

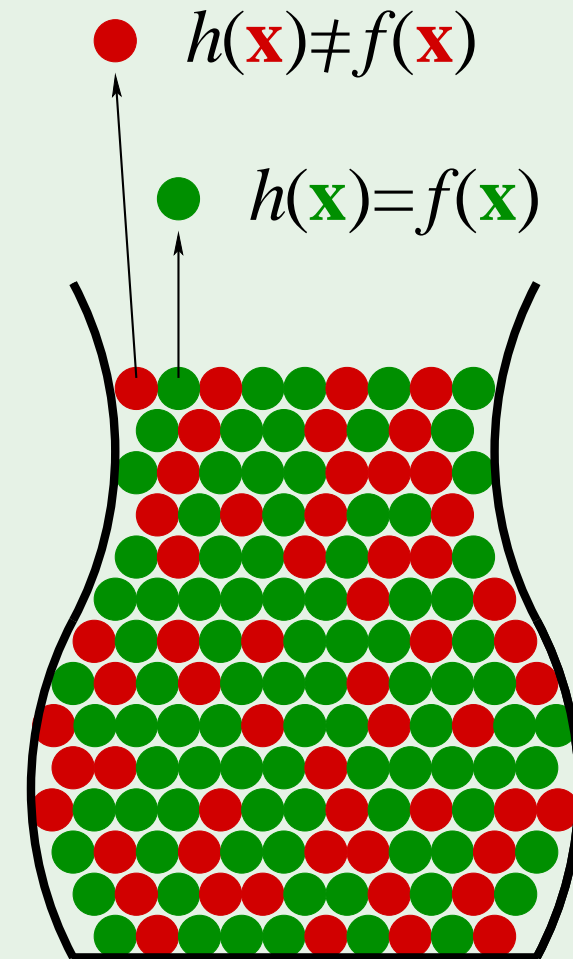
# Connection to learning

**Bin:** The unknown is a number  $\mu$

**Learning:** The unknown is a function  $f : \mathcal{X} \rightarrow \mathcal{Y}$

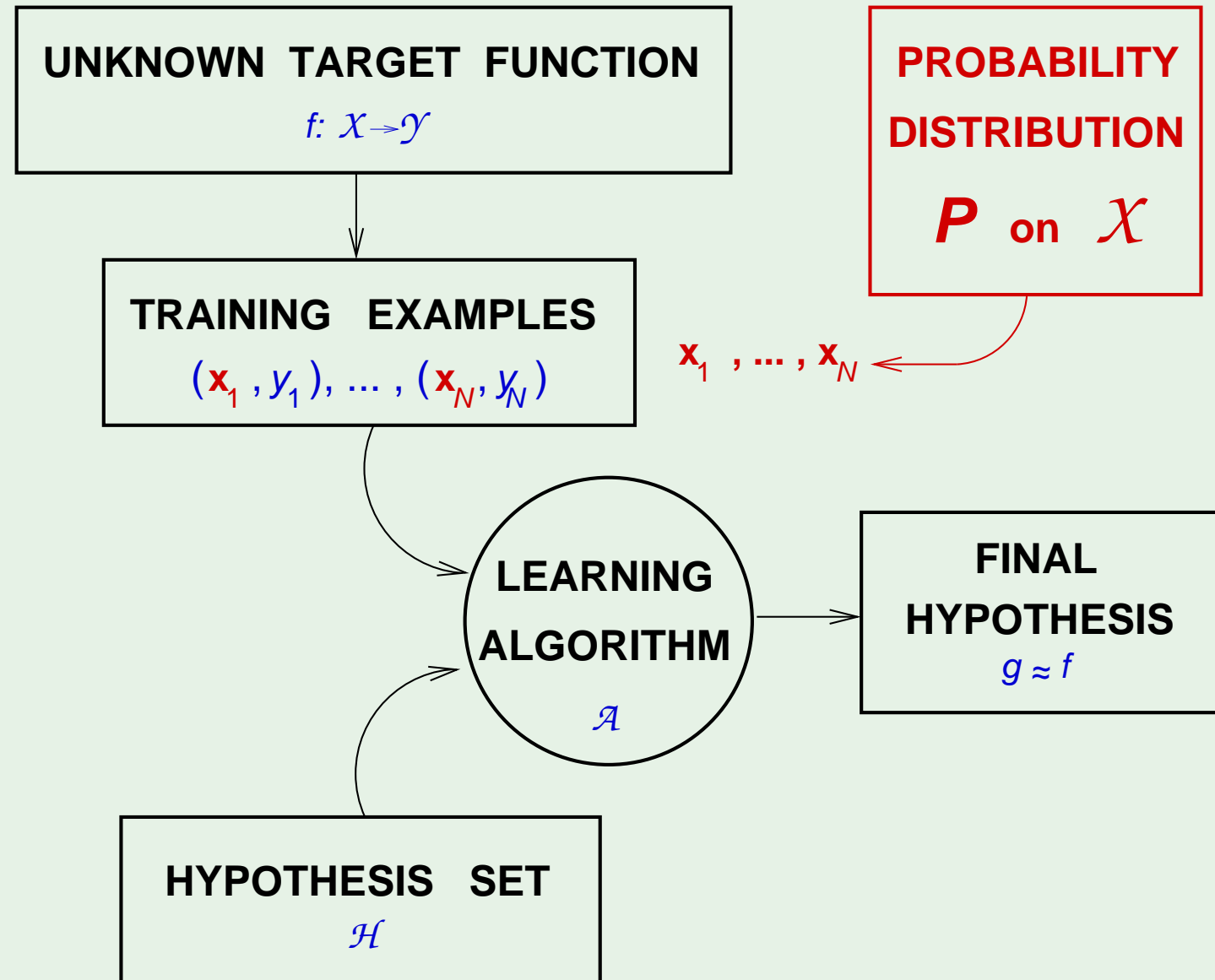
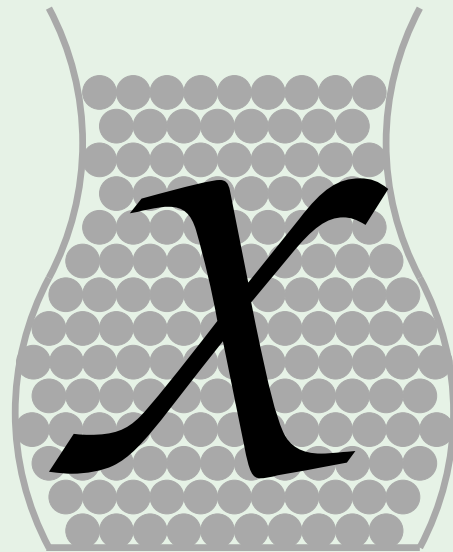
Each marble  $\bullet$  is a point  $\mathbf{x} \in \mathcal{X}$

- : Hypothesis got it **right**  $h(\mathbf{x})=f(\mathbf{x})$
- : Hypothesis got it **wrong**  $h(\mathbf{x})\neq f(\mathbf{x})$



# Back to the learning diagram

The bin analogy:



# Are we done?

Not so fast!  $h$  is fixed.

For this  $h$ ,  $\nu$  generalizes to  $\mu$ .

‘verification’ of  $h$ , not learning

No guarantee  $\nu$  will be small.

We need to **choose** from multiple  $h$ 's.

