LESSON 17

How the internet moves data

40 minutes | Strand 2: Let's get connected | Outcome 2.1 | Outcome 2.2

WHAT THIS LESSON DOES

Explore how a message travels from your device to a server when loading a webpage. Order the journey steps yourself and observe real network traffic to learn about packets, routers and protocols.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
2.1	discuss the basic concepts underpinning the internet
2.2	investigate and describe how data is transported on the internet and how computers communicate and cooperate through protocols

WHAT STUDENTS SHOULD BE ABLE TO DO

- Discuss the basic concepts underpinning the internet, and how a message gets from one device to another (LO 2.1)
- Describe in simple terms how data is transported on the internet and how devices communicate through protocols (LO 2.2)

BEFORE THE BELL

- Review the flow of the interactive activity in advance.
- Practise opening the Network tab on the class browser and prepare a one-line cheat-sheet for the board.
- Optional: prepare a simple Network waterfall screenshot or print so pairs can annotate if the live list is hard to read from the back.
- Student devices with browser access; know how to open Network tools on the class browser; one-line cheat-sheet ready on the board; optional Network waterfall screenshot or print for pairs

How the internet moves data

HOW THE LESSON RUNS

4 min	introduction	Start
4 min	content	A message leaves your device
2 min	content	Why devices have to agree on rules
13 min	activity	Hands-on: put the journey in order
6 min	activity	Watch a real page load
5 min	content	Note three things as you watch
2 min	content	Make sense
1 min	content	What a protocol does
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Demonstrate how to drag the cards on the interactive before students start.
- Circulate during the ordering activity and listen for use of key terms.
- Model the Network tab on the board first, then run three short pair call-outs (count, file type, slowest time) rather than a long silent watch.
- Keep the three labelled observation prompts on screen during the page-load watch.
- In Make sense, take two or three voices only, then let the next step introduce the word protocol.
- Limit the reflect discussion to two or three student responses.

WHAT TO WATCH FOR

- Students place the packet creation after routing. Solution: Emphasise that packets are formed on the device first.
- Students cannot locate the Network tab. Solution: Stay with the projected demo; solo use is extension only.
- Students expect one request for the whole page. Solution: Point out the multiple entries in the network list.
- Students call each Network-tab row a packet. Solution: A row is a request for a file; packets are the small chunks inside each request.
- Students treat "protocol" as a device or a place. Solution: Bring them back to "agreed rules" and the HTTP example.

DIFFERENTIATION

- Support: Let students work in pairs for the journey ordering task.
- Extension: In the Network tab, find the slowest request. Ask: was it an image, a script, or the page itself, and what would a user notice if that one request failed?
- Support: Provide a reference list of the main terms for the activity.
- Support during the page-load watch: give pairs the printed waterfall so they can tick off the three prompts even if they cannot see the board clearly.