1. **4 Layers of the TCP/IP Network Model**	1. Application - HTTP, HTTPS, FTP, SMTP, etc 2. Transport - TCP or UDP 3. Internet - IP 4. Link - Ethernet
2. **7 Layers of OSI Model**	1. Application - HTTP 2. Presentation - JPEG/GIF 3. Session - RPC 4. Transport - TCP/UDP 5. Network - IP 6. Data Link - Ethernet 7. Physical - DSL, 802.11
3. **... are made up of 4 octets, each a 8-bit binary number converted to decimal. ex. 192.168.1.1**	IPv4 Address
4. **... are made up of a 128bit number. It is usually represented in hexadecimal, with every four digits separated by a : ex. 2001:0db8:85a3:0000:0000:8a2e:0370:7334**	IPv6 Address
5. **Common DNS Record Types**	A - Directly maps a domain name to an IPv4 Address AAAA - Directly maps a domain name to an IPv6 Address CNAME - Maps a domain name to another domain name MX - Defines the mail server for a domain NS - Defines the DNS Servers for a zone (domain) SOA - Defines which DNS Server is the authority for a zone(domain)
6. **DNS - Domain Name System**	A protocol (on UDP port 53) that allows our computer to talk to a DNS Server and resolve a Domain Name into an IP Address
7. **Domain Name**	A human readable name assigned to an IP address. Examples: google.com
8. **Fields of an IPv6 Header**	Version Traffic Class Flow Label Payload Length Next Header Hop Limit Source IP Destination IP
9. **Hub**	A device which hooks multiple computers together over ethernet and blindly repeats ethernet packets to all the other devices on a local area network.
10. **IP Address**	assigned to a particular networking device (Ethernet adapter, Wi-Fi Adapter, etc).
11. **MAC Address**	A hardware address assigned to every physical networking device on a network.
12. **OSI Reference Model**	Some descriptions of this model try to fit our existing tech into the seven layer model but it doesn't match up exactly with how networks work today.
13. **Port**	Represents a TCP/UDP connection on an actual computer. Used by the operating system of a computer to route TCP connections to the right program running on a computer.
14. **Router**	A device which is responsible for routing IP packets BETWEEN different networks.
15. **Rules to shorten an IPv6 header ex. 2001:0db8:85a3:0000:0000:8a2e:0370:7334**	An entire string of zeros can be removed, you can only do this once. 4 zeros can be removed, leaving only a single zero. Leading zeros can be removed. ex. 2001:db8:85a3::0:8a2e:370:7334

16.	**Switch**	A device which intelligently hooks multiple computers together over ethernet and sends ethernet packets to the correct devices on a local area network based on MAC Addresses.
17.	**TCP/IP Network Model**	This model is the actual way networks today work, it is simpler than the OSI model and has only four layers.
18.	**TCP - Transmission Control Protocol**	is used when you want reliable connections and you want the packets to reach the destination in the correct order.
19.	**UDP - user Datagram Protocol**	is used when you don't mind a more unreliable connection, but where real time interactivity is more important
20.	**Version number of IPv4**	0100
21.	**Version number of IPv6**	0110