$$S_{n,1} = (1,2)$$
, $S_{n,2} = 1,2$, $S_{n,3} = (1,3)$, $S_{n,4} = 1,3$, $S_{n,5} = (1,4)$, $S_{n,6} = 1,4$, $S_{n,7} = (1,5)$, and $S_{n,8} = 1,5$.