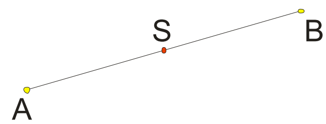
CENTRAL SYMMETRY

Draw along. Let the S be its central point.



It is clear that AS = BS.

Points A and B **are symmetryc to** S. S is **centre of symmetry.**

For points A and B say that they are **symmetric with respect to point** S. Point S is the **center of symmetry.**

More can be said that the point A to point B symmetric relative to point S, ie that B is symmetric with respect to A in S.

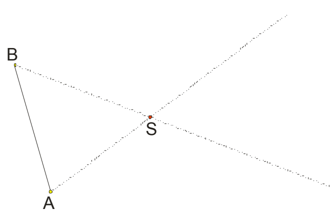
Mapping of each point A and some planes α translates into a point A` which is symmetric to the point A in relation to the point S with the plane α , called the *central plane of symmetry* α *with center in S*
Central symmetry is usually marked with I_S , of course, if your teacher marks it differently and you do so...

If you are not confused, **axisymmetry** is similarly marked I_s , with a team that was down slightly in the index letter s.

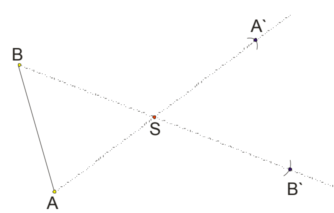
For figure *F* from plane α we say that maps in figure *F*` is central symmetry $I_S$ if each point of A figure F match point with a figure *A*` figure *F*` `is a central symmetric point *A*: $\boxed{A`= I_S(A)}$ **and vice versa.**

<u>**Example 1.**</u>
Along AB is given. Construct along the central symmetry if the center of symmetry, the point S, no longer belongs.

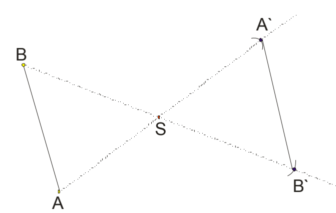
<u>***Solution:***</u>



picture 1.



picture 2.



picture 3.

Merge vertices given long with a center of symmetry S and extend to the other side ... (picture 1)
Sting compass point in S, we take the distance to A (ie SA) and move, we got a point A `, and also to perform to point B, then the distance SB switch to another page and get `B (picture2)

Obtained merge point A `and B`, we get (Along) A `B`, which is centrally symmetric to AB in relation to the point S (picture3)

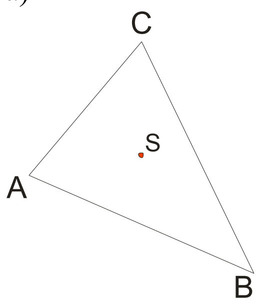
Example 2.

Construct a triangle A `B` C `centrally symmetric to given triangle ABC if the center of symmetry:

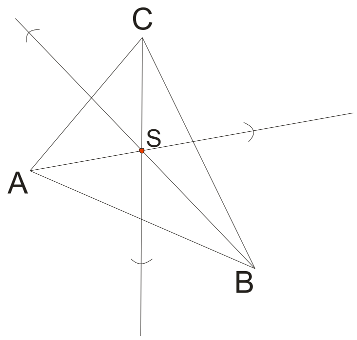
a) within the triangle
b) outside the triangle

Solution:

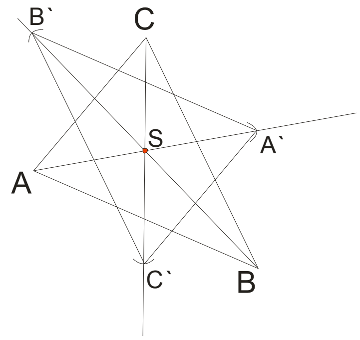
a)



picture 1.



picture 2.



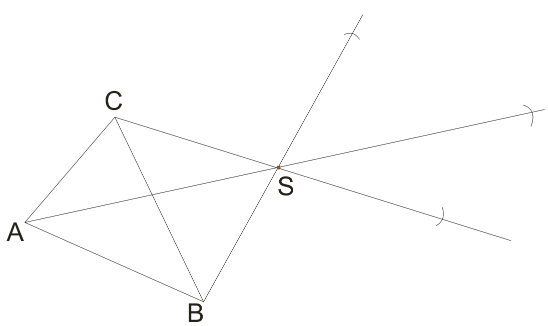
picture 3.

