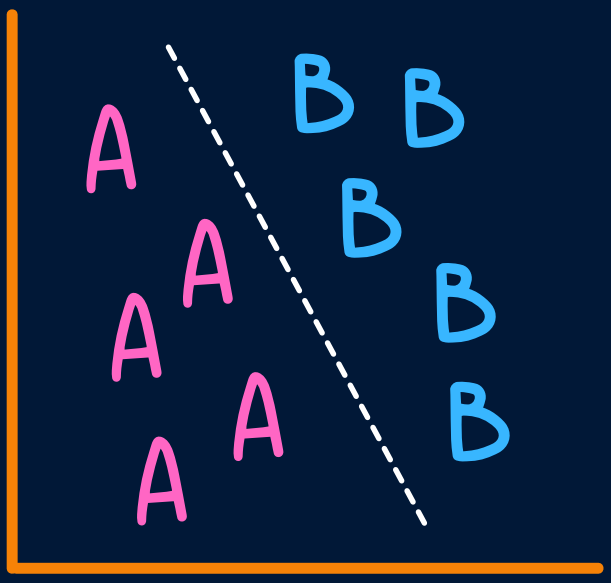
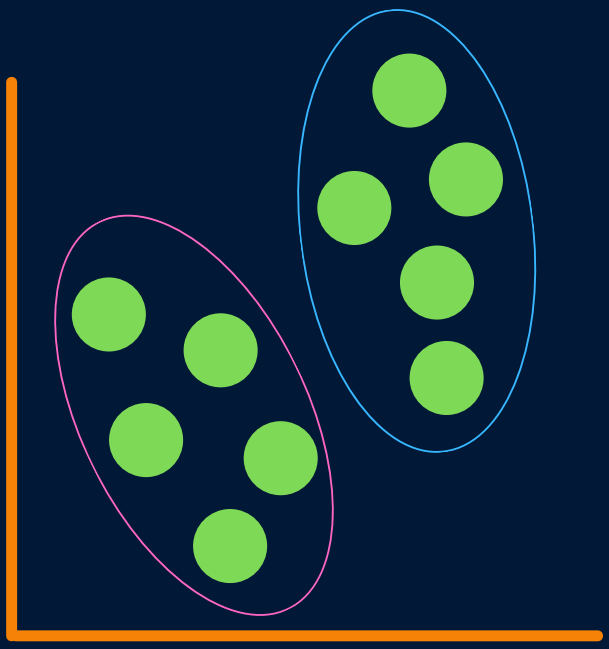
DATA SCIENCE INFINITY

Supervised Learning



VS



Unsupervised Learning

DATA SCIENCE INFINITY

Supervised Learning and **Unsupervised Learning** are essentially just two broad areas within Machine Learning that are applied to solve tasks with slightly different end-goals

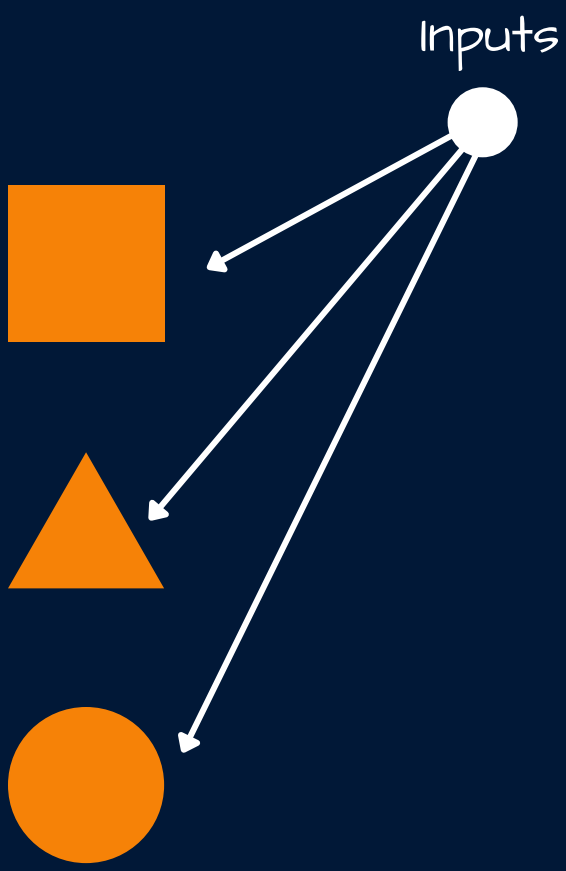
It is important to understand the difference, as well as which algorithms are useful for tasks that fall into each area

