WORKSHEET

F10.3 Network performance

Networks · GCSE · OCR J277 1.3.1, Edexcel 1CP2 4.1.5 · about 15 min

Name _____ Class _____ Date _____

What this lesson is about

Bandwidth, transfer time calculations, what slows a network, and measuring latency with a ping.

- Speed and bandwidth
- Calculating transfer time
- What slows a network down?
- Measuring latency

Questions

5 marks in all

1. How many seconds does a 25 MB file take to send at 10 Mbps? [1 mark]

2. What is bandwidth? [1 mark]

- ☐ **A** The most data a connection can carry each second
- ☐ **B** The length of a cable
- ☐ **C** The number of devices on a network
- ☐ **D** The delay before data arrives

3. Why is a home internet connection often slower in the evening? [1 mark]

- ☐ **A** More users are sharing the bandwidth
- ☐ **B** Cables cool down at night
- ☐ **C** Routers switch off at night
- ☐ **D** Servers run slower in the dark

4. What is latency? [1 mark]

- ☐ **A** The delay for data to travel from one device to another
- ☐ **B** The total amount of data sent
- ☐ **C** The number of packets lost
- ☐ **D** The speed of the processor

5. How many megabytes per second is a 100 Mbps connection? [1 mark]

The task: ping the server

Ping the Server three times. For each ping, send `ping`, time how long until a reply arrives using `clock()`, and print `ping <n>: <seconds> s`, rounded to two decimal places. Then print `average: <seconds> s`, also rounded to two decimal places.

```
# the two lines every program starts with: the commands, then the robot
from bugbot import *
connect()
```

Plan your program here, then type it in and press Run.

Do it on the robot

www.bugbotlab.com/learn/f10-3-network-performance/

The simulator checks it and tells you when it passes. Nothing to install, no account.

Challenges

1. How long does a 2 GB file take over a 50 Mbps connection? Over 1 Gbps?
2. Ten people share a 100 Mbps connection equally. How long does each take to download a 250 MB update?
3. Why does latency matter more for an online game than for downloading a film?