Machine Learning first let me tell you that the shortcut for it is (ML).

So, ML is computer algorithms (sometimes it called method – model) can solve problem from trained data. ML make machine act like human. And it can improve automatically through learning the model with a lot of new data. ML is a part of AI field. The main target of ML is to make machine predict or to decide without any new programming code or human intervention. A lot of ML applications nowadays in real world, such as in Robots – Computer Vision – Recommendation Systems – Military – Drones – Medicine. So, some problems cannot be solved with normal algorithms.

Type of approaches:

Supervised learning: which is labeled dataset.

Unsupervised learning: which is not labeled dataset.

Note: there are more than this approaches, but this is the basic such as (Semi-supervised – Reinforcement).

For Supervised learning there are some common models such as (Linear Regression - Logistic Regression Decision Tree - SVM - Random Forest).

Note: there are more than those models.

For Supervised learning there are some common models such as (Clustering – Association).

Note: there are more than those models.

How can I decide supervised or unsupervised learning?

It depends on your dataset for example in fig (1) dataset has column y which is the target of the problem. And the x are the features which the model will learn to predict the y.

	X(Input)			Y(Output)
Student	Test1 marks	Test2 Marks	Study hours	Final result
1	30	35	4	Pass
2	42	45	6	Pass
3	20	17	1	Fail
4	45	48	6	Pass
5	25	22	2	Pass
6	34	40	2	Pass
7	49	47	6	Pass
8	17	10	0	Fail
9	25	20	1	Fail
10	35	38	3	Pass

fig 1

So, if you have a dataset without **y** then your problem is unsupervised.