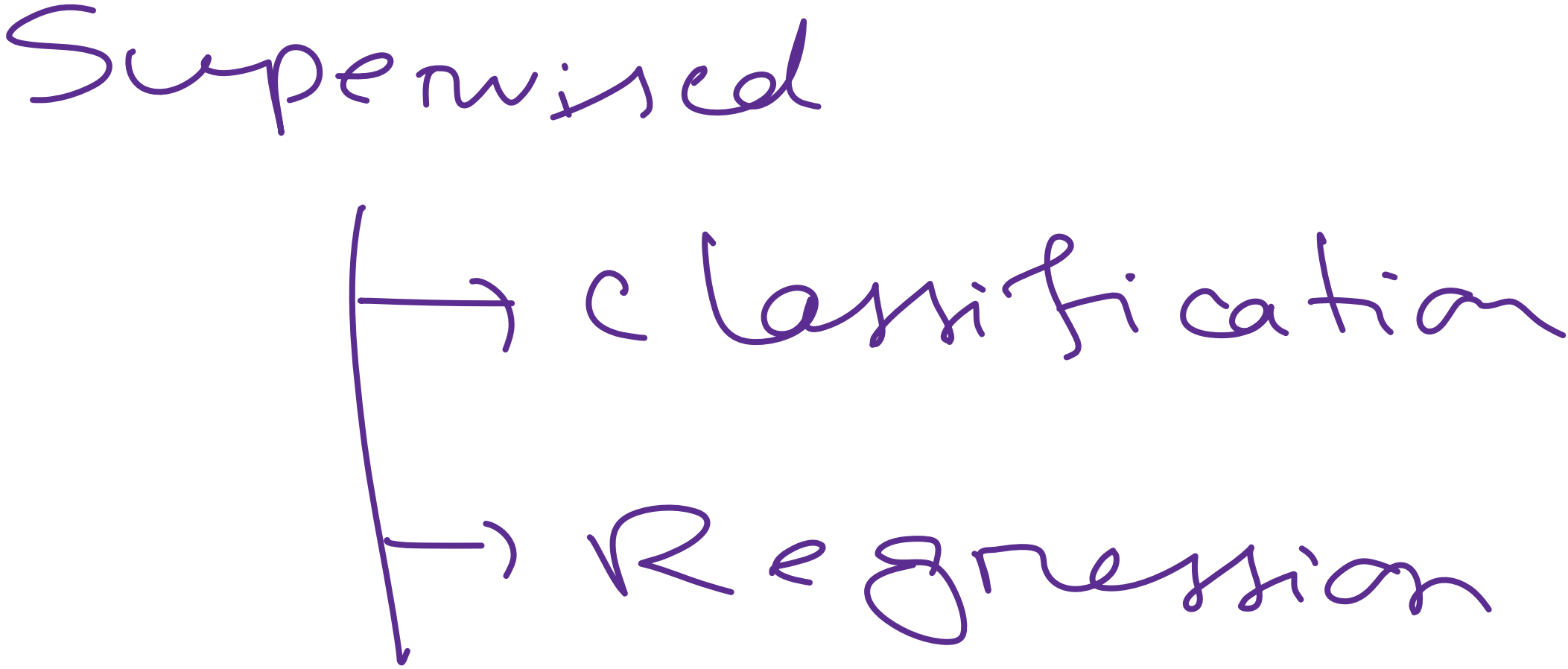
Types of ML

1. Supervised
2. Unsupervised
3. Reinforcement
4. Semi - Supervised

(4) Semi - Supervised

Supervised

IRIS	4 features	Target
- Label		


Supervised
classification
Regression

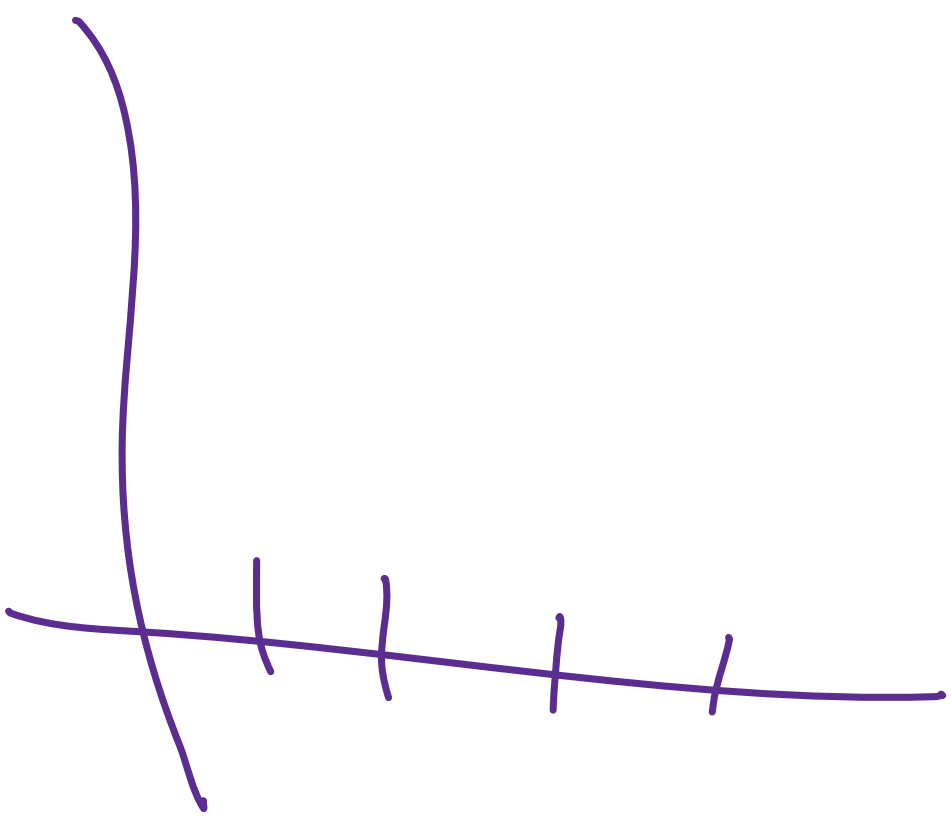
Classification

Feature	Target