DATA SCIENCE INFINITY

SUPERVISED LEARNING

SUPERVISED LEARNING

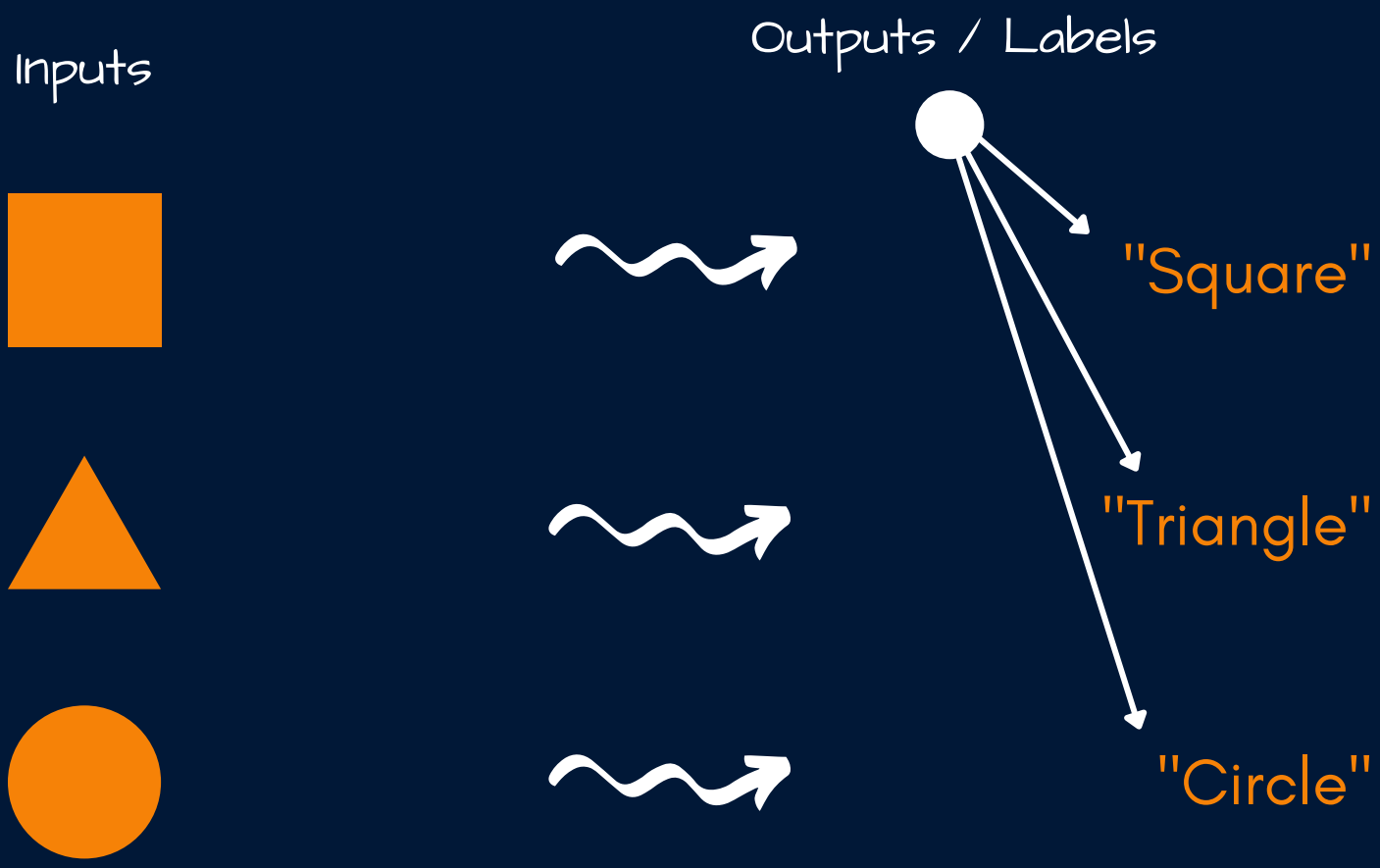
In Supervised Learning, we have **input data**...