Choose a point inside a triangle with (arbitrary), we can see in picture 1.

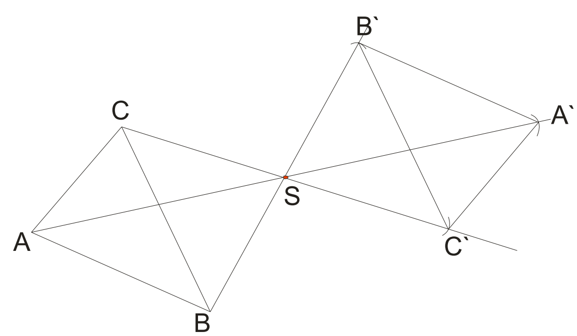
Merge the vertices of a triangle with the center of symmetry S and continue ... We have three lines .Thrust compass point in S and transmits the distance to A, B and C on the other hand the correspondinglines. (picture 2.)

Merge points, and obtained our required triangle A `B` C `, which is centrally symmetric to the given triangle ABC to the point S is inside the triangle.

b)



picture 1.



picture 2.

The procedure is analogous as under a) with only a point outside the triangle we choose arbitrarily

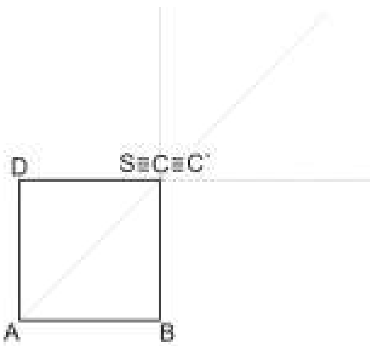
<u>Example 3.</u>

Construct a square with A `B` C `D` centrally symmetric given square ABCD if the center of symmetry:

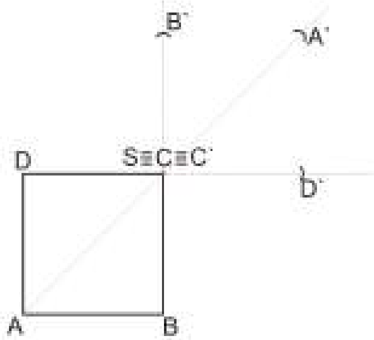
a) vertices C
b) on BC

<u>Solution:</u>

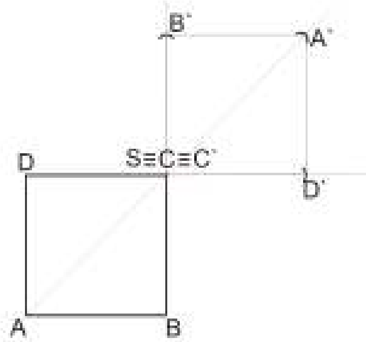
a)



Pictures 1



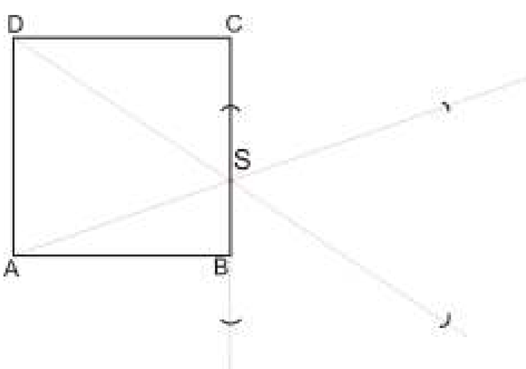
Pictures 2



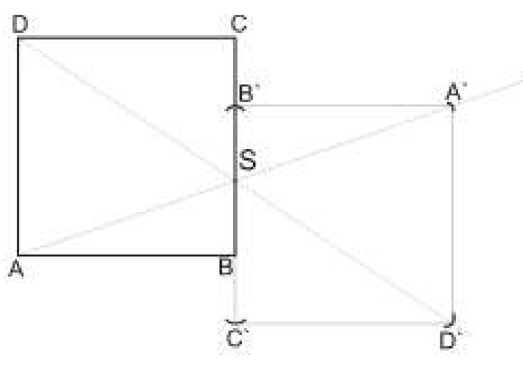
Pictures 3

As specified the topics C center of symmetry, that is what your image at the same time , that is, for $C \equiv C`$,for the other points do the procedure...

b)



Pictures 1

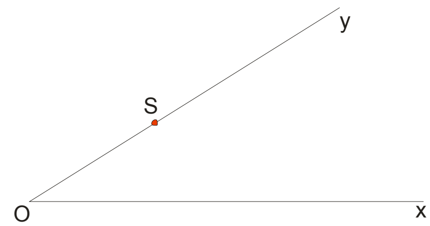


Pictures 2

Arbitrarily choose a point S on BC and we do everything according to procedure...

