13. PYTHONDA GRAFIKA



“Turtle” - bu chizma taxtasi kabi Python -ning o'ziga xos xususiyati bo'lib, u bizga turtleni hamma joyini chizishni buyuradi! Turtle.forward (...) va turtle.right (...) kabi funktsiyalarni ishlatishimiz mumkin, ular Toshbaqa (Turtle)ni harakatga keltiradi. Turtlening keng tarqalgan usullari:

Usul	**Parametr**	**Tavsif**
Turtle()	Hech nima	Yangi tutrle ob'ektini yaratadi va qaytaradi
forward()	miqdori	Toshbaqa (Turtle)ni belgilangan miqdorda oldinga siljitadi

Usul	**Parametr**	**Tavsif**
backward()	miqdori	Toshbaqa (Turtle)ni belgilangan miqdorda orqaga siljitadi
right()	burchak	Toshbaqa (Turtle)ni soat yo'nalishi bo'yicha aylan
left()	burchak	Toshbaqa (Turtle)ni soat sohasi farqli o'girib
penup()	Hech nima	Toshbaqa (Turtle) qalamini oladi
pendown()	Hech nima	Toshbaqa (Turtle) qalamini qo'yadi
up()	Hech nima	Toshbaqa (Turtle) qalamini oladi
down()	Hech nima	Toshbaqa (Turtle) qalamini qo'yadi
color()	Rang nomi	Toshbaqa (Turtle) qalamining rangini o'zgartiradi
fillcolor()	Rang nomi	Turtlening rangini o'zgartirish ko'pburchakni to'ldirishda ishlatiladi
heading()	Hech nima	Joriy sarlavhani qaytaradi
position()	Hech nima	Joriy pozitsiyani qaytaradi
goto()	x, y	Toshbaqa (Turtle)ni x, y holatiga o'tkazing
begin_fill()	Hech nima	To'ldirilgan ko'pburchak uchun boshlang'ich nuqt eslang

Usul	Parametr	Tavsif
end_fill()	Hech nima	Ko'pburchakni yoping va joriy rang bilan to'ldiring
dot()	Hech nima	Nuqtani hozirgi holatida qoldiring
stamp()	Hech nima	Hozirgi joyda Toshbaqa (Turtle) shakli haqida taassurot qoldiradi
shape()	shakl nomi	"Ok", "klassik", "Toshbaqa (Turtle)" yoki "doira" bo'lishi kerak

Turtle yordamida chizmachilik

Toshbaqa (Turtle) usullari va funktsiyalaridan foydalanish uchun biz Toshbaqa (Turtle)ni import qilishimiz kerak. "Toshbaqa (Turtle)" standart Python to'plami bilan to'ldirilgan va uni tashqaridan o'rnatish shart emas. Turtle dasturini bajarish uchun yo'l xaritasi 4 bosqichdan iborat:

1. Turtle modulini import qiling
2. Boshqarish uchun Toshbaqa (Turtle) yarating.
3. Toshbaqa (Turtle) usullaridan foydalanib, atrofni chizib oling.
4. done () ni ishga tushiring.

Yuqorida aytib o'tilganidek, Toshbaqa (Turtle)ni ishlatishdan oldin, biz uni import qilishimiz kerak. Biz uni quyidagicha import qilamiz:

```
from turtle import *

# or

import turtle
```

Turtlelar kutubxonasini import qilib, Toshbaqa (Turtle)ning barcha funktsiyalarini bizga taqdim etgandan so'ng, biz yangi chizma taxtasi (oyna) va Toshbaqa (Turtle)ni yaratishimiz kerak. Shunday qilib, biz kodni quyidagicha yozamiz:

```
wn = turtle.Screen()

wn.bgcolor("light green")

wn.title("Turtle")

shakl =Turtle()
```

Endi biz deraza va Toshbaqa (Turtle)ni yaratdik, Toshbaqa (Turtle)ni siljitishimiz kerak. Shakl qaragan tomonga 100 piksel oldinga siljish uchun biz kodlaymiz:

