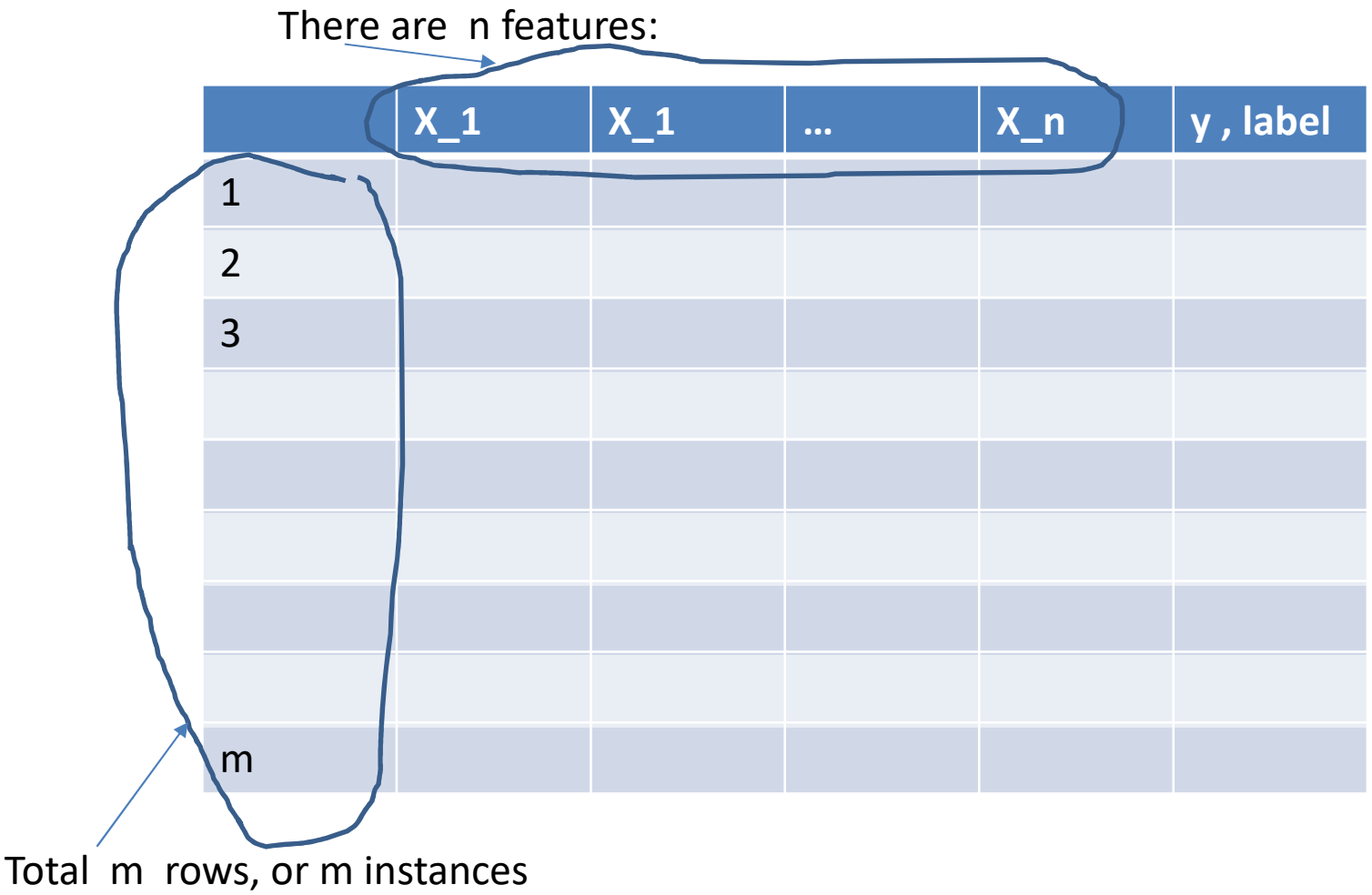
