Kubernetes API:

API server exposes an HTTP API that lets end users, different parts of your cluster, and external components communicate with one another.

*The kubernetes API lets you query and manipulate the state of objects in the kubernetes API (i.e: Pods, Namespaces, configmaps, and events).

Kubernetes Objects: Persistent entities in the kubernetes system. kubernetes uses these entities to represent the state of your cluster.

* You able to describe:
  - What containerized applications are running (and on which nodes).
  - The resources available to those applications.
  - The policies around how those applications behave, such as restart policies, upgrades, and fault-tolerance.

kubernetes containers:
Containers decouple applications from underlying host infrastructure.

kubernetes pod:
A group of containers that are deployed together on the same host.

(Containers)
Container deployment era: Containers are similar to VMs, but they have relaxed isolation properties to share the operating system (OS) among the applications. Therefore, containers are considered lightweight. Similar to a VM, a container has its own filesystem, CPU, memory process space, and more. As they are decoupled from the underlying infrastructure, they are portable across clouds and OS distributions.

*Containers are a good way to bundle and run your applications. In a production environment, you need to manage the containers that run the applications and ensure that there is no downtime.
(Ex: If a container goes down, another container needs to start. Wouldn't it be easier if this behavior was handled by a system?)
* Yes!
* Kubernetes provides a framework to run distributed systems resiliently. Takes care of scaling and failover for your application, provides deployment patterns, etc.

*distributed systems: A system whose components are located on different networked computers.

* Kubernetes allows for:
- Service discovery and load balancing
- Storage orchestration
- Automated rollouts and rollbacks
- Automatic bin packing
- Self-healing
- Secret and configuration management