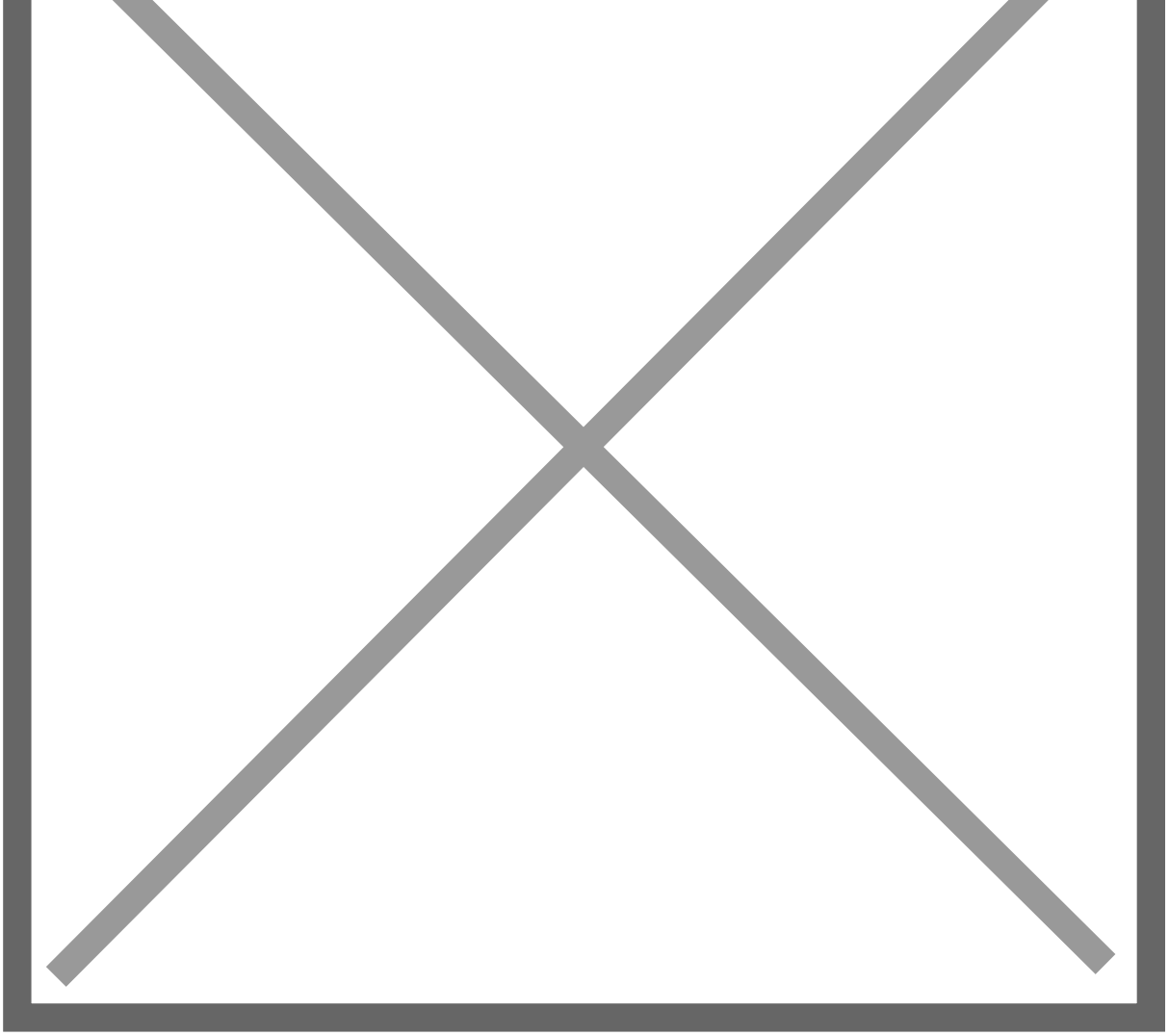
```
shakl.forward(100)
```

Biz shakl 100 piksel oldinga siljitdik, Ajoyib! Endi biz dasturni done () funktsiyasi bilan yakunlaymiz.