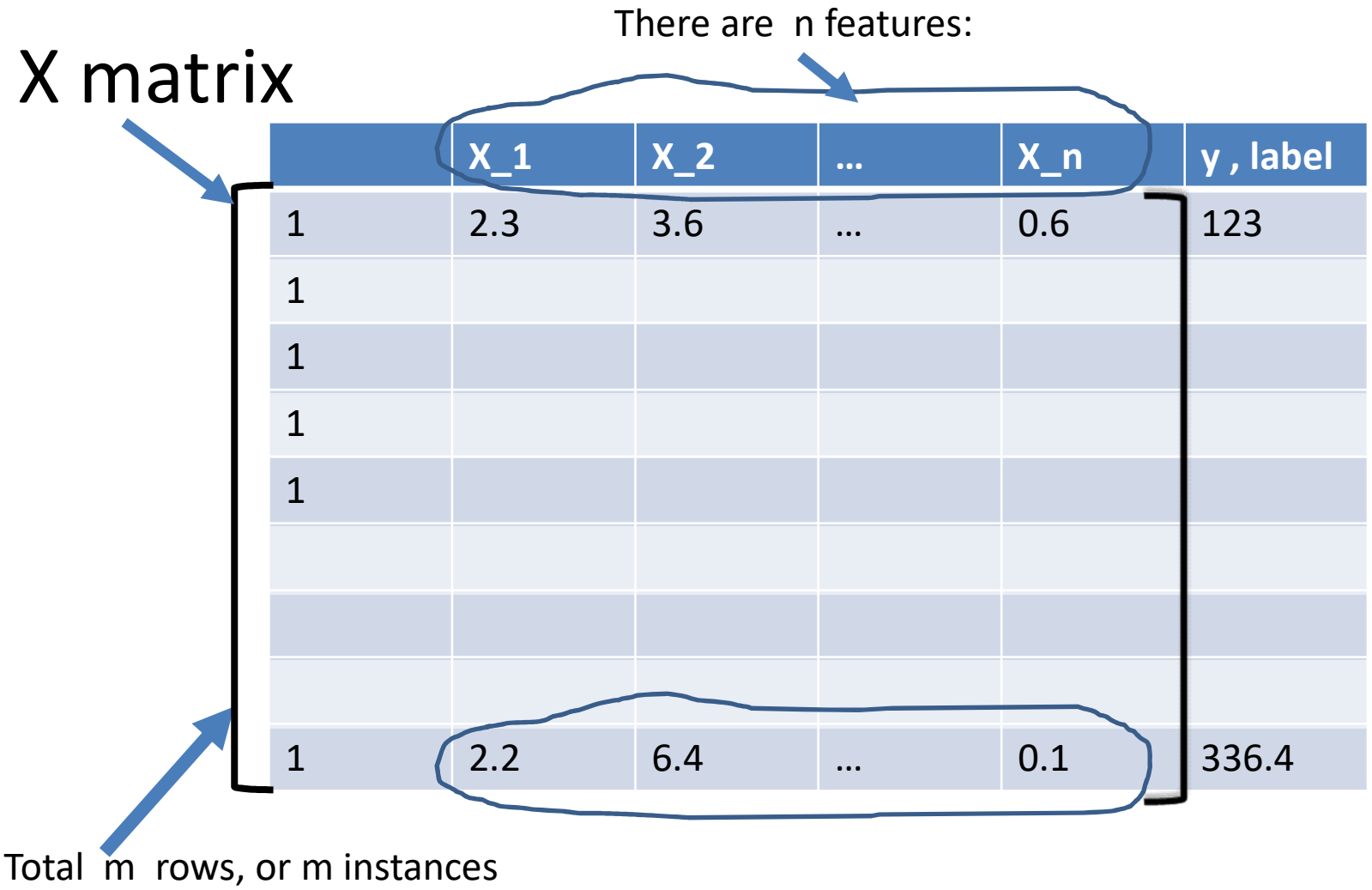
Ex: predict house value



