COMP 3203 Assignment 1

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1. Given:
   R1 = 400Kbps
   R2 = 1.6 Mbps
   R3 = 800kbps

   Solution:
   a. With no traffic in the network (assuming) = R1 = 400Kbps since it will be min of R1, R2 and R3
      Throughput for the file transfer is 400Kbps

   b. File size (F1) = 5M bytes
      Convert bytes to bits = 5M*8 =40M bits (40000000 bits) → file size
      Throughput = 400Kbps (400000bps)
      Dividing the file size by throughput to get time for transfer of file= $\frac{40000000}{400000} = 100\ seconds.$

   c. R2 = 100Kbps
      Therefore Throughput will change to 100Kbps =100000bps
      File size (F1) = 5M = 40M bits ((same as before)
      Dividing the file size by throughput to get time for transfer of file= $\frac{40000000}{100000} = 400\ seconds.$

2. Given:
   Propagation speed (P) = 130km/hr
   Cars number = 10

   Solution:
   a. Distance (D) =120km
      Delay time =D/P = $\frac{120}{130}\ hr = 0.92\ hr \approx 55\ \text{min}\ and\ 38sec$
      Time for 3 tollbooths to reach 10 cars = (10 cars/5 cars min)2*3 minutes= 6 minutes
      End to End Delay = 55m:38s + 6m =61m:38s

   b. Distance (same)
      Cars number = 8
      Delay Time = $0.92\ hr \approx 55\ \text{min}\ and\ 38sec$
      Time for 3 toll both to reach 8 cars = (7cars/5cars/mins) = 1.4*3 minutes = 4.2 minutes
      $\approx 4minutes\ 12seconds$
      End to End delay = 55m:38s + 4m:12s =59m:50s