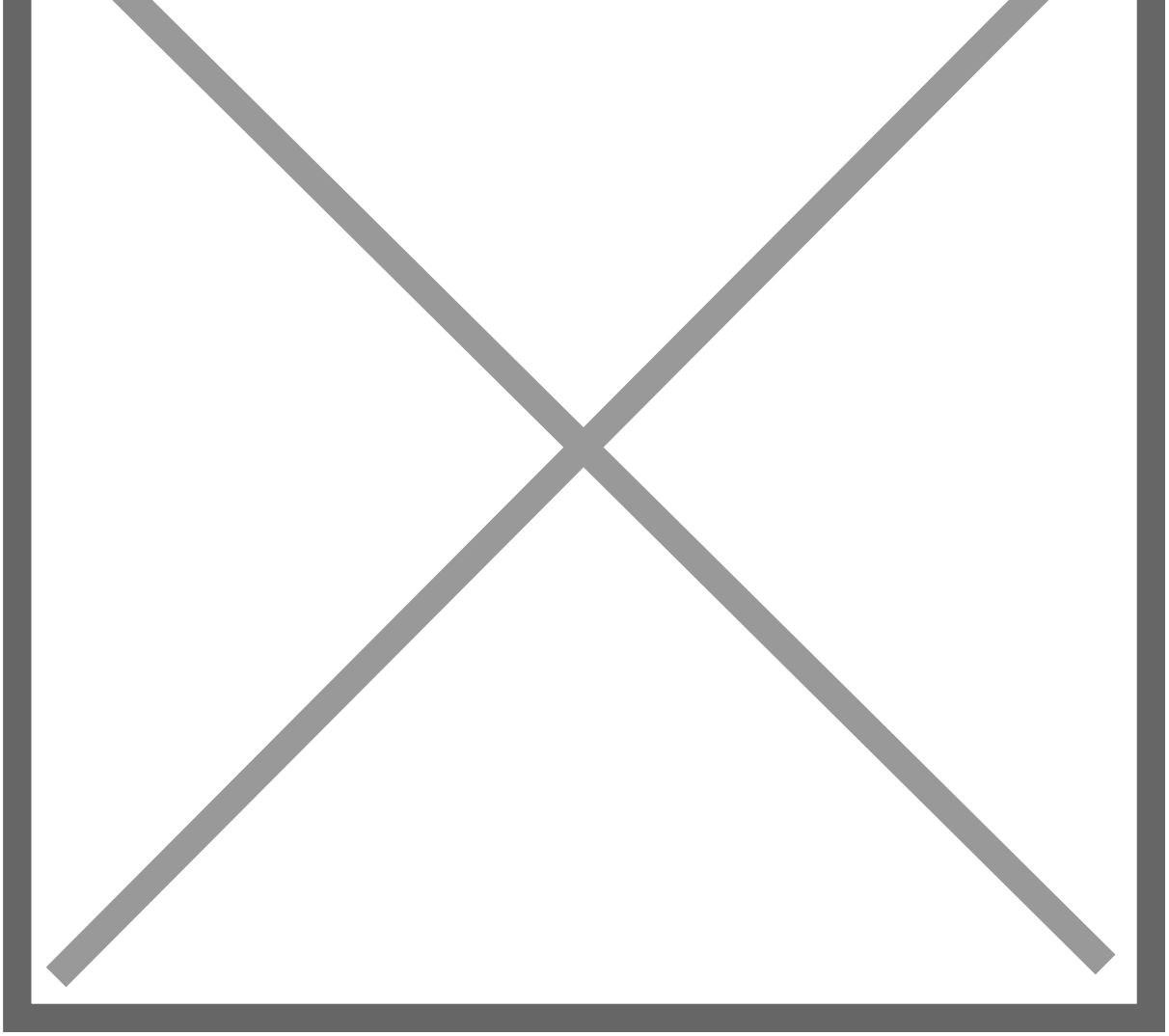
```
turtle.done ()
```

Shunday qilib, biz 100 piksel uzunlikdagi chiziq chizadigan dastur yaratdik. Turtle usullari yordamida biz har xil shakllarni chizishimiz va turli ranglarni to'ldirishimiz mumkin. Pythondagi Turtlelar kutubxonasi yordamida kodlash uchun ko'plab funktsiyalar va dasturlar mavjud. Keling, ba'zi asosiy shakllarni chizishni o'rganamiz.

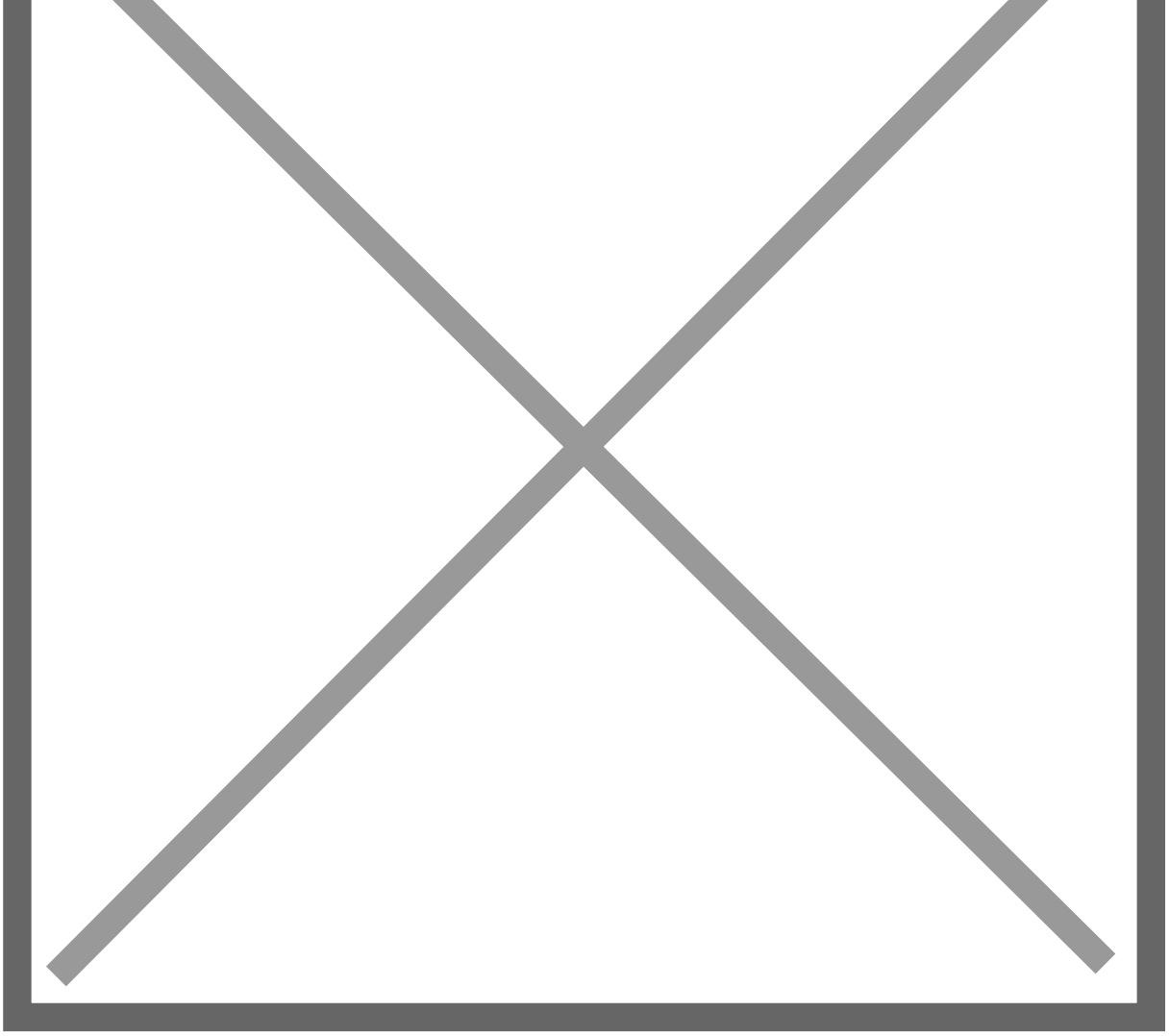
1 -shakl: kvadrat



2 -shakl: yulduzcha