DATA SCIENCE INFINITY

SUPERVISED LEARNING

and we have **output data**...

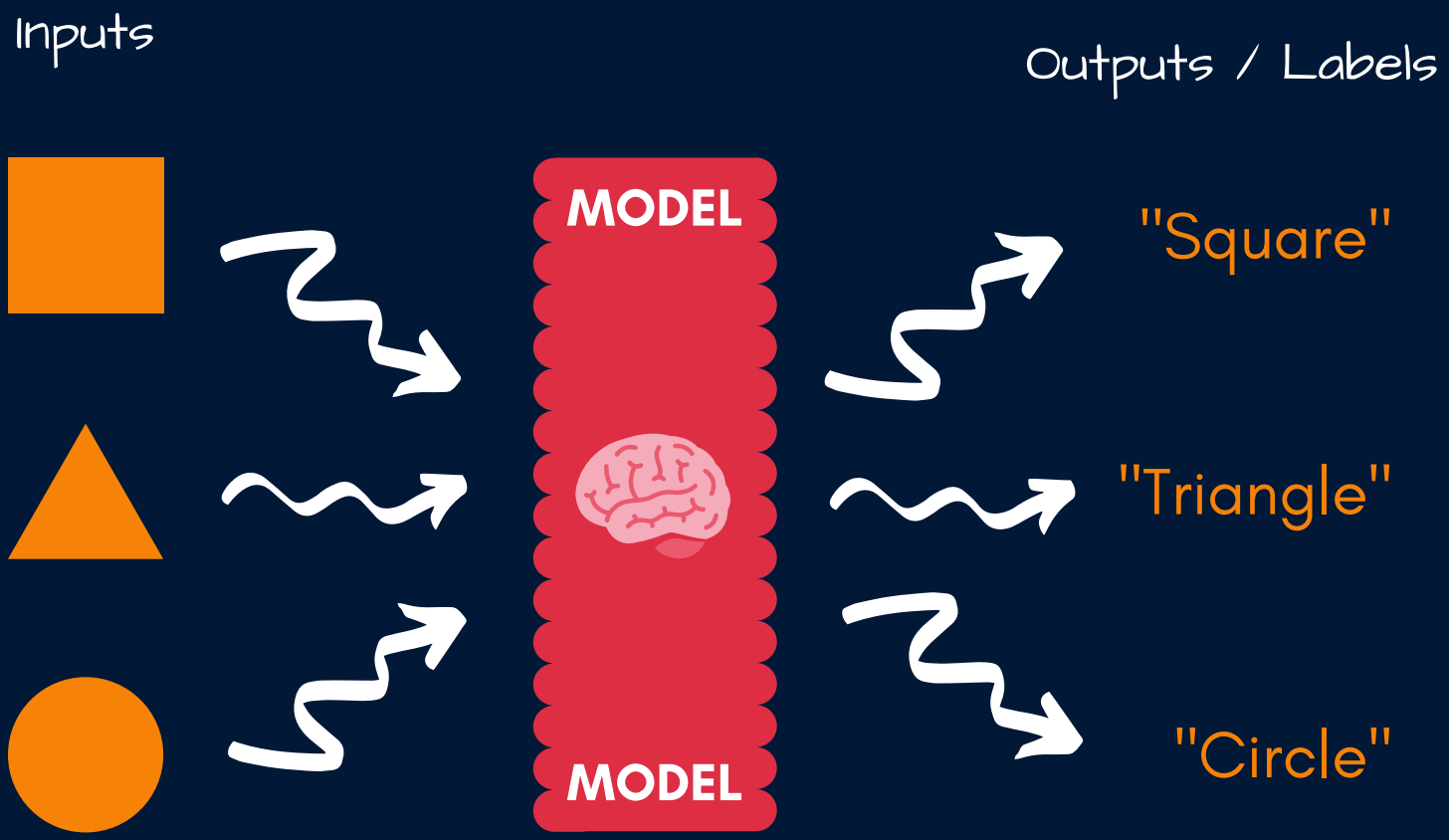


This output data is **known**, or **labelled**. A supervised Machine Learning algorithm looks to find generalised relationships that link the input data to the output data...

