# **The Internet Discussion Guide (for use during or after reading)**

1. What is the internet and how is it used? (The Internet, p. 4-5)
   1. The internet is a useful tool that includes the World Wide Web, email, chat, and other applications. People use the internet every day. They share pictures and videos, play games, study, shop, work, and more! The internet has not always been part of our daily life, but it certainly plays a big role now!
2. Why is it helpful to group computers together as a network? (Computer Networks, p. 6-7)
   1. A computer network is used to connect multiple computers together. Networks can be local (LAN) or can cover a wide area (WAN). The internet itself is a computer network! Computer networks are helpful because they allow us to share and communicate data easily.
3. Describe how data can be shared across a wide variety of hardware. (The Hardware of the Internet, p. 8-9)
   1. Hardware like computers, laptops, and cell phones share data through the internet. Electric signals as well as radio waves are both used to transmit data across a variety of hardware.
4. What are servers? How do they cooperate with clients? (The Hardware of the Internet, p. 10-11)
   1. Servers are special kinds of computers that store data so it can be shared over networks. Servers can store a lot of data! The internet relies on millions of these large servers. In order for a server to cooperate with a client (device), the device must first request information from the server. The server receives the request and sends the correct information back to the client.
5. What is an IP address and why is it important in the process of transmitting data? (How Data Moves Over the Internet, p. 12-13)
   1. The term IP address is short for Transmission Control Protocol/Internet Protocol address. An IP address is like a home address. It tells servers where to deliver data just like a home address tells postal workers where to deliver the mail. An IP address is important in transmitting data because without it, servers would not know where to send certain pieces of information.
6. Describe how packet switching works and why it is an efficient way to transmit data. (How Data Moves Over the Internet, p. 14-15)
   1. Packet switching is a process used by IP to transmit data. In packet switching, the original data to be transmitted is broken up into small chunks. Each of these chunks is called a packet. Packets are sent individually and travel through cell towers, radio waves, or servers and do not need to take the same route or stay in the same order. Once all the packets arrive at the correct destination (IP address), they are reassembled to take the form of the original data. This is an efficient way to transmit data because individual packets can travel in the path that is the best for them. Making use of this convenience allows for efficiency when transmitting data.
7. Describe the differences between a URL, a web browser, and a web page. (Internet Applications, p. 18-19)
   1. The World Wide Web is an internet application. Typically, people use the World Wide Web to look for information. To do so, they must understand the differences between a URL, a web browser, and a web page. URL stands for Uniform Resource Location and is the address of a website. It is often called a web address. A web browser is a program that finds and displays web pages and other information from the internet. A web page is a digital document that can be accessed using a web browser. A website is a collection of web pages.
8. Explain what people mean when they say their data is “in the cloud.” (It’s in the Cloud!, p. 22-23)
   1. When people say their data is “in the cloud,” they do not mean that their data is physically stored in the sky near the clouds. Rather, they mean that their data is being stored on one or more of the internet’s many servers. This means that they can access their data from a variety of locations, as long as they can connect to the internet. If your data is backed up on multiple servers, it is less likely to get lost or destroyed. In addition, storing data in the cloud saves memory space on individual devices.
9. Why was the internet and the process of packet switching originally developed? (The Internet of Things, p. 26-27)
   1. The internet and the process of packet switching was originally developed by the United States government during the 1960’s and 1970’s. The military wanted to share information in a way that made it difficult for it to be intercepted, or stopped, by an enemy. Packet switching helped ensure that even if information was intercepted, the enemy might not have access to all of it or might not be able to make sense of it. The World Wide Web was not designed until the 1990’s and was the first “place” people could organize and share information digitally.
10. How has the internet, including the World Wide Web, changed since its invention in the 1960’s and 1990’s? How do you think the internet might change during your lifetime? (The Internet of Things, p. 28-29)
    1. The internet, including the World Wide Web, has changed drastically since its invention in the 1960’s and 1990’s. The invention of the World Wide Web allowed everyday people, not just computer scientists, access to the internet. Throughout the 2000’s and the 2010’s the internet became commonplace in American society, allowing it to develop. Internet connections became faster, computers became smaller, and people have found new and creative ways to use the internet in their everyday lives.