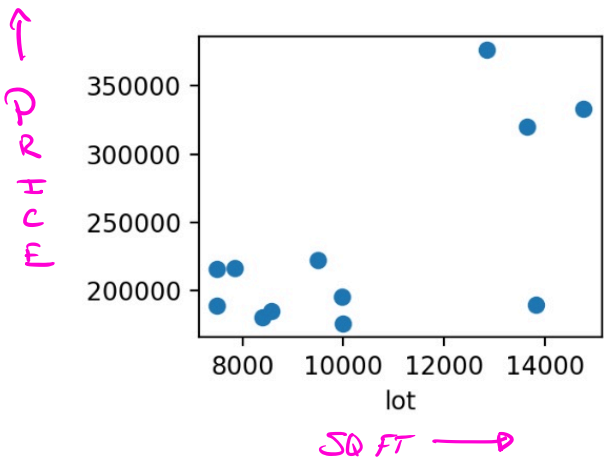
Supervised Learning

+ Definitions
+ Linear Regression
+ Batch & Stochastic Gradient
+ Normal Equations

Supervised Learning

Example Data House prices (Ames dataset, Kaggle dataset)

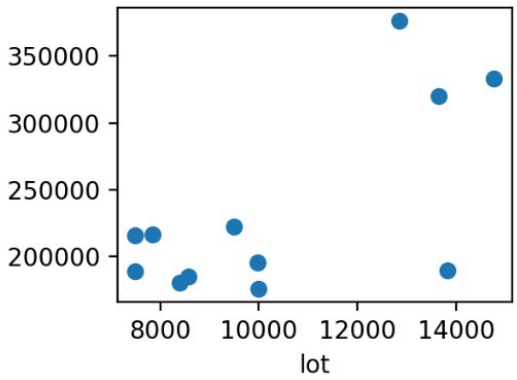
	SalePrice	Lot.Area
4	189900	13830
5	195500	9978
9	189000	7500
10	175900	10000
12	180400	8402
22	216000	7500
36	376162	12858
47	320000	13650
55	216500	7851
56	185088	8577
58	222500	9505
59	333168	14774

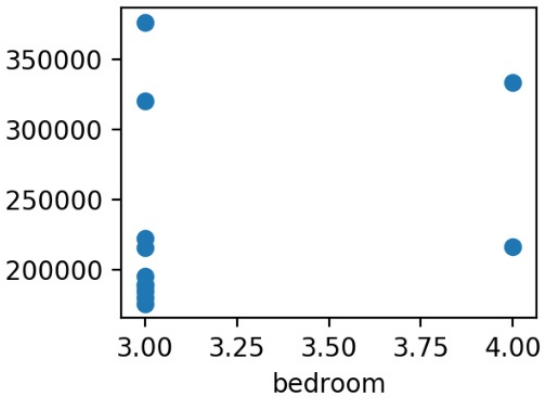


Slightly Richer Example...

	Lot.Area	SalePrice	Bedroom.AbvGr
4	13830	189900	3
5	9978	195500	3
9	7500	189000	3
10	10000	175900	3
12	8402	180400	3
22	7500	216000	3
36	12858	376162	3
47	13650	320000	3
55	7851	216500	4
56	8577	185088	3
58	9505	222500	3
59	14774	333168	4

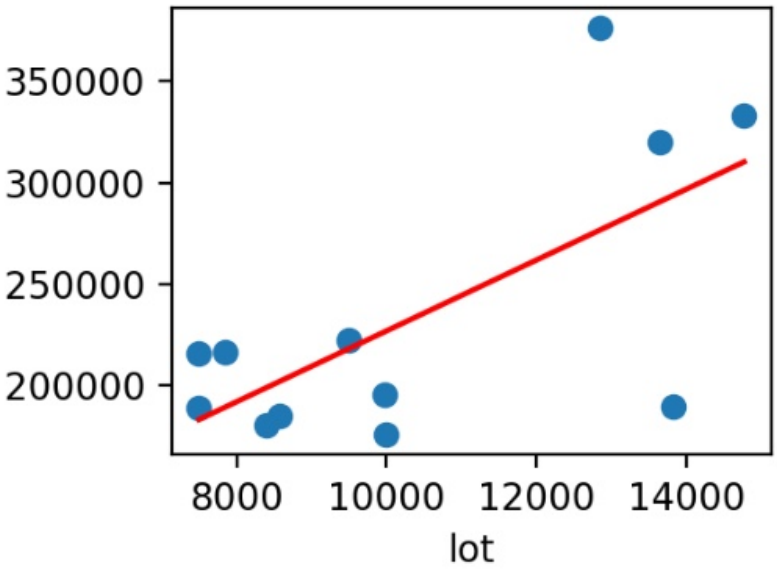
Price

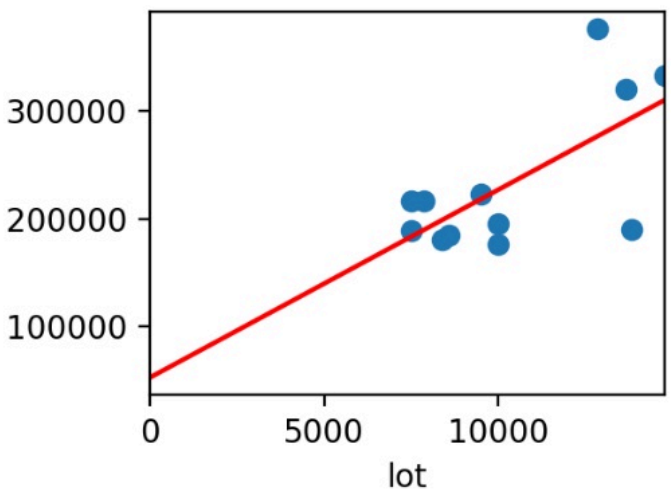




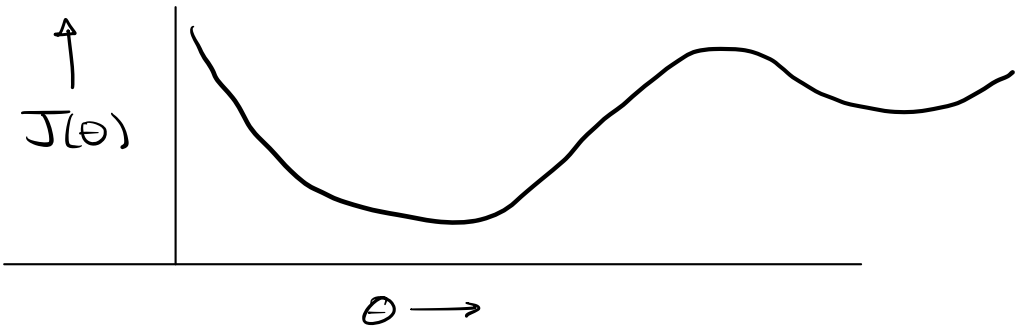
How do we represent h?

Simplest fit





Gradient Descent



Batch vs. Stochastic Minibatch

Normal Equation