DATA SCIENCE INFINITY

SUPERVISED LEARNING

We save these relationships as a **model...**

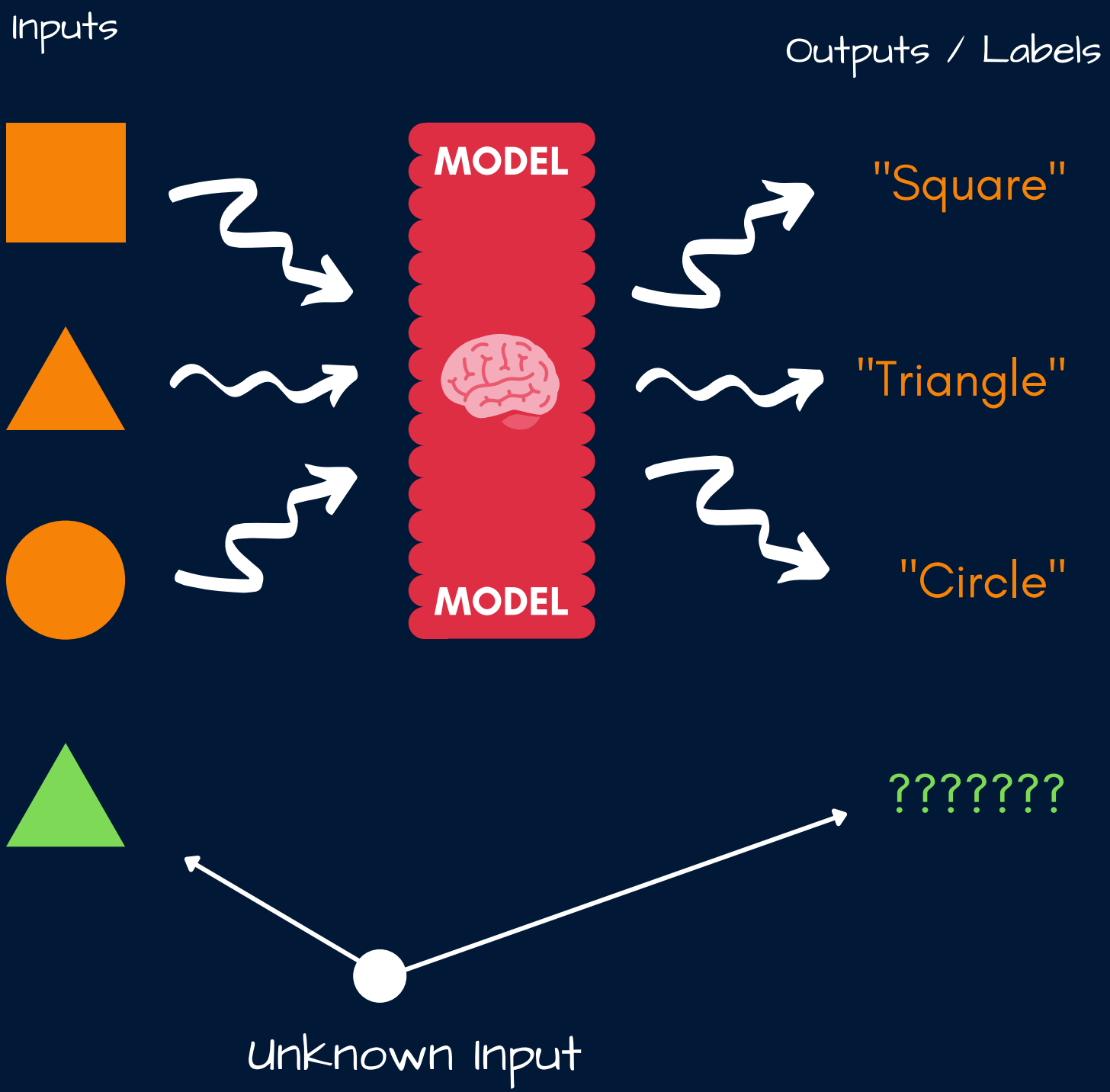


...meaning that when we are presented with...