1	Cat
1	Dog
1	Dog
1	Cat

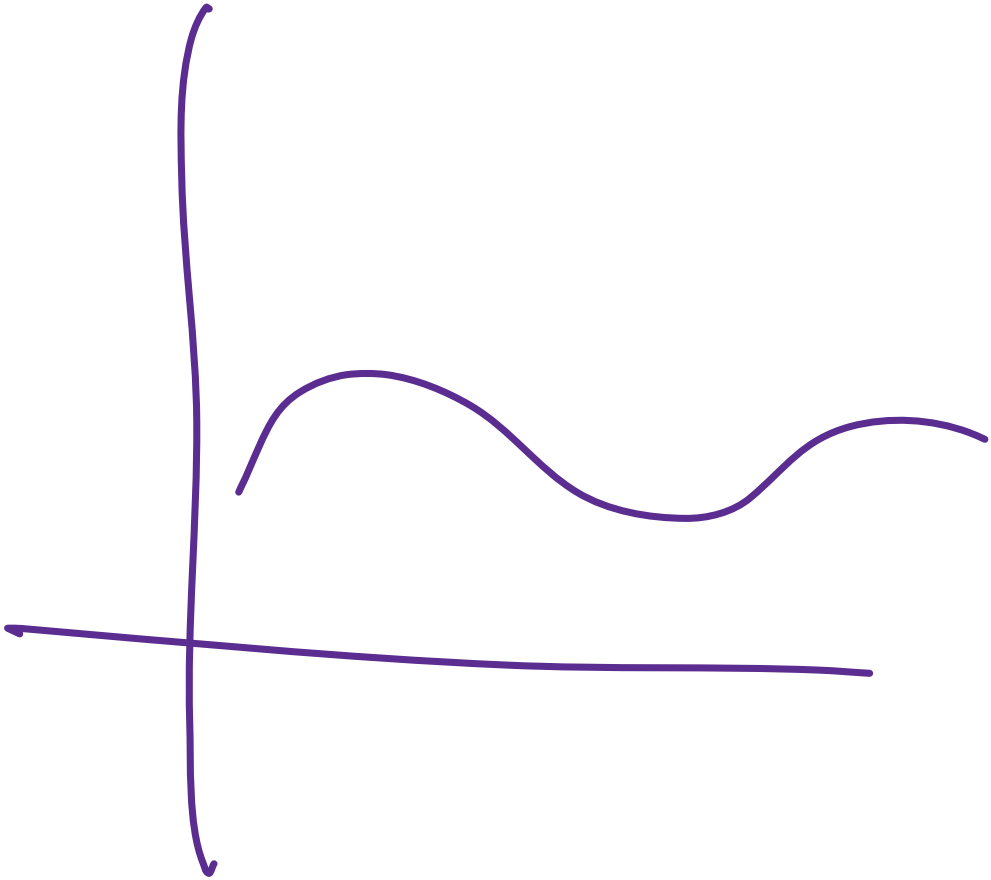
Regression

$0 < Price < \infty$

Feat. of car	Price
	12.0
	20.5
	30.68



C



R

Algorithm

- Linear Regression
- Logistic ..
- KNN - Random Forest
- Decision Tree

Classification

Spam Email

1, 0

Regression

Car Price

House Price

