| **Skill 12.01 Exercise 1** |
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| What is the Internet? |
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| How do you use the Internet? Think about your typical day. When are you using the Internet? For what purposes? What role does it have in your life? |
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| **Skill 12.02 Exercise 1** |
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| Define network topology. |
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| **Skill 12.02 Exercise 2** |
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| Obtain two pieces of string from Pluska.  Complete the following challenges in your assigned group. For each challenge your group must consider the following rules,   * Only two people can be connected by a single string. * You can be connected to multiple people at the same time via multiple strings. |
| Challenge 1: As a group, create a network topology where everyone is connected to everyone else. How many strings did you use to create your network? |
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| Challenge 2: Strings cost money, so create a network topology that uses as few strings as possible. How many strings did you use to create your network? |
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| Challenge 3: Strings can be cut, which might disconnect people from the network. Create a network topology that keeps everyone connected even if one of the lines is cut. How many strings did you use to create your network? |
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| Challenge 4: Consider the guidelines below,  **Guideline A:** Strings cost money, so try to use the least number of strings possible  **Guideline B:** Strings can be cut, which might disconnect people from the network  **Guideline C:** Direct Connections are faster than long paths with indirect connections  As a group, create a network that you feel balances all 3 guidelines.  Thinking about the 3 guidelines, what is a strength of the network topology your group created?  What is a weakness? |
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| **Skill 12.03 Exercise 1** | |
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| Identify what each acronym below represents | |
| WAN |  |
| DCN |  |
| LAN |  |
| Based on what you wrote above, what type of network did you create with your group using strings? | |
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| What type of network is the Internet? | |
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| **Skill 12.04 Exercise 1** |
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| For each of the physical network connections, identify the type of signal it transmits, along with the advantages and disadvantages of each technology.   |  | Type of signal | Advantage | Disadvantage | | --- | --- | --- | --- | | Copper wires |  |  |  | | Wireless |  |  |  | | Fiber-optic |  |  |  | |

| **Skill 12.05 Exercise 1** |
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| How many wires would be required to send the number 20 |
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| What if only 1 wire were available? How could you send the number 20? |
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| **Skill 12.06 Exercise 1** | |
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| The flashlight binary signal test simulates a flashlight turning on and off. Let the letter B represents the off position and the letter A represents the on position. Watch the first test, then decide on the message being sent, | |
| **Test 1** |  |
| Now watch the second test and decide on the message being sent, | |
| **Test 2** |  |
| After seeing Test 2, how might you revise test 1? Indicate your revised version below. | |
| **Test 1 Revised** |  |
| What additional information let you to revise your message? | |
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| **Skill 12.06 Exercise 2** |
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| Below is a screen shot of the results of an Internet speed test on my home computer, |
| How many bits per second can I download? How many bits per second can I upload? |
| I want to download a video that is 1.5 GB… How long will it take? |

| **Skill 12.06 Exercise 3** |
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| Josiah used a tool to measure how many bits he could transfer over his home connection to the Internet. What is the bandwidth? |

| **Skill 12.06 Exercise 4** |
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| What is latency? |
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| Navigate to <http://ping-test.net/> and run the ping test.  For which location did the ping test take the longest? The shortest? |
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