Task to complete

Given is a square $ABCD$. We label the sides of the square as a and the diagonal as d. We know the measure of $d - a$. Create the steps of such a construction.

Steps of construction.

Suppose a plane α. We have a line segment $\overline{AX}$, such that $\overline{AX} \subset \alpha$. Furthermore, $\overline{AX} = d - a$. Then, we create a ray $\overrightarrow{AX}$.

Suppose we create line segments from X to any of the 4 vertices. We then observe such 4 triangles:

1. Δ_{ABX}, where $\overline{AB} = a$, $\overline{BX} = b$, $\overline{AX} = d - a$
2. Δ_{BCX}, where $\overline{BC} = a$, $\overline{BX} = b$, $\overline{CX} = a$
3. Δ_{CDX}, where $\overline{CD} = a$, $\overline{CX} = a$, $\overline{DX} = b$
4. Δ_{ADX}, where $\overline{AD} = a$, $\overline{AX} = d - a$, $\overline{DX} = b$

$\ldots$ we observe $\Delta_{ABX} \cong \Delta_{ADX} \land \Delta_{BCX} \cong \Delta_{CDX}$.

*We don't need to specify the size b as it's not for this particular example. Moreover, the triangle Δ_{ABX} (likewise Δ_{ADX}) are of no significance for this particular exercise. Since, $\Delta_{BCX} \cong \Delta_{CDX}$, we will use Δ_{BCX} for brevity.

We see that Δ_{BCX} is an isosceles triangle with an angle $\measuredangle BCX = 45^\circ$. Therefore, $\measuredangle CBX = \measuredangle CXB = (180 - 45) \div 2 = 67.5^\circ$. We continue with the next step, namely, we create $\overleftrightarrow{p}$, such that $X \in \overleftrightarrow{p} \land \measuredangle \overrightarrow{AX}, \overleftrightarrow{p} = 67.5^\circ$ (in the upper half-plane). Additionally, we have $\overleftrightarrow{q}$, such that $A \in \overleftrightarrow{q} \land \measuredangle \overrightarrow{AX}, \overleftrightarrow{q} = 45^\circ$. Consequently, we get the vertex B, where $\overleftrightarrow{p} \cap \overleftrightarrow{q} = \{B\}$. In order to obtain the vertex C, we create a line $\overleftrightarrow{r}$, such that $B \in \overleftrightarrow{r} \land \overleftrightarrow{q} \perp \overleftrightarrow{r}$. So, we have C, where $\overrightarrow{AX} \cap \overleftrightarrow{r} = \{C\}$. Lastly, we create a line segment $\overline{CD}$, where $\overline{CD} \parallel \overleftrightarrow{q} \land \overline{CD} = \overline{AB}$. Finally, we observe the square $ABCD$ in the plane α.