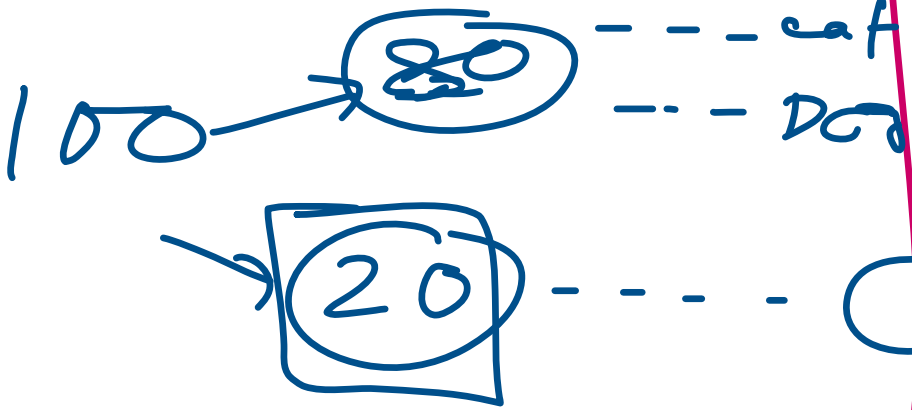
Rainfall predict

Classification

Precision

Recall

F-1 score



Regression

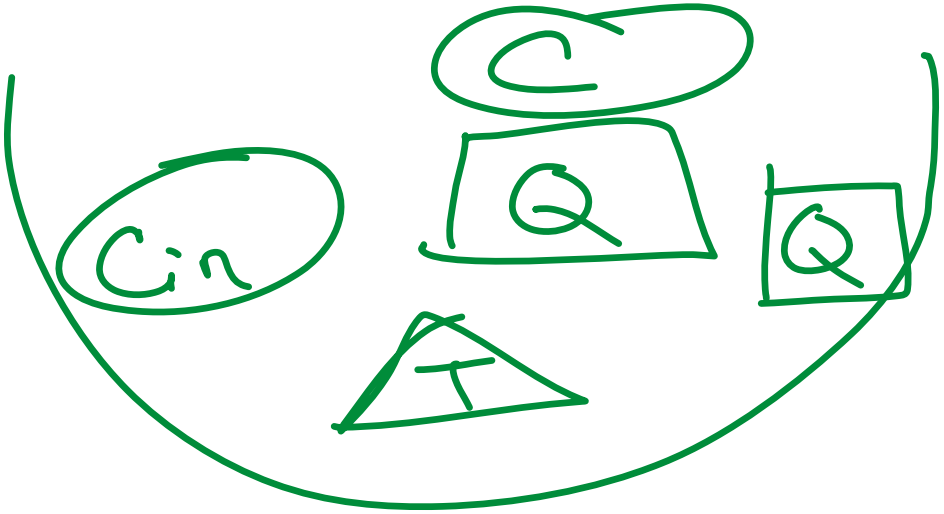
Mean-squarederr

MAPE

R2 - score

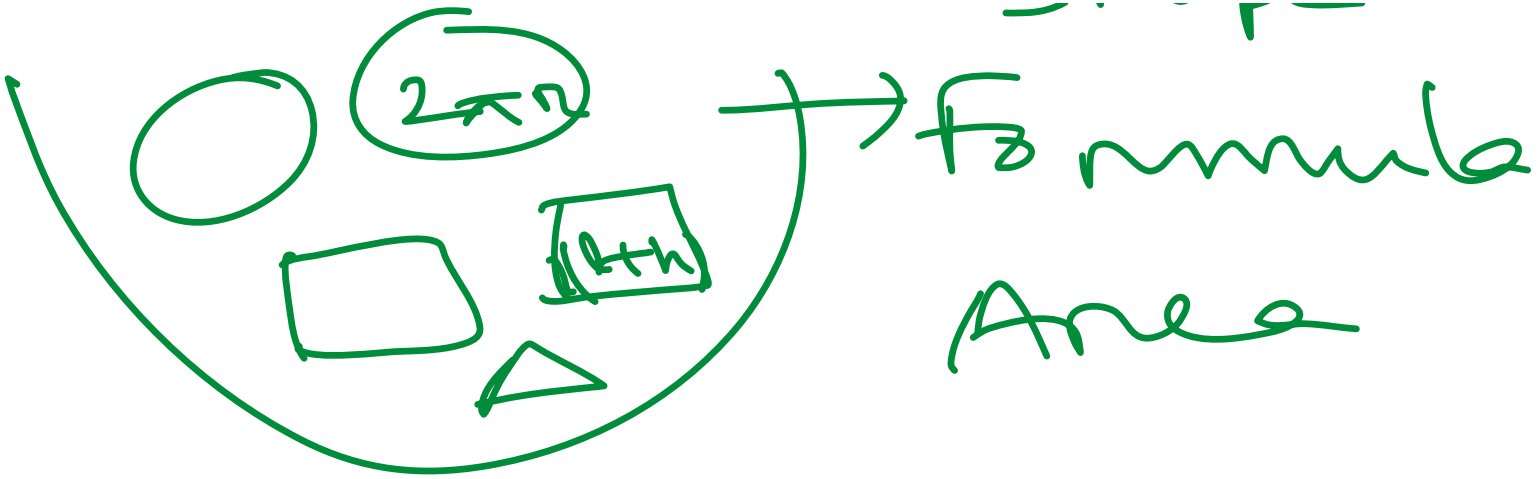
$$\frac{18}{20} = 90\%$$

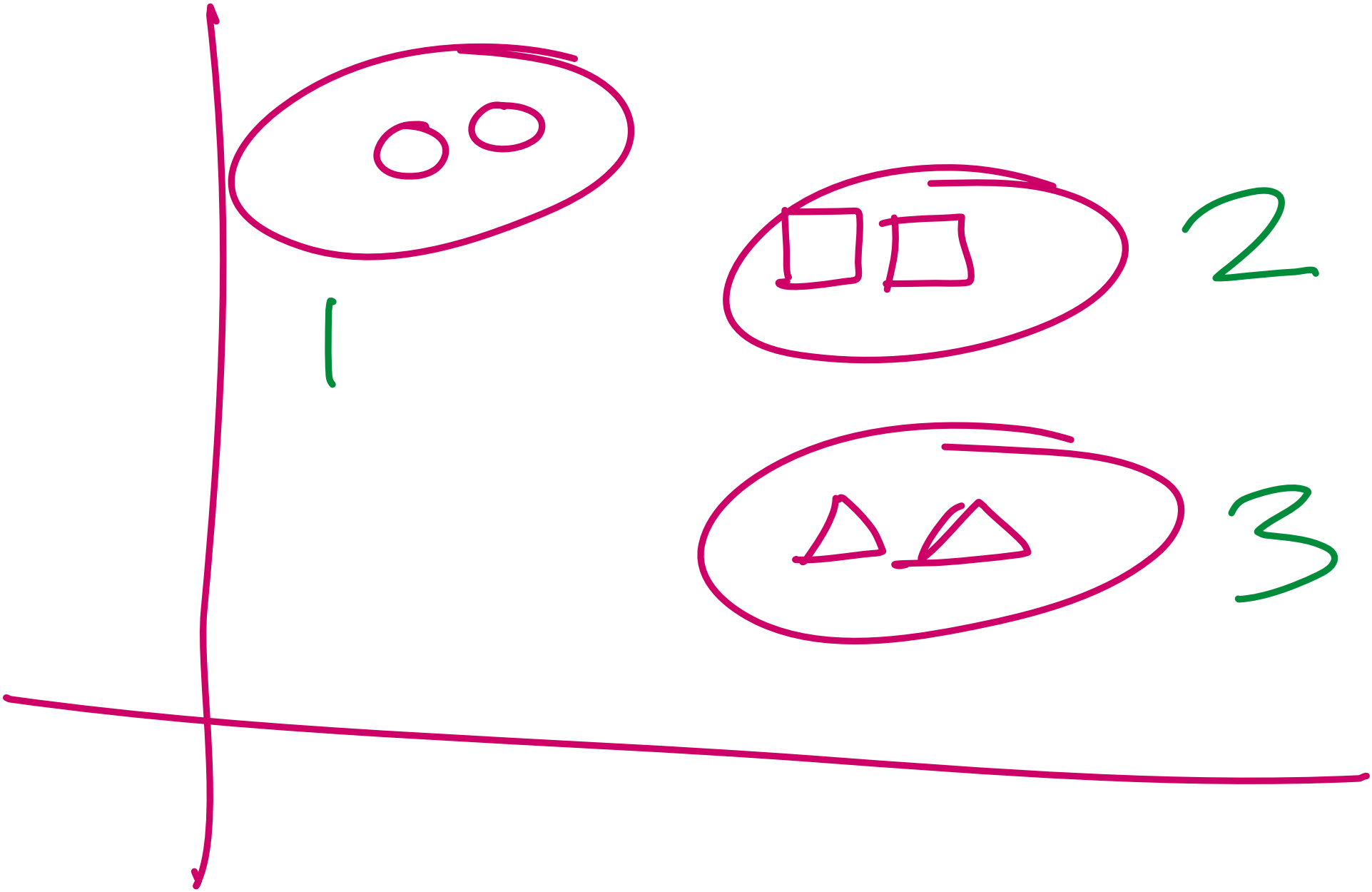