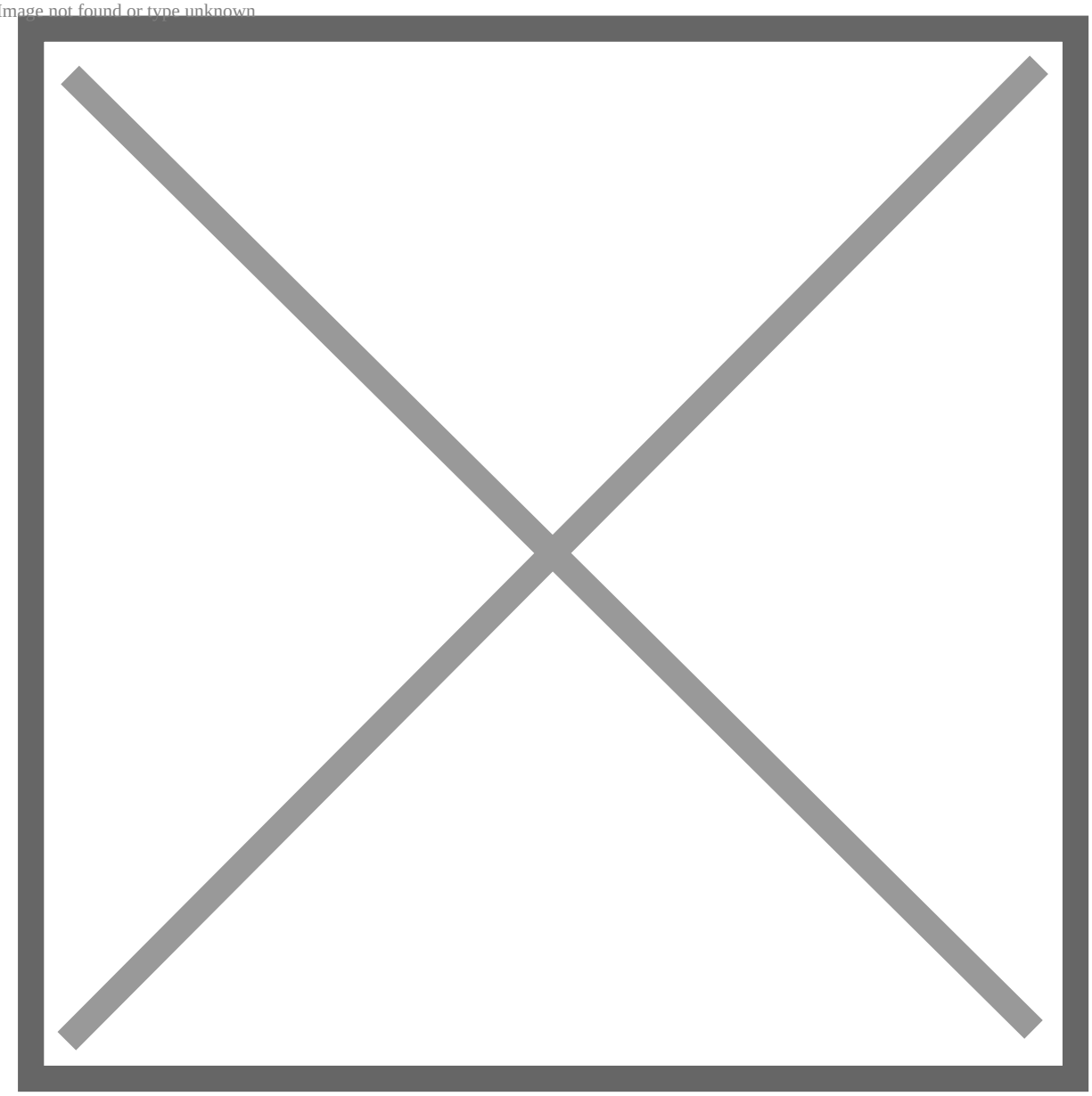


3 -shakl: olti burchakli



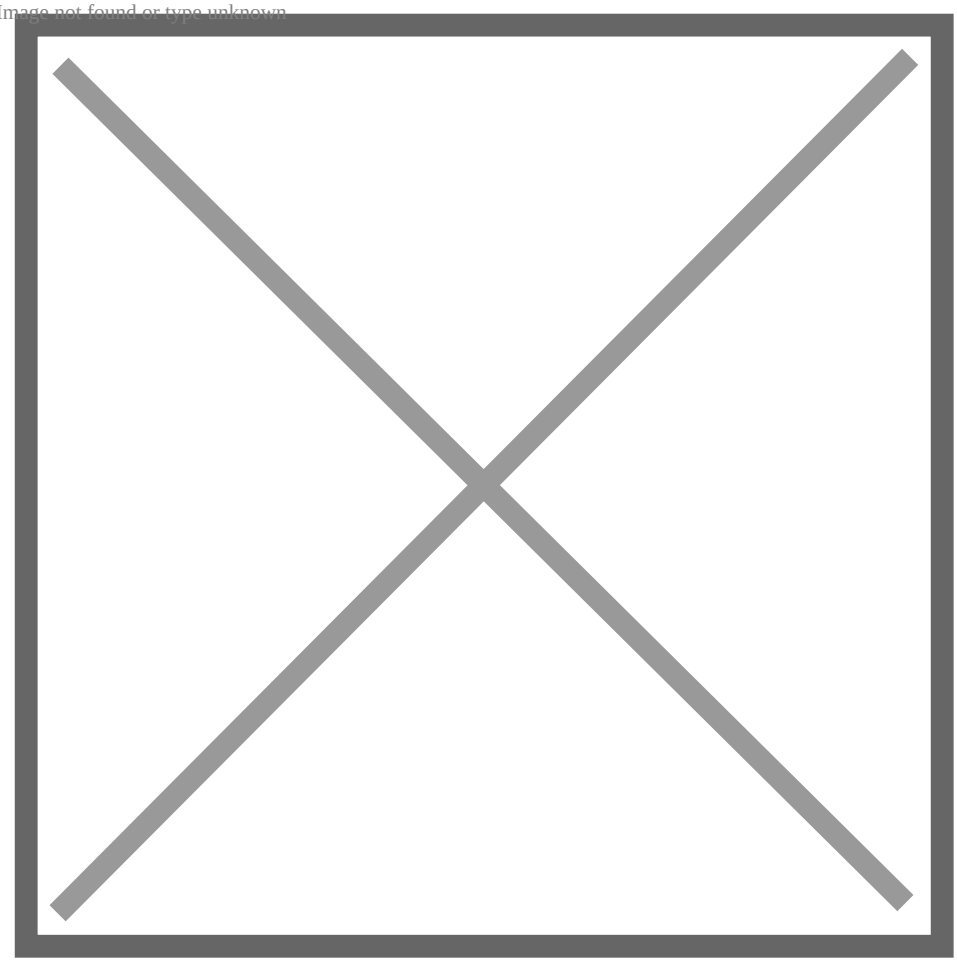