DATA SCIENCE INFINITY

SUPERVISED LEARNING

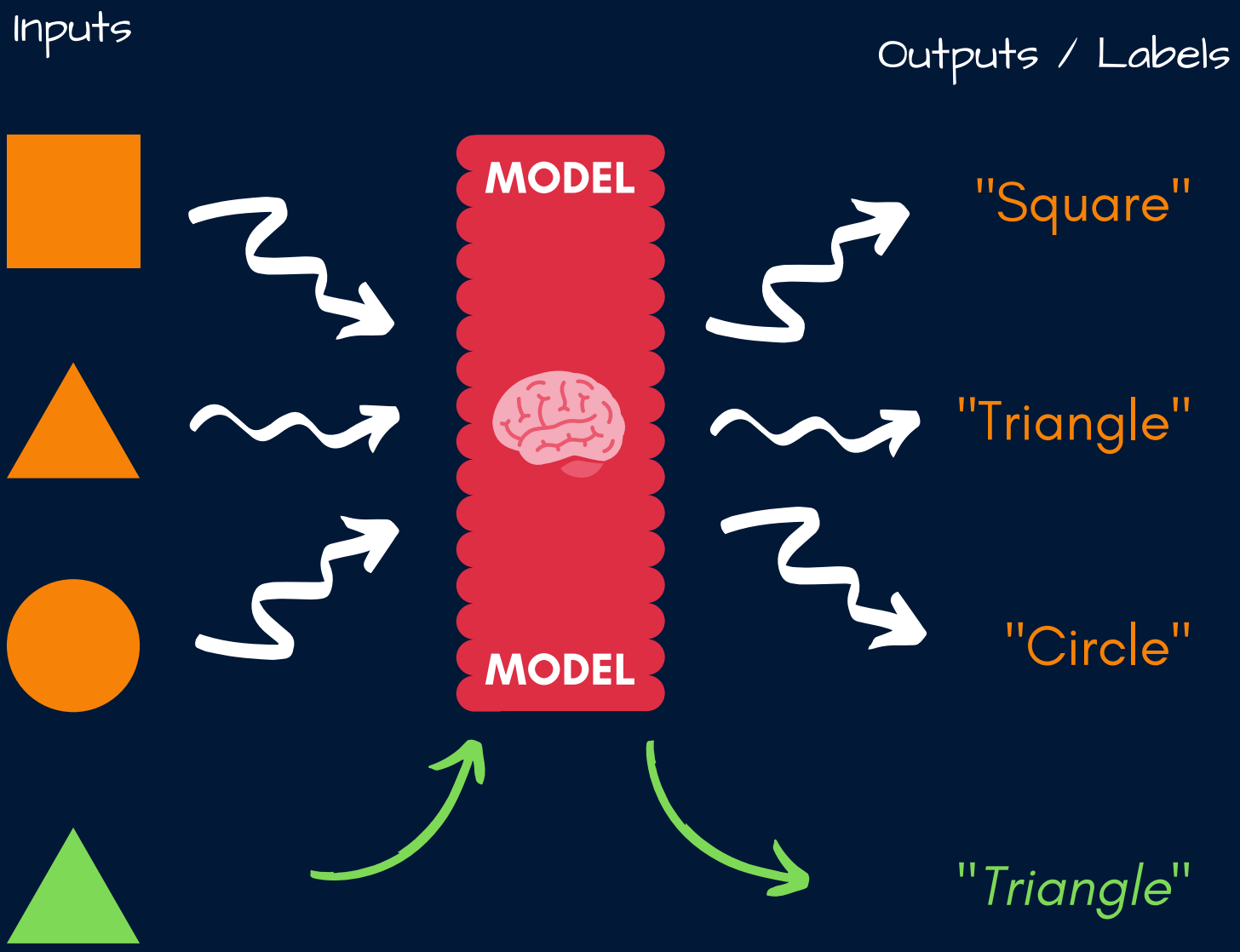
...an **unknown input** in the future...