Unsupervised



→ Supervised

Shape


2πr
(l+h)
Formula
Area

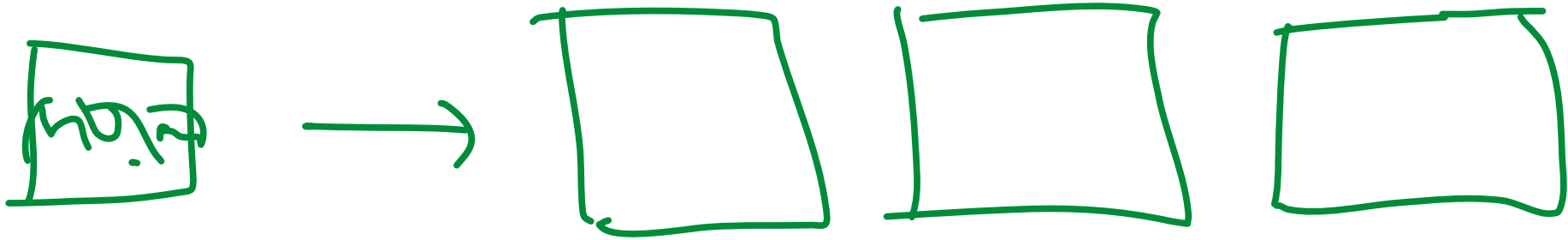

1
2
3

① clustering

- → Hierarchical
- → K-means
- → PCA
- → Singular value

(D) Association

1:1 Association



Adv

1. Flexible
2. DR
3. Ease of prep of dataset
4. Low cost
5. Labeling

Disadv

1. Less accurate
