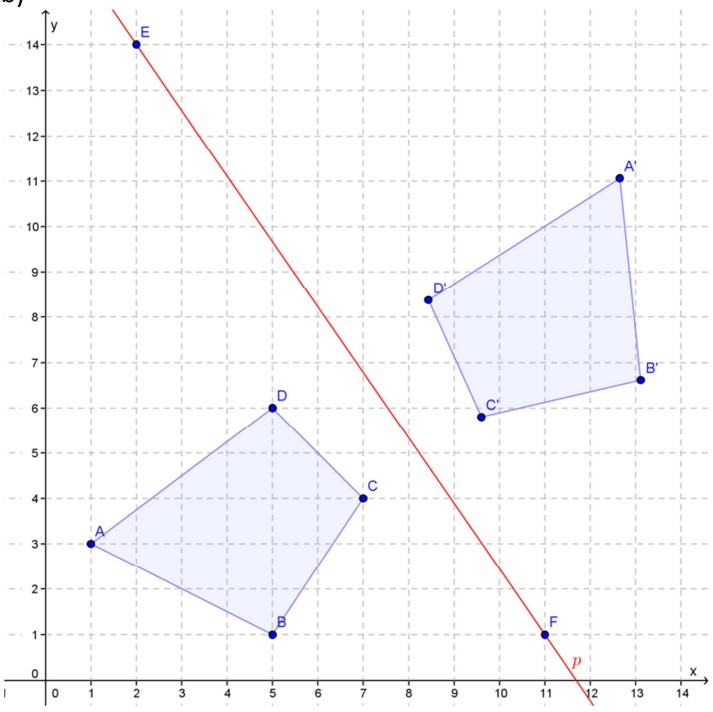




6

a) Lik *ABCD* ni osno simetričen.

b)



7 S prepogibanjem po diagonalah in po simetralah stranic.

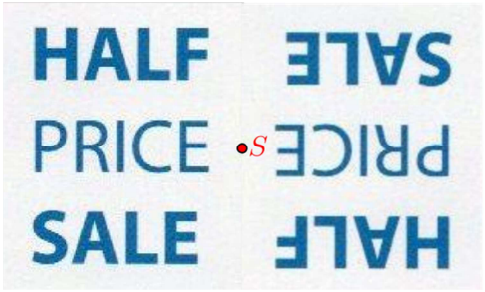
8

a) H, A, I, C, E, S

b)

c)

c)



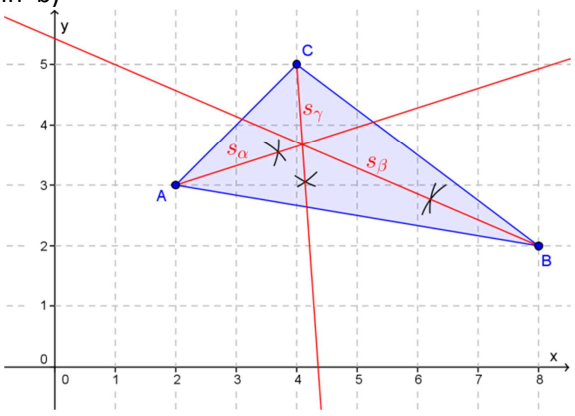
9

a) Prva fotografija.

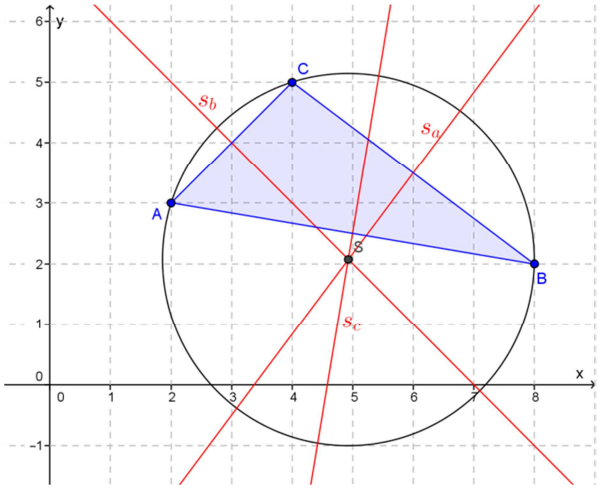
b) Druga fotografija je nastala z zrcaljenjem leve polovice originala preko osi, ki navpično razpolavlja original.
Tretja fotografija je nastala z zrcaljenjem desne polovice originala preko osi, ki navpično razpolavlja original.

10

a) in b)



c)

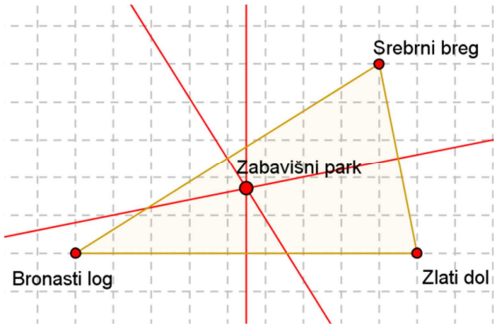


11 Trikotnik je premaknjen za 11 enot v desno in 3 enote navzgor.

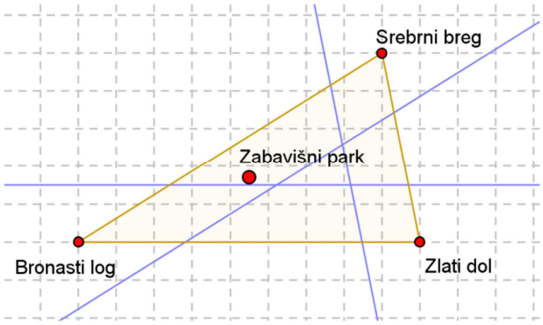
12

b) Bronasti log – Zlati dol: 4,5 km
Zlati dol – Srebrni breg: 2,6 km
Srebrni breg – Bronasti log: 4,7 km

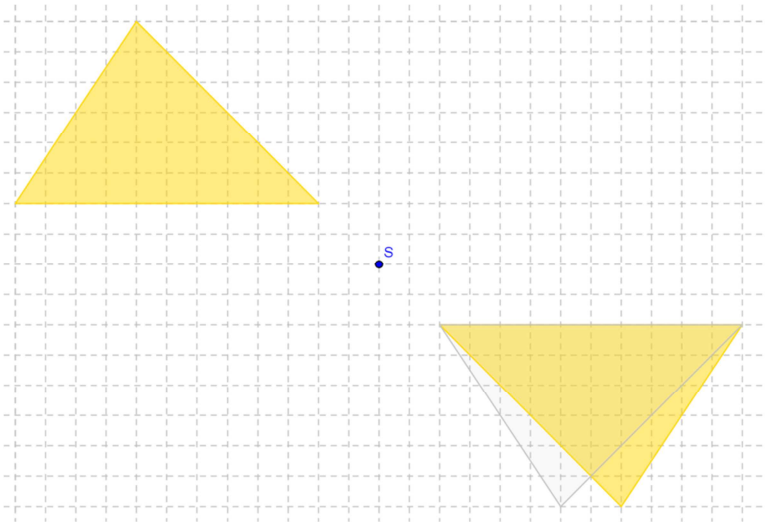
c)



d) Ne, zabaviščni park je od ceste Bronasti log – Srebrni breg oddaljen manj kot 750 m.



13 Ne. Pravilna rešitev:



14

a) Vrtež ali zrcaljenje čez premico in točko.
b) Zrcaljenje čez premico in čez točko.
c) Premik ali vrtež ali zrcaljenje čez premico in točko.