1. Voting
2. Indicate which protocol is encapsulated in the payload of the frame
3. You can lose bandwidth from packet-switched networks because when collisions occur, you have to resend them, and to avoid collisions, you sometimes don’t send any packets so in both scenarios, bandwidth is wasted, which would not happen with circuits.
4. Network protocols are formal standards and policies comprised of **rules**, **procedures / algorithm**, and **formats** that define communication between two or more devices over a network. A network protocol defines rules and conventions for communication between network devices. Network protocols include mechanisms for devices to identify and make connections with each other, as well as formatting rules that specify how data is packaged into messages sent and received.
5. Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway. DHCP allows hosts to obtain required TCP/IP configuration information from a DHCP server.  
     
   DHCP hinders accountability because no one has a set IP address since they get recycled. Therefore, it is more difficult to trace back to the user. However, it can still be done by looking at timestamps of when the IP addresses were used.
6. The 8-bit Hop Limit field is decremented by one, by each node (typically a router) that forwards a packet. If the Hop Limit field is decremented to zero, the packet is discarded. This ensures that the packet does not continuously hop forever.
7. **Benefit:** because there is a shortage of IP addresses, NATs offer a way to expand the number of usable IP addresses by giving private IP addresses to everyone in the subnet.  
     
   **Drawback:** goes up to layer 3, which complicates thin waist model of internet. Because of this, you have to switch IP addresses every time you enter or exit a NAT, which adds additional complexity and bandwidth cost.
8. Tor gives users anonymity by wrapping packets up indifferent layers. You do not send packets directly to your destination, you send them to different nodes which in turn unwrap a section of your packet to send to the next node.
9. There are too many routers and hosts for any of the routing algorithms to work efficiently since they would have to look at the millions of routers or iterate through all of them. With an AS, you only need to find the shortest path inside your AS, and your gateway router can do the rest of the work.