How does the Internet Work?

### The answer to all the questions can be found in the listed videos. I suggest reading through all the questions first so that you know what answers you’re looking for, then watching videos that sound like they will answer the question you’re trying to answer. **Answers must be in complete sentences to receive credit.**

Internet Infrastructure as Fast as Possible - <https://youtu.be/n71TUnTNdw8>

DNS as Fast as Possible - <https://youtu.be/Rck3BALhI5c>

Internet vs Web as Fast as Possible - <https://youtu.be/laepk9KrAZY>

Internet Protocol - IPv4 vs IPv6 as Fast as Possible - <https://youtu.be/aor29pGhlFE>

Routers vs. Switches vs. Access Points - And More - <https://youtu.be/Vc16CCAAz7Q>

What is TCP/IP? - <https://youtu.be/PpsEaqJV_A0>

HTML5 as Fast as Possible - <https://youtu.be/IsXEVQRaTX8>

Bits vs Bytes as Fast as Possible - <https://youtu.be/Dnd28lQHquU>

How Do URLs Work? - <https://youtu.be/OvF_pnJ6zrY>

# Questions:

1. What is the difference between bits and bytes and what are they used for?
   1. A bit is a small form of data, either a 0 or 1. A byte is 8 bits, and can represent different values like a letter of the alphabet.
2. Why is HTML5 the new standard?
   1. It has native support for many common media formats without requiring plug-ins like Flash and better support for vector graphics, making it more accessible for people using mobile devices and for developers who want their content to look correct across device form factors.
3. What is the difference between the Internet and the Web?
   1. Internet is short for internetworking, meaning it is interconnected intranet networks. The web is the space where the content is stored, and the internet connects everything together, even things that aren't in the web and use different protocols.
4. What is the role of an ISP?
   1. It directs traffic through a DNS server that maps the domain to the correct ip address.
5. What is a modem?
   1. A device that processes the signal sent from an ISP and interfaces with your local network.
6. What is a browser?
   1. An application that interprets web languages like HTML and CSS.
7. What is the difference between guided and unguided media?
   1. Guided media uses a physical method to transmit, while unguided media broadcasts through the air.
8. Summarize how the internet was developed.
   1. Networking methods around the world were being worked on as early as 1966, when plans for ARPANET were laid and tested. More and more computers were added to ARPANET, and eventually it grew into the internet as new networks were built and connected.
9. What is a web server and what purpose does it serve?
   1. A web server is a server that processes requests using HTTP.
10. What is a router and what purpose does it serve?
    1. A router creates a local network that assigns each connected device a local ip address and routes data appropriately.
11. What are packets and what purpose do they serve?
    1. Packets are small pieces of data that each are able to travel independently to their destination and carry instructions on how to reassemble them into a whole.
12. What are IP addresses and what purpose do they serve?
    1. A string of numbers that are used to identify individual devices using Internet Protocol to communicate on a network.
13. What is Intranet and what purpose does it serve?
    1. Intranet refers to a local, often private network that connects local devices in an organization or in a home, etc. It can only be accessed by those with permission.
14. What is bandwidth?
    1. Bandwidth is the maximum amount of data that can be transferred across a certain pathway.
15. What is a firewall?
    1. A firewall is a security system on a network that monitors ingoing and outgoing traffic and uses defined rules to restrict or allow traffic.
16. What is the “backbone” (Internet backbone service providers) and what purpose does it serve?
    1. A backbone is one of the central routes of data transmission between large networks on the internet, hosted by internet backbone service providers. It is responsible for data transmission between countries, across oceans, around the world.
17. What is the purpose of a domain name?
    1. It is used to identify a website, and to find computers on the internet (on the consumer end).
18. Match the parts of the URL to its name:
    1. <http://www.google.com>
    2. http is the protocol
    3. www is the subdomain.
    4. Google is the domain.
    5. .com is the top level domain.
19. What is a static IP address?
    1. An IP configured manually that doesn't change when a computer connects to a different network.
20. What is a dynamic IP address?
    1. An IP address requested by a computer automatically when it connects to a network.
21. What is the difference between IPv4 and IPv6?
    1. IPv4 only allows for 4 billion unique addresses. IPv6 allows many, many more using a 128 bit address. IPv6 allows devices to configure themselves and is much more simple. There is no backward compatibility between IPv4 and IPv6.
22. What is the function of a DNS?
    1. It matches a URL to an IP address so your computer can navigate to the proper web page.
23. What does HTTP stand for and how is it used?
    1. HTTP is Hypertext Transfer Protocol, the base protocol that defines how messages and data are formatted and transmitted in the web.
24. What does HTTPS stand for and how is it used?
    1. HTTPS is Hypertext Transfer Protocol Secure, and is an extension of HTTP that uses SSL or TLS to create a secure connection.
25. What does FTP stand for and how is it used?
    1. FTP is File Transfer Protocol, and is used for transferring files between computers over a network.
26. What does SMTP stand for and how is it used?
    1. SMTP is the Simple Mail Transfer Protocol and is used for delivering mail between computers on a network.
27. What does TCP/IP stand for and how is it used?
    1. Transmission Control Protocol / Internet Protocol. It helps with routing internet traffic using things like protocols, ports, and packets.