Definition (Sum of resources). If the poset $\mathbf{A}$ is monoidal, then the *sum* of n copies of $\mathbf{A}$ is a design problem given by

$$\sum : (\mathbf{A}^n)^{\mathrm{op}} \times \mathbf{A} \to_{\mathbf{Pos}} \mathbf{Bool}$$

$$\langle a_1{}^*, \ldots, a_n{}^*, a_{\text{resource}} \rangle \mapsto (a_1 + \cdots + a_n \preceq_{\mathbf{A}} a_{\text{resource}}).$$

Clearly $\sum$ is monotone. Diagrammatically: