

1. After going to the website that are given "<http://www.speedtest.net>", the result of the speed test is as follows:-

Ping	Download speed	upload speed
86ms	2.75mbps	2.14mbps

A mobile photo with 3MB is the same as 24bits and to find out how long it takes to download a given amount of data, we just have to divide the data rate (in megabit) / speed (in Mbps)

Time in millisecond for downloading speed = $24/2.75 \rightarrow 8.72727$

Time in millisecond for uploading speed = $24/2.14 \rightarrow 11.2149$

2. After going to this <http://www.wolframalpha.com> website the result for distance between Oslo and New York is 5932 and the distance light in fiber for New York is 28 and its given in millisecond. Using a measurement called ping the roundtrip time (RTT) for the following website www.metopera.org is as follow:-

Ping statistics for 69.18.205.90

packets:- sent = 4, received = 4, lost = 0

Approximate round trip time in milliseconds:-

Minimum = 112ms

Maximum = 226ms

Average = 164ms

The correspondence between the measured time and the theoretical transmission time of light in fiber is different as we see the results from above. These can be explained in different ways with different reasons. Some of them are:-

- Repeaters, switches and routers slow down transfer speeds
- Actual speed of the signal will never quite match the speed of light
- The actual distance traveled will be longer

	Distance	Average	%Sol	Minimum	Maximum	median/dev
Brasilla	9913km	251.94ms	39 %	242.12ms	284.53ms	10.83ms
Cape Town	10470km	171.29ms	61 %	171.11ms	171.88ms	0.59ms
New York	5895km	102.91ms	58 %	102.63ms	103.72ms	0.27ms
Tokyo	8407km	288.44ms	29 %	286.58ms	292.96ms	1.59ms
Sydney	15952km	322.06ms	50 %	321.73ms	323.34ms	0.72ms

From the above table, we can see that different part of the continent has different ping times and the farthest one has the highest ping time because of time it takes for a return signal.

3.) My lowest ping time is 0.27ms * numbers of RTT (4 in this part) and this will give me the time it takes for an object to travel to the recipient in milliseconds then 5 objects * the answer from my previous question which will give me number of milliseconds it takes for the web page with 5 objects to load which is 5.4ms then we change 7500 bytes to mega bytes which is 0.0375mb
time will be $0.0375 / 0.27 = 0.1388$
time = $0.1388 + 5.4 \rightarrow 5.5388\text{ms}$

Yes, because when packets arrive at a router, they have to be processed and transmitted. A router can only process one packet at a time. If packets arrive faster than the router can process them the router puts them into the the buffer until it can get around to transmitting them.

My highest ping time is 10.83ms(same ways like previous question)
219.376ms

	Stockholm	San Jose	Melbourne
Performance Grade	E 55	D 61	D 61
Load time	483ms	5.15s	4.71
Faster than	97 %	30 %	34 %
Page size	706.6kb	706.1kb	706.6kb
Request	38	36	38

Loading speed of a web page depends on many factors some of them are:-

- Test location/ Location of the server
- Data size
- Buffering in the browser