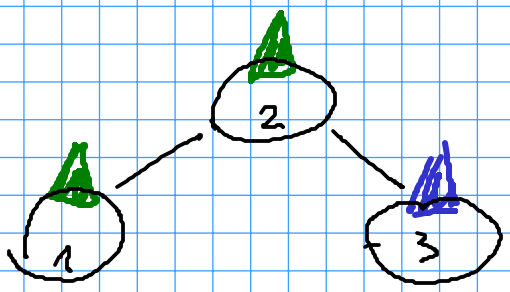
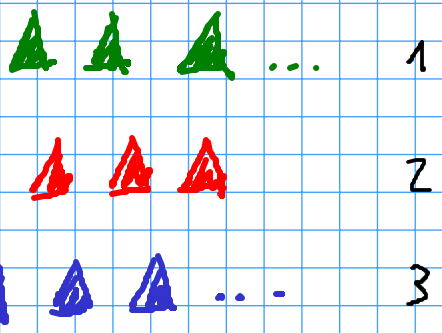
The hat-guessing number





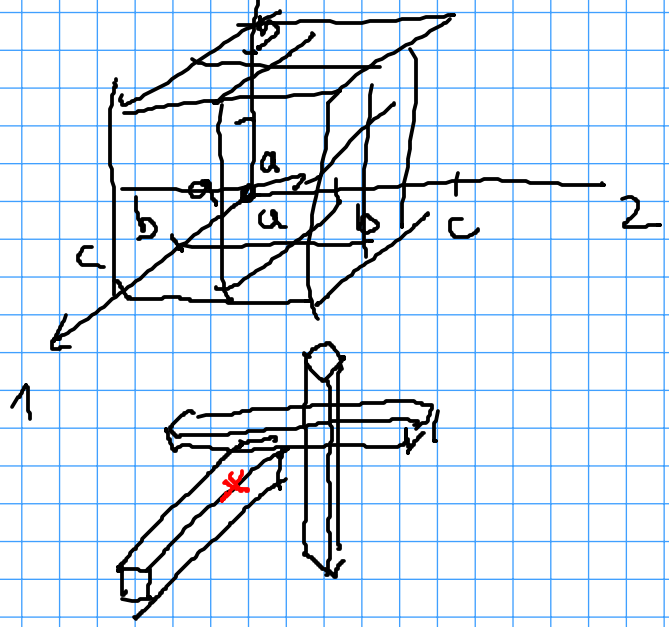
$2i - j + k \equiv \begin{matrix}0\\1\\2\end{matrix} \pmod 3$

$F = \{a, b, c\}$

Decision $\boxed{*bb \to abb}$

$a*c \to abc$

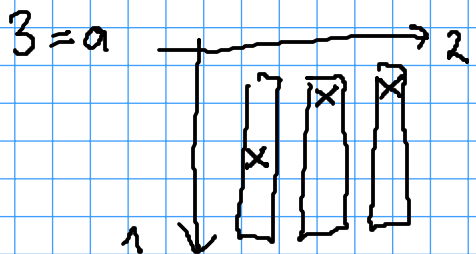
covers abb

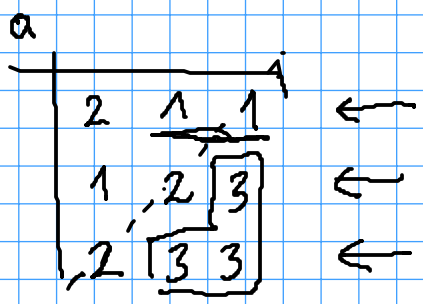


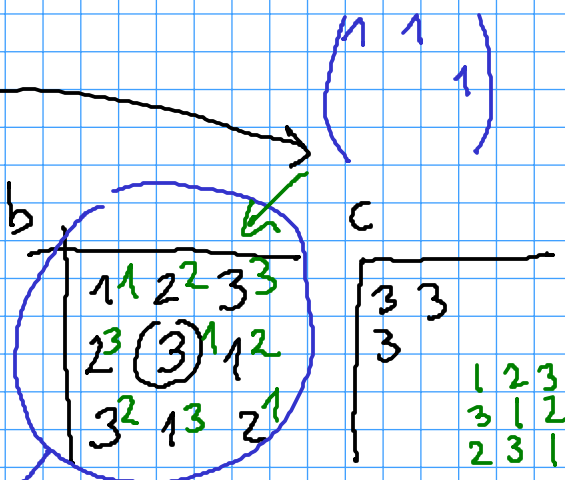
Strategy: Collection of decisions

$3 \cdot 9 = 27$

$|F| = 4 \quad 3 \cdot 16 < |conf| = 4^3$







12512 strategies

Latin square

$X_{ijk} \in \{0,1\}$

ij entry = k

$\sum_* x_{*jk} = 1 \quad \forall jk$

$\sum_i x_{i*k} = 1 \quad \forall ik$

$\to \sum_k x_{ij*} = 1 \quad \forall ij$

} 3 dim. planner AP

$\forall ijk\ldots \quad \sum_{*} x_{ijk*} \geq 1$

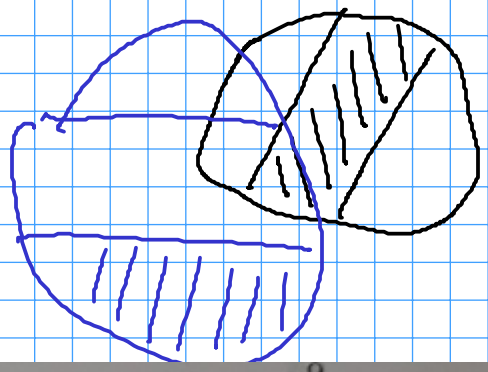
$\forall jk\ldots \quad \sum_{*} x_{*jk1} \leq 1$

$\sum_{*} x_{i*k2} \leq 1$

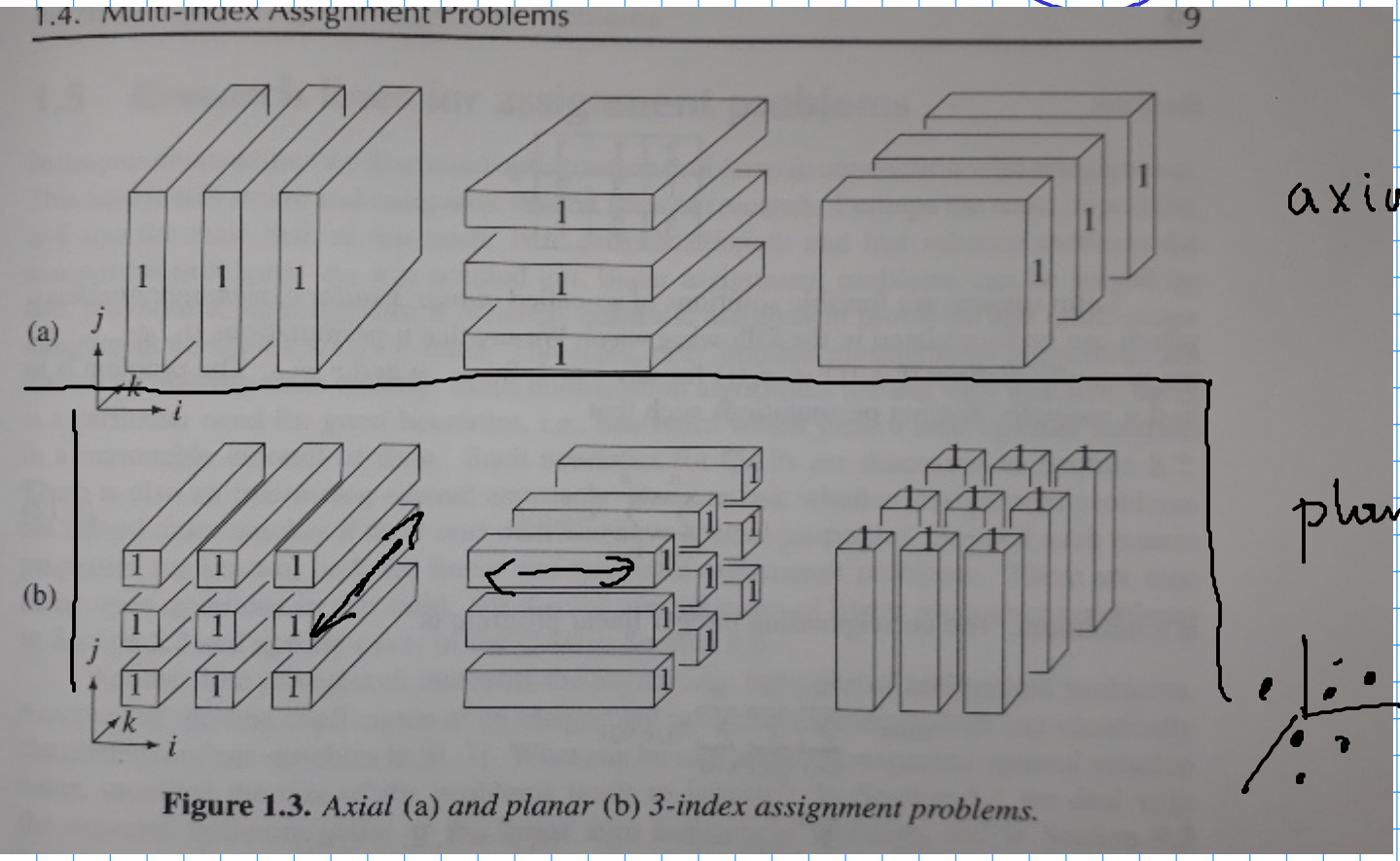
$\sum_{*} x_{ij*3} \leq 1$

$x_{ijkl} = 1$

player l is responsible for conf. ijk



1.4. Multi-Index Assignment Problems 9



axial

planar

Figure 1.3. *Axial* (a) *and planar* (b) *3-index assignment problems.*