

In $\mathbf{Sets} \times \mathbf{Sets}$, an arrow is a pair of functions $f: Y \rightarrow X, f': Y' \rightarrow X'$. The pair of subsets $(1 \subset 2, 1 \subset 2)$ is a subobject classifier, and the characteristic arrow of any subobject $(S \subset X, S' \subset X')$ is evidently just the pair of characteristic functions $(\phi_S: X \rightarrow 2, \phi_{S'}: X' \rightarrow 2)$ from the category \mathbf{Sets} . Thus, there are, in 2×2 , four “truth-values”. The corresponding subobject classifier for \mathbf{Sets}^n has 2^n truth-values; as we shall see, it is the Boolean algebra of all 2^n subsets of n .