Step-1

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(a) Given that $A = A^T$, where A is a 5 by 5 matrix.

We have to find how many entries of A can be chosen independently.

Step-2

We know that the number of entries that can be chosen independently in a symmetric matrix of order n are $\frac{n(n+1)}{2}$

Since A is a 5 by 5 matrix.

So $n = 5$

Therefore, the number of independent entries are

$$\frac{5(5+1)}{2} = \frac{30}{2} = 15$$

Hence the number of independent entries in the given matrix are $\boxed{15}$.

Step-3

(b) We have to explain how does L and D given the same number of choices in LDL^T.

The 5 by 5 matrices L and D gives the same number of choices in LDL^T because L and L^T have same elements in different order because they are symmetric matrices.