2. Scalability L

K-means Clustering

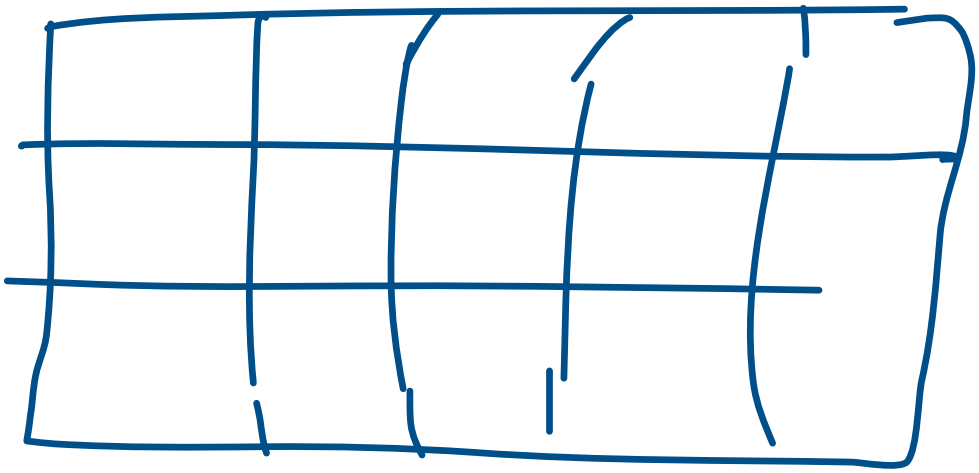
3 → centroide / mean

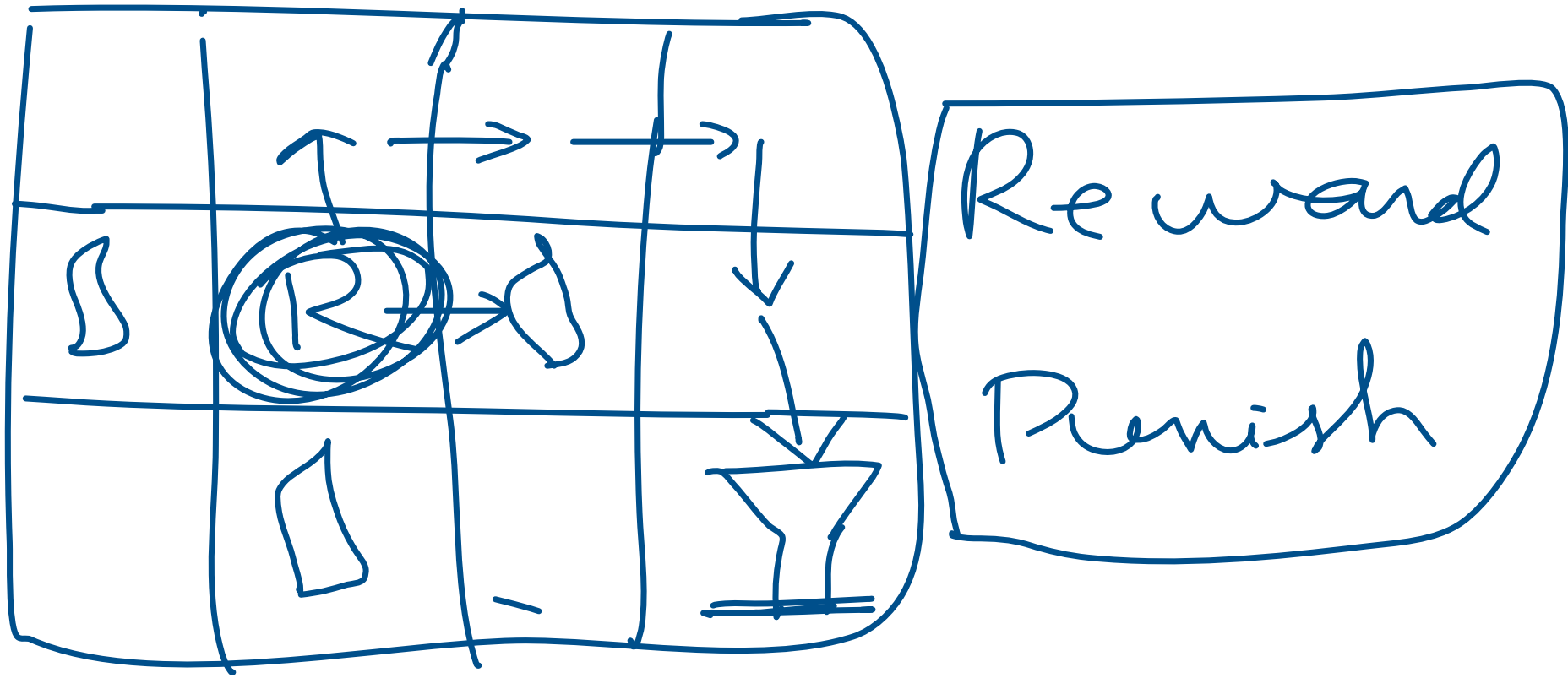
1, 2, 8, 7, 13, 15

3 7 13

Reinforcement

↳ Decision making Science





- Input → Initial state

- Output → variety of solution

→ Keeps
→ Best

