

Transmission Media Comparison Matrix

Property	Twisted Pair	Coaxial Cable	Fiber Optic	Wireless
Speed	Slow (up to 1 Gbps)	Moderate (1–10 Gbps)	Very Fast (10+ Gbps)	Varies (1–3 Gbps)
Cost	Cheap	Moderate	Expensive	Moderate (no cables)
Distance	Short (100m max)	Medium (500m max)	Long (40+ km)	Limited by signal
Interference	High (noisy)	Some shielding	Immune to noise	Signal drops
Ease of Use	Easy to install	Moderate	Hard to repair	No cables needed!
Example	Telephone lines	Cable TV	Internet backbone	Wi-Fi/4G/5G

- **Group Discussion:** Ask students to guess which media fits scenarios like:
 - "You need internet in a rural area with no cables." (Answer: Wireless)
 - "A hospital needs ultra-fast, secure data transfer." (Answer: Fiber)
- **Sorting Game:** Print the matrix with blanks and have students fill in properties.
- **Real-World Ties:** Show actual cables/Wi-Fi routers and match them to the matrix.

Reinforcement

Technique	Speed	Path Usage	Example
Circuit Switching	Slow	Dedicated	Phone call
Packet Switching	Fast	Shared	Internet (Wi-Fi)
Message Switching	Slowest	Store & Forward	Old telegraph

- **Real-World Analogy:**
 - *Circuit Switching* = "Like a phone call—dedicated line, no interruptions!"
 - *Packet Switching* = "Like sending letters—chopped into pieces, reassembled at the end."
 - *Message Switching* = "Like an old telegram—store, then forward later."