4-shakl. Ichma-ich spiral kvadrat

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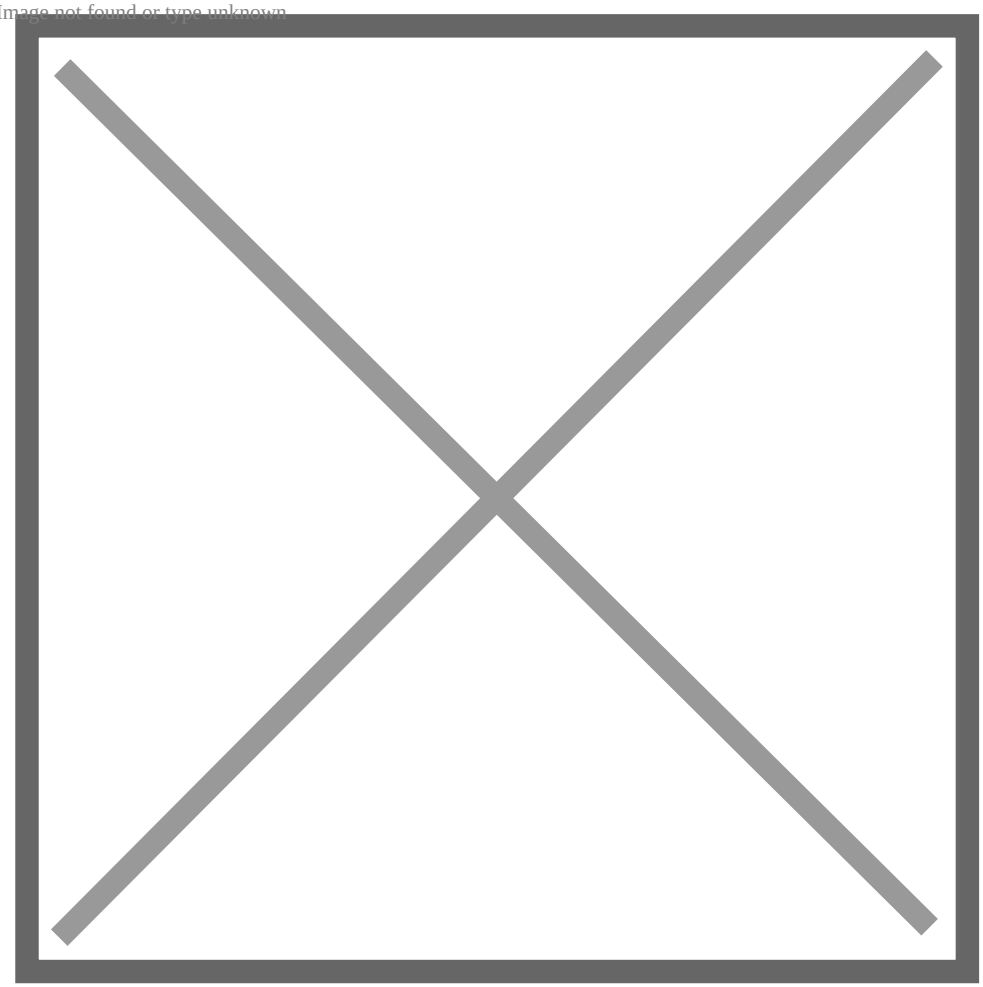
5-shakl. Pythonda sipiral chizma.