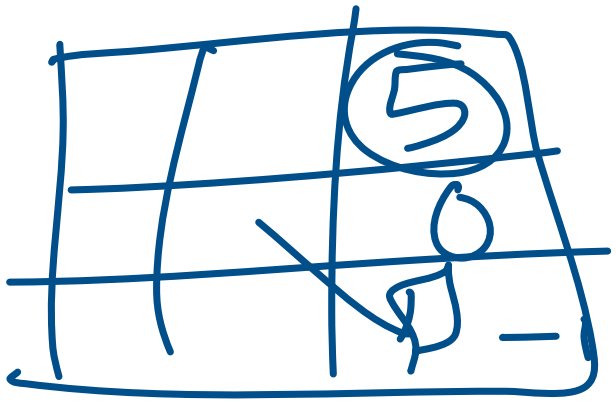
learning solution

Types

① Positive

② Negative

Elements



1. Policy
2. Reward Function
3. Value "
4. Model of environment

1. Robotics
2. Chess Board
3. Credit Assignment problem

Disadv

- Simple problem X
- Interpret, Debug
- Lots of data
- Highly dependent reward function

S	U	R
labelled data	Labelling ×	Interacts with environment
Regression, classification	Association, Clustering	Exploration, Exploitation

S	U	R
Supervision ✓	X	X

SARSA,
Q-learning

forecast
Prediction

Recommendation

Self-
driving car
Gaming

Semi-Supervised

- Supervised → Some Data
- Unsupervised