This library is a collection of functions on finite geometric objects and some related combinatorial objects

KSets(n,k): This function returns all subsets of size k in $\{1, 2, ..., n\}$

PerfectDifference(n): This function returns all perfect difference sets of size n in $\mathbb{Z}_{(n-1)^2+n}$

PDSProjective(S): Constructs and then returns the set of lines for a projective plane from the perfect difference set S

OrdernProjective(n): Returns the lines of an order n projective plane constructed from a perfect difference set of order n

Affine(P): Given a set of lines P of a projective plane, removes a line and all points on it to return the set of lines for an Affine plane

SetMinus(n,m): Returns $n \setminus m$

SetUnion(U,V: Returns $U \cup V$

SetIntersection(U,V): Returns $U \cap V$

ParallelClasses(A): Given the set of lines for some Affine space A, reutrns parallel classes

Projective(A): Given the set of lines of an Affine plane A, returns the lines of a projective plane generated by adding a "line at infinity"

LineIntersect(l1,l2):Returns true if the lines l1 and l2 intersect. Returns false otherwise.

Subset(U,V): Returns true if $U \subset V$. Returns false otherwise

LineThrough(P,Q,Proj): Given the set of lines of a projective space Proj, this returns the unique line through P and Q

ProjectiveSpan(S,Proj): Given the set of lines of a projective space Proj, and a set of points, returns the smalles linear subspace containing S