DATA SCIENCE INFINITY

SUPERVISED LEARNING

...the model can assess the input, apply what it has learned...



...and provide a **prediction** of what the output might be!

DATA SCIENCE INFINITY

SUPERVISED LEARNING

Supervised Learning will commonly be applied to **Regression** tasks (predicting a number) or **Classification** tasks (predicting a label or type)

Examples of these algorithms are **Linear Regression**, **Logistic Regression**, **Decision Trees** & **Random Forests**. Artificial & Convolutional **Neural Networks** are also often applied to Supervised Learning tasks!

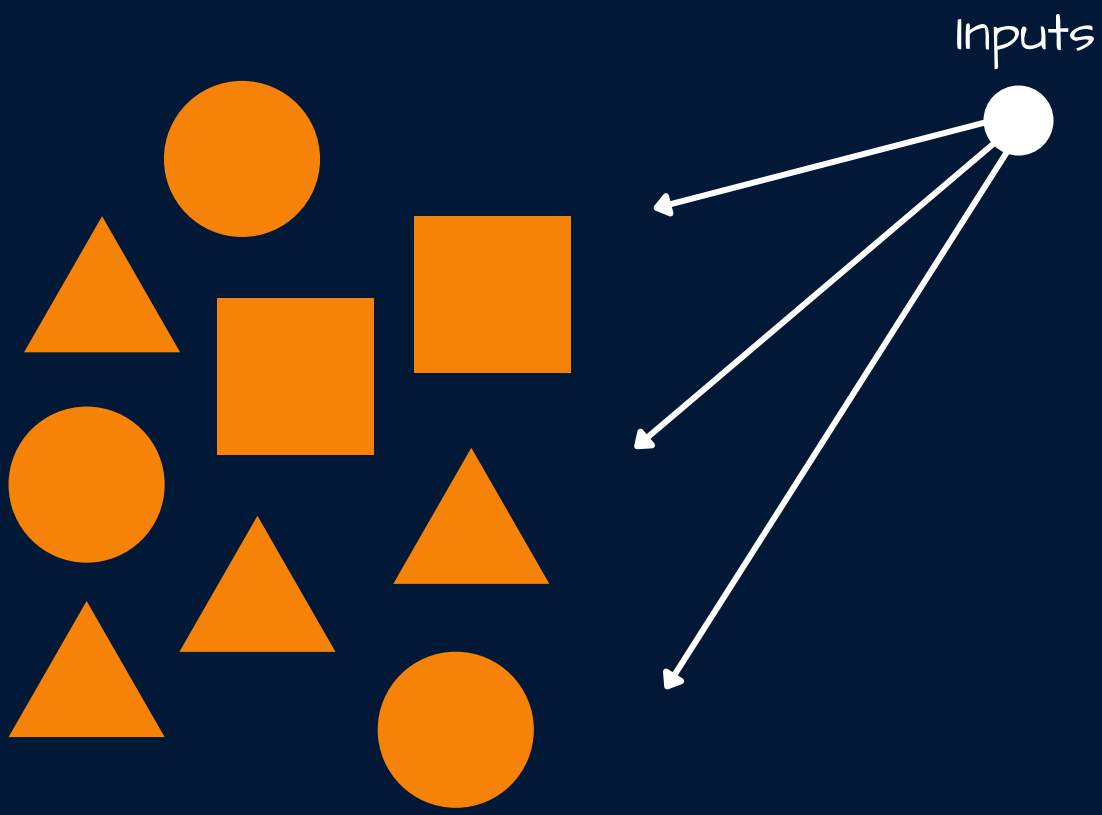
DATA SCIENCE INFINITY

UNSUPERVISED LEARNING

DATA SCIENCE INFINITY

UNSUPERVISED LEARNING

In Unsupervised Learning, we essentially **just have input data** - nothing is pre-labelled!

