Fast Learners: Compare collision detection and avoidance techniques in real networks.

WORK SHEET

Use the **word bank** below to complete the sentences.

Word Bank:
`CSMA/CA`, `CSMA/CD`, `wireless`, `wired`, `listens`, `checks`, `stops`, `waits`, `Ethernet`, `Wi-Fi`, `faster`, `slower`

1. _____ is used in _____ networks (like Ethernet cables), while _____ is used in _____ networks (like Wi-Fi).
2. In _____, a device _____ while transmitting data. If a collision happens, it _____ and retries.
3. In _____, a device _____ if the channel is busy before sending data. This makes it _____ than CSMA/CD.
4. Old _____ networks used CSMA/CD, but modern switches made it obsolete.
5. Your home _____ router uses CSMA/CA to avoid data collisions.

Part 2: True or False

Circle the correct answer.

1. **CSMA/CA is used in wired networks.**
   - True / False
2. **CSMA/CD is faster because it doesn't wait before sending data.**
   - True / False
3. **Wi-Fi uses CSMA/CD to detect collisions.**
   - True / False

Part 3: Draw It!

Sketch a simple diagram showing:

- **CSMA/CD**: A device detecting a collision (e.g., two computers with an "X" between them).
- **CSMA/CA**: A device waiting (e.g., a computer with a "?" before transmitting).

Part 1: Fill in the Blanks

Use the **word bank** below to complete the sentences.

Word Bank:

`Stop-and-Wait`, `Sliding Window`, `buffer`, `ACK`, `sender`, `receiver`, `efficient`, `slow`, `TCP`, `congestion`

1. In _____ flow control, the sender transmits one frame and waits for an _____ before sending the next.
2. The _____ protocol allows multiple frames to be sent before waiting for acknowledgments, making it more _____.
3. Flow control prevents the _____ from overwhelming the _____ by regulating data speed.
4. _____ uses sliding window flow control to manage data transmission.
5. If the receiver's _____ is full, it will signal the sender to pause.

Part 2: Matching

Match each term to its description.

1. **Stop-and-Wait** → a. Allows multiple frames in transit
2. **Sliding Window** → b. Sends one frame at a time
3. **ACK** → c. Confirmation of received data
4. **Buffer Overflow** → d. Receiver can't process incoming data