**Communication Metrics**

1. How long would it take an image which is 1024 pixels by 768 pixels with 16 bit colour encoding to transfer via:-
   1. GSM - 9.6 kbps

1310.72 seconds

* 1. UMTS - 2 Mbps

6.291456 seconds

* 1. 802.11g - 54 Mbps

2.3 seconds

1. How long would a 10 MB animation take to transfer via:-
   1. 56 kbps Modem

178.57 seconds forgetten to time 8.

* 1. 1 Gbps LAN

100 seconds forgotten to times 8

1. A High Definition (1920×1080 resolution, 24 bit colour encoding per pixel, 24 frames per second) film of 1 hour and 45 minutes duration, is to be transmitted over a communication channel in under 12 s. What is the minimum transmission speed of the system?

147,456 seconds

1. A floppy disk stores 1.4 MB of data and weighs 30 g. If an airliner carries 30,000kg of these floppies at a speed of 1000 km/hr over a distance of 5000 km, what is the data rate achieved?

42GB

0.03kg

900kg

5million

42GB/hr

1. The following files were sent over a communication link and their transmission time recorded.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | File α | File β | File γ | File δ | File ε |
| File Size | 125 B | 250 B | 375 B | 500 B | 625 B |
| Transmission Time | 0.625 s | 1.250 s | 1.875 s | 2.500 s | 3.125 s |

1. Plot the data on a graph. Transmission Time on the y axis and file size in bits on the x axis)
   1. Using the graph, determine how long it will take to transfer a file of 300 B
   2. What is the gradient?
   3. What is the equation of the line?
   4. What is the reciprocal of the gradient?
   5. What is the transmission speed of the system?

<http://staffweb.cms.gre.ac.uk/~sp02/IntroInternet/8452solutions.htm>