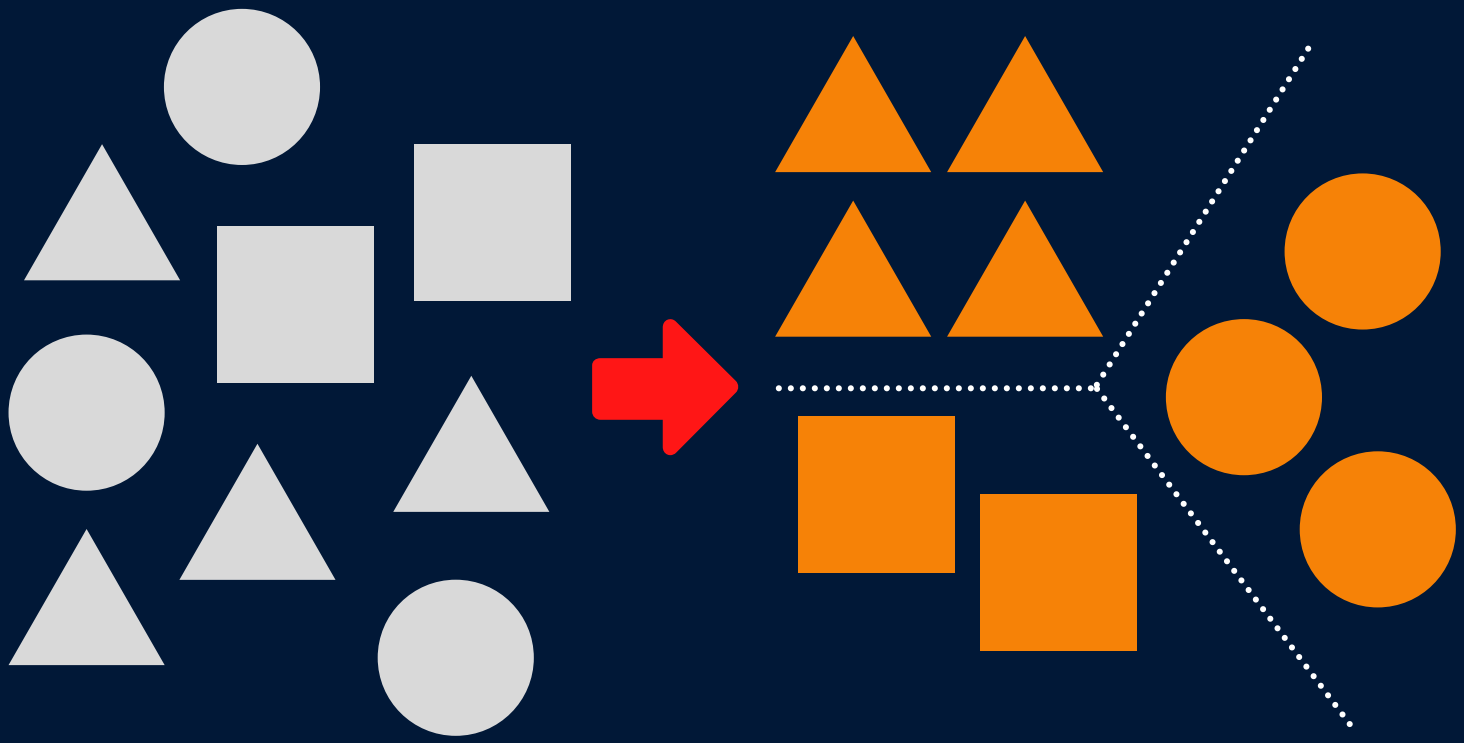


The goal in this scenario is for the algorithm to find...

DATA SCIENCE INFINITY

UNSUPERVISED LEARNING

...hidden structures and patterns in the data...



...often based upon how similar or dissimilar data-points are to each other.

SUPERVISED LEARNING

Unsupervised Learning will commonly be applied for **Clustering**, **Dimensionality Reduction**, or **Association** tasks

Examples of these algorithms are **k-means**, **DBSCAN**, **Apriori**, and **Principal Component Analysis**!