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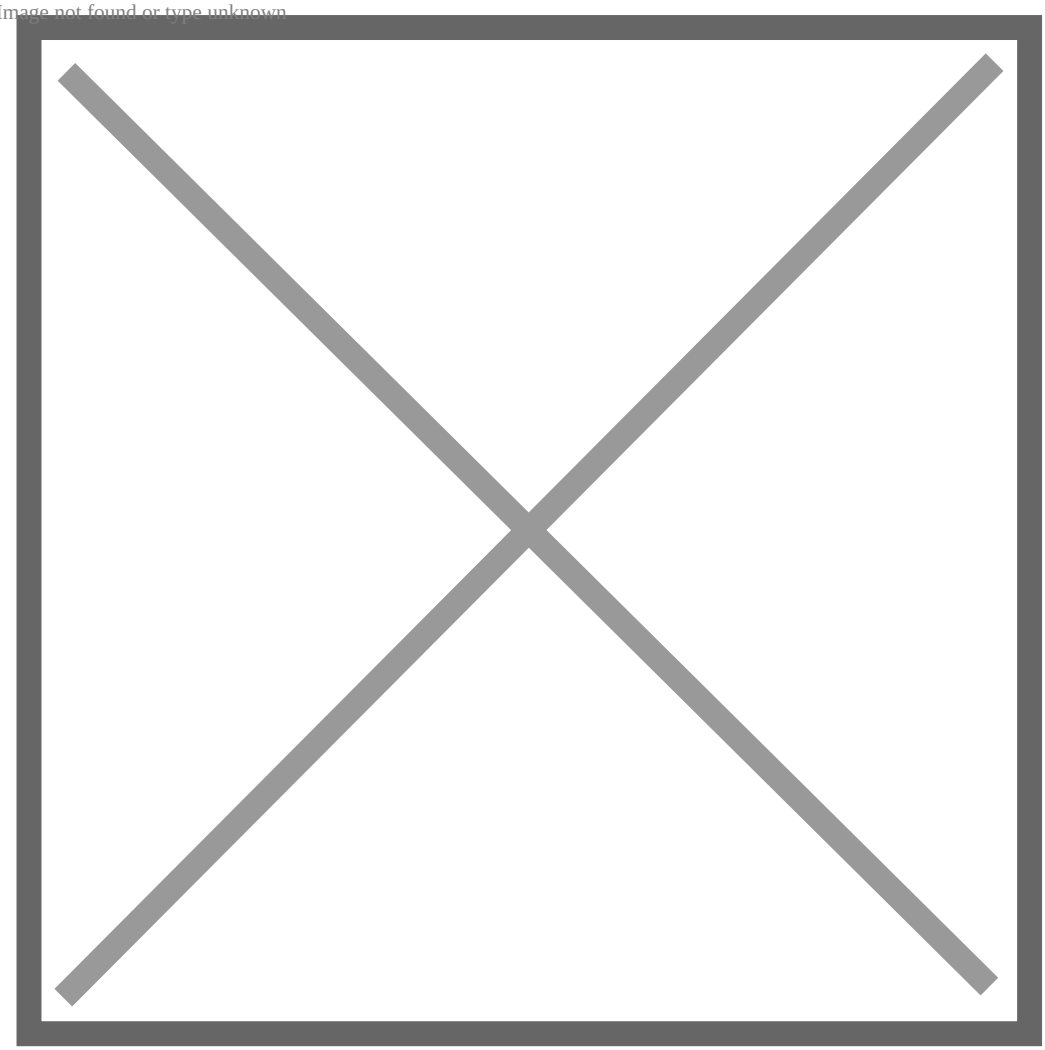
6-shakl. Chiziq chizish.

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7-shakl. Ellips chizish.

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Mustaqil yechish uchun topshiriqlar

Masala 1. Rangi qizil chiziq chizing

Masala 2. Rangi ko’k va fon rangi yashil chiziq chizing

Masala 3. Rangi sariq aylana chizing

Masala 4. Rangi sariq va fon rangi ko’k aylana chizing

Masala 5. Rangi yashil to’rtbrchak chizing

Masala 6. Rangi yashil va fon rangi qora to’rtburchak chizing

Masala 7. Rangi qizil to’rtburchak va yulduzcha chizing

Masala 8. Rangi qizil va fon rangi qora to’rtburchak va yulduzcha chizing

Masala 9. Rangi sariq kvadrat chizing

Masala 10. Rangi sari va fon rangi yashil kvadrat va elips chizing

Masala 11. Fon rangi qizil Ellips chizing

Masala 12. Fon rangi ko’k Ellips va sakkiz birchak chizing

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