Example 4.

Given angle of $\measuredangle xOy$ transferred central symmetry with respect to point S (see picture)



Solution:

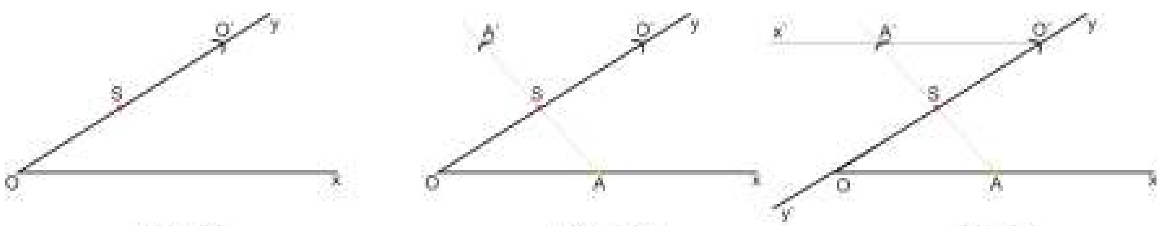


Figure 1 Figure 2 Figure 3

First, move threads of the angle (Figure 1)
To switch arm of Ox, we will take an arbitrary point A on the arm and move it ... (Figure 2)
merge O `A` and thus get arm O `x` (Figure 3)

Example 5.

To rounds, are given, k i k_1, but with different centers and O and O_1, which are cut. Through one of the points of intersection withdraw the right circle that p these circles cut the same tendon leader.

Solution:

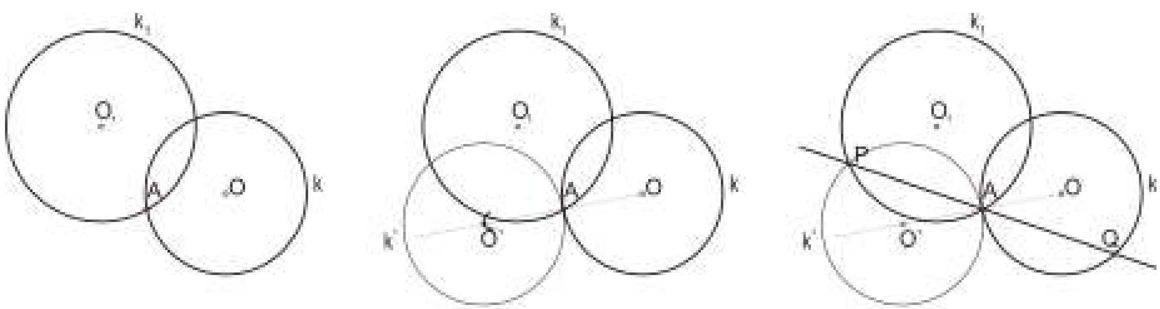


Figure 1 Figure 2 Figure 3

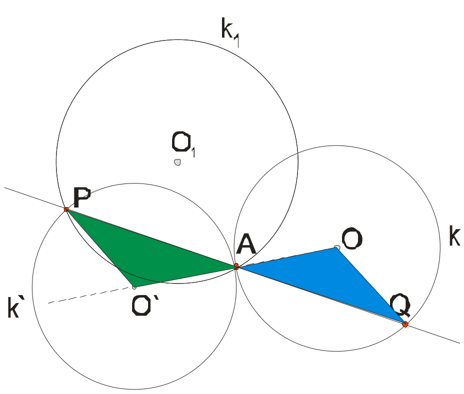
In Figure 1 We draw two given circles and marked with A single point of intersection of their circle.

The idea is that we map the central k symmetry circle compared to point A. To have it done it is enough to map the centre of O the circle k , and the radius will ,of course, remain the same. (Figure 2)

The intersection of the circle obtained k` the circle $k_1$ **`gives us the point P.** wepull a line right through the points A and P, we get point Q on the circle k. **Tendon PA and QA su jednake.** (Figure 3)

Why?

Recognize triangles APO` and AOQ.



These two triangles are matched, so PA=AQ.