Notes

Given that $\dim W = 3$

$\dim T = 5$

$\dim(W \cap T) \le \min(3, 5)$

$\dim(W \cap T) \le 3$

$\dim(W + T) = \dim W + \dim T - \dim(W \cap T)$

$\dim \cancel{W} + \dim T - \max(\quad) =$

$\dim W + \dim T - \max(\dim W \cap T) \le \dim(W+T) \le \dim V$

and $W+T$ is smallest subspace which contains both subspace W and T.

$3 + 5 - 3 \le \dim(W+T) \le \dim V$

$5 \le \dim(W+T) \le \dim V$

Hence

$5 \le \dim V$