(FS)

- KTR1
- Pigeonhole principle

Ex. Show: among 51 elements in $\{1, \ldots, 100\}$, there are two that sum to 101.

do at least one

Ex. (requires hint) 11 pos. integers on a circle sum to 30. Prove: some consecutive segment sums to 20.

Ex. Show: among 5 pts on equilat. triangle, side length 1, two are at most $\frac{1}{2}$ apart.

- PIE for 2, 3 sets with Venn diag.

Ex. Find #subsets of $\{1, \ldots, 8\}$ that contain at least one odd and at least one element ≤ 3

Thm. (PIE, n sets)

Ex. How many permutations of $\{A, \ldots, Z\}$ do not contain RAT, FISH, or BIRD as consecutive subsequences?

if time

Pf. of PIE using char. functions ($n=3$ is enough)

Ex. Find #solutions to $x_1 + x_2 + x_3 + x_4 = 15$; $x_1, x_2, x_3 \leq 5$, $x_4 \leq 8$. ($x_i \in \mathbb{N}$)