用 m 筆 資料 (每筆有 n 個 feature), 來預測房價

Ex: predict house value



	X_1	X_2	…	X_n	y , label
1	2.3	3.6	…	0.6	123
1					
1					
1					
1					
1	2.2	6.4	…	0.1	336.4

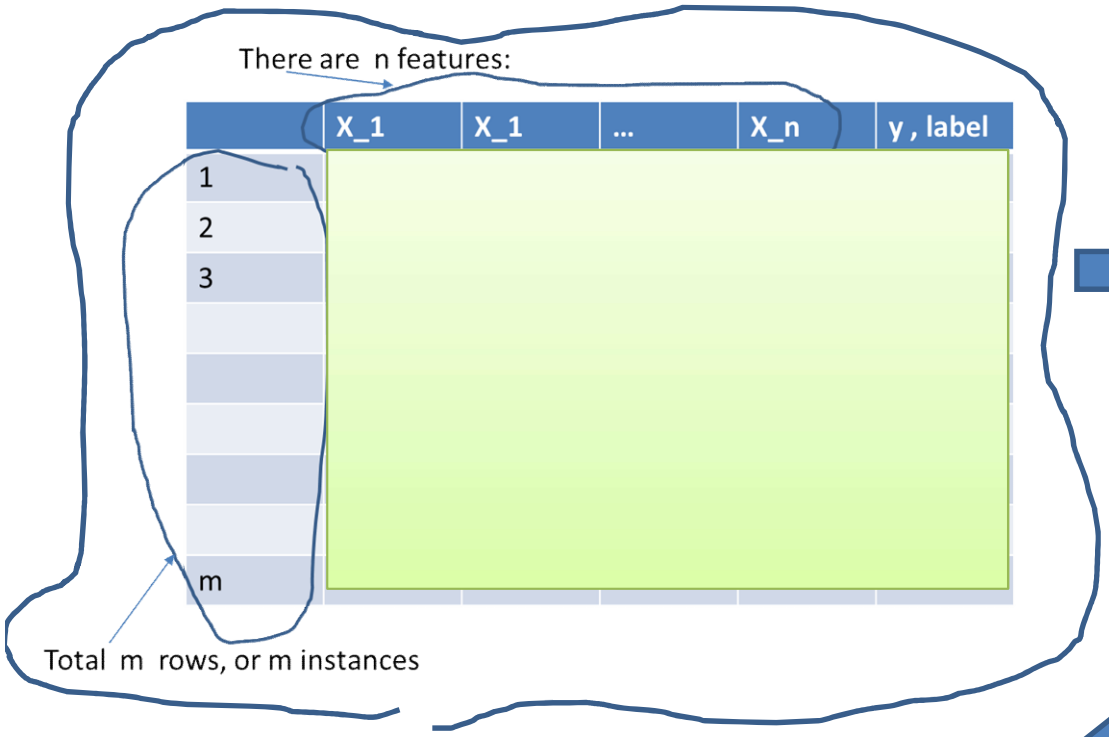
用 m 筆 資料 (每筆有 n 個 feature), 來預測房價

Want $X\theta \approx y$

- $\theta=(\theta_0, \theta_1,\cdots, \theta_n)$ is a column vector
- X has m rows, n+1 columns

	X_1	X_2	…	X_n	θ	y
1	2.3	3.6	…	0.6	θ_0	y_1
1					θ_1	y_2
1						
1						
1						
1	2.2	6.4	…	0.1	θ_n	y_m

dataset



Learning algorithm

New unseen x

$x=(x_1,\cdots,x_n)$

$\theta=(\theta_0,\theta_1,\cdots,\theta_n)$ is a column vector

$\hat{y}=\theta_0+\theta_1x_1+\theta_2x_2+\cdots+\theta_nx_n$

Linear regression

- use only one variable to predict
  - $\hat{y}=\theta_0+\theta_j x_j \;\; j = 1,2,\cdots,n$
  - Straight line fit using each explanatory variable

- Regression with all explanatory variables
  - $\hat{y}=\theta_0+\theta_1 x_1+\theta_2 x_2+\cdots+\theta_n x_n$