Virtual Reality (VR) vs Augmented Reality (AR)

1. Virtual Reality (VR)

Definition: Virtual Reality is a computer-generated simulation where users are completely immersed in a digital environment. It replaces the real world with a fully artificial, interactive 3D world.
Examples:
- Gaming: Oculus Quest or PlayStation VR headsets where you play inside a virtual game world.
- Education: Virtual science labs where students can perform experiments in a 3D simulated lab.
- Training: Flight simulators used to train pilots without real aircraft.

2. Augmented Reality (AR)

Definition: Augmented Reality overlays digital information (like images, text, or animations) onto the real world, enhancing the user's actual environment instead of replacing it.
Examples:
- Gaming: Pokémon GO – where Pokémon appear in real locations through your phone camera.
- Shopping: IKEA Place app lets you place virtual furniture in your real room using AR.
- Education: AR anatomy apps show 3D human organs over textbooks for medical students.

3. Differences between VR and AR

Feature	Virtual Reality (VR)	Augmented Reality (AR)
Definition	Virtual Reality: Fully immersive digital environment that replaces the real world.	Augmented Reality: Adds digital elements on top of the real world.
Environment	Virtual Reality: Completely artificial/simulated.	Augmented Reality: Real world enhanced with digital layers.
Equipment	Virtual Reality: Requires headsets like Oculus, HTC Vive, PlayStation VR.	Augmented Reality: Works with smartphones, AR glasses, or tablets.
Interaction	Virtual Reality: User interacts only inside the virtual world.	Augmented Reality: User interacts with both real and virtual elements.
Examples	Virtual Reality: VR gaming (Beat Saber), VR training simulators.	Augmented Reality: Pokémon GO, Snapchat AR filters, IKEA AR furniture.
Immersion level	Virtual Reality: High – user feels 'inside' the virtual world.	Augmented Reality: Low to medium – user still sees the real world.
Purpose	Virtual Reality: Entertainment, training, simulations.	Augmented Reality: Enhancing real-world tasks, visualization, education.