Solutions

Each answer shows the steps, then the **result**.

2.1

- a LAN covers one site, such as one building
- a WAN covers a large area and joins LANs, such as the internet

2.2

- (i) **router**
- (ii) **wireless access point**
- (iii) **firewall**

2.3

- wired: e.g. faster, more reliable, harder to intercept
- wireless: e.g. no cables, users can move around

2.4

- it makes an encrypted connection over the internet to the school network
- the teacher can use school files as if on site, and intercepted data cannot be read

3.1 B

- a switch uses the MAC address

3.2 B

- single point of failure

3.3 C

- personal area network

3.4

(a)

- **client–server**
- files are stored and backed up centrally on the server
- access to project files is controlled by log-ins and permissions; the server can also be reached by staff at home

(b) Any three, e.g.:

- switch: joins the office PCs and the printer
- router: joins the office LAN to the internet
- server: stores the shared project files; or firewall: blocks unwanted traffic; or WAP: connects laptops by Wi-Fi

(c)

- star needs only one cable per device and is easy to extend
- a mesh would need a cable between every pair of devices: costly, with no real benefit for 12 staff

(d)

- connect through a **VPN**
- the data is encrypted over the internet, and users log in before reaching the files