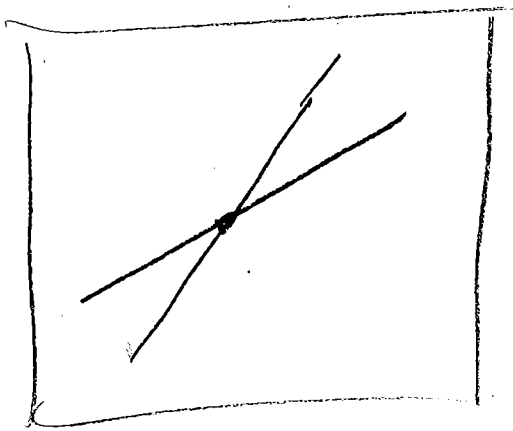
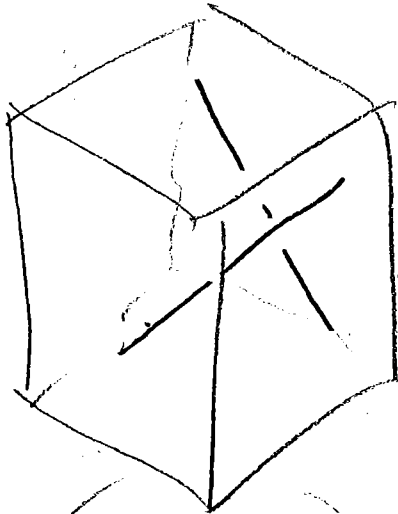


Intersections

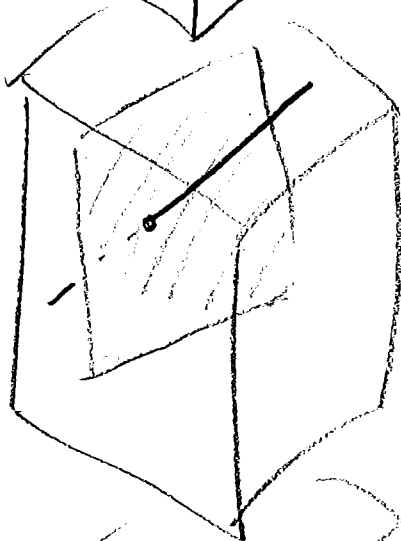


unless the lines have the same slope, they intersect in a point.

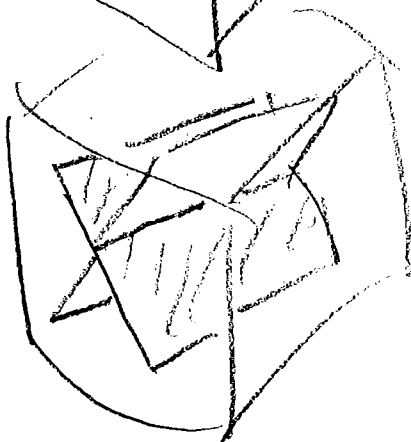
in the plane



Unless the lines are placed very carefully, they don't intersect.
in space



Unless the line and plane are placed carefully, they intersect in a point



Unless two planes are placed carefully, they intersect in a line.

How do two planes intersect typically²
in 4-dim space?

$$\dim(\text{line}) = 1$$

$$\dim(\text{point}) = 0$$

$$\dim(\text{plane}) = 2$$

$$\dim(\text{space}) = 3$$

Two lines in the plane: $L_1, L_2 = \text{lines}$

$$\dim(L_1 \cap L_2) = \dim(L_1) + \dim(L_2) - \text{dim of the space containing them}$$

$$\dim(L_1 \cap L_2) = 1 + 1 - 2 = 0$$

↑
point.

Two lines in space

$$\dim(L_1 \cap L_2) = 1 + 1 - 3 = -1$$

↑
negative means the lines don't intersect.

Line & Plane in space

$$\begin{aligned} d(L \cap P) &= d(L) + d(P) - 3 \\ &= 1 + 2 - 3 = 0 \end{aligned}$$

Two planes in space

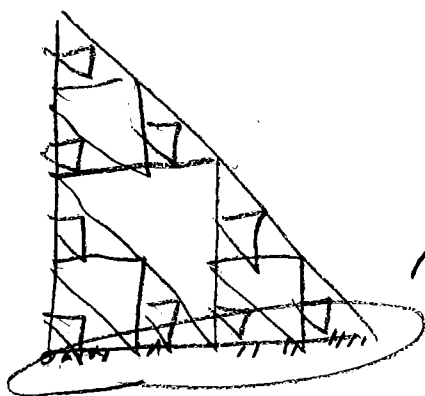
$$d(P_1 \cap P_2) = d(P_1) + d(P_2) - 3$$

$$= 2 + 2 - 3 = 1$$

line segment

Two plane in 4-dim space

$$d(P_1 \cap P_2) = 2 + 2 - 4 = 0$$



Align the center set with the bottom edge of the gasket

$$d(G \cap C) = d(C)$$

Monotonicity: If A is contained in B (is a subset of) B , then $d(A) \leq d(B)$