Test Sheet 7

Use the test sheet to:

- Check your own progress
- Practice giving and receiving feedback by working with our course members.

1. A 'light year' is the distance light travels in a year. How long is a 'light nano-second' (in cm)? Assume that speed of light is 3×10^8 m/s.

2. A state of the art processor (core) is able to complete one primitive instruction every nano-second (or less). So counting in nano-second is roughly the same as counting primitive instruction

Activity	Number of nano-seconds / instructions
Find a file on the hard disk (average)	
Send a request/reply to/from USA	
Access main memory (RAM)	
Two keystrokes	
Update screen playing an interactive game	

3. Addresses on the Internet are often compared with postal addresses and other personal identifiers. Match each item on the left to one item on the right to give the best analogy. Explain the analogy.

- Postcode
- House and road number & name
- Postal sorting centre
- Postman's bicycle
- Web site to find postcode
- NI number

- Ethernet cable
- URL
- IP address
- MAC address
- DNS
- Router

4. Discuss the following issue about teaching communication protocols with another member of the course:
   a. Can you explain the difference between a protocol and an algorithm? Which is more general?
   b. What is a good analogy for a protocol? Consider the following ideas: a recipe for a cake; rules of a board game; Morse code; rules for driving (e.g. at a roundabout); making arrangements for a night out.