Problem #1

* Home Access:
  + DSL (Digital Subscriber Line)
  + Cable
  + FTTH (Fiber to the home)
  + Dial-Up
  + Satellite
* Access in the Enterprise (and the Home):
  + Ethernet and WiFi
* Wide-Area Wireless Access
  + 3G
  + LTE

Problem #2

Delay Components in the end-to-end delay:

Assuming that the network is uncongested, then we will have the processing delay, transmission delay, and propagation delay. If the network is congested, then we add to the previous list the queuing delay.

According to the book, the queuing delay is variable and it depends on the level of congestion in the network. Processing delay, transmission delay, and propagation delay are considered to be constant delays.

Problem #4

1. Since there is going to be a long period of time, there is not going to be idle time, it is better to use a **circuit-switched network** to get a fixed capacity of the link and create a constant flow of data. If the packet-switched network is used and there is another application sending data, then we might have son queuing delay if the link’s capacity gets congested.
2. No, a form of congestion will be redundant because if the application data rates is less than every link’s capacity and there is no other application sending data into the network, then there is not going to be any queuing delays. There is going to be a constant flow of data without a possibility of delays occurring in the form of congestion in the routers.

Problem #5

1. This network can support a maximum of 12 connections.
2. Assuming that the circuit switches are not congested by the flow of data from switches A and C, I can make four connections from switch D to A and four connections from switch D to C. If the circuit switches are congested, then I can only have a maximum of 8 connections.
3. Yes, the route will be 2 connections from A -> B -> C and 2 connections from A-> D -> C using B and D as intermediaries. The other 4 connections will follow this route D -> A - >B and D -> C -> B using A and C as intermediaries. This routes are also done by hand in the following pages.