

p. 331/49

$P(n)$: all horses in a set of n horses are the same color

Proof:

Basis step: clearly, $P(1)$ is true

agree, since there is only one horse

Inductive step: Assume that $P(k)$ is true: all horses in any set of k horses are the same color.

Consider any $k+1$ horses; number these as horses

$1, 2, 3, \dots, k, k+1$. Now the first k of these horses

all must have the same color (agree, IH), and

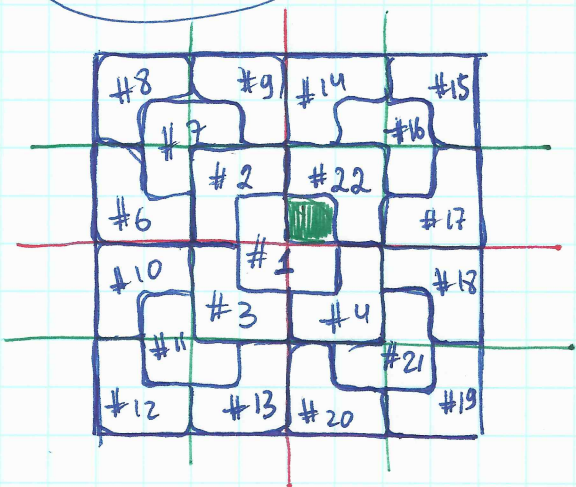
the last k of these must also have the same color

(disagree, this is not $P(k)$ from IH, this is a different one)

moreover if we consider $k=1$, then $k+1=2$ and hence the sets of horses do not overlap.

p. 333/77

$$8 \times 8 = 2^3 \times 2^3$$



note that there are other ways (with different cut out squares) are available