1. For the network of Figure 5.7a (and ignore the line weights), suppose flooding is used for the routing algorithm. If a packet is sent from E to D, with a maximum hop count of 3, list all the routes it will take. How many packets are sent in this flooding?

2. For the subnet of Figure 5.13(a), using distance vector routing. As router B, build the router table for that node having received the following vectors: from A (0,4,6,8,6,10), from C (7,2,0,5,2,8) and from F (11,4,8,5,7,0). B has measured its routes to its neighbors A, C and F and gets 2, 3 and 2 respectively. Compute B’s new routing table, showing both the outgoing line and the expected delay.

3. For the subnet of Figure 5.6(a), draw a sink tree for router B. Using this subtree, how many packets are generated by a broadcast from B using:
   a. reverse path forwarding
   b. the sink tree?

4. Referring to Figure 5-20, suppose that node C has just rebooted and has no routing information in its tables. It immediately needs a route to node H. It sends out broadcasts with TTL of 1, 2, 3, and so on. How many rounds does it take to find the route?

5. Suppose an ATM network uses a token bucket scheme for traffic shaping. If a new token is put into the bucket every 10 µsec, and is good for one 64K Byte packet, what is the maximum sustainable data rate?

6. An IP datagram reassembly algorithm uses a timer to avoid having a lost fragment tie up buffers indefinitely. Suppose that a datagram was fragmented into three fragments, and the first two arrive, but the timer goes off before the last fragment arrives. The algorithm has discarded the first two fragments, now it has – finally – the missing third fragment. What does it do with it?

8. Convert the IP address whose hexadecimal representation is C0A8000D.

9. What does this address tell you about its location?

10. A router has the following (CIDR) entries in its routing table:
    
    | Address/mask       | Next hop     |
    |-------------------|--------------|
    | 128.114.56.0/22    | Interface 0  |
    | 128.114.60.0/22    | Interface 1  |
    | 192.168.30/23      | Router 1     |
    | **Default**        | **Router 2** |

    For packets with the following IP addresses, show where the router will send the packet:
    (a) 128.114.63.09
    (b) 128.114.57.11
    (c) 128.114.52.02
    (d) 192.168.33.05
    